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Puzzle Mania

Complete Puzzles & Seating Arrangement for Prelims and Mains

For all Bank & Insurance Exams
(SBI PO, IBPS PO, RBI Grade B, LIC AAO, IBPS Clerk & others)

SPECIAL EDITION

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Section I: Building blocks (Basic Arrangements)

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CHAPTER 1 – COMPARISON

What is Comparison?

Basically, in these questions, the knowledge of comparing things on basis of certain parameters such as height, weight, ranks, ages, etc. is been tested.
It is the basic type which is been asked in SSC exams, banking exams, railways, etc. Level of questions in each exam is different and varies from easier to difficult side.

Let's learn the approach...

⇒ Recognise the parameter based on which comparison is made and, make arrangement in tabular form or comparison form (__ < __ < __ ...).
For example: If the comparison is done among certain number of persons on basis of their heights then, the terms "taller than" and "shorter than" might have been used.
Similarly, if the comparison is done based on weights then, the terms "heavier" and "lighter" might have been used.
⇒ Look out for the direct information given in the question and write it down separately.
⇒ Look for other variables given in the hints and combine them, which may or may not lead to more than one possibility.
⇒ Eliminate the invalid possibilities with the further statements, hence, reaching the final answer.

These types of questions may be asked along with certain other arrangements such as linear, circular, etc. and number of variables associated with the question may be more than one. We will learn these in later chapters.

Key Pointers

⇒ Always remember whether the arrangement is done in increasing/ascending or decreasing/descending order of given parameters. Do not mix the orders.
⇒ When the comparison is done based on ranking of the students, persons, positions in a race, etc., then the one with numerically lower rank has higher rank than the one with numerically higher rank. For ex: Rank 1 or position 1 is higher than rank 2 or position 2. Take care of this according to the given question.
⇒ Similarly, the elder person is always born before the younger one i.e., in the year which is numerically lower than the year of birth of younger one. This has to be taken care when the years of birth of certain persons is given and comparison is made on the basis of their ages.
⇒ Take care of number of possible cases formed out of one statement of question. This is one of the important takeaways.
⇒ Try to derive the information from the indirect information and hints given in the question.

Solved Examples

Type 1: DIRECT COMPARISON WITHOUT ANY VARIABLE

Question 1 There was a group of 5 persons A, B, C, D, E who had different earnings. C earned more than B who earned less than only 2 persons. C did not earned the maximum. E earned more than D but did not earn the maximum. How many persons earned less than A?

Solution:

C earned more than B who earned less than only 2 persons.

__> C > B> __ > __

E earned more than D but did not earn the maximum

A > C > B> E > D

4 persons earned less than A.

Question 2 6 articles A, B, C, D, E, and F are sold at different price. B is costlier than only 2 items and C is not one of them. D is cheaper than A and

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is costlier than F, which is costlier than E. Cost of D is the average of cost of A and C. Cost of how many articles is more than F but less than C?

Solution:

B is costlier than only 2 items, where C is not one of them.

Case 1: -

$\succeq \quad \succeq C \succeq B \succeq \quad \succeq$

Case 2: -

$\succeq C \succeq \quad \succeq B \succeq \quad \succeq$

Case 3: -

$C \succeq \quad \succeq \quad \succeq B \succeq \quad \succeq$

D is cheaper than A and is costlier than F, which is costlier than E.

So, we get: -

$A \succeq D \succeq F \succeq E$

Fitting this combination in 3 cases mentioned above, we get: -

Case 1: -

$A \succeq D \succeq C \succeq B \succeq F \succeq E$

Case 2: -

$A \succeq C \succeq D \succeq B \succeq F \succeq E$

Case 3: -

$C \succeq A \succeq D \succeq B \succeq F \succeq E$

Cost of D is the average of cost of A and C. So, only case 1 is valid.

Final Solution:

$A \succeq D \succeq C \succeq B \succeq F \succeq E$

Question 3 Seven bags contain different number of balls. C contains more balls than F, but less than A. Two bags have more balls than B but, less than C. G doesn't has lesser balls than neither A nor B. F has more balls than B and D. E doesn't have more balls than B. Which bag has more number of balls than exactly two bags?

Solution:

→ C contains more balls than F, but less than A.

→ Two bags have more balls than B but, less than C.

→ F has more balls than B.

A>C>F>__>B

Or

A>C>__>F>B

→ G doesn't have less balls than neither A nor B.

→ E doesn't have more balls than B.

We get,

G>A>C>F>__>B>E

Or

G>A>C>__>F>B>E

→ F has more balls than D.

So, case II becomes invalid and we get the final arrangement as follows:

G>A>C>F>D>B>E

Thus, D has more no. of balls than exactly two bags.

TYPE 2: DIRECT COMPARISON WITH NUMERICAL PARAMETERS

Question 4 Five friends scored different marks in a paper which was of 100 marks. Abdullah scored more than Baadshah but less than Chinar. 75 marks were scored by Chinar. Dafiq scored less marks than only one person who was Eijaz. The minimum marks scored were 50 and the maximum scored were 90 marks. One of the persons scored 3/5th of the total marks.

If one of the persons scored marks which is half of the sum of the total score of the persons who scored the highest and the third highest marks. Then what could be the probable score of the person?

Solution:

So, we have the maximum marks as 90 and the minimum as 50. So, we get

Let us arrange them in the descending order of their marks.

(90) > ____ > ____ > ____ > (50).

Dafiq scored less marks than only one person who was Eijaz.

=> Eijaz(90) > Dafiq > ____ > ____ > (50).

Abdullah scored more than Baadshah but less than Chinar. 75 marks were scored by Chinar.

So, the only possibility that we will have is

=> Eijaz(90) > Dafiq > Chinar (75) > Abdullah > Baadshah (50)

One of the persons scored 3/5th of the total marks.

= 3/5 x 100 = 60 marks.

So, we will get that Abdullah will be the one who got 60 marks.

So, the final arrangement is as follows.

Eijaz(90) > Dafiq > Chinar (75) > Abdullah (60)> Baadshah (50)

The highest marks are 90 and the third highest are 75.

So total = 90+75 = 165

So, half of the total = 165/2 = 82.5

Directions [5 to 6]: Six people A,B,C,D,E,F, were standing in a row for cricket team selection in order of decreasing weight(the heaviest person was standing in the front). Each of them had a different weight. Further it is known that A weighed more than at least three people but was not the

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heaviest. Two people were standing between E and D. F who did not weigh the lowest was standing just behind C. D weighed less than C.

Question 5 If A weighed 66 kg, and F weighed 42 Kg , then what could be the possible weight of D?
a) 68kg b)74kg c)93kg d)38kg
e) 44kg

Question 6 How many people were standing between C and B?

Solution:
A weighed more than at least three people but was not the heaviest.
__>A>__>__>__
Two people were standing between E and D.
E>__>__D or D>__>__E
D weighed less than C.
F who did not weigh the lowest was standing just behind C.
So we have:
B>A>E>C>F>D

Answer 5: D weighed less than F, So the possible weight can be 38 kg.

Answer 6: 2 people were standing between C and B.

Directions [7 to 8]: Six persons A, B, C, D, E and F were of different ages. Thus, no two persons were of the same age. All the ages were integers.
C was elder to A but younger to D.
Number of persons elder to B was equal to the number of persons younger to A.
D was not the eldest and B was elder to A
The 3rd eldest person was aged 27
Not more than three persons were younger to E
A was not the youngest.

Question 7 Which of the following can be the age of F?
I. 25 II. 28 III. 29

Question 8 How many persons were younger to D?

Solution:
Number of persons elder to B was equal to the number of persons younger to A.
D was not the eldest and B was elder to A

B > ___ > ___ > ___ > ___ > A

___ > B > ___ > ___ > A > ___

___ > ___ > B > A > ___ > ___

A was not the youngest. Thus, 1st sequence is wrong
C was elder to A but younger to D
D>C>A where D was not the eldest
The 3rd eldest person was aged 27

___ > B > D (27) > C > A > ___

D > C > B (27) > A > ___ > ___

D was not the eldest, thus, the 2nd sequence given above is invalid.
Not more than three persons were younger to E

F > B > D (27) > C > A > E

Answer 7: F was elder to D who was 27 years old, he cannot be 28 years old as the ages are integral values and B was elder to D but younger to F.

Answer 8: Three persons were younger to D

TYPE 3: COMPARISON WITH ONE OR MORE VARIABLES

Question 9 There are six boys P, Q, R, S, T, U comparing the marble collection they have. The number of marbles they have are 16, 15, 13, 10, 8 and 5, in no particular order. Further, it is known that:
P has a prime number of marbles with him. S has more marbles than U but less than Q. The number of marbles with Q is a multiple of the number of marbles with R. U has less number of marbles as compared to T. T doesn't have 10 marbles. There is a difference of 3 between the number of marbles with P and T. Either P can have more marbles than T or T can have more marbles than P. What is the difference of the number of marbles with S and U?

Solution:
P has a prime number of marbles. So, P can have 13 or 5 marbles with him.
There is a difference of 3 between the number of marbles with P and T. If P has 5 then T has 8 marbles, but we are given that U has a lesser number of marbles as compared to T. So, this case won't be possible. So, P has 13 and T has 16 marbles.
Now we know that the number of marbles with Q is a multiple of the number of marbles with R. So, Q can have 15 and the number of marbles with R is 5. Or Q has 10 and R has 5.
Case where Q has 10 marbles:

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T has 16, P has 13, Q has 10, R has 5. S has more than U. So, S should have 15. But S should also have less than Q. Hence, this case is invalid.
Case where Q has 15 marbles:
S has more marbles than U. So S will have 10 marbles.
Finally, we have:
T (16) > Q (15) > P (13) > S (10) > U (8) > R (5)
The difference of the number of marbles with S and U is 2.

Directions [10 to 12]: Seven friends A, B, C, D, E, F & G were born on same month & same date but different years. Two of them were born on same year.
C is older than E. G is older than E but younger than D. No two people Either older than C or younger than E has same age. D's age is equal to combined age of C & A. Neither A's nor B's age is equal to any other person. Number of people older than C is equal to number of people younger than E. No one was born in between A & B. Number of people born between E & F is an even prime number.

Question 10 Who is the youngest among all friends?
Question 11 Who among is the eldest?
Question 12 Who among the given persons have the same age?
Solution:
• C is older than E.
• No. of people older than C is equal to no. of people younger than E.
• No two people Either older than C or younger than E has same age.
Case 1 > C > > > E >

Case 2 C > > > > > E

Case 3 > > C > E > >
• D's age is equal to combined age of C & A.
(case 2 is eliminated as D is heavier than C)
Case 1 D > C > > > E >

Case 3-a > D > C > E > >

Case 3-b D > > C > E > >
• Neither A's nor B's age is equal to any other person.
• No one was born in between A & B.

Case 1 D > C > A/B > B/A > E >

Case 3-a > D > C > E > A/B > B/A

Case 3-b D > > C > E > A/B > B/A
• G is older than E but younger than D
• Neither A's nor B's age is equal to any other person.
• No two people Either older than C or younger than E has same age.
Case 1 D > C = G > A/B > B/A > E >

Case 3-a > D > C= G > E > A/B > B/A

Case 3-b-1 D > > C= G > E > A/B > B/A

Case 3-b-2 D > G > C > E > A/B > B/A
• No. of people born between E & F is an even prime no.
• No two people Either older than C or younger than E has same age.
(case1, case 3a and case 3-b-2 are eliminated because E and F have 2 peoples born between them)
D > F > C= G > E > A/B > B/A

Answer 10: Either A or B is the youngest
Answer 11: D is the eldest
Answer 12: C & G are having the same age.

Directions [13 to 14]: Seven cars A, B, C, D, E, F and G reached different maximum speed in 5 seconds. The cars were of different colour blue, green, black, yellow, red, pink and white not necessarily in the same order.
Number of cars faster than F was twice as the number of cars faster than the white car. 2 cars were slower than white car but faster than A. Car A was faster than car G but slower than car E. Number of cars faster than black car was thrice as that of the number of cars faster than the pink car. Only one car was faster than B. Yellow car was slower than blue car but faster than car C. Car C was either red or black in colour but was not the slowest. Neither car E nor the white car was the fastest. Car A was not yellow in colour.

Question 13 Which of the following car/cars was/were slower than the green car?
I. C II. G III. A
Question 14 What was the colour of car D?
Solution:
• Number of cars faster than black car was thrice as that of the number of cars faster than the pink car
• Only one car was faster than B

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Case 1 ___ > B (Pink) > ___ > ___ (Black) > ___ > ___ > ___

Case 2 ___ > B > ___ (Pink) > ___ > ___ > ___ > ___ (Black)

• 2 cars were slower than white car but faster than A

Case 1 ___ (White) > B (Pink) > ___ > A (Black) > ___ > ___ > ___

Case 1a ___ > B (Pink) > ___ (White) > ___ (Black) > ___ > A > ___

Case 2 ___ (White) > B > ___ (Pink) > A > ___ > ___ > ___ (Black)

Case 2a ___ > B (White) > ___ (Pink) > ___ > A > ___ > ___ (Black)

Case 2b ___ > B > ___ (Pink) > ___ (White) > ___ > ___ > A (Black)

• Car A was faster than car G but slower than car E. Thus, case 2b becomes invalid.

• Neither car E nor the white car was the fastest. Thus, cases 1 and 2 become invalid

• Number of cars faster than F was twice as the number of cars faster than the white car

Case 1a ___ > B (Pink) > ___ (White) > ___ (Black) > F > A > G

Case 2a ___ > B (White) > F (Pink) > ___ > A > ___ > ___ (Black)

• Yellow car was slower than blue car but faster than car C.

Blue> Yellow>C

Thus, case 1a become invalid as car C cannot be placed in that arrangement

• Car C was either red or black in colour but was not the slowest

• Car A was faster than car G but slower than car E. Thus, E>A>G

• Neither car E nor the white car was the fastest.

• Car A was not yellow in colour

Thus, the final sequence is as follows:

D > B > F > E > A > C > G

Blue White Pink Yellow Green Red Black

Answer 13: Cars C and G were slower than the green car

Answer 14: Car D was blue in colour

Directions [15 to 19]: Seven doctors A, B, C, D, E, F and G participated in a conference. Each person gave a speech which was of different duration. Each was from a different country viz. USA, Russia, India, Australia, Germany, France and Sri Lanka not necessarily in the same order.

• The person from Russia had a speech duration that was more than only one other person's duration

• E had a longer duration than F

• Number of persons who had longer duration than the one from USA was equal to the number of persons who had lesser duration than A who was from Germany. The person from USA had a longer duration than A

• The person from France had a duration lesser than D's duration

• Either 3 or 4 persons had a duration higher than the duration of the one from India

• G had a duration more than C's duration but less than the duration of the one from Sri Lanka

• Number of persons who had longer duration than the one from Sri Lanka was equal to the number of persons who had lesser duration than C. The person from Sri Lanka had a longer duration than C

• C was not from Russia or India

• Not more than one person had a duration greater than the duration of the one from France.

• D was not from Sri Lanka and E was not from France

Question 15 Who among the following had the highest speech duration?

a) B b) D c) E d) The person from Australia e) Cannot be determined

Question 16 Who among the following was from Australia?

a) B b) C c) D d) E e) G

Question 17 B was from which of the following countries?

a) Australia b) India c) Russia d) France e) USA

Question 18 How many persons had a duration lower than the duration of C?

Question 19 How many persons had a duration higher than the duration of the person from USA?

Solution:

• The person from Russia had a speech duration that was more than only one other person's duration

• Number of persons who had longer duration than the one from USA was equal to the number of persons who had lesser duration than A who was from Germany. The person from USA had a longer duration than A

___ (USA) > ___ > ___ > ___ > ___ > ___ (Russia) > A (Germany)

___ > ___ > ___ (USA) > ___ > A (Germany) > ___ (Russia) > ___

• Number of persons who had longer duration than the one from Sri Lanka was equal to the number of persons who had lesser duration than C. The person from Sri Lanka had a longer duration than C

Case 1 ___ (USA) > ___ (Sri Lanka) > ___ > ___ > ___ > C (Russia) > A (Germany)

Case 2 ___ (USA) > ___ > ___ (Sri Lanka) > ___ > C > ___ (Russia) > A (Germany)

Case 3 ___ (Sri Lanka) > ___ > ___ (USA) > ___ > A (Germany) > ___ (Russia) > C

Case 4 ___ > ___ (Sri Lanka) > ___ (USA) > ___ > A (Germany) > C (Russia) > ___

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• C was not from Russia or India. Thus, cases 1 and 4 are invalid.
• Either 3 or 4 persons had a duration higher than the duration of the one from India
• G had a duration more than C's duration but less than the duration of the one from Sri Lanka

Case 2 ___ > ___ > ___ > G > C > ___ > A
USA, Sri Lanka, India, Russia, Germany

Case 3 ___ > ___ > ___ > ___ > A > ___ > C
Sri Lanka, USA, India, Germany, Russia

• The person from France had a duration lesser than D's duration
• Not more than one person had a duration greater than the duration of the one from France.

Case 2 D > ___ > ___ > G > C > ___ > A
USA, France, Sri Lanka, India, Russia, Germany

Case 3 D > ___ > ___ > ___ > A > ___ > C
Sri Lanka, France, USA, India, Germany, Russia

D was not from Sri Lanka, thus, case 3 is invalid.
• E had a longer duration than F
• E was not from France

Thus, the final arrangement is as follows:

D > B > E > G > C > F > A
USA, France, Sri lanka, India, Australia, Russia, Germany

Answer 15: D had the maximum speech duration
Answer 16: C was from Australia
Answer 17: B was from France
Answer 18: Two persons had a duration lower than C's duration
Answer 19: The person from USA had the highest duration, so none had higher than it.

Directions [20 to 23]: Five persons - U, V, W, X and Y work in the same company. Each one among them works for different number of hours per week - 25, 45, 33, 30 and 18, not necessarily in same order and, each one has a different designation - designer, developer, manager, editor and accountant.
U's working hours is more than three persons individually. The designer works for more number of hours than the manager but, less number of hours than the developer. Y is neither editor nor accountant. The manager works for number of hours less than accountant, who doesn't work for 30 hours. Editor works for more number of hours than accountant, but not for 45 hours. Neither V nor W, work for maximum number of hours. W, who is not editor, works for more number of hours than V. X works for less number of hours than accountant.

Question 20 What is the designation of W?
Question 21 What is the difference between number of working hours of X and W?
Question 22 Who works for second greatest number of hours?
Question 23 What is the correct order of persons in descending order of number of working hours?
a) X > U > Y > W > V
b) Y > W > U > V > X
c) Y > U > W > V > X
d) Developer>editor>accountant>manager>designer
e) None of these

Solution:
Let's arrange the number of working hours in descending order.
U works for number of hours more than three persons.
The designer works for more number of hours than the manager but, less number of hours than the developer.
So, the designer cannot work for maximum or minimum number of hours.
We get,

Case I: ___ (45, developer) > U (33, designer) > ___ (30) > ___ (25) > ___ (18)

Case II: ___ (45) > U (33) > ___ (30, designer) > ___ (25) > ___ (18)

Case III: ___ (45) > U (33) > ___ (30) > ___ (25, designer) > ___ (18, manager)

Now,
The manager works for number of hours less than accountant, who doesn't work for 30 hours.
And,
Editor works for more number of hours than accountant, but not for 45 hours.
Thus, case III gets eliminated.
We get,

Case I: ___ (45, developer) > U (33, designer) > ___ (30, editor) > ___ (25, accountant) > ___ (18, manager)

Case II: ___ (45, developer) > U (33, editor) > ___ (30, designer) > ___ (25, accountant) > ___ (18, manager)

Now,
X works for less number of hours than accountant.
So, X is manager.
Also,
Y is neither editor nor accountant.
We get,

Case I: Y (45, developer) > U (33, designer) > ___ (30, editor) > ___ (25, accountant) > X (18, manager)

Case II: (a) Y (45, developer) > U (33, editor) > ___ (30, designer) > ___ (25, accountant) > X (18, manager)

Case II: (b) ___ (45, developer) > U (33, editor) > Y (30, designer) > ___ (25, accountant) > X (18, manager)

Now,
Neither V nor W, work for maximum number of hours.

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So, case II(b) is invalid.
And,
W, who is not editor, works for more number of hours than V.
So, case I becomes invalid.
We get the final arrangement as follows:

Y	>	U	>	W	>	V	>	X
45		33		30		25		18
developer		editor		designer		accountant		manager

Answer 20: W is designer.
Answer 21: X=18; W=30;
Difference = 30 - 18 = 12 hours
Answer 22: Editor works for 2nd greatest number of hours.
Answer 23: Option (c) is the correct order.

TYPE 4: COMPARISON WITH 'RANK' VARIABLE

Directions [24 to 28]: Answer the questions based on the following information:
Six persons are ranked in terms of their goals scored in football. No two persons had the same rank. The person who scored the highest goals was ranked 1 and the next highest was ranked 2 and so on. Three persons scored odd number of goals. The goals scored by Messi were lesser than that scored by Chhetri and Milan. Dawson scored more goals than Ronaldo. The least goals that were scored were 2. Ronaldo scored more goals than Chhetri. The highest goals were double than that of the goals scored by Chhetri which were 1 more than the one who scored 1 goal more than Zambo. Zambo scored lesser goals than Ronaldo. Milan was ranked immediately next to the one who was ranked top and Messi was ranked immediately next to the one who was ranked least.

Question 24 Who scored the highest number of goals?
Question 25 What was the number of goals scored by the person who was ranked 2nd?
Question 26 What was the rank of Chhetri?
Question 27 How many persons scored more goals than Zambo but less than Ronaldo?
Question 28 Which of the following is true?
a) Dawson scored the highest goals.
b) Ronaldo was ranked 3rd
c) Chhetri's goals were double that of Zambo
d) All are true
e) All are false

Solution:
So, the ranking is done in terms of the goals being scored. The person scoring the highest goals was ranked 1 and so on.
We will try to represent it as follows.

Person						
Rank	1st	2nd	3rd	4th	5th	6th
Goals Scored						

Messi was ranked immediately next to the one who was ranked least.
So, he will be ranked 5th.
Milan was ranked immediately next to the one who was ranked top. So, he will be ranked 2nd.

Person		Milan			Messi	
Rank	1st	2nd	3rd	4th	5th	6th
Goals Scored						

Zambo scored lesser goals than Ronaldo. Dawson scored more goals than Ronaldo.
Ronaldo scored more goals than Chhetri.
From the above data we get that Ronaldo scored more goals than Zambo and Chhetri.
The goals scored by Messi were lesser than that scored by Chhetri and Milan. So that means Chhetri will be at 4th.
Ronaldo will be at 3rd.
Dawson scored more goals than Ronaldo. Hence Dawson will be at 1st.
Hence the final arrangement that we will get is as follows.

Person	Dawson	Milan	Ronaldo	Chhetri	Messi	Zambo
Rank	1st	2nd	3rd	4th	5th	6th
Goals Scored						

Now let's look at the goals scored by the persons.
The least goals scored were 2 which is scored by Zambo.
The highest goals were double that of the goals scored by Chhetri which were 1 more than the one who scored 1 goal more than Zambo.
So, the person scoring 1 goal more than Zambo will become Messi which will be 2 goals and the person scoring 1 more than Messi will be Chhetri which will be 4 goals.
So, the highest goals were double of Chhetri which = 4x2 = 8.

Person	Dawson	Milan	Ronaldo	Chhetri	Messi	Zambo
Rank	1st	2nd	3rd	4th	5th	6th
Goals Scored	8			4	3	2

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Three persons scored odd number of goals. So, the left-over goals are 5,6,7 but 6 cannot be taken as three persons scored odd number of goals.Hence the final arrangement is as follows.

Person	Dawson	Milan	Ronaldo	Chhetri	Messi	Zambo
Rank	1st	2nd	3rd	4th	5th	6th
Goals Scored	8	7	5	4	3	2

Answer 24: Dawson scored the highest number of goals.
Answer 25: The person ranked 2nd was Milan and he scored 7 goals
Answer 26: Chhetri was ranked 4th.
Answer 27: 2 persons scored more goals than Zambo and less than Ronaldo.
Answer 28: All the options given are true.

Practice Yourself

Question 1 A family had six members A, B, C, D, E and F. Each person had a different height. D was taller than A. Number of persons shorter than D was equal to the number of persons taller than C. There were only 2 persons shorter than E but taller than B. C was taller than D. F was not the tallest. Who was the second tallest member of the family?
a) D b) E c) F d) C
e) Cannot be determined

Question 2 Seven IT professionals A, B, C, D, E, F and G had different number of years of experience. Number of persons who had more experience than A was thrice as that the number of persons who had less experience than F. F had more experience than C. A had more experience than D. E had more experience than G and B. Who among the following had the 2nd highest experience?
a) A b) B c) G d) Either A or G
e) Either B or G

Question 3 A shopkeeper has six pen drives of six different brands and each one has a different memory capacity. Two pen drives have more capacity than Toshiba, but less than SanDisk. At least two pen drives have less capacity than iBall, which has more capacity than Toshiba and less capacity than Sony. Toshiba didn't have the least capacity. HP has more capacity than Moserbear and Toshiba, but not the maximum. At least one pen drive has more capacity than Toshiba but, less than HP. Which brand's pen drive has the more capacity than two pen drives only?
a) Sony b) HP c) SanDisk
d) Cannot be determined e) iBall

Question 4 In an examination, Ram scored the highest marks. Piya's marks are lesser than at least three persons, among whom Olly is the one. Olly's marks are less than Qureshi's marks. Nita's marks are less than Manu's. Manu got less marks than Olly, who got 64 marks. Nita got 60 marks and Piya got 62 marks. Each one got different marks, which are a whole number. What is the difference between Manu's and Piya's marks?
a) 3 marks b) 1 mark c) 2 marks
d) 4 marks e) Can't be determined

Question 5 A, B, C, D, E and F participated in a cookie eating competition. Each of them ate a different number of cookie. There were only 2 persons who ate more cookies than D but less cookies than F. B ate more cookies than A who ate less cookies than C. Neither E nor A ate the least number of cookies. At least 2 persons ate more cookies than C. Who among the following ate the 3rd lowest number of cookies?
a) A b) B c) C d) D e) F

Question 6 Six boxes were arranged in a row as per their size in a row. The boxes were named P, Q, R, S, T and U. Each box was coloured differently pink, blue, green, golden, red and yellow not necessarily in the same order. There were 2 boxes smaller than box U but larger than the pink box which was not the smallest. Only one box was larger than the blue box. Number of boxes larger than golden box was equal to the number of boxes smaller than box P. S was green in colour and was larger than the golden box. R was larger than the yellow box which was larger than box T. T was not the smallest. How many boxes were smaller than box P but larger than box Q?
a) None b) One c) Two
d) Three e) Cannot be determined

Question 7 5 children A, B, C, D and E were born in different months January, February, March, April and May not necessarily in the same order. Each of them weighed differently. They were born in the same year. A was heavier than the one born in May but lighter than B. B was born just after E who was the 2nd lightest. Only 2 persons were lighter than D and heavier than the one born in March. D was heavier than the one born in April. The eldest

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person was not the heaviest. In which of the following months was the 3rd heaviest person born?
a) February b) May c) March
d) January e) Cannot be determined

Directions [8 to 9]: A person went to a fruit market and purchased different fruits viz. apple, litchi, orange, mango, guava, grapes and papaya. He bought different quantities of each fruit. The weights were in integral values.
Grapes weighed more than litchi but less than guava
Papaya weighed more than guava but less than apple
Mango weighed 34kg
The fruits those weighed the 3rd lightest weight was 28kg
Litchi was not the lightest
At least 3 fruits were heavier than mango.

Question 8 If papaya weighed twice as that of grapes, then which of the following can be the weight of the 3rd heaviest fruit?
a) 64kg b) 40kg c) 32kg
d) 27kg e) None of the above

Question 9 How many fruits were lighter than orange?
a) None b) One c) Two
d) Three e) Cannot be determined

Directions [10 to 11]: There are six filled water bottles - A, F, I, K, R and Z. Water in each bottle is filled up to different levels. Level of water in F is more than that in at least two bottles. Level in Z is more than in A, but less than in K. F doesn't have highest level of water. K has more level than I, which has more level than A, which doesn't have the lowest level.

Question 10 If it is given that bottle F is filled up to 100 ml, I is filled up to 140 ml, Z is filled up to 130 ml, and the lowest level of water in any bottle is 40 ml, then what might be the possible level of water in bottle A?
a) 39 ml b) 132 ml c) 126 ml d) 87 ml
e) 170 ml

Question 11 Which of the given bottles has the lowest level of water filled?
a) R b) K c) Either (a) or (b)
d) None of these e) Z

Directions [12 to 14]: There are six notebooks - H, I, J, K, L and M, each having different number of pages in it such that every notebook has number of pages in multiples of 50. The thickness of the notebook is determined by the no. of pages it has i.e., a notebook with more no. of pages is thicker than the one with less no. of pages.
- J is thicker than I.
- K has the minimum possible no. of pages and H has 200 pages.
- There are two notebooks thicker than L but, thinner than M.
- Maximum pages that a notebook can contain are 400.
- Difference between the no. of pages of L and M is equal to no. of pages of H.
- No notebook has 350 or 250 pages.

Question 12 Which notebook is the thickest and how many pages does it have?
a) I, 350 b) J, 300 c) M, 400
d) J, 400 e) I, 300

Question 13 How many notebooks are thinner than H?
a) One b) Two c) Three
d) None e) Five

Question 14 How many pages does L has.
a) 150 b) 300 c) 100
d) 400 e) 450

Directions (15 to 17): 6 balloons of different colours Red, White, Black, Blue, yellow and Green have different shapes radius among 10 cm, 12 cm, 14 cm, 16 cm, 18 cm and 20 cm not necessarily in the same order.
Red balloon has bigger radius than Green balloon, but not the biggest. Number of balloons bigger than Green are same as the number of balloons smaller than Red balloon. Only one balloon is larger than Blue balloon but smaller than Black balloon. The difference between radius of Blue balloon and radius of Yellow balloon is 6 cm. White balloon is larger than yellow balloon but not the largest.

Question 15 What is the sum of radius of Red and Yellow balloon?
a) 24 cm b) 28 cm c) 32 cm
d) 36 cm e) None of these

Question 16 What is the difference between the radius of Green and Blue balloon?
a) 2 cm b) 4 cm c) 6 cm
d) 8 cm e) 10 cm

Question 17 Which of the following balloons are larger than Blue balloon?
a) Yellow b) Red
c) Green d) Both Red and Black
e) Both red and Green

Directions [18 to 20]: 6 persons A to F are standing in a row facing north. They participated in the 3 rounds of the competition viz. Round I, round II and round III. Each person finished the round I with different rank from 1st to 6th (1st being higher

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than 2nd which is higher than 3rd and so on) and same is true for round II and round III.
• Only 1 person is standing between A and D, who finished round II with rank 4.
• D is standing to the immediate right of F.
• A is standing at the end of the row and he is standing adjacent to the one who finished round I and round II with first rank.
• B is standing to the immediate right of the person who finished round II with rank lower than D in round II.
• Rank of C was lower in round III than round I and lower in round I than round II.
• The rank of the person standing to the immediate right of E is 4 in round III.
• C never finished any round with either rank 4 or 6.
• Neither A nor E finished the round II with lowest rank.
• Rank of A is lower in round III than round II and lower in round II than round I.
• D finished his all rounds with even ranks.
• Only 2 persons finished the 2 different rounds with the same rank.
• No one finished all three rounds with same rank.
• The person who finished the round III with 1st rank is not standing 2nd to the right of D.

Question 18 Who among the following finished the round I with higher rank than D?
I. A II. C III. F IV. B
a) Only I and II b) Only II and III
c) Only I, II and III d) All of the above
e) Only one of the above

Question 19 Who among the following finished every round with ranks lower than or equal to 3?
I. A II. C III. B IV. F
a) Both II and IV b) Only I and IV
c) Only III d) Both I and III
e) More than 2 persons

Question 20 For which of the following person, sum of his ranks in all rounds is maximum?
a) A b) B c) C d) D e) None of these

Directions [21 to 24]: A, B, C, D, E and F had different integral heights and were from different cities viz. Kolkata, Lucknow, Delhi, Chennai, Mumbai and Jaipur not necessarily in the same order. Each person wore a different coloured shirt viz. red, green, brown, yellow, white and blue not necessarily in the same order.
• B was taller than E but shorter than the person from Lucknow.
• The person who wore the red shirt was taller than the one from Lucknow
• Number of persons taller than F was equal to the number of persons shorter than the one with the blue shirt. F was taller than the one with blue shirt.
• The person from Jaipur was shorter than the person with blue shirt
• The person with the green shirt was from Mumbai
• F was not wearing the green shirt.
• Not more than three persons were shorter than the person from Mumbai
• C was shorter than A but taller than the one from Chennai
• C was from either Kolkata or Jaipur
• The person from Chennai was not wearing the yellow shirt
• D was from Delhi
• The shortest person wore the yellow shirt
• The person with the white shirt was taller than the person with brown shirt

Question 21 Who among the following wore the brown dress?
a) A b) F c) B d) E e) C

Question 22 What was the colour of the shirt of the 2nd tallest person?
a) White b) Brown c) Red
d) Green e) Cannot be determined

Question 23 How many persons were shorter than E?
a) Three b) One c) Two
d) None e) Cannot be determined

Question 24 What was the colour of the shirt of the person from Kolkata?
a) Red b) White c) Blue
d) Brown e) Yellow

Directions [25 to 29]: 8 persons A, B, C, D, E, F, G and H have different weights and different heights.
A is taller than 2 persons and heavier than 4 persons.
C is heavier than A but not heaviest.
Number of persons heavier than C is same as the number of persons shorter than C.
B was not the tallest. Three persons are taller than D but shorter than B.
Number of persons taller than H are same as the number of persons heavier than H and at least one person is taller than H.
Number of persons shorter than G are same as the number of persons lighter than G and at least one person is lighter than G.
H is taller than A but not heavier than A.
The lightest person is tallest.
E is lighter than F, who is heavier than D.
F is not heaviest.

Question 25 Who is the heaviest person?
a) A b) B c) D d) F e) C

Question 26 E is ___.
a) Tallest
b) Lightest

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c) Heaviest
d) Both option (1) and option (2)
e) Both option (2) and option (3)

Question 27 How many people are there who are taller than A and also lighter in weight than G?
a) 2 b) 3 c) 4 d) 5 e) More than 5

Question 28 Who among the followings is/are heavier as well as shorter than H?
a) A
b) D
c) C
d) Both option (1) and option (3)
e) More than persons mentioned above

Question 29 A is ___.
a) 3rd tallest and 5th heaviest
b) 6th tallest and 4th heaviest
c) Heavier than at-least 6 persons
d) Lighter than 6 persons
e) None of these

Directions [30 to 34]: 6 friends A, B, C, D, E & F belongs to different city Delhi, Pune, Bangalore, Punjab, Mumbai & Kolkata. They all rolled a number on a standard dice. No two friends rolled the same number. (consider 1 as a perfect square)

- Difference between numbers rolled by person from Bangalore & person from Pune is a prime number.
- F is not from Punjab.
- B rolled number which is 2 more than the number rolled by A.
- Difference between numbers rolled by E & the person who belongs to Kolkata is equal to the number rolled by A.
- Person from Kolkata rolled number higher than E.
- E rolled number which is twice of number rolled by C.
- Person who rolled lowest number belongs to Delhi.
- A rolled a number which is a perfect square.
- Difference between numbers rolled by person from Mumbai & person from Kolkata is a prime number.
- Person from Punjab didn't roll a prime number or a perfect square.

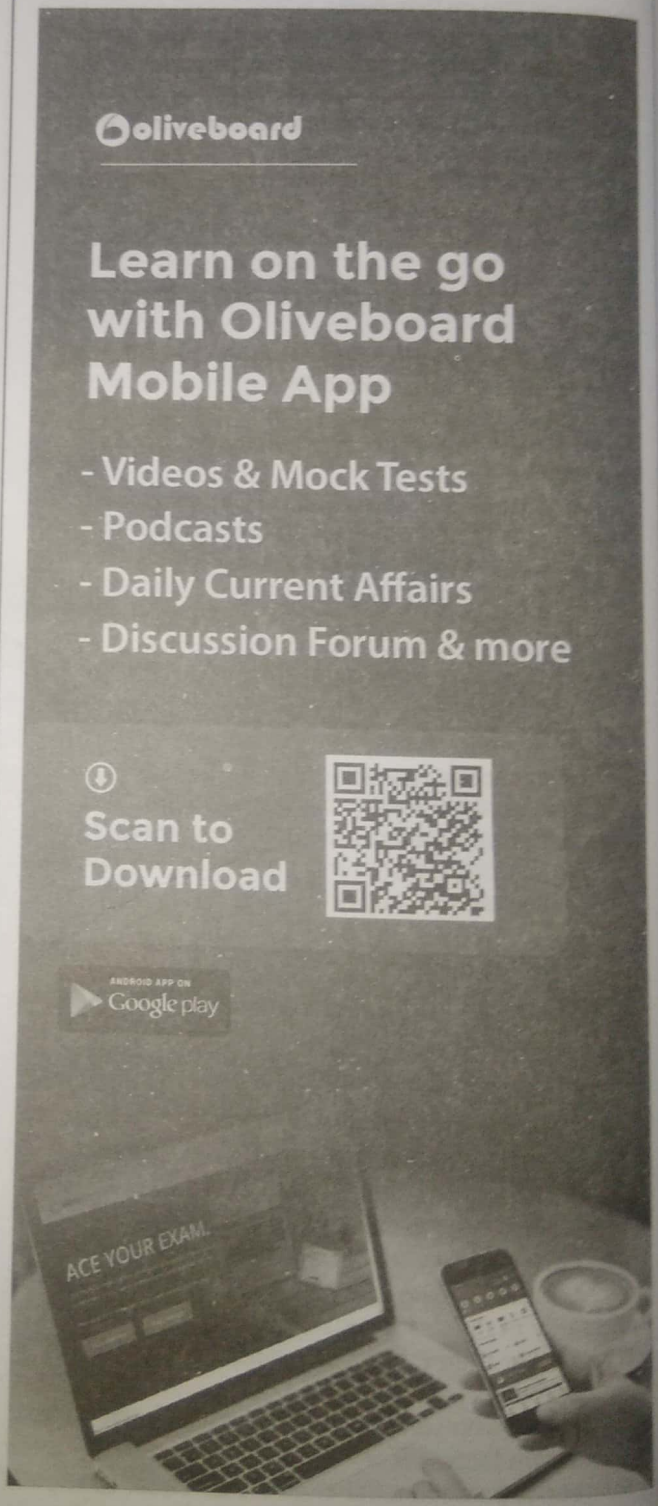
Question 30 What is the difference in number rolled by F & B?
a) 1 b) 2 c) 3 d) 4 e) 5

Question 31 Who rolled the lowest number?
a) A b) B c) C d) D e) F

Question 32 Sum of numbers rolled by person from Punjab & Person from Bangalore is ___
a) 8 b) 7 c) 9 d) 10 e) Cannot determine

Question 33 What is the number rolled by person from Pune?
a) Either 2 or 3 b) Either 3 or 4
c) Either 4 or 5 d) Either 2 or 4
e) None of these

Question 34 Who rolled the number which is equal to difference between the number rolled by person from Mumbai & E?
a) A b) B c) C d) D
e) No one as difference is 0.



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ANSWER KEY

1- d	2- e	3- e	4- b	5- c	6- b	7- d	8- b
9- a	10- d	11- a	12- d	13- c	14- c	15- b	16- b
17- d	18- c	19- c	20- b	21- e	22- a	23- d	24- d
25- b	26- d	27- b	28- d	29- b	30- b	31- a	32- e
33- d	34- a						

DETAILED SOLUTIONS

QUESTION 1

• Number of persons shorter than D was equal to the number of persons taller than C. Also, D was taller than A hence he was not the shortest.
• C was taller than D.

___ > C > ___ > ___ > D > A

___ > ___ > C > D > ___ > ___

• There were only 2 persons shorter than E but taller than B.

E > C > ___ > B > D > A

___ > E > C > D > B > A

F was not the tallest, thus, the 2nd sequence is invalid.
The final sequence is as follows:

E > C > F > B > D > A

QUESTION 2

• Number of persons who had more experience than A was thrice as that the number of persons who had less experience than F.
• F had more experience than C

___ > ___ > ___ > A > ___ > F > C

___ > ___ > ___ > ___ > F > C > A

• F had more experience than C
• A had more experience than D. Thus, 2nd case is invalid.

___ > ___ > ___ > A > D > F > C

• E had more experience than G and B

E > G/B > G/B > A > D > F > C

Thus, either G or B had the 2nd highest experience.

QUESTION 3

→ Two pen drives have more capacity than Toshiba, but less than SanDisk.
→ Toshiba didn't have the least capacity.
Case I:
SanDisk > ___ > ___ > Toshiba > ___ > ___
Case II:
___ > SanDisk > ___ > ___ > Toshiba > ___
Now,
→ At least two pen drives have less capacity than iBall, which has more capacity than Toshiba and less capacity than Sony.
We get,
Case I:
SanDisk > Sony > iBall > Toshiba > ___ > ___
Case II:
___ > SanDisk > Sony > iBall > Toshiba > ___
Case III:
Sony > SanDisk > ___ > iBall > Toshiba > ___
Case IV:
Sony > SanDisk > iBall > ___ > Toshiba > ___
Further,
→ HP has more capacity than Moserbear and Toshiba, but not the maximum.
So, case I and case II are eliminated.
We get,
Case III:
Sony > SanDisk > HP > iBall > Toshiba > Moserbear
Case IV:
Sony > SanDisk > iBall > HP > Toshiba > Moserbear
It is given that,
→ At least one pen drive has more capacity than Toshiba but, less than HP.
So, case IV of above becomes invalid and we get the final arrangement as follows:
Sony > SanDisk > HP > iBall > Toshiba > Moserbear
Thus,
iBall's pen drive has more capacity than two pen drives only.

QUESTION 4

In an examination, Ram scored the highest marks. Piya's marks are less than at least three persons, among whom Olly is the one.
We get,
Case I:

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Piya < ____ < ____ < Ram
Case II:
Piya < ____ < ____ < ____ < Ram
Case III:
Piya < ____ < ____ < ____ < ____ < Ram
Now,
Olly's marks are less than Qureshi's and Nita's marks are less than Manu's.
Manu got less marks than Olly.
i.e. Nita < Manu < Olly < Qureshi
We get,
Case I:
Nita < Manu < Piya < Olly < Qureshi < Ram
Case II:
Nita < Piya < Manu < Olly < Qureshi < Ram
Case III:
Piya < Nita < Manu < Olly < Qureshi < Ram
Now, everyone got different marks and that too in whole numbers.
Marks of Olly= 64
Marks of Nita = 60
Marks of Piya = 62
So, case III becomes invalid.
Possible cases are:
Case I:
Nita (60) < Manu (61) < Piya (62) < Olly (64) < Qureshi < Ram
Case II:
Nita (60) < Piya (62) < Manu (63) < Olly (64) < Qureshi < Ram
Difference in Manu's and Piya's marks = 1 (in both cases)

QUESTION 5

There were only 2 persons who ate more cookies than D but less cookies than F

F > ___ > ___ > D > ___ > ___

___ > F > ___ > ___ > D > ___

___ > ___ > F > ___ > ___ > D

- B ate more cookies than A who ate less cookies than C
- Neither E nor A ate the least number of cookies.
- At least 2 persons ate more cookies than C.

F > C/B > C/B > D > A > E

C/B > F > C/B > A > D > E

E > C/B > F > C/B > A > D

1st and 2nd cases are invalid as E did not eat the least number of cookies.

- At least 2 persons ate more cookies than C

E > B > F > C > A > D

QUESTION 6

Only one box was smaller than P but larger than Q.

- There were 2 boxes smaller than box U but larger than the pink box which was not the smallest.
- Only one box larger than the blue box.

U > Blue > ___ > Pink > ___ > ___

___ > U > ___ > ___ > Pink > ___

- Number of boxes larger than golden box was equal to the number of boxes smaller than box P.
- S was green in colour and was larger than the golden box.

Case 1 U > P > S > ___ > ___ > ___
(Blue, Green, Pink, Golden)

Case 2 S > U > ___ > P > ___ > ___
(Green, Blue, Golden, Pink)

Case 3 S > U > P > ___ > ___ > ___
(Green, Blue, Golden, Pink)

Case 4 P > U > ___ > ___ > ___ > ___
(Blue, Pink, Golden)

R was larger than the yellow box which was larger than box T. Thus, case 1 and 3 becomes invalid.
T was not the smallest.

Case 2 S > U > R > P > T > ___
(Green, Blue, Golden, Yellow, Pink)

Case 4 P > U > R > ___ > T > ___
(Blue, Yellow, Pink, Golden)

We cannot place box S in case 4, hence it also becomes invalid
The final arrangement is as follows:

S > U > R > P > T > Q
(Green, Blue, Golden, Yellow, Pink, Red)

One box is smaller than box P and larger than box Q

QUESTION 7

- B was born just after E who was the 2nd lightest.
- only 2 persons were lighter than D and heavier than the one born in March.

D > ___ > ___ > E > ___
(March)

___ > D > ___ > E > ___
(March)

- A was heavier than the one born in May but lighter than B
- D was heavier than the one born in April

D > B > A > E > C
(March, May)

B > D > A > E > C
(May, March)

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B was born just after E. In case 1 B was the one born in April. Case 2 becomes invalid, as no one was born in June.

D > B (April) > A > E (March) > C (May)

• The eldest person was not the heaviest. Hence D was born in February and A was born in January

D (February) > B (April) > A (January) > E (March) > C (May)

3rd heaviest person was born in the month of January

QUESTION 8 TO 9

Mango weighed 34kg

The fruits those weighed the 3rd lightest weight was 28kg

At least 3 fruits were heavier than mango.

___ > ___ > ___ > Mango (34) > (28) > ___ > ___

Grapes weighed more than litchi but less than guava

Papaya weighed more than guava but less than apple

Litchi was not the lightest

Apple> Papaya> Guava> Grapes> Litchi

Apple > Papaya > Guava > Mango (34) > Grapes (28) > Litchi > ___

Only fruit left is orange. Thus, the final sequence will be:

Apple > Papaya > Guava > Mango (34) > Grapes (28) > Litchi > Orange

ANSWER 8

The weight would be between 56kg and 34kg. Thus, 40kg can be the probable weight of guava (3rd heaviest)

QUESTION 10 TO 11

→ Level of water in F is more than that in at least two bottles.

→ F doesn't have highest level of water.

Hence, possibilities are -

___ > ___ > ___ > F > ___ > ___

or

___ > ___ > F > ___ > ___ > ___

or

___ > F > ___ > ___ > ___ > ___

Then we have,

→ Level in Z is more than in A, but less than in K.

K > Z > A

Also,

→ K has more level than I, which has more level than A, which doesn't have the lowest level.

Hence, R has the lowest level. (comparison between I and Z cannot be done, however)

We get,

K > I/Z > Z/I > A > R

Thus, we get three possible cases -

Case I: ***K > I/Z > Z/I > F > A > R***

or

Case II: ***K > I/Z > F > Z/I > A > R***

or

Case III: ***K > F > I/Z > Z/I > A > R***

QUESTION 10

F = 100 ml, I = 140 ml and Z = 130 ml

So, we get,

I > Z > F

Thus, only case I is valid, remaining cases II and III become invalid.

And, minimum level = 40 ml = R

We get,

K > I > Z > F (100 ml) > A > R (40 ml)

Hence, A lies between 40 to 100 ml. thus, option (d) is correct.

QUESTION 11

R has the lowest level of water filled.

QUESTION 12 TO 14

The no. of pages in a notebook are in multiples of 50

Minimum no. of pages possible = 50

Maximum pages that a notebook can contain = 400

No notebook has 350 pages or 250 pages

Thus,

Possible no. of pages = 50, 100, 150, 200, 300, 400.

K has minimum no. of possible pages, so K has 50 pages and is the thinnest notebook

We arrange the notebooks in descending order of their thickness,

We get,

_____ > _____ > _____ > _____ > _____ > K (50)

Now,

There are two notebooks that are thicker than L but, thinner than M

So, two cases are possible

Case I: _____ > M > _____ > _____ > L > K (50)

Case II: M > _____ > _____ > L > _____ > K (50)

Now,

As per the condition,

Difference between the no. of pages of L and M is equal to no. of pages of H

H has 200 pages

So, M's pages - L's pages = 200

Possible case is,

No. of pages of M	No. of pages of L	Difference
300	100	300-100=200

The above case is obtained by the possible no. of pages in a notebook. 350 and 250 is not a case,

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While 200 and 50 are not considered as each notebook has a different no. of pages
Thus,
L has 100 pages so, case II becomes invalid as, no possible notebook can come between L and K as, they have 50 and 100 pages respectively.
Also,
N has 200 pages and no notebook can come between N and M as, 250 is not a case of any notebook given
Thickest notebook contains 400 pages as 350 is not a case
So, we get,

$$\frac{\quad}{400} > \frac{M}{300} > \frac{N}{200} > \frac{\quad}{150} > \frac{L}{100} > \frac{K}{50}$$

We know,
J is thicker than I
So, J contains 400 pages
And, I contains 150 pages
Final answer is,

$$\frac{J}{400} > \frac{M}{300} > \frac{N}{200} > \frac{I}{150} > \frac{L}{100} > \frac{K}{50}$$

Question 15 to 17

Red balloon has bigger radius than Green balloon, but not the biggest.
Number of balloons bigger than Green are same as the number of balloons smaller than Red balloon.

Case 1: -

Colour	Radius
	10
Green	12
	14
	16
Red	18
	20

Case 2: -

Colour	Radius
	10
	12
Green	14
Red	16
	18
	20

Only one balloon is larger than Blue balloon but smaller than Black balloon.

So, case 2 is invalid.

Case 1 (a): -

Colour	Radius
	10
Green	12
	14
Blue	16
Red	18
Black	20

Case 1 (b): -

Colour	Radius
Blue	10
Green	12
Black	14
	16
Red	18
	20

The difference between radius of Blue balloon and radius of Yellow balloon is 6 cm.

Case 1 (a): -

Colour	Radius
Yellow	10
Green	12
White	14
Blue	16
Red	18
Black	20

Case 1 (b): -

Colour	Radius
Blue	10
Green	12
Black	14
Yellow	16
Red	18
White	20

White balloon is larger than yellow balloon but not the largest.
So, case 1 (b) is invalid.

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Final Solution:

Colour	Radius
Yellow	10
Green	12
White	14
Blue	16
Red	18
Black	20

QUESTION 18 TO 20

A is standing at the end of the row.
Only 1 person is standing between A and D, who finished round II with rank 4.
D is standing to the immediate right of F.

Case 1: -

Positions of A to F	A	F	D			
Rank in round I						
Rank in round II			4			
Rank in round III						

Case 2: -

Positions of A to F			F	D		A
Rank in round I						
Rank in round II				4		
Rank in round III						

A is standing at the end of the row and he is standing adjacent to the one who finished round I and round II with first rank.

Case 1: -

Positions of A to F	A	F	D			
Rank in round I		1				
Rank in round II		1	4			
Rank in round III						

Case 2: -

Positions of A to F			F	D		A
Rank in round I					1	
Rank in round II				4	1	
Rank in round III						

B is standing to the immediate right of the person who finished round II with rank lower than D.
We have: D finished rank II with rank 4.
Rank of C was lower in round III than round I and lower in round I than round II.
I.e. for C: round III < round I < round II
So, C cannot be the person who finished round II with rank 5 or rank 6.

Case 1 (a): -

Positions of A to F	A	F	D	E	B	C
Rank in round I		1				
Rank in round II		1	4	5/6		
Rank in round III						

Case 1 (b): -

Positions of A to F	A	F	D	C	E	B
Rank in round I		1				
Rank in round II		1	4		5/6	
Rank in round III						

Case 2: -

Positions of A to F	E	B	F	D	C	A
Rank in round I					1	
Rank in round II	5/6			4	1	
Rank in round III						

for C: round III < round I < round II
Case 2 is invalid.
The rank of the person standing to the immediate right of E is 4 in round III.
Rank of C was lower in round III than round I and lower in round I than round II.
I.e. for C: round III < round I < round II
C never finished any round with rank 6 or 4.

Case 1 (a): -

Positions of A to F	A	F	D	E	B	C
Rank in round I		1				3
Rank in round II		1	4	5/6		2
Rank in round III					4	5

Case 1 (b): -

Positions of A to F	A	F	D	C	E	B
Rank in round I		1		3		
Rank in round II		1	4	2	5/6	
Rank in round III				5		4

Neither A nor E finished the round II with lowest rank.
So, B must be the one who finished the round II with lowest rank.
Rank of A is lower in round III than round II and lower in round II than round I.
i.e. For A: Round I > Round II > Round III

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Case 1 (a): -

Positions of A to F	A	F	D	E	B	C
Rank in round I	2	1				3
Rank in round II	3	1	4	5	6	2
Rank in round III	6				4	5

Case 1 (b): -

Positions of A to F	A	F	D	C	E	B
Rank in round I	2	1		3		
Rank in round II	3	1	4	2	5	6
Rank in round III	6			5		4

D finished his all rounds with even ranks but not with last rank.
Only 2 persons finished the 2 different rounds with same rank.
So, E and B finished the round I with rank 6 and 5 respectively.
No one finished all three rounds with same rank.
So, F finished round II with rank 3.

Case 1 (a): -

Positions of A to F	A	F	D	E	B	C
Rank in round I	2	1	4	6	5	3
Rank in round II	3	1	4	5	6	2
Rank in round III	6	3	2	1	4	5

Case 1 (b): -

Positions of A to F	A	F	D	C	E	B
Rank in round I	2	1	4	3	6	5
Rank in round II	3	1	4	2	5	6
Rank in round III	6	3	2	5	1	4

The person who finished the round III with 1st rank is not standing 2nd to the right of D.
So, case 1 (b) is invalid.

Final Solution:

Positions of A to F	A	F	D	E	B	C
Rank in round I	2	1	4	6	5	3
Rank in round II	3	1	4	5	6	2
Rank in round III	6	3	2	1	4	5

QUESTION 21 TO 24

- The person who wore the red shirt was taller than the one from Lucknow
- Number of persons taller than F was equal to the number of persons shorter than the one with the blue shirt. F was taller than the one with blue shirt.
- The person from Jaipur was shorter than the person with blue shirt
- The shortest person wore the yellow shirt

— > F > — > — > Blue > Yellow Jaipur

— > — > F > Blue > Jaipur > Yellow

— > — > F > Blue > — > Yellow Jaipur

- The person with the green shirt was from Mumbai
- Not more than three persons were shorter than the person from Mumbai

Case 1 — > F > Green Mumbai > — > Blue > Yellow Jaipur

Case 1a — > F > — > Green Mumbai > Blue > Yellow

Case 2 — > — > F Green Mumbai > Blue > Jaipur > Yellow

Case 3 — > — > F Green > Blue > — > Yellow

Cases 2 and 3 are invalid as F was not wearing the green shirt.

- C was shorter than A but taller the one from Chennai
- C was from Kolkata or Jaipur
- D was from Delhi
- The person from Chennai was not wearing the yellow shirt

Case 1 D Delhi > F > A Green Mumbai > C Kolkata > Blue Chennai > Yellow Jaipur

Case 1a A > F > C Kolkata > Green Mumbai > Blue Chennai > Yellow Jaipur

Case 1a is invalid as D cannot be placed in it

- The person with the white shirt was taller than the person with brown shirt
- B was taller than E but shorter than the person from Lucknow.
- The person who wore the red shirt was taller than the one from Lucknow

D Red Delhi > F White Lucknow > A Green Mumbai > C Brown Kolkata > B Blue Chennai > E Yellow Jaipur

QUESTION 25 TO 29

Let us arrange persons from heaviest to lightest and from tallest to shortest in the table. Tallest and Heaviest person will be on the top of the table.
A is taller than 2 persons and heavier than 4 persons.
C is heavier than A but not heaviest.
Number of persons heavier than C is same as the number of persons shorter than C.
So, C must be 2nd heaviest and 2nd shortest.

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Weight	Height
C	
A	
	A
	C

B was not the tallest. Three persons are taller than D but shorter than B.
So, D must be shortest.
Number of persons taller than H is the same as the number of persons heavier than H.
Number of persons shorter than G is the same as the number of persons lighter than G.
H is taller than A but not heavier than A.

Weight	Height
C	
G	G
A	B
H	H
	A
	C
	D

The lightest person is tallest.
E is lighter than F, who is heavier than D.
F is not heaviest.
Hence, E must be the one who is lightest and tallest.
Also, D is 2nd lightest and F is 3rd lightest person.
Finally, we get: -

Weight	Height
B	E
C	F
G	G
A	B
H	H
F	A
D	C
E	D

QUESTION 30 TO 34

- A rolled a number which is a perfect square.
- B rolled number which is 2 more than the number rolled by A.

Person	Number Rolled	City	Number Rolled	City
A	1		4	
B	3		6	
C				
D				
E				
F				
	Case 1		Case 2	

- Difference between numbers rolled by E & the person who belongs to Kolkata is equal to the number rolled by A.
- Person from Kolkata rolled number higher than E.
- E rolled number which is twice of number rolled by C.

Person	Number Rolled	City	Number Rolled	City
A	1		4	
B	3		6	Kolkata
C	2		1	
D				
E	4		2	
F				
	Case 1			Case 2

So, in case 1 person from Kolkata rolled 5.
- Person who rolled lowest number belongs to Delhi.

Person	Number Rolled	City	Number Rolled	City
A	1	Delhi	4	
B	3		6	Kolkata
C	2		1	Delhi
D				
E	4		2	
F				
	Case 1		Case 2	

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• Difference between numbers rolled by person from Mumbai & person from Kolkata is a prime number.

Person	Number Rolled	City	Number Rolled	City
A	1	Delhi	4	Mumbai
B	3	/Mumbai	6	Kolkata
C	2	/Mumbai	1	Delhi
D				
E	4		2	
F				
	Case 1		Case 2	

• Difference between numbers rolled by person from Bangalore & person from Pune is a prime number.

• Person from Punjab didn't roll a prime number or a perfect square.
• F is not from Punjab.
So, case 2 is eliminated.

Person	Number Rolled	City
A	1	Delhi
B	3	Mumbai
C	2	Bangalore/ Pune
D	6	Punjab
E	4	Pune / Bangalore
F	5	Kolkata
	Case 1	

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CHAPTER 2 - BASIC ARRANGEMENTS

In analytical reasoning section (puzzles), most of the questions asked are based on arrangement of persons, things, etc. in some given pattern.
These type of arrangements can be categorized under two categories –
1. **Open Figure Arrangements** – Among this, we include the arrangements done in a line, a queue, etc., such as linear single row arrangement and linear two rows arrangement.
2. **Closed Figure Arrangements** – Among this, we include those arrangements which are around some closed shape such as – Square, Rectangle, etc.
To tackle the arrangement problems, following should be followed –
- Firstly, recognize the type of arrangement given very clearly in the question.
- The directions are to be read very carefully. Misreading of even a small statement can make a large difference to the solution.
- Selection of a hint from the given directions to start the question is very crucial step in determining the time taken to solve the question.
- Follow each hint and, make every possible case. Do not miss any possibility.
- Going further, keep eliminating the invalid cases with the given hints and, final answer will be obtained.

We will learn the approach to every kind of arrangement in different chapters that follow.
Also, these arrangements can be asked along with certain other parameters as well as certain other types such as direction sense, blood relation, etc. We will learn these in separate chapters.

PART I – OPEN FIGURE ARRANGEMENTS

CHAPTER 2.1 - LINEAR SINGLE ROW ARRANGEMENT

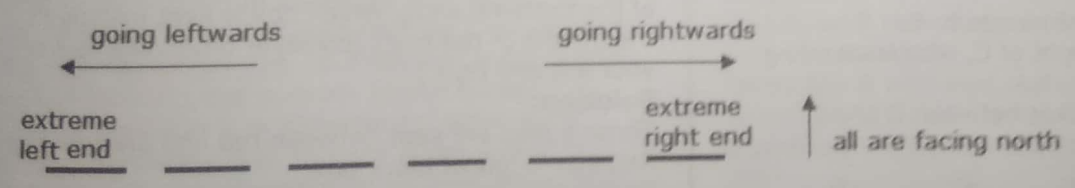
What is Linear Arrangement?

These type of arrangements are those, in which persons or other entities are arranged in or along a straight Line.
This is a common type of arrangement which is generally asked in all the bank and SSC exams.

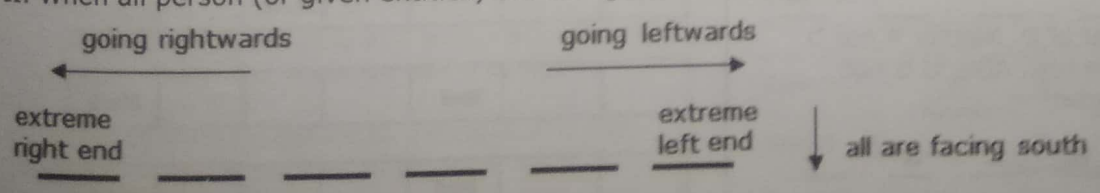
Let's learn the approach...

Linear arrangements in a single row can be of the following types:

I. When all persons (or given entities) are facing in north direction



II. When all person (or given entities) are facing in south direction



III. When some persons (or given entities) are facing north while some are facing south.

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In this type, we can't determine which end is extreme left and extreme right. If it is mentioned that the directions are to be taken as per your left and right, then we consider it same as we considered in 'all facing north' case (as, then extreme left end is at our left side and extreme right end is at our right side).

IV. These arrangements can also be asked in vertical manner or Queue, when instead of north/south, we will have East/ west as directions. For example: Queue lined up in front of a ticket window. The hints mentioned can be second to the left, immediate right etc. (persons will be facing east/west) or can be immediately behind or immediately front (vertical queue; persons will be facing north or south)

'To the left' is to be taken towards the leftwards side as per the arrangement and same follows for 'to the right'.

Key Pointers

⇒ Care should be taken while taking the left and right sides of the linear row. It varies according to the facing of the persons, things, etc.
⇒ When questions are given with facing in both north and south directions, then, number of cases possible are more, if direction of any one variable is not given. Those should not be missed.
⇒ If more than one possible final arrangement is obtained, then answer accordingly.
⇒ The types of parameters might vary across various types, such as multiples of any number, factors, ages, dates, etc. We will get to practice many such in later chapters too.

Solved Examples

TYPE 1: ALL FACING IN SAME DIRECTION

Question 1 8 labours A, B, C, D, E, F, G, and H are standing in a row facing north on a construction site to pass the bucket. They pass the bucket from East to West. C takes bucket from G and passes to B. 3 persons handles the bucket between G and H. A is standing 2nd to the right of D. Neither A nor D is standing at the end of the row. G is not standing at the end of the row. Both E and F are standing on the same side of A. F is not the neighbour of B. What is the position of C with respect to F?

Solution:
C takes bucket from G and passes to B.
So, G is standing to the right of C, who is standing to the right of B.
3 persons handles the bucket between G and H.
Case 1: -

H		B	C	G

Case 2: -

B	C	G				H

A is standing 2nd to the right of D. Neither A nor D is standing at the end of the row. Also, G is not standing at the end of the row.
Case 1: -

	D	H	A	B	C	G	

Case 2: -

	B	C	G	D		A	H

Both E and F are standing to the same side of A.
So, case 1 is invalid.
F is not the neighbour of B.
So, we get: -

E	B	C	G	D	F	A	H

C is standing 3rd to the left of F.

Question 2 Seven boxes of different colours are kept from left to right in a row. Three boxes are kept between red and black boxes, among which one is green. Red box is to the left of black box. Blue box is kept third to right of yellow box and, purple box is kept third to left of brown box. None of the boxes purple, blue or brown are kept at any of the extreme ends. Which box is kept exactly in the middle of the row? (consider directions as per your left and right).

Solution:
Three boxes are kept between red and black boxes.
Red box is left of black box.
So,
Following cases are possible:

Red				Black		

		Red				Black

		Red				Black

Blue box is kept third to right of yellow box and, purple box is kept third to left of brown box.

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None of the boxes purple, blue or brown are kept at any of the extreme ends.
Case I and II becomes invalid as we cannot place blue, purple, brown and yellow boxes as per the given conditions.
And, one of the boxes among the ones kept between Red and Black is green.

So, we get the final arrangement as follows:

Yellow	Purple	Red	Blue	Brown	Green	Black

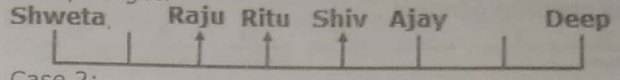
Blue box is thus kept exactly in the middle of the row.

TYPE 2: FACING IN BOTH DIRECTIONS

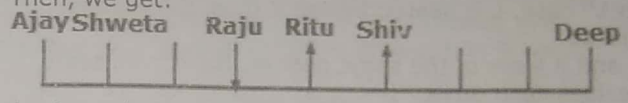
Question 3 Ten friends Ajay, Riya, Ravi, Ritu, Hari, Raju, Shweta, Arun, Shiv and Deep are sitting in a row in such a way that five persons are facing north and other are facing south. Ajay sits third to the right of Raju, who sits second to the left of Shiv. Ravi sits second to the right of Shweta, who sits third to the left of Ritu, who sits facing north. Raju sits fourth to the right of Ravi and Arun sits second to the right of Shiv. Riya sits neighboring Shweta and Raju, who sits third to the right of Hari, who sits facing south. Deep sits third to the right of Shiv, who sits immediate right of Ritu. How many persons sit between Arun and Shweta?

Solution:
We have:
Shweta sits third to the left of Ritu, and Ritu sits facing north.
Shiv sits immediate right of Ritu.
Deep sits third to the right of Shiv then, Shiv must be facing north.
Raju sits second to the left of Shiv, and Ajay sits third to the right of Raju.
Then, two cases are possible:
Case 1:
Raju facing north.

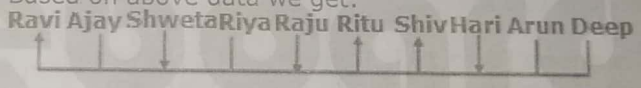
Then, we get:



Case 2:
Raju facing south.
Then, we get:



Again we have:
Ravi sits second to the right of Shweta then, Shweta must be facing south.
Riya sits exactly between Shweta and Raju.
Raju sits third to the right of Hari and Hari sits facing south.
Then, case 1 is not valid.
Raju sits fourth to the right of Ravi then, Ravi must be facing north.
Based on above data we get:



Thus, five persons sit between Arun and Shweta.

LINEAR ARRANGEMENT – WITH MORE THAN ONE VARIABLE

Directions [4 to 8]: Seven persons A, D, G, H, I, K and L were seated in a straight row facing the north. They were seated such that no 2 males were seated consecutively and no 3 females were seated consecutively. No two persons whose names appear consecutively in alphabetical order were seated immediately next to each other. A and D can be seated immediately next to each other, but K cannot be seated immediately next to L and so on.

- G was seated 3rd to the left of K
- H was 2nd to the left of D and both were females
- A and K were of the same gender and were seated at a gap of 1
- Number of persons seated to the right of H was twice as that of the number of persons seated to the left of I
- The persons seated at the extreme ends were of the opposite genders

Question 4 Who were females among seven persons?
Question 5 How many females were seated between A and D?
Question 6 Who was seated exactly in the middle of the row?
Question 7 Who was seated to the immediate left of I?
Question 8 Who was the only female who was seated between two males?

Solution:
- G was seated 3rd to the left of K
- H was 2nd to the left of D and both were females

Case 1		H (female)	G	D (female)		K (male)	
Case 2	G		H (female)	K (male)	D (female)		
Case 3	G			K	H (female)	male	D (female)
Case 4	H (female)	male	D (female)	G			K

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Case 1 is invalid as G and H cannot seat adjacent to each other. Number of persons seated to the right of H was twice as that of the number of persons seated to the left of I. Thus, case 4 becomes invalid.

G	I	____	K	H	____	D
				female	male	female
____	I	G	____	H	K	D
				female	male	female

• A and K were of the same gender and were seated at a gap of 1
• The persons seated at the extreme ends were of the opposite genders

G	I	L	K	H	A	D
male				female	male	female
L	I	G	A	H	K	D
male				female	male	female

In 1st case, L is seated beside K thus, the case is invalid.
K and A were of the same gender. No 2 male seats besides each other.

L	I	G	A	H	K	D
male	female	female	male	female	male	female

Answer 4: I, G, H and D were the females.
Answer 5: Only one female was seated between A & D.
Answer 6: A was seated exactly in the middle of the row.
Answer 7: L was to the immediate left of I
Answer 8: H was the only female who was seated between two males.

Directions [9 to 13]: There are six persons and each of them has a different degree - M. Tech, MBA, B. Tech, B. Com, MCA and B. Sc. They are sitting in a linear row from left to right, and each person faces either north or south, not necessarily in the same order.
• Q has a B. Com degree and, is facing north.
• S is sitting second to the right of the one with B. Sc degree.
• U sits at either of the extreme ends and has B. Tech degree.
• There are at least two people sitting between S and T, and both S and T, face south.
• P faces north.
• S sits to immediate right of U and immediate neighbours of S face in same direction.
• The one with MBA degree, sits second to right of the one with M. Tech degree, who is not R.

Question 9 How many persons are facing south?
Question 10 Who has MCA degree?
Question 11 What is the position of T with respect to P?
Question 12 Which of the following pairs is sitting at the extreme ends?
Question 13 P has _____ degree.
Solution:
• U sits at either of the extreme ends and has B. Tech degree.
There are two cases: either U is at extreme left end or at extreme left end.

Since,
• S sits to immediate right of U.

Case I	U↑	S	____	____	____	____
	B.Tech					
Case II	____	____	____	____	S	U↓
						B.Tech

• There are at least two people sitting between S and T, and both S and T, face south.
Also,
• S is sitting second to the right of the one with B. Sc degree.
• Immediate neighbours of S face in same direction.
So, we get,

U↑	S↓	↑	↓	T↓	____
B.Tech			B.sc		
U↑	S↓	↑	↓	____	T↓
B.Tech			B.sc		
____	T↓	↑	↓	S↓	U↓
		B.sc			B.Tech
T↓	____	↑	↓	S↓	U↓
		B.sc			B.Tech

• Q has a B. Com degree and, is facing north.
And,
• The one with MBA degree, sits second to right of the one with M. Tech degree, who is not R.
We get,

U↑	S↓	↑	↓	T↓	Q↑
B.Tech	MCA	MBA/M.Tech	B.sc	M.Tech/MBA	B.com
Q↑	T↓	↑	↓	S↓	U↓
B.com	MBA	B.sc	M.Tech	MCA	B.Tech

Since,
• P faces north.
And, R is not M. Tech.
Thus, case II becomes invalid.
Final arrangement is as follows:

U↑	S↓	P↑	R↓	T↓	Q↑
B.Tech	MCA	M.Tech/MBA	B.sc	MBA/M.Tech	B.com

Answer 9: Three persons are facing south (S, R and T).
Answer 10: S has MCA degree.
Answer 11: T is second to right of P
Answer 12: Q and U sit at the extreme ends.
Answer 13: P has either M. tech or MBA degree

Directions [14 to 18]: Eight chairs of different colours - red, blue, white, green, yellow, pink, brown and orange are kept in a linear row, in no particular order. Six persons - L, M, N, O, P and Q are sitting on these different chairs such that two chairs are left vacant. All chairs/persons are facing north.
L is sitting to immediate left of P, who sits second to the right of a vacant chair. O sits at one of the extreme ends on yellow chair and is not adjacent to vacant chair. One of the vacant chairs is

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between P and Q. Q, who is towards right of P and sits on white chair. No one sits between L and N. N, who sits on orange chair. Brown chair, which is not vacant, is second to left of O. L doesn't sit on blue and green chair. Red chair is second to left of blue chair, but not next to green chair.

Question 14 Which coloured chairs are vacant among the given ones?
I. Red II. Pink
III. Green IV. Blue
Question 15 What is the position of P with respect to M?
Question 16 M sits on _____ chair.
Question 17 How many persons are sitting between the two vacant chairs?
Question 18 Who sits on blue chair?
Solution:
O sits at one of the extreme ends on yellow chair and is not adjacent to vacant chair.
Since,
Brown chair, which is not vacant, is second to left of O.
Thus, O sits at extreme right end.
We get,

___	___	___	___	___	___	___	O
					Brown		Yellow

Now,
L is sitting to immediate left of P, who sits second to right of a vacant chair.
No one sits between L and N, who sits on orange chair.
Thus, there must be a vacant chair between L and N, as there is no other possibility.
We get,

N	Vacant	L	P
Orange			

Now,
One of the vacant chairs is between P and Q, who is towards right of P and sits on white chair.
Also, brown chair and the chair beside O is not vacant.
The only possibility is as follows:

N	Vacant	L	P	Vacant	___	Q	O
Orange					Brown	White	Yellow

Thus, M sits on brown chair.
And,
Colours left are - red, blue, green, pink
Since,
L doesn't sit on blue and green chair.
So, L sits on either red or pink chair.
We get,

Case I:	N	Vacant	L	P	Vacant	M	Q	O
	Orange		Red			Brown	White	Yellow
Case II:	N	Vacant	L	P	Vacant	M	Q	O
	Orange		Pink			Brown	White	Yellow

Since,
Red chair is second to left of blue chair, but not next to green chair.
Thus, case I becomes invalid.
We get the final arrangement as follows:

N	Vacant	L	P	Vacant	M	Q	O
Orange	Red	Pink	Blue	Green	Brown	White	Yellow

Answer 14: Both I and III i.e. both red and green chairs are vacant.

Answer 15: P is second to the left of M.
Answer 16: M sits on brown chair.
Answer 17: Two persons (L and P) are sitting between the two vacant chairs.
Answer 18: P sits on blue chair.

Directions [19 to 23]: Study the following information carefully and answer the questions given below:
Eight persons A, B, C, D, E, F, G and H are having different ages. Their ages are consecutive multiple of 3 but not necessarily in the same order. They like different colors i.e. Yellow, Brown, White, Black, Red, Pink, Orange and Blue, not necessarily in the same order. C is 39 years old and likes Black color. D's age is half the age of E's age. The one who likes Pink is 24 years old. The one who likes Brown is 9 years elder to D. F likes Orange and younger to the one who likes Brown. H is 6 years elder to F. The one who likes White is younger to F. E is elder to G who likes Yellow. A is 30 years old and elder to H. The one who likes Red is younger to G.

Question 19 What is the age of D?
Question 20 Which of the following combination is correct?
a) E-Black b) B-27 years old
c) G-36 years old d) A-Red
e) H-24 years old likes Red.
Question 21 Who among the following is not elder to A?
a) G b) E c) C d) B
e) The one who likes Blue
Question 22 D likes _____ color?
Question 23 Who likes Brown?
Solution:
C is 39 years old and likes Black color. The one who likes Pink is 24 years old. So we know that their ages are consecutive multiple of 3. Then ages are 24, 27, 30, 33, 36 and 39. Still two persons age are left. D's age is half the age of E's age. So E's age can be 42 then D's age will be 21 then we will get all 8 ages and other case is E's age is 36 and D's age is 18 so we will get 18 and 21 age. These are two conditions.

D	___	___	___	___	___	C	E	Case 1
21	24 (pink)	27	30	33	36	39 (black)	42	
D	___	___	___	___	___	E	C	Case 2
18	21	24 (pink)	27	30	33	36	39 (black)	

The one who likes Brown is 9 years elder to D. So the one who likes Brown is either 30 or 27 years old. F likes Orange and is younger to the one who likes Brown. So F is either 27 or 21 years old. H is 6 years elder to F so H is either 33 or 27 years old. The one who likes White is younger to F then D must like White in both cases.

D	___	F	___	H	___	C	E	Case 1
21 (white)	24 (pink)	27 (orange)	30 (brown)	33	36	39 (black)	42	
D	F	___	H	___	___	E	C	Case 2
18 (white)	21 (orange)	24 (pink)	27 (brown)	30	33	36	39 (black)	

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A is 30 years old and elder to H from this Case 1 is rejected. E is elder to G who likes Yellow then G must be 33 years old then B must be 24 years old. The one who likes Red is younger to G then A must like Red and E likes Blue.

Here is the final arrangement:

D	F	B	H	A	G	E	C	Case 2
18	21	24	27	30	33	36	39	
(white)	(orange)	(pink)	(brown)	(red)	(yellow)	(blue)	(black)	

Answer 19: D is 18 years old.
Answer 20: d is correct
Answer 21: B is not elder to A.
Answer 22: D likes White color.
Answer 23: H likes Brown color.

Directions [24 to 26]: Eight persons A, B, C, D, E, F, G and H are seated across two tables such that four of them are seated on table 1 facing north and four are seated on table 2 facing north. Table 1 is to the left of table 2. The chairs are numbered 1-4 from left to right on both the tables. Each of them had some money in form of 100 and 50 rupees note. Each had at least one note of each denomination.

- A and G together had money equal to what H had with him.
- G was seated 2nd to the left of F who had twice the amount of money G had.
- D and H had the same seat number.
- B had a seat number twice of G.
- E was seated exactly between C and the one who had Rs350.
- D's neighbour had Rs250.
- A and his neighbour together had Rs700.
- A and E are seated on different tables and had the same seat number.
- E's neighbour was 2nd to the left of B.
- The person on seat 1 of table 1 had Rs300.
- H had Rs100 more than B.
- No two persons had the same amount and nobody had more than Rs600.
- The total amount with all of them together was Rs3000.
- E had Rs150 more than C.

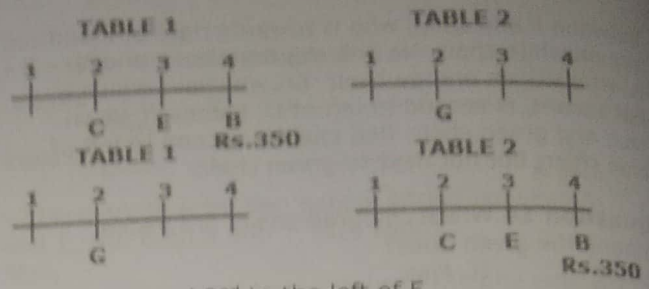
Question 24 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) D b) F c) C d) B e) H

Question 25 What is the difference between the amount of the persons have who are seated on seat number 4 of both tables?

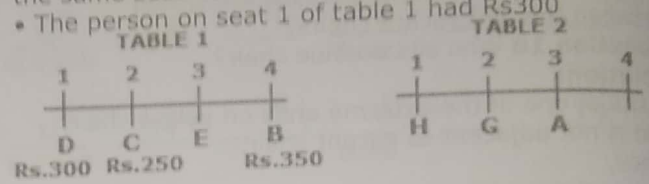
Question 26 If the two tables were joined such that the right end of table 1 was joined with left end of table 2, what will be the position of C with respect to the one who has the lowest amount?

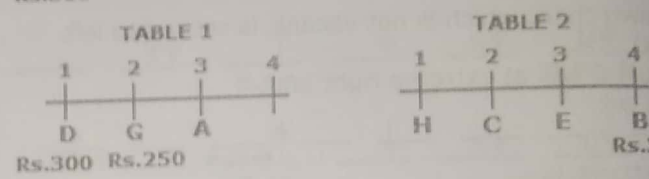
Solution:

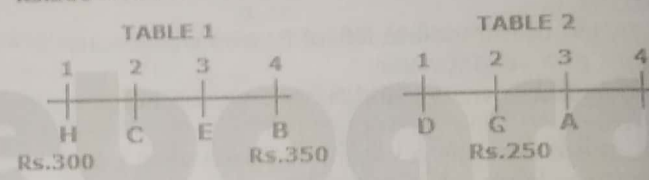
- B had a seat number twice of G
- E was seated exactly between C and the one who had Rs350
- E's neighbour was 2nd to the left of B

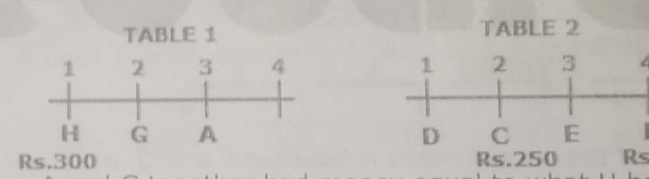


- G was seated 2nd to the left of F
- D and H had the same seat number.
- D's neighbour had Rs250
- A and E are seated on different tables and had the same seat number
- The person on seat 1 of table 1 had Rs300

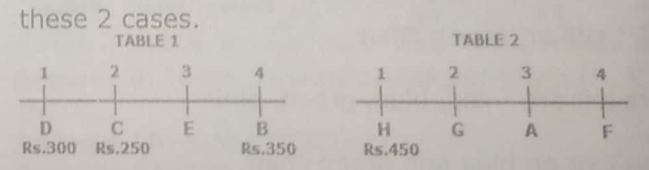


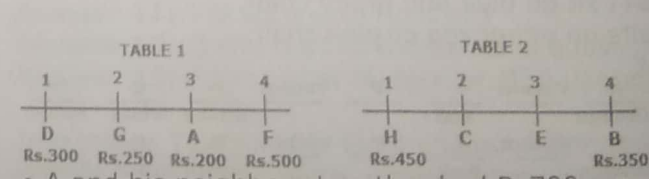






- A and G together had money equal to what H had
- G was seated 2nd to the left of F who had twice the amount of money he had.
- H had Rs100 more than B, thus case 3 and 4 become invalid as H had 300 and B had 350 in these 2 cases.





- A and his neighbour together had Rs700

In case 1:
A+G= H = 450
A+F= 700
F=2G
A+2G=700
A+G=450
Thus, G=250; A=200; F=500

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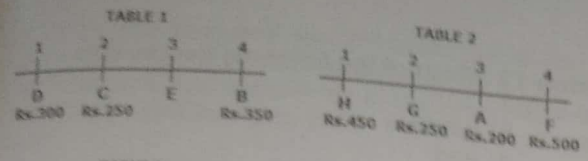
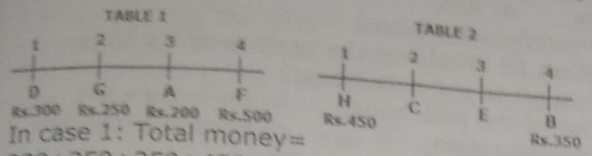
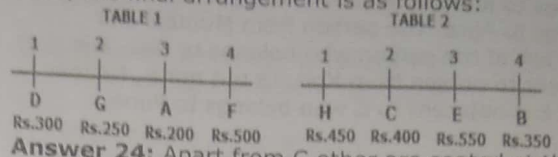




In case 1: Total money=
300+250+350+450+250+200+500= Rs2300
Thus, money with E=3000-2300=700
As nobody had an amount greater than Rs600, the case becomes invalid.
In case 2:
C+E= 3000- (300+250+200+500+450+350)
=3000-2050
=950

Now E=C+150
C+C+250=950
2C=800
C=400
E=550
Thus, the final arrangement is as follows:



Answer 24: Apart from C other are seated at the extreme ends of their table.
Answer 25: F had Rs500 with him and B had Rs350 with him.
Difference = 150
Answer 26: C will be 3rd to the right of A who had Rs200.

Practice Yourself

Question 1 6 persons A, B, C, D, E and F are sitting in a row facing south. A is sitting 3rd from the right end of the row. 2 persons are standing between A and B. only 1 person is standing between B and C. Only 2 persons are standing between D and F. Who is standing at the right end of the row?
a) B b) C c) D d) E e) F

Question 2 Six persons are sitting in a linear row facing towards north and each one likes either blue, white or red colour. P sits second to left of the one who likes red colour. Q and U sit adjacent to each other and, both like same colour. T sits at one of extreme ends and likes white. Only one person likes red and, at least two persons like white. V and P like the same colour. At least two persons sit between T and U. Persons sitting at ends, like different colours. Immediate neighbours of S like the same colour.
Among the following who likes blue colour?
I. Q II. P III. V
a) Only I b) Only II c) Only III
d) Either II or I e) Both II and III

Question 3 6 persons A, B, C, D, E and F are standing in a line. Some of them are facing towards north and remaining persons are facing towards south. A and C are standing 2nd to the left of each other. C is standing 2nd to the right of D. Number of persons facing south are more than the number of persons facing north. Persons standing at the corner are facing in the opposite directions. B is standing 4th to the left of E, who is not standing at the end of the row. A is not standing at the end of the row. Who among the following faces north?
a) F b) E c) D d) C e) B

Question 4 In a park there are 7 children A, B, C, D, E, F, G are sitting in a row facing north. They like either Ben10 or Pokémon Cartoon. A is at one of the extreme ends and likes Pokémon. There are 3 children between B and F and both of them like different cartoons. One of the child among B and F is at one of the extreme ends. F is an immediate neighbor of E. G is 2nd to the right of C who likes Ben10. C is not an immediate neighbour of B, who doesn't like Ben10. D is not sitting next to E and vice-versa. F is not an immediate neighbour of G. Number of children who like Ben10 is more than number of children who like Pokémon. Immediate neighbours of F and G like different cartoons. D does not like Pokémon. Who sits to immediate right of E?
a) No one b) F c) C d) A e) B

Directions [5 to 6]: 5 persons A, B, C, D and E are standing in queue to buy a train ticket. Each one destined for different cities among Bhopal, Amritsar, Delhi, Mumbai and Pune not necessarily in the given order. C is standing behind only 2 persons and none of them is A. B is going to Pune and is standing at the last in the row. D is standing behind the one going to Mumbai and is not standing ahead of the one going to Amritsar. A is not going to Delhi.

Question 5 Who is going to Bhopal?
a) A b) B c) C
d) D e) Cannot be determined

Question 6 C is going to ___.
a) Bhopal b) Delhi c) Amritsar
d) Mumbai e) Cannot be determined

Directions [7 to 11]: Eight friends A, B, C, D, E, F, G & H are sitting in a row facing north direction. They belong to different cities Agra, Pune, Mumbai, Delhi, Punjab, Goa, Kolkata & Amritsar.

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Neither A nor B sit at extreme ends. 3 people sit between H & E. Neither B nor G belongs to Amritsar. Neither A nor B is immediate neighbour of E who doesn't sit at extreme ends. Person from Punjab is sitting immediate left of the person who belongs to Kolkata. B sits 4th to right of A who belongs to Agra. The person from Mumbai sits 3rd to left of the person who belongs to Goa. F is adjacent to person from Kolkata but not B. Neither A nor E is adjacent to C who belongs to Pune.

Question 7 Who belongs to Mumbai?
a) D b) B c) F d) Either (b) or (c)
e) None of these

Question 8 Who sits immediate right of person who belongs to Kolkata?
a) F b) G c) D d) B
e) None of these

Question 9 How many people are sitting between H & D?
a) None b) 1 c) 2 d) 3
e) More than 3

Question 10 In some way D is related to the person who belongs to Punjab, in the same way, G is related to the person who belongs to Pune. Following the same pattern _____ is related to person who belongs to Delhi?
a) G b) D c) E d) A
e) None of these

Question 11 Which of the following statements is/are true?
I. Person who belongs to Pune sit at one of the extreme ends
II. G belongs to Delhi.
III. Three persons sit between D & E
IV. Person from Kolkata & person from Delhi are immediate neighbours
a) I & II b) II & III
c) II, III & IV d) All of these
e) None of these

Directions [12 to 14]: Seven houses were situated across a street in a row. The houses were built facing the north. Each house was of different colour red, green, yellow, white, grey, pink and blue not necessarily in the same order. The owners of these houses were among A, B, C, D, E, F and G not necessarily in the same order. Each person owned a single house.
- D's house was 4th to the left of the white house
- Number of houses to the right of the yellow house was equal to the number of houses to the left of D's house
- G's house was neighbouring D's house and was 3rd to the right of the pink house
- B lived in the green house
- There were 3 houses between B's house and the blue house. Blue house was somewhere to the right of B's house
- Grey house was to the immediate left of A's house
- C's house was to the immediate left of F's house

Question 12 Which of the following houses was owned by D?
a) Grey b) White
c) Blue d) Red
e) Cannot be determined

Question 13 What was the position of E's house with respect to the pink house?
a) E owned the pink house b) Immediate left
c) Immediate right d) Second to the left
e) Second to the right

Question 14 Who among the following lived in the white house?
a) E b) G c) F d) C e) A

Directions [15 to 17]: 10 friends A, B, C, D, E, F, G, H, I & J are sitting in a row. Some of them are facing north while other are facing south. Not more than 2 person facing same direction sit together. They all have their birthday in different months of same year. Person born on consecutive months are not sitting adjacent to each other.
C sits 4th to right of A who sits at one of the extreme ends. Only 4 persons face to the south direction. No one has birthday in April & May. C has birthday in a month which has 30 days. Person having birthday in February sits to the immediate right of person having birthday in October & both face same direction. Immediate neighbour of A has birthday in November & faces south direction. D who has birthday in September sits fourth to the left of B whose direction is opposite of A. F has birthday in august. Neither B nor D is an immediate neighbour of C. E who has birthday in March sits immediate right of J who is 3rd to left of person who has birthday in January. I neither faces south nor has birthday is October.

Question 15 Who has birthday in December?
a) F b) J c) B d) G e) H

Question 16 Who are immediate neighbours of B?
a) H & person born in November
b) G & person born in October
c) H & G d) D & either G or H
e) None of these

Question 17 Who sits 2nd to right of person who has birthday in June?
a) D b) E c) G d) H
e) Either (c) or (d)

Directions [18 to 20]: 6 companies dealing with manufacturing, finance, education, IT, Export and consulting were situated across a street. The buildings were facing north. Each building was built in a different year 2001, 2005, 2007, 2011, 2013 and 2016 not necessarily in the same order. The companies had different CEO's Mr Sharma, Mr Verma, Mr Singh, Mr Kumar, Mr Das and Mr Srivastava not necessarily in the same order. Assume that all companies were established on 1stJanuary and make age calculations for the companies as on 1st January 2017.

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• Mr Singh's company was 2nd to the left of the company that dealt with manufacturing
• there were two companies in between the company established in 2005 and manufacturing unit
• Mr Verma was the CEO of the consulting firm
• Sum of ages of consulting firm and Mr Kumar's firm was equal to the age of the export based company
• Export based company was 3rd to the right of the company that dealt with education
• Mr Srivastava's company was exactly between the companies established in 2016 and 2011
• IT firm was to the immediate right of Mr Singh's firm
• The firm of Mr Das was 2nd to the right of the firm that was established 6 years before it. The firm of Mr Das was not established in 2011
• Finance firm was neighbouring the education firm
• Mr Sharma's firm was to the immediate left of Mr Kumar's firm.

Question 18 Which firm was to the immediate right of the firm whose CEO was Mr Kumar?
a) IT b) Export c) Manufacturing
d) Education e) Finance

Question 19 How many companies were there between the company established in 2005 and the company whose CEO was Mr Sharma?
a) None b) One c) Two
d) Three e) Four

Question 20 What is the position of Mr Srivastava's firm with respect to the Finance firm?
a) Immediate left
b) Immediate right
c) Second to the right
d) Mr Srivastava himself is the CEO of the finance firm
e) Third to the left

Directions [21 to 25]: 8 friends A, B, C, D, E, F, G & H are sitting in a row. Some of the are facing north while others are facing south. They goes to different colleges I, J, K, L, M, N, O & P(not necessary in the same order). No two friends go to same college. Not more than 2 persons facing same direction are sitting together. Atleast 4 persons face towards south.
B who goes to college I is 3rd to right of A & 4th to left of the person who goes to college J. H face north. 3 people sit between H and the person who goes to college P. F & E who is not adjacent to B, are immediate neighbours. The person who goes to college O sits immediate right of person who goes to college L. F goes to neither College K nor College N. Number of people sitting between H & D is equal to number of people sitting between the person who goes to college K & the person who goes to college N. H's immediate neighbour face different directions. Only 1 person sit between the person who goes to college P & E. G & the person who goes to college O face opposite directions. More than 1 person sit between G & the person who goes to college O. F & the person who goes to college L face opposite directions. No one sits towards right of the person who goes to college J. H doesn't sit adjacent to person who goes to college N.

Question 21 Who goes to college L?
a) Person sitting immediate right of B
b) C
c) Person sitting 2nd to left of C
d) Person sitting 2nd to right of C
e) None of these

Question 22 Who sits 2nd to right of the person who goes to college K?
a) C
b) The person who goes to college O
c) G
d) The person who goes to college I
e) None of these

Question 23 Which of the following statements is/are correct?
I. E & person sitting 2nd to right of G faces same direction.
II. C goes to college O
III. 2 people sit between D & the person who goes to college L.
IV. The person who goes to college N & the person who goes to college K are adjacent to each other.
a) I & III b) II & IV c) I & II
d) II, III & IV e) None of these

Question 24 How many people sit between person who goes to college O & the person who goes to college J?
a) None b) 5 c) 4
d) 3 e) None of these

Question 25 Four of the following are similar in some way. Find odd one.
a) F & H
b) The person who goes to college K & the person who goes to college L
c) F & G
d) G & the person who goes to college O
e) A & the person who goes to college P

Directions [26 to 30]: During the annual sports meet of college XYZ seven captains A, B, C, D, E, F and G were called for a meeting to discuss about the strategic planning of the event. They were seated in a straight row facing the north. The different games cricket, basketball, baseball, football, chess, kabaddi and tennis were to be played on different days of the week starting from Monday. The captains of those teams whose games were to be played on consecutive days were not seated together.
• The captain of the chess team was 3rd to the left of the captain whose match was on Saturday
• There were two captains in between F and G who was the neighbour of the chess team captain
• E was the captain of the kabaddi team and was seated at either of the extreme ends

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oliveboard

- A's and B's matches were to be played on consecutive days. A's neighbour played tennis
- The basketball captain was 3rd to the left of the tennis team captain
- D was seated exactly between B and the captain whose match was on Friday
- C played his match on Saturday and was at a gap of 3 from B whose neighbour had a match on Thursday
- Football was to be played on Tuesday
- A did not play on Wednesday
- Cricket was played just before Chess.

Question 26 When was baseball played?
a) Sunday b) Monday c) Wednesday
d) Friday e) Saturday

Question 27 Who was the captain of the cricket team?
a) A b) B c) C d) D e) G

Question 28 How many persons were seated between B and the one who played on Monday?
a) None, as B played on Monday
b) One c) Two
d) Three e) More than three

Question 29 Who among the following was seated exactly in the middle of the row?
a) A b) B c) D d) F e) G

Question 30 Which of the following game was played on Friday?
a) Baseball b) Basketball c) Football
d) Cricket e) Tennis

Directions [31 to 35]: Seven persons A, B, C, D, E, F and G are seated in a straight row facing the north. They have different number of facebook followers 10, 20, 30, 40, 50, 60 and 70 not necessarily in the same order.

- D has twice the number of followers than the person who is seated 4th to the left of G.
- G and C together have the same number of followers as E alone has.
- E has 20 followers more than D.
- C has more followers than at least 3 others.
- One person seated between G and C.
- D is 2nd to the left of the one who has the maximum number of followers.
- A has lesser number of followers than D.
- F's neighbour is seated 3rd to the right of E.
- F and C do not sit together and B is not seated at any of the extreme ends.
- A had more followers than B.

Question 31 What is the position of B with respect to the person who has 30 followers?
a) B has 30 followers b) Immediate left
c) Immediate right d) Second to the right
e) Third to the left

Question 32 Who among the following are seated at the extreme ends?
a) A, G b) G, E c) G, D
d) C, D e) A, F

Question 33 How many followers does the person have who is seated exactly in the middle of the row?
a) 60 b) 50 c) 40 d) 30 e) 70

Question 34 How many persons have more followers than F?
a) None b) One c) Two
d) Three e) More than three

Question 35 In which of the following groups is the 1st person seated exactly in between the 2nd and the 3rd person?
a) ABE b) BCD c) DGC
d) FGC e) CBA

Directions [36 to 40]: Eight friends A, B, C, D, E, F, G & H are sitting in a row facing north direction. No two persons whose names are in consecutive English alphabetical order are adjacent to each other. They like different fruit Mango, Apple, Kiwi, Apricot, Grapes, Guava, Blue berry & Orange (not necessarily in same order)
The person who likes Blueberry sits 4th to right of the person who like Apricot & 2nd to left of H. Neither F nor E likes Grapes. The person who like Apple is 3rd to left of A. B sits 2nd to left of G who likes Mango. 3 people sit between C & D. The person who likes Grapes sits immediate left of the person who likes Kiwi. H is not adjacent to the person who likes Guava. A neither likes Blueberry nor sit adjacent to the person who likes Blueberry. F is towards right of E.

Question 36 Who likes oranges?
a) H b) F c) E d) A
e) None of these

Question 37 How many people sit between the person who like oranges & D?
a) None b) 2 c) 3 d) 4
e) None of these

Question 38 Who sits immediate left of the person who like Guava?
a) No one b) F c) E d) D e) C

Question 39 Which of the following statement is correct?
a) A is adjacent to C b) D is adjacent to B
c) C is adjacent to H d) C likes Kiwi
e) None of these

Question 40 A is related to F in some way. Following the same patter D is related to E. Now, following the same pattern _____ is related to A?
a) H b) E c) B d) G
e) None of these

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ANSWER KEY

1- d	2- a	3- c	4- b	5- a	6- b	7- e	8- b
9- e	10- c	11- e	12- d	13- a	14- c	15- b	16- c
17- a	18- b	19- b	20- d	21- b	22- a	23- a	24- b
25- c	26- b	27- c	28- c	29- e	30- e	31- c	32- e
33- b	34- a	35- c	36- b	37- d	38- b	39- b	40- c

DETAILED SOLUTIONS

Question 1

A is sitting 3rd from the right end of the row.
2 persons are standing between A and B. only 1 person is standing between B and C.

___ ___ A ___ C ___ B

Only 2 persons are standing between D and F.
So, we get: -

E D/F A C D/F B

So, E is standing at the right end of the row.

Question 2

P sits second to left of the one who likes red colour.
We get,

Case I P ___ ___ ___ ___ ___
red

Case II ___ P ___ ___ ___ ___
red

Case III ___ ___ P ___ ___ ___
red

Case IV ___ ___ ___ P ___ ___
red

T sits at one of extreme ends and likes white.
At least two persons sit between T and U.
And,
Q and U sit adjacent to each other and, both like same colour, so none of them can like red colour as only one person likes red.
Thus, case I and IV become invalid.
Also,
Persons sitting at ends, like different colours.
Thus, one likes white then, other likes blue.
We get,

Case II T ___ ___ ___ ___ ___
white

Case III Q/U U/Q P ___ ___ T
blue blue red white

Only one person likes red.
V and P like the same colour.
Thus, S likes red colour.
Immediate neighbours of S like the same colour.
we get,

Case II T P V S U/Q Q/U
white blue blue red blue blue

Case III Q/U U/Q P V S T
blue blue white white red white

Since,
At least two persons like white.
Thus, case II becomes invalid.
Final case:

Q/U U/Q P V S T
blue blue white white red white

We get, among Q, P and V, only Q likes blue.

Question 3

A and C are standing 2nd to the left of each other. C is standing 2nd to the right of D.
Case 1: -

A(s) ___ C(n) ___ D(s)

Case 2: -

D(n) ___ C(s) ___ A(n)

A is not standing at the end of the row.
B is standing 4th to the left of E, who is not standing at the end of the row.
Case 1: -

B ___ A(s) ___ C(n) E(n) D(s)

Case 2: -

D(s) E(s) C(s) ___ A(n) B

Number of persons facing south are more than the number of persons facing north.
Case 1: -

B(s) A(s) F(s) C(n) E(n) D(s)

Case 2: -

D(n) E(s) C(s) F(s) A(n) B(s)

Persons standing at the corner are facing in the opposite directions.
So, case 1 is invalid.
Final Solution:

D(n) E(s) C(s) F(s) A(n) B(s)

SO, among the given options, D is facing the north.

Question 4

→ A is at one of the extreme ends and likes Pokémon.
→ There are 3 children between B and F and both of them like different cartoons.
→ One of the child from B and F is at one of the extreme ends.

A ___ B/F ___ ___ ___ B/F
Pokemon

B/F ___ ___ ___ B/F ___ A
Pokemon

Now,
→ G is 2nd to the right of C who likes Ben10.
→ C is not an immediate neighbor of B who does not like Ben10.
We get,

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A Pokemon	___	F	C Ben 10	___	G	B Pokemon
A Pokemon	C Ben 10	F	G	___	___	B Pokemon
B Pokemon	C Ben 10	___	G	F	___	A Pokemon
B Pokemon	___	___	C Ben 10	F	G	A Pokemon

D is not sitting next to E and vice-versa and F is an immediate neighbor of E. So, Case 2 and case 4 will be rejected.

B Pokemon	C Ben 10	D/E	G	F	D/E	A Pokemon
A Pokemon	D/E	F	G Ben 10	D/E	G	B Pokemon

We know,

→ Immediate neighbours of F and G like different cartoons.

→ F is not an immediate neighbour of G so, case 1 will be eliminated.

And, we get,

A Pokemon	D/E Pokemon	F	C Ben 10	D/E Ben 10	G	B Pokemon

→ Number of children who like Ben 10 is more than number of children who like Pokémon.

→ D does not like Pokémon.

Thus, final arrangement is as follows:

A Pokemon	E Pokemon	F Ben 10	C Ben 10	D Ben 10	G Ben 10	B Pokemon

So, F sits to immediate right of E.

QUESTION 5 TO 6

C is standing behind only 2 persons and none of them is A. B is going to Pune and is standing at the last in the row.

(First)	
C	
A	
B(Last)	Pune

D is standing behind the one going to Mumbai and is not standing ahead of the one going to Amritsar. So, D is standing 2nd in the row and he is going to Amritsar.

E (First)	Mumbai
D	Amritsar
C	
A	
B (Last)	Pune

A is not going to Delhi.

Final Solution:

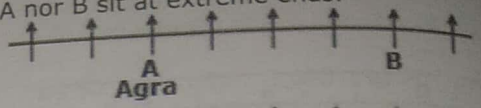
E (First)	Mumbai
D	Amritsar
C	Delhi
A	Bhopal
B (Last)	Pune

QUESTION 7 TO 11

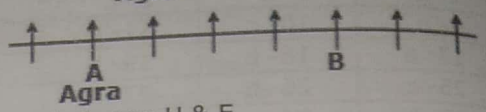
B sits 4th to right of A who belongs to Agra.

Neither A nor B sit at extreme ends.

Case 1



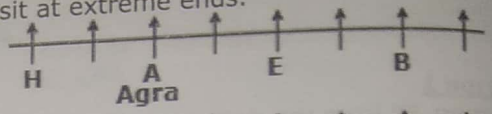
Case 2



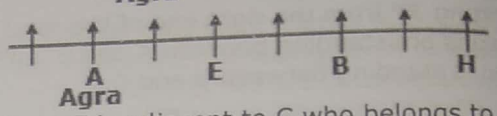
3 people sit between H & E.

Neither A nor B is immediate neighbour of E who doesn't sit at extreme ends.

Case 1

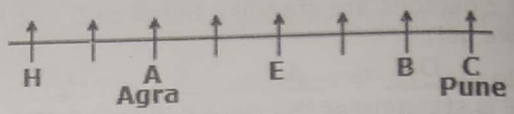


Case 2

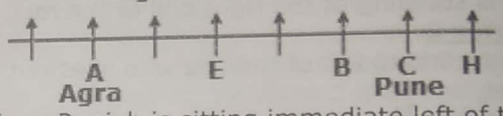


Neither A nor E is adjacent to C who belongs to Pune.

Case 1



Case 2



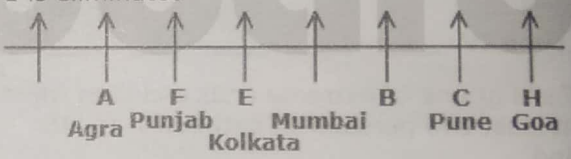
Person from Punjab is sitting immediate left of the person who belongs to Kolkata.

The person from Mumbai sits 3rd to left of the person who belongs to Goa.

F is adjacent to person from Kolkata but not B.

So case 1 is eliminated

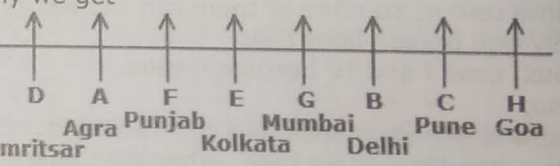
Case 2



Neither B nor G belongs to Amritsar

So, finally we get

Case 2



QUESTION 12 TO 14

- D's house was 4th to the left of the white house
- Number of houses to the right of the yellow house was equal to the number of houses to the left of D's house

Case 1 D ___ ___ ___ ___ white ___ yellow

Case 2 ___ ___ D ___ ___ white ___ yellow

- G's house was neighbouring D's house and was 3rd to the right of the pink house, thus, 1st arrangement becomes invalid.
- B lived in the green house
- There were 3 houses between B's house and the blue house. Blue house was somewhere to the right of B's house

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B D G
pink green white blue yellow

• Grey house was to the immediate left of A's house

• C's house was to the immediate left of F's house

B D G A C F
pink green grey white blue yellow

The only owner left of E and the colour left if red

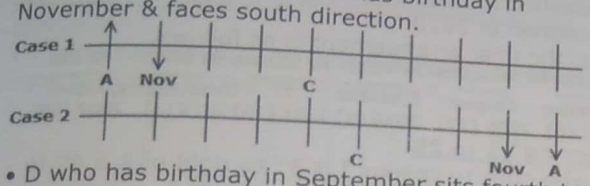
The final arrangement will be as follows:

E B D G A C F
pink green red grey yellow blue white

QUESTION 15 TO 17

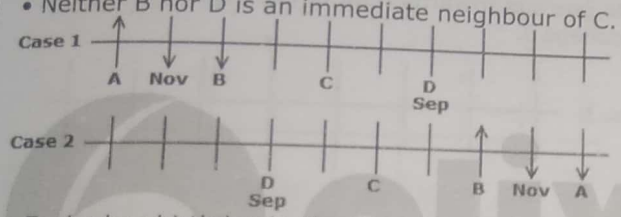
• C sits 4th to right of A who sits at one of the extreme ends.

• Immediate neighbour of A has birthday in November & faces south direction.



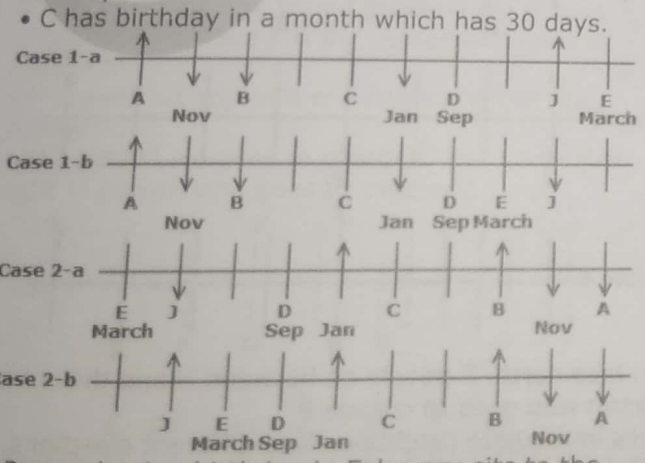
• D who has birthday in September sits fourth to left of B whose direction is opposite of A.

• Neither B nor D is an immediate neighbour of C.



• E who has birthday in March sits immediate right of J who is 3rd to left of person who has birthday in January.

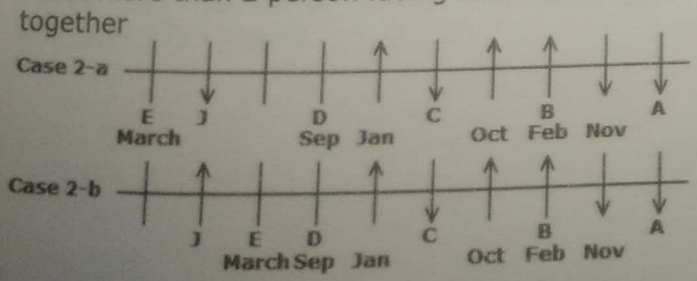
• C has birthday in a month which has 30 days.



• Person having birthday in February sits to the immediate right of person having birthday in October & both face same direction.

• Person born on consecutive months are not sitting adjacent to each other.

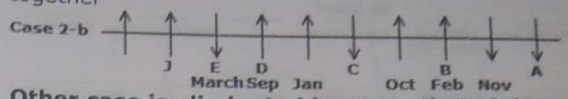
• Not more than 2 person facing same direction sit together



Only in these 2 cases it was possible to make such arrangement so, other cases are eliminated.

• Only 4 person faces south direction.

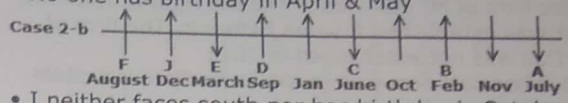
• Not more than 2 person facing same direction sit together



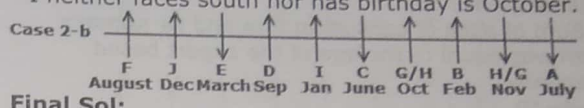
Other case is eliminated because that violates the condition that not more than 2 people facing same direction sits together.

• F has birthday in august.

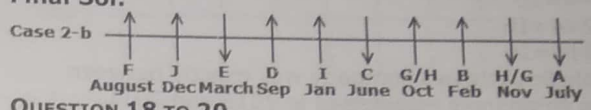
• No one has birthday in April & May



• I neither faces south nor has birthday is October.



Final Sol:



QUESTION 18 TO 20

The age of the companies will be:

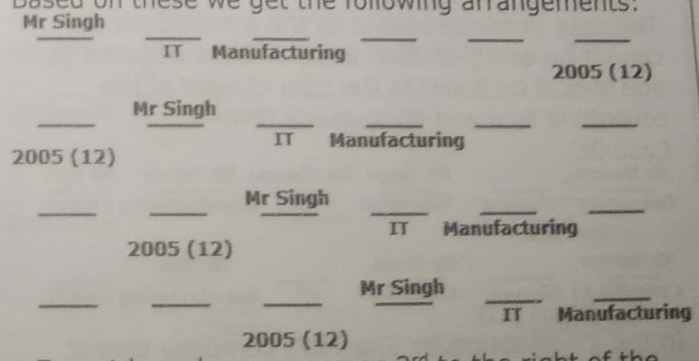
2001	16
2005	12
2007	10
2011	6
2013	4
2016	1

• Mr Singh's company was 2nd to the left of the company that dealt with manufacturing

• The company established in 2005 was at a gap of 2 from the manufacturing unit

• IT firm was to the immediate right of Mr Singh's firm

Based on these we get the following arrangements:



• Export based company was 3rd to the right of the company that dealt with education

• Finance firm was neighbouring the education firm

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Mr Singh Education	IT	Manufacturing	Export		2005 (12)
Finance 2005 (12)	Mr Singh Education	IT	Manufacturing	Export	Consulting
Consulting	Finance 2005 (12)	Mr Singh Education	IT	Manufacturing	Export
Education	Finance	Consulting 2005 (12)	Mr Singh Export	IT	Manufacturing

The first case is invalid as finance firm cannot be placed in that arrangement.

- Mr Verma was the CEO of the consulting firm
- The firm of Mr Das was 2nd to the right of the firm that was established 6 years before it. The firm of Mr Das was not established in 2011
- Mr Sharma's firm was to the immediate left of Mr Kumar's firm.
- Sum of ages of consulting firm and Mr Kumar's firm was equal to the age of the export based company

6+4=10
12+4=16
10+6=16

- Mr Srivastava's company was exactly between the companies established in 2016 and 2011
- The firm of Mr Das was 2nd to the right of the firm that was established 6 years before it.

Taking each case separately:

Case 1:

Finance 2005 (12)	Mr Singh Education	IT	Manufacturing	Mr Das Export	Mr Verma Consulting
Finance 2005 (12)	Mr Singh Education	IT	Mr Das Manufacturing	Export	Mr Verma Consulting

In the 2nd situation Mr Sharma's company cannot be placed hence it becomes invalid.

Mr Srivastava Finance 2005 (12)	Mr Singh Education	Mr Sharma IT	Mr Kumar Manufacturing	Mr Das Export	Mr Verma Consulting

Mr Srivastava's company should be exactly between the companies established in 2016 and 2011, hence the case becomes invalid.

Case 2:

Mr Sharma Education	Mr Kumar Finance	Mr Verma Consulting 2005 (12)	Mr Singh Export	Mr Srivastava IT	Mr Das Manufacturing

The case becomes invalid as the export company cannot be established in 2016 or 2011 because its age should be equal to the sum of ages of the consulting firm and Mr Kumar's firm.

Case 3:

Mr Verma Consulting	Finance 2005 (12)	Mr Singh Education	Mr Sharma IT	Mr Kumar Manufacturing	Mr Das Export
Mr Verma Consulting	Finance 2005 (12)	Mr Singh Education	IT	Mr Das Manufacturing	Export

In the 2nd situation Mr Sharma's company cannot be placed hence it becomes invalid. Thus, in case 1 Mr Srivastava will be the CEO of the finance firm and it will be between companies established in 2011 and 2016. The age of consulting firm cannot be 1 year hence the consulting firm was established in 2011.

Mr Verma Consulting 2011 (6)	Mr Srivastava Finance 2005 (12)	Mr Singh Education 2016 (1)	Mr Sharma IT	Mr Kumar Manufacturing	Mr Das Export

- The firm of Mr Das was 2nd to the right of the firm that was established 6 years before it. Thus, the firm of Mr Das was established either in 2007 or 2013.
- Sum of ages of consulting firm and Mr Kumar's firm was equal to the age of the export based company

6+4=10 (2007)
12+4=16 (2001)
10+6=16 (2001)

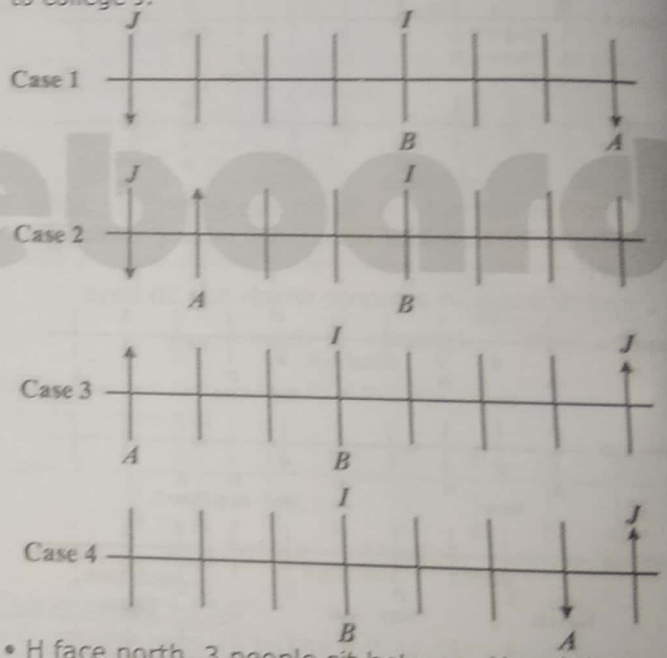
Thus, the export company of Mr Das was established in 2007 and Mr Kumar's firm was established in 2013.

Thus, the final arrangement is as follows:

Mr Verma Consulting 2011 (6)	Mr Srivastava Finance 2005 (12)	Mr Singh Education 2016 (1)	Mr Sharma IT 2001 (16)	Mr Kumar Manufacturing 2013 (4)	Mr Das Export 2007 (10)

QUESTION 21 TO 25

- B who goes to college I is 3rd to right of A & 4th to left of the person who goes to college J.
- No one sits towards right of the person who goes to college J.



- H face north. 3 people sit between H and the person who goes to college P.
- H's immediate neighbour face different directions.
- Only 1 person sit between the person who goes to college P & E.
- F & E who is not adjacent to B, are immediate neighbours.

So, case 2 and 4 are become invalid.

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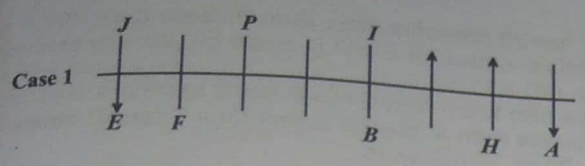
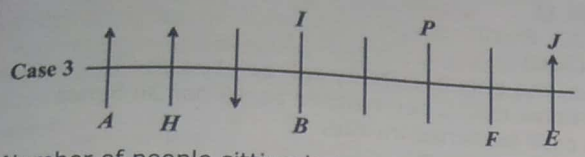
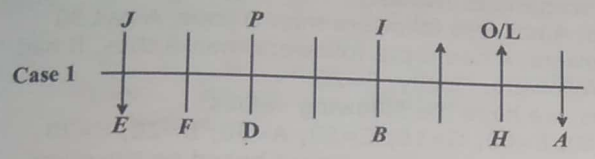
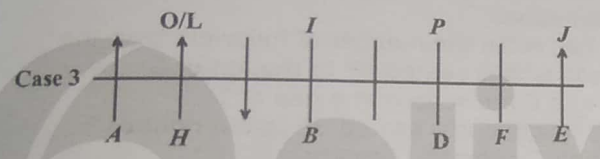


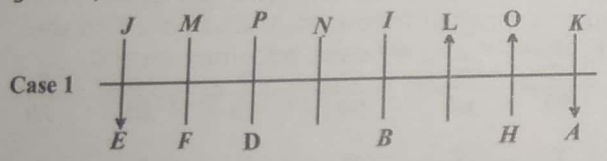


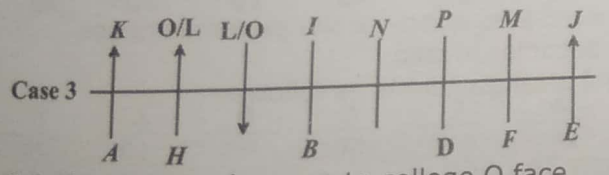
• Number of people sitting between H & D is equal to number of people sitting between the person who goes to college K & the person who goes to college N.
• The person wo goes to college O sits immediate right of person who goes to college L.



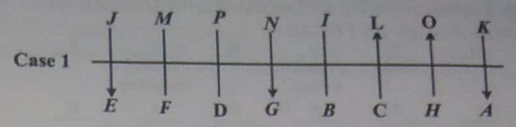


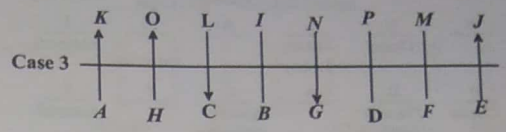
• F goes to neither College K nor College N.
• Number of people sitting between H & D is equal to number of people sitting between the person who goes to college K & the person who goes to college N.
• H doesn't sit adjacent to person who goes to college N.
• The person wo goes to college O sits immediate right of person who goes to college L.



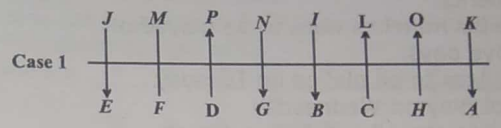


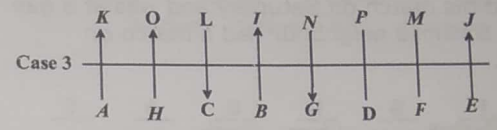
• G & the person who goes to college O face opposite directions.
• More than 1 person sit between G & the person who goes to college O.



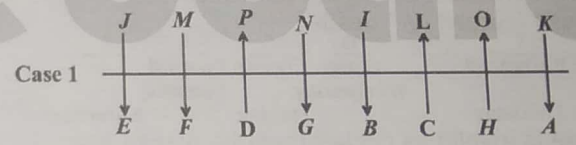


• Not more than 2 persons facing same direction are sitting together.



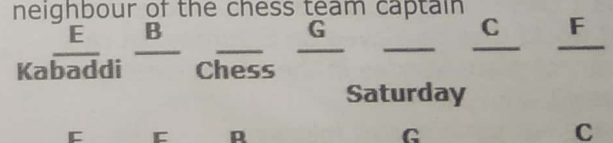


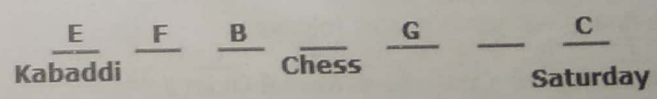
• F & the person who goes to college L face opposite directions.
• Atleast 4 persons face towards south and not more than 2 persons facing same direction are sitting together
So case 3 is eliminated.

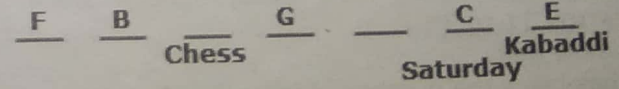


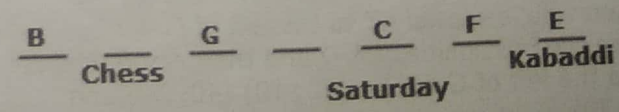
QUESTION 26 TO 30

• E was the captain of the kabaddi team and was seated at either of the extreme ends
• The captain of the chess team was 3rd to the left of the captain whose match was on Saturday
• C played his match on Saturday and was at a gap of 3 from B whose neighbour had a match on Thursday
• F was at a gap of 2 from G who was the neighbour of the chess team captain









• A's neighbour played tennis
• The basketball captain was 3rd to the left of the tennis team captain

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• D was seated exactly between B and the captain whose match was on Friday

E Kabaddi	B	D Chess	G /Tennis Friday	A	C Tennis/ Saturday	F
E Kabaddi	F Basketball	B	D Chess	G Tennis Friday	A	C Saturday
F Basketball	B	D Chess	G Tennis Friday	A	C Saturday	E Kabaddi
B	D Chess	G /Tennis Friday	A	C Tennis/ Saturday	F	E Kabaddi

Cases 1 and 4 are invalid as the captain of the basketball team cannot be placed in those arrangements.

• A's and B's matches were to be played on consecutive days.

• Football was to be played on Tuesday

• A did not play on Wednesday

• Cricket was played just before Chess.

• C played his match on Saturday and was at a gap of 3 from B whose neighbour had a match on Thursday.

Case 1:

E Kabaddi	F Basketball Thursday	B	D Chess	G Tennis Friday	A	C Saturday

If B plays football on Tuesday

E Kabaddi	F Basketball Thursday	B Football Tuesday	D Chess	G Tennis Friday	A	C Saturday

The case becomes invalid as the one who plays his match on Wednesday cannot be placed.

If A plays football on Tuesday.

E Kabaddi	F Basketball Thursday	B	D Chess Wednesday	G Tennis Friday	A Football Tuesday	C Saturday

The case is invalid as cricket must be played just before chess i.e. it must be played on Tuesday, but Football is played on Tuesday.

Case 2:

F Basketball Thursday	B Football Tuesday	D Chess Sunday	G Tennis Friday	A Monday	C Saturday	E Kabaddi Wednesday
F Basketball Thursday	B Monday	D Chess	G Tennis Friday	A Football Tuesday	C Saturday	E Kabaddi

In case 1 cricket must be played just before chess. Cricket would thus be played on Saturday. In case 2 We cannot place Sunday in the arrangement, thus case 2 is invalid.

The final arrangement is as follows:

F Basketball Thursday	B Football Tuesday	D Chess Sunday	G Tennis Friday	A Baseball Monday	C Cricket Saturday	E Kabaddi Wednesday

QUESTION 31 TO 35

We know that:

• D has twice the number of followers than the person who is seated 4th to the left of G

Hence the possibilities for D and the person who is 4th to the left of G will be (20, 10) (40, 20) and (60, 30)

• E has 20 followers more than D hence the possible values for E and D would be (20, 40) or (40, 60)

• We also know that G+C=E and C has more followers than at least 3 others thus C cannot have 10, 20 or 30 followers.

Case 1:

D=20; E=40

G+C=40

Thus, the only possibility will be: 10+30=40

We know that C can neither be 10 nor 30 hence the case becomes invalid.

Case 2:

D=40; E=60

G+C=E

Thus, we have 2 possibilities:

10+50=60 or 20+40=60

We already have D with 40 followers thus the 2nd scenario is invalid.

Also, A has less followers than D thus, A has 30 followers. A had more followers than B thus, B had 20 followers. Finally, F=70

Thus, we have the following values:

D=40; E=60; G=10; C=50; A=30; B=20; F=70

Let us make the arrangement based on the given information:

• D has twice the number of followers than the person who is seated 4th to the left of G

• G and C are seated at a gap of 1

• F's neighbour is seated 3rd to the right of E

• F and C do not sit together

E 60		F 20		C 50		G
	20	E 60	C 50		G	F
20	E 60	C 50		G	F	
20	E 60		F	G		C 50

Finally, we have:

• D is 2nd to the left of the one who has the maximum number of followers, thus D is 2nd to the left of F, thus 1st and 4th case becomes invalid.

A 30	B 20	E 60	C 50	D 40	G 10	F 70
B 20	E 60	C 50	D 40	G 10	F 70	A 30

• B is not seated at any of the extremes hence case 2 becomes invalid.

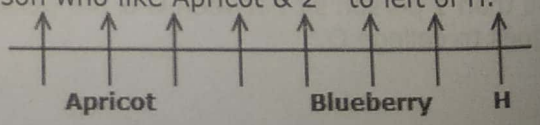
The final arrangement is as follows:

A 30	B 20	E 60	C 50	D 40	G 10	F 70

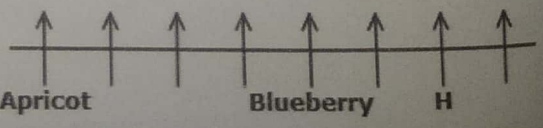
QUESTION 36 TO 40

• The person who likes Blueberry sits 4th to right of the person who like Apricot & 2nd to left of H.

Case 1



Case 2



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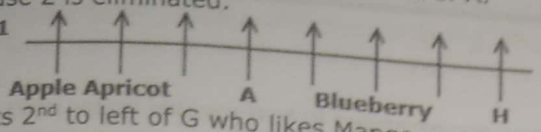
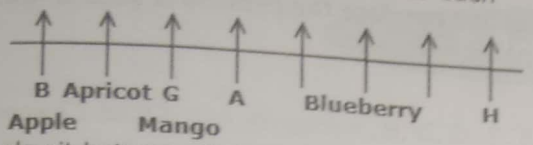
• A neither likes Blueberry nor sit adjacent to the person who likes Blueberry.
• The person who like Apple is 3rd to left of A.
So, case 2 is eliminated.

Case 1



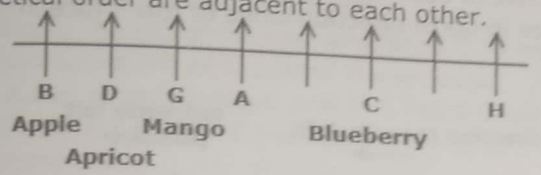
• B sits 2nd to left of G who likes Mango.
• No two persons whose names are in consecutive English alphabetical order are adjacent to each other.

Case 1



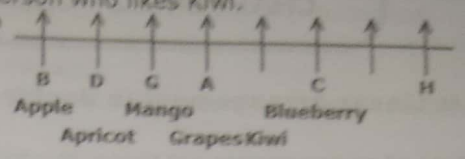
• 3 people sit between C & D.• No two persons whose names are in consecutive English alphabetical order are adjacent to each other.

Case 1

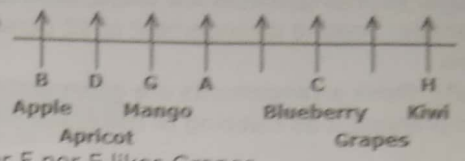


• The person who likes Grapes sits immediate left of the person who likes Kiwi.

Case 1-a

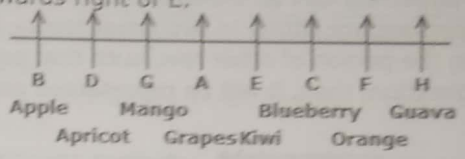


Case 1-b



• Neither F nor E likes Grapes.
So, case 1-b is eliminated.
• H is not adjacent to the person who likes Guava.
• F is towards right of E.

Case 1-a



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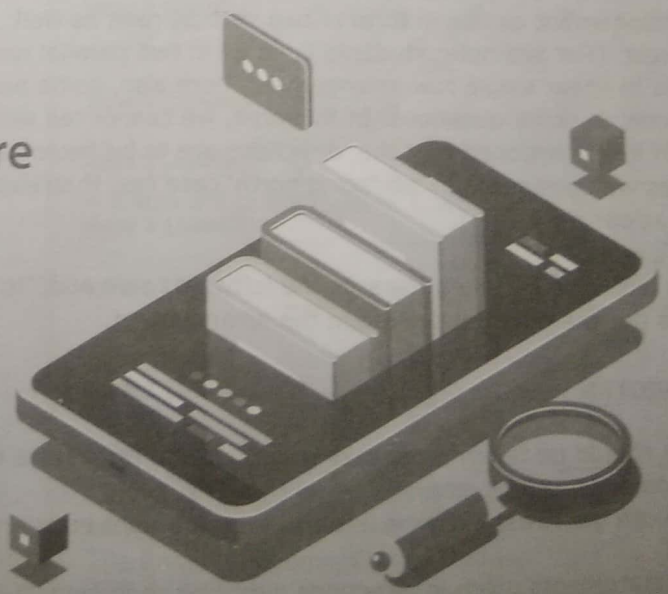

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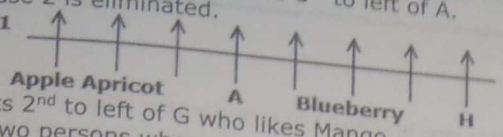
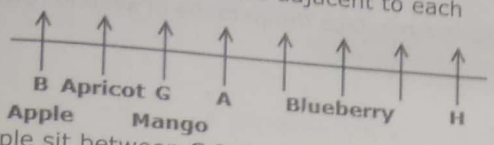
• A neither likes Blueberry nor sit adjacent to the person who likes Blueberry.
• The person who like Apple is 3rd to left of A.
So, case 2 is eliminated.

Case 1



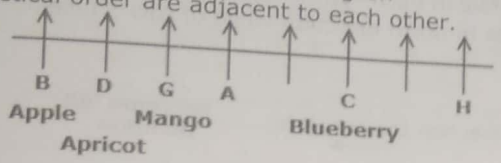
• B sits 2nd to left of G who likes Mango.
• No two persons whose names are in consecutive English alphabetical order are adjacent to each other.

Case 1



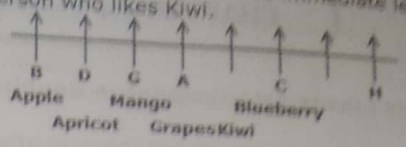
• 3 people sit between C & D.• No two persons whose names are in consecutive English alphabetical order are adjacent to each other.

Case 1

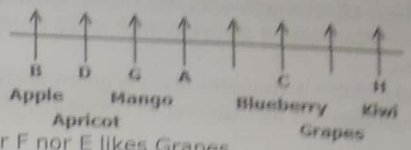


• The person who likes Grapes sits immediate left of the person who likes Kiwi.

Case 1-a

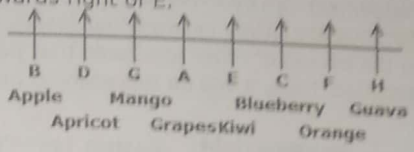


Case 1-b



• Neither F nor E likes Grapes.
So, case 1-b is eliminated.
• H is not adjacent to the person who likes Guava.
• F is towards right of E.

Case 1-a



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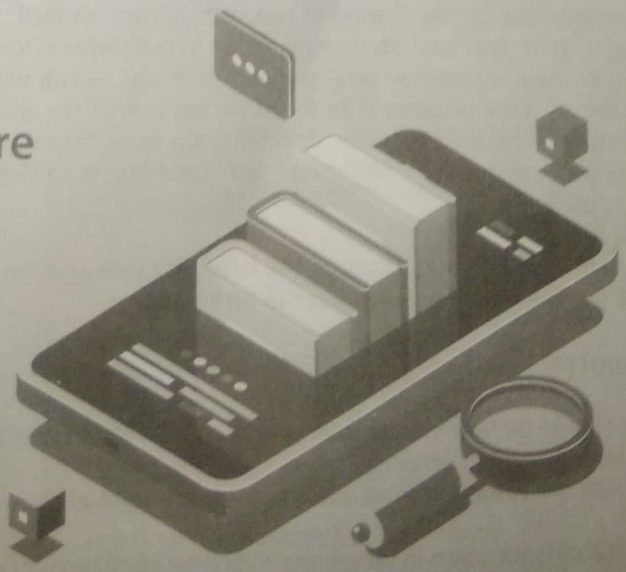

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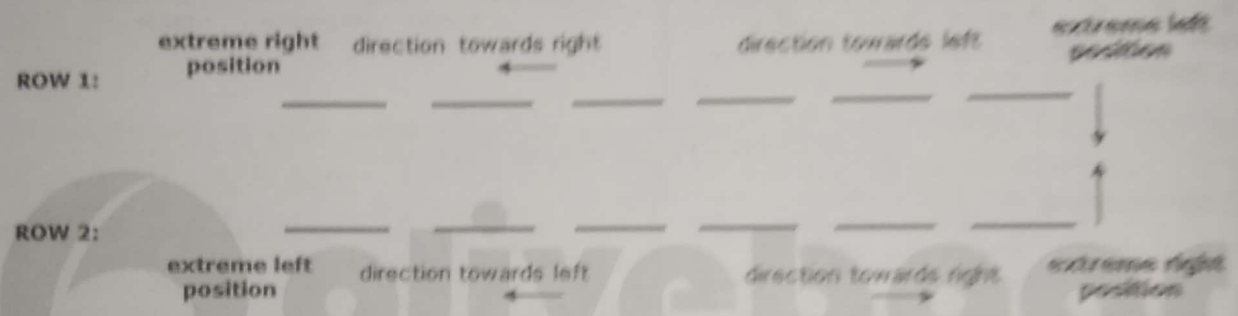
CHAPTER 2.2 - LINEAR DOUBLE ROWS ARRANGEMENT

What is Linear Arrangement in double row?

These type of arrangements are those, in which persons or entities are arranged in two parallel linear rows.
For Example: Seating arrangement of 12 persons is done in two parallel rows such that 6 persons are sitting in each row.
Generally, these arrangements are given such that the persons of one row face the persons of second row. We can comprehend it as clubbing of two linear single row arrangements into one.

Let's learn the approach...

The arrangement can be explained by the following example –
If Ten persons are sitting in two linear rows – row 1 and row 2, five in each row. And, each person of one row is facing the person of other row, such that persons of row 2 face in north direction while of row 1 face in south direction, then, it will be represented as follows:



In the above arrangement, the extreme left end and extreme right end varies for both the rows. It is as per the direction of facing in each row.

Linear arrangement in a two rows can be asked in following manners –

I. When persons (or given entities) of one row are facing in north direction and of other row are facing in south direction.
II. When all the persons (or given entities) of both the rows are facing in same direction (south/north).
III. Arrangement can be in form of two vertical rows as well, when instead of north/south, directions would be east/west. (For example: students lined up in two parallel rows from front to end)
IV. Like in linear single row arrangement, here also, some persons might face north and some in south directions, in some questions. In this type, we cannot tell which end is extreme left and which is extreme right. If it is mentioned that the 'directions are to be taken as per your left and right', then we consider it same as we considered in 'all facing north' case (as, then extreme left end is at our left side and extreme right end is at our right side).
In the directions –
'To the left' is to be taken towards the leftwards side and, 'to the right' to be taken towards the rightwards side, as per the directions given in the arrangement.

KEY POINTERS

⇒ Care should be taken while taking the left and right sides of both the rows. It varies according to the facing of the persons, things, etc.
⇒ For both the rows, extreme left and extreme right ends are different. (varies according to direction of facing)
⇒ The statements given in directions might be confusing. If it is given – "A is facing B" then, A and B are in different rows.

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While, if it is given – "A is second to the left of B" then, A and B are in same rows.
⇒ When questions are given with facing in both north and south directions, and, the starting statement doesn't give the exact direction, then, number of possible cases are more, as you have to consider possibilities with respect to all possible direction of facing. Those should not be missed.
⇒ If more than one possible final arrangement is obtained, then answer will vary according to the question asked.
⇒ The types of parameters might vary across various types, such as multiples of any number, factors, ages, dates, etc. We will get to practice many such in later chapters too.

Solved Examples

Directions [1 to 5]: Ten persons A, B, C, D, E, F, G, H, I and J were seated in two rows such that 5 of them were in row 1 facing the South and five of them were in row 2 facing the North.
H was 3rd to the left of the one who faced G. G was to the immediate left of I. I faced B who faced South. A was neighbouring D and E. E faced C who was not neighbouring B. F was not seated at any of the extreme ends.

Question 1 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) J b) E c) C d) G e) H

Question 2 Who among the following were facing North?
I. C II. E III. F
a) Only I b) Only II c) Both II and III
d) Only III e) Both I and II

Question 3 A was seated opposite to _____ who was 2nd to the left of _____

Question 4 Who was seated to the immediate left of J?

Question 5 What was the position of D with respect to F?

Solution:
- H was 3rd to the left of the one who faced G
- G was to the immediate left of I
- I faced B who faced South

Row 1 (South)	___	___	B	___	H
Row 2 (North)	___	G	I	___	___

Row 1 (South)	___	B	___	H	___
Row 2 (North)	G	I	___	___	___

- A was neighbouring D and E, thus, case 1 becomes invalid.
- E faced C who was not neighbouring B

Row 1 (South)	___	B	___	H	C
Row 2 (North)	G	I	D	A	E

- F was not seated at any of the extreme ends

Thus, the final arrangement is as follows:

Row 1 (South)	J	B	F	H	C
Row 2 (North)	G	I	D	A	E

Answer 1: Apart from H others were seated at the extreme ends
Answer 2: Among the given persons E was seated facing North
Answer 3: A was seated opposite to H who was 2nd to the left of B
Answer 4: B was seated to the immediate left of J
Answer 5: D was seated opposite to F

Question 6 Ten persons A, B, C, D, E, P, Q, R, S and T were seated in 2 rows such that A, B, C, D and E were in row 1 facing South and P, Q, R, S and T were in row 2 facing the North. R was facing A and was 3rd to the right of Q. E was 2nd to the right of C who faced T. S was to the immediate left of P. D was seated opposite to S. Who was seated opposite to the one who was 2nd to the left of P?

Solution:
- R was facing A and was 3rd to the right of Q
- S was to the immediate left of P
- D was seated opposite to S.

Row 1 (South)	___	___	D	___	A
Row 2 (North)	___	Q	S	P	R

OR

Row 1 (South)	___	D	___	A	___
Row 2 (North)	Q	S	P	R	___

- E was 2nd to the right of C who faced T

Row 1 (South)	___	E	D	C	A
Row 2 (North)	___	Q	S	P	R

OR

Row 1 (South)	___	D	E	A	C
Row 2 (North)	Q	S	P	R	T

Case 1 is invalid as T cannot be placed in that arrangement

The final arrangement is as follows:

Row 1 (South)	B	D	E	A	C
Row 2 (North)	Q	S	P	R	T

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Thus, B was seated opposite to Q was 2nd to the left of P.

Directions [7 to 11]: 14 chairs are placed in 2 parallel rows and each row has 7 chairs each. Chairs from one row are facing towards north and chairs from another row are facing towards south. Each chair from either row is facing towards one chair from another row. 10 persons are sitting on these chairs and each row has 2 vacant chairs.

- C is sitting on a chair 3rd to the left of chair of H, who is facing vacant chair.
- In only one row, both vacant chairs are placed adjacent to each other.
- Neither of the vacant chair is placed at the end of the row.
- J is sitting to the immediate right of H and is facing B.
- C is not facing in the north direction.
- D is sitting on a chair which is 2nd to the left of chair of C.
- G is facing A, who is sitting on the adjacent chair of C.
- E and F are sitting on a chair adjacent to G.
- I is sitting on one of the chair.

Question 7 Who is facing C?

Question 8 Who is facing I?

Question 9 Who is sitting on a chair which is placed 3rd to the left of G's chair?

I is sitting on a chair, 3rd to the left of G's chair.

Question 10 Who among the following is sitting 2nd to the right of any vacant chair?

a) G b) I c) B d) D e) A

Question 11 How many persons are facing vacant chair?

Solution:

C is sitting on a chair 3rd to the left of H's chair, who is facing vacant chair. J is sitting to the immediate right of H and is facing B. C is not facing in the north direction.

In only one row, both vacant chairs are placed adjacent to each other but neither one is placed at the end of the row.

Case 1: -

J H ___ ___ C

B Vacant Vacant ___ ___

Case 2: -

J H Vacant Vacant C

B Vacant ___ ___ ___

D is sitting on a chair which is 2nd to the left of chair of C. So, D is sitting at the leftmost position in the row facing south.

G is facing A, who is sitting on the chair adjacent to C.

Case 1: -

J H Vacant A C Vacant D

B Vacant Vacant G ___ ___ ___

Case 2: -

J H Vacant Vacant C A D

B Vacant ___ ___ ___ G ___

E and F are sitting on a chair adjacent to G.

So, case 1 becomes invalid.

case 2: -

In only one row, both vacant chairs are placed adjacent to each other but neither one is placed at the end of the row.

So, both vacant chairs which are facing north are placed at the gap of 1 chair from each other.

I is sitting on one of the chair.

J H Vacant Vacant C A D

B Vacant I Vacant E/F G F/E

Answer 7: Either E or F is facing C.

Answer 8: Since, I is facing the vacant chair, so no one is facing I.

Answer 9: I is sitting on a chair, 3rd to the left of G's chair.

Answer 10: G is sitting 2nd to the right of vacant chair.

Answer 11: H and I are facing vacant chair.

Directions [12 to 16]: Answer the following question based on the information given below. Twelve friends - O, P, Q, R, S, T, U, V, W, X, Y, and Z went to watch Sultan movie in a theatre that has rows A-N (in sequence) with six seats per row. Row A is the closest to the screen. The group completely occupied rows D and E and all they faced the screen. There are five girls and seven boys in this group but none of the girls occupies the corner seats. It is also known that:

- O, P, W and Z occupy the corner seats.
- U is to the immediate left of P and opposite R. However, U can see R but R cannot see U.
- X is second to the left of W and third to the right of O.

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- V is to the right of Z and opposite Q.
- Y, who is opposite S, is the neighbour of O.
- In row D, the girls have occupied the third and fifth seats from the left. In row E, U is the only girl sitting opposite to a girl.
- There are three girls in row E.

Question 12 Which of these groups sits in the same row?
a) Y-R-X b) O-Y-T c) Z-S-R
d) S-Y-V e) T-U-Q

Question 13 Which of these is correct w.r.t the position of X?
a) Opposite U
b) Second to the right of R
c) Third to the left of V
d) To the immediate right of Q
e) To the immediate left of T

Question 14 Who among the following male is sitting between two girls?
a) Y b) X c) Z d) T e) R

Question 15 Who are the neighbours of T?

Question 16 If the following people exchange places (Y with U, X with T and V with W), who is now third to the right of S?

Solution:
O, W, Z and P have occupied the corner seats.
Since all of them are facing the screen, assume that the screen is in the north.
From the second and third clue, P and W have to be at the extreme right corners.
Hence, O and Z are at the extreme left corners.
Since U can see R but R cannot see U, U is immediately behind R.
Since U is to the immediate left of P, P is in the second row i.e. row E.
Thus, the arrangement is:
__ __ __ __ R W
__ __ __ __ U P
X is second to the left of W and third to the right of O. Hence, O is in row D and Z is in row E.
Thus, the arrangement becomes:
O __ __ X R W
Z __ __ __ U P
Y is the neighbour of O and opposite S. Hence, the arrangement becomes:
O Y __ X R W
Z S __ __ U P
V is to the right of Z and opposite Q. This is only possible when Q is between Y and X. Hence, the final arrangement is:
O Y Q X R W
Z S V T U P
Now, O, Z, W and P are definitely males.
Since the third and fifth girl from the left in row D are females, Q and R are females.
Since U is the only girl sitting opposite a girl, U and R are females.
Since Q is a female, V has to be a male (as per the above statement).
Since there are three females in row E, S and T are females (apart from U).
Hence, in row D, Y and X are males.
Thus, the final arrangement is:

O (m)	Y (m)	Q (f)	X (m)	R (f)	W (m)
Z (m)	S (f)	V (m)	T (f)	U (f)	P (m)

Answer 12: Among the groups given, only Y-R-X sit in the same row.
Answer 13: Among the given options, only the one in option 4 is true.
Answer 14: X and V are the only male people sitting between two girls.
Answer 15: U and V are the neighbours of T.
Answer 16: Since U has exchanged places with Y, Y is now third to the right of S.

Directions [17 to 19]: Answer the questions based on the following information:
Eight persons G, H, I, J, P, Q, R and S are seated equally in two rows such that their seats are exactly opposite. Some of them are facing towards north direction and some of them are facing towards south direction. They like different colours from Violet, Indigo, Blue, Green, Yellow, Orange, Red and White (not necessarily in the same order). The pairs which are opposite at the extreme end are facing the same direction and the pair at the other end will be facing the opposite direction. G sits third to the right of J who is facing a direction in a way such that the person opposite to him in the row is also facing the same direction as him. S sits third to the right of the one who likes yellow who is not either G or J. No two persons who are facing the same direction are neighbours.
The colour yellow is liked by the person who is seated exactly opposite to the person who faces north and seated towards the right of G. Q and R are facing north and neither of them likes yellow.
Q is seated second to the right of H, who is seated opposite to the second to the left of person who is seated in the row opposite to Q who likes white.
Red is not liked by any of the person sitting at the corner and is neither neighbouring nor facing white. I is an immediate neighbour of the one who faces the same direction and does not like red.
Violet is not liked by the persons facing north and is to the left of the person who is in a row opposite to that of the person who likes red colour. Blue is not liked by the person who is at any of the corners and is not in the same row as the one liking white.

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The immediate neighbours and the neighbours' opposite of the person liking Indigo are facing the same direction. Green is not liked by the person facing south.

Question 17 Which of the following is the position of H?

I. At a corner

II. Opposite to the person who likes green.

III. Adjacent to the person liking Red.

a) Only I b) Both II and III

c) All I, II and III d) Both I and II

e) Cannot be determined.

Question 18 Who is seated second to the left of the one who is seated opposite to the one who is second to the right of G?

Question 19 How many people are facing north and south respectively?

Solution:

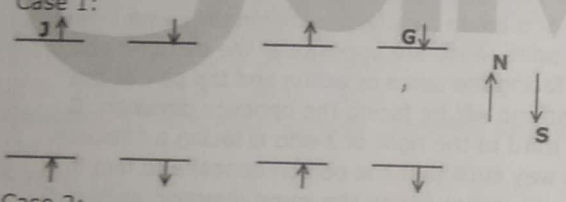
G sits third to the right of J who is facing a direction in a way such that the person opposite to him in the row is also facing the same direction as him.

The pairs which are opposite at the extreme end are facing the same direction and the pair at the other end will be facing a opposite direction.

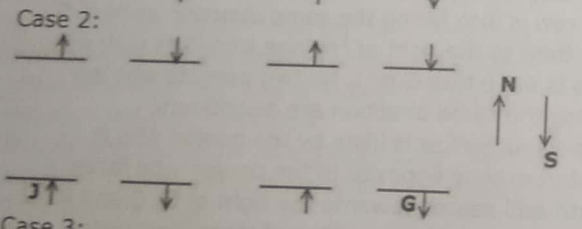
No two persons who are facing the same direction are neighbours.

We will have the cases as follows:

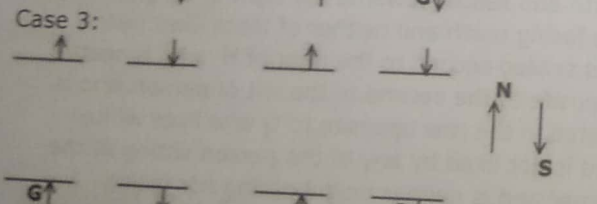
Case 1:



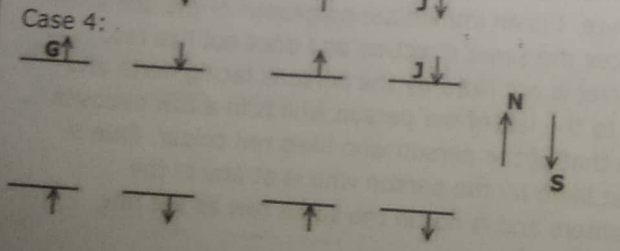
Case 2:



Case 3:



Case 4:



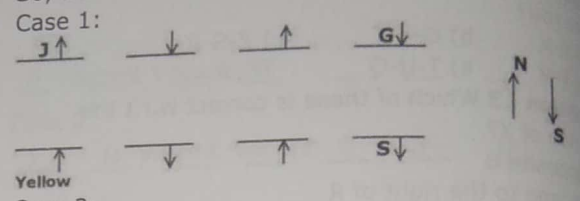
The colour yellow is liked by the person who is seated exactly opposite to the person facing north and is towards the right of G.

S sits third to the right of the one who likes yellow who is not either G or J.

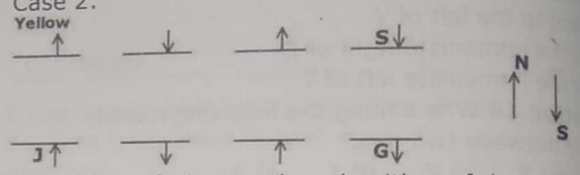
So, case 3 and 4 gets eliminated as we cannot place the person who likes yellow.

So, we will have

Case 1:



Case 2:

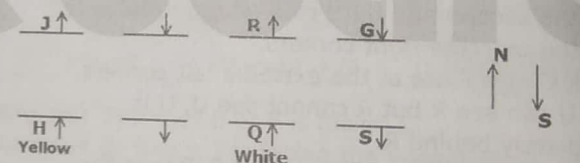


Q and R are facing north and neither of them likes yellow.

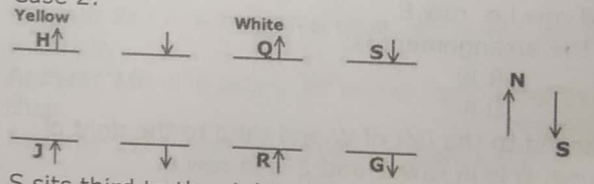
Q is seated second to the right of H, who is seated opposite to the second to the left of the person who is seated in a row opposite to Q who likes white.

So, we will have.

Case 1:



Case 2:

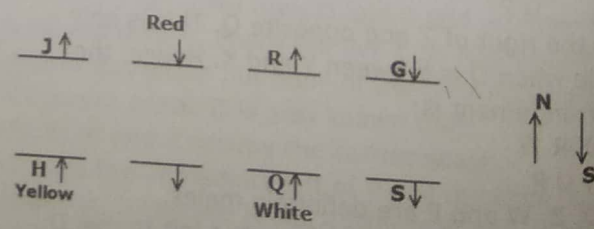


S sits third to the right of the one who likes yellow who is not either G or J.

Red is not liked by any of the person sitting at the corner and is neither neighbouring nor facing white.

So, we will have

Case 1:



Case 2:

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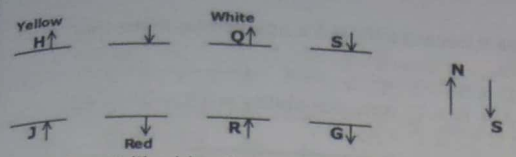
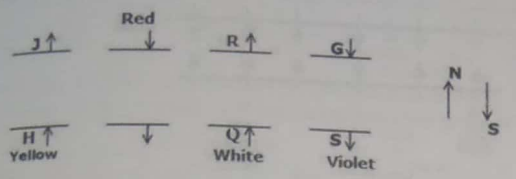
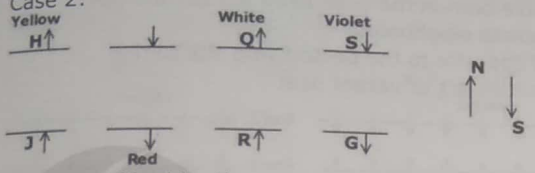


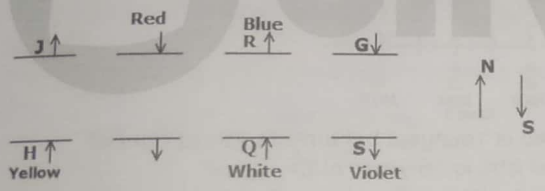
Violet is not liked by the persons facing north and is to the left of the person who is in a row opposite to that of the person who likes red colour.
Hence it will be S who will like violet.
Hence we will have,
Case 1:



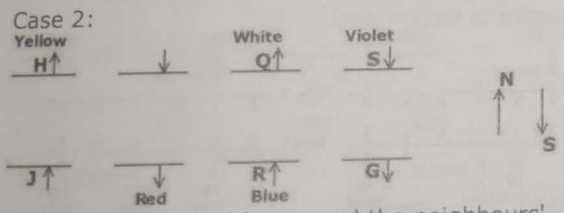
Case 2:



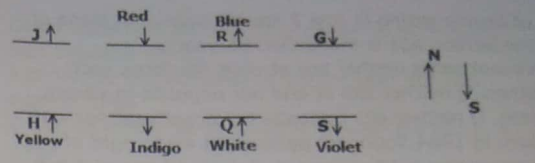
Blue is not liked by the person who is at any of the corners and is not in the same row as the one liking white. Hence R will like Blue.
Case 1:



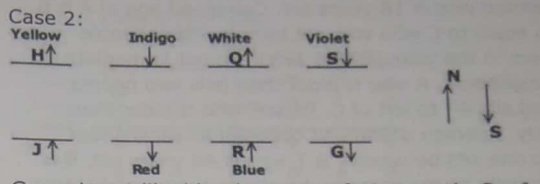
Case 2:



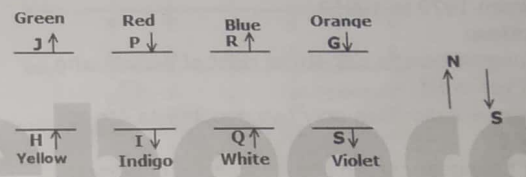
The immediate neighbours and the neighbours' opposite of the person liking Indigo are facing the same direction.
So, the only option left here is the person seated in a row opposite to Red. He will like Indigo and his neighbours and the neighbours who are also adjacent to the person opposite to the person who likes Indigo will face North.
Case 1:



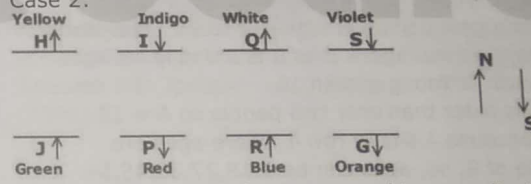
Case 2:



Green is not liked by the person facing south. So, J will like green.
I is an immediate neighbour of the one who faces the same direction and does not like red.
So, I will like Indigo and the person left is P who likes Red and G will like Orange.
The final arrangement is as follows where we will get two cases:
Case 1:



Case 2:



Answer 17: H is at the corner and is opposite to the person who likes green.
Answer 18: The person seated second to the right of G is P and the person opposite to him is I. The person second to the left of I is S.
Answer 19: There are 4 persons each who are facing north and south directions respectively.

Directions [20 to 22]: Ten persons A, B, C, D, E, P, Q, R, S & T are sitting in 2 parallel rows. P, Q, R, S & T are sitting in row 2 facing south direction while A, B, C, D & E are sitting in row 1 facing north direction in such a way that the distance between two adjacent neighbours is constant. Each row has 6 seats & one of them is vacant. In given sitting arrangement each seat in a row is opposite to another seat in other row. They all were born on 1 January but different years. We calculated ages of everyone on 1 Jan 2018 & found that ages of people sitting in row 1 are multiple of 9 while ages

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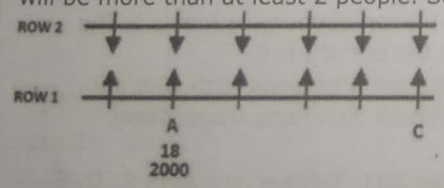
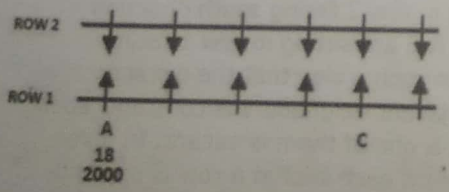
of people sitting in row 2 are multiple of 8. None of the person age is more than 55 years.
Vacant seats neither are at ends nor faces each other. Q neither sits at end nor opposite to vacant seat. D neither sits opposite to vacant seat nor was born in 1964.Youngest person sits 4th to right of person who is 16 years old. Combined age of A & B is equal to C who was not born in 1964. People born in the year 1973 & 1991 are not immediate neighbours. A who is elder than only two people and sits 4th to left of C. Person who is older than only 1 person doesn't sit opposite to vacant seat. No one sits between P & T who is 40 years old. B is opposite to the person who sits to the immediate left of vacant seat. P is the Youngest person. Ages of both immediate neighbours of S who wasn't born in 1986 are consecutive multiples of 8.

Question 20 Who was born in the year 1986?
Question 21 Who sits 2nd to right of person who sits opposite to vacant seat?
Question 22 How many persons were born in between 1979 to 1995?
Solution:
• Youngest person sits 4th to right of person who is 16 years old.
• A who is elder than only two people sits 4th to left of C.
Since Youngest person sits 4th to right of person who is 16-year-old. We know that 16 is multiple of 8 so Youngest person is sitting in row 2. Therefore, youngest person age is 8 as it is the only multiple of 8 which is Younger than 16.
Now A is elder than only two people so A = 18 years because A sits in row 1 where ages are multiple of 9, so, ages can be 9,18,27,36,45,54.
If A = 9 then his age will be more than only 1 person. Also A cannot be 27 because than his age will be more than at least 2 people. So, A = 18.

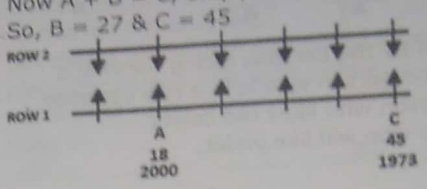


Case 1

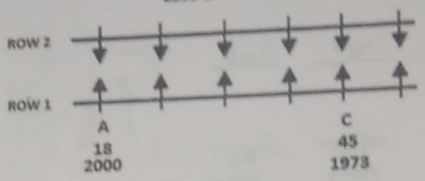


Case 2

• Combined age of A & B is equal to C who was not born in 1964.
Now B, C, D & E are 27, 36, 45, & 54 (not necessarily in same order). None of the person age can be 9 because than A's age will be more than 3 people.
Also C ≠ 54
Now A + B = C, only possibility is 18 + 27 = 45.
So, B = 27 & C = 45

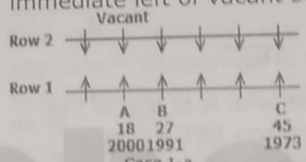


Case 1

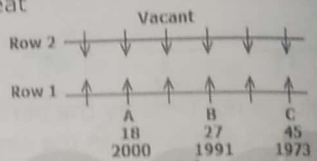


Case 2

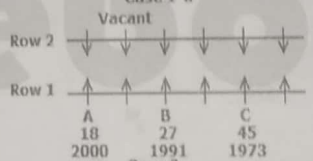
• People born in the year 1973 & 1991 are not immediate neighbours
• B is opposite to the person who sits to the immediate left of vacant seat



Case 1-a

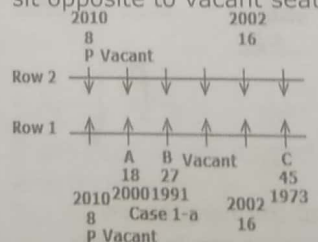


Case 1-b

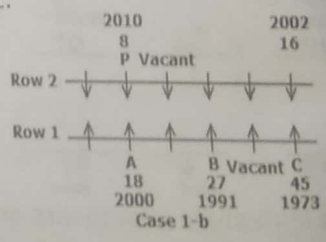


Case 2

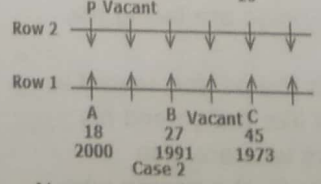
• P who is Youngest person sits 4th to right of person who is 16 years old.
• Person who is older than only 1 person doesn't sit opposite to vacant seat.



Case 1-a



Case 1-b



Case 2

• No one sits between P & T who is 40 years old.

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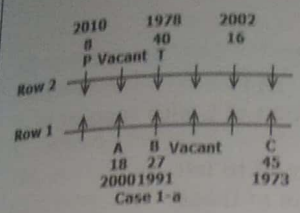
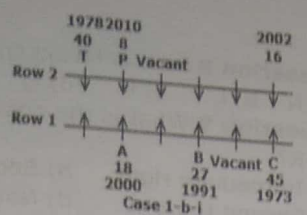
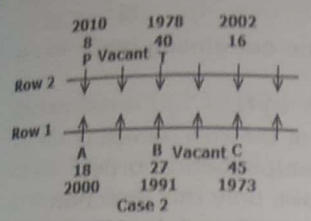


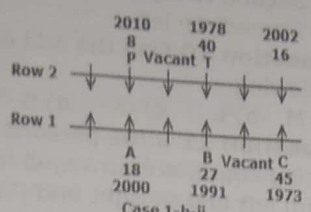
Case 1-a



Case 1-b-i

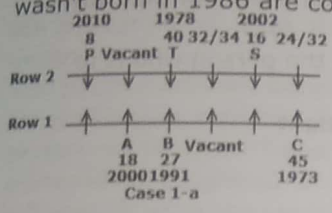


Case 2

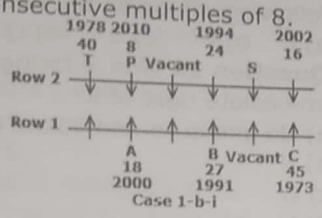


Case 1-b-ii

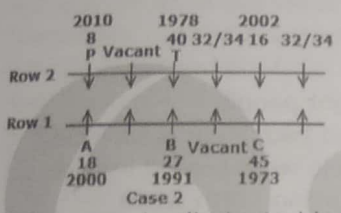
• Ages of both immediate neighbours of S who wasn't born in 1986 are consecutive multiples of 8.



Case 1-a



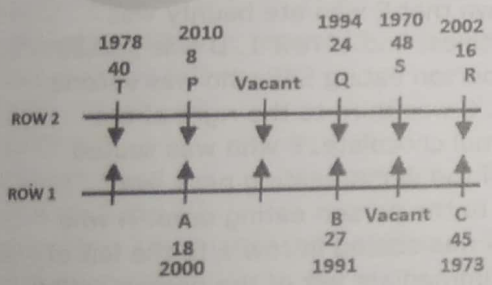
Case 1-b-i



Case 2

Other case is eliminated because there was no such place available for S

• Q neither sits at end nor opposite to vacant seat.



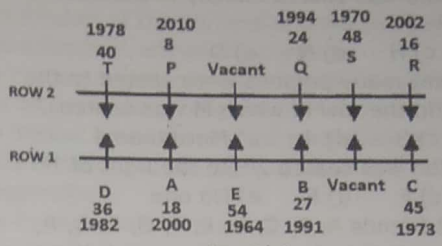
Case 1-b-i

Other cases are eliminated because no such place was available for Q.

• D neither sits opposite to vacant seat nor was born in 1964

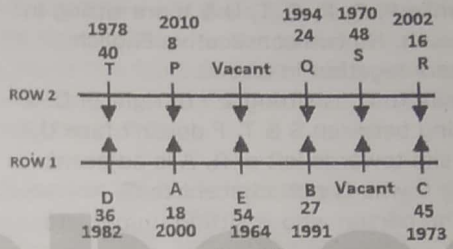
D can be either 36-year-old or 54year old But D ≠ 1964.

So, E = 1964 & D = 1982



Case 1-b-i

Final Solution:



Case 1-b-i

Answer 20: No one was born in the year 1986.

Answer 21: Seat 2nd to right of person who sits opposite to vacant seat is also vacant.

Answer 22: 3people -- D (1982), Q (1994) & B (1991).

Practice Yourself

Directions [1 to 5]: 14 persons (A to N) were seated in two parallel rows. 7 persons were seated in the 1st row while remaining were seated in the 2nd row. Every person from 2nd row was seated exactly behind one of the person from 1st row. All 14 persons were facing in the same direction i.e. north.

• A was seated exactly behind the person, who was 2nd to the left of D.

• D was seated 3rd to the left of G.

• Neither A nor N was seated at any extreme.

• C was at a gap of 1 person from D.

• F was seated to the immediate left of C.

• F, E and H were seated at the end of the row.

• B was seated behind D. Neither B nor D was the neighbour J.

• I was the neighbour of H.

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• K was seated 2nd to the left of L and was seated behind M.

Question 1 Find the odd one out.
a) E b) F c) H d) I e) K
Question 2 Who was seated 2nd to the left of N?
a) A b) B c) D d) M e) None of these
Question 3 Who was seated exactly in the middle of the 1st row?
a) A b) C c) H d) N e) D
Question 4 How many persons were seated to the left of M (Only in the row in which M was seated)?
a) 1 b) 2 c) 3 d) 4 e) More than 4
Question 5 Who was seated 2nd to the right of J?
a) D b) F c) E d) B e) No one
Question 6 14 friends A, B, C, D, E, F, G, P, Q, R, S, T, U & V are sitting in 2 parallel rows such that each person in one row faces a person of other row. A, B, C, D, E, F & G are sitting in one row facing north while P, Q, R, S, T, U & V are sitting in row 2 facing south. No two consecutive English Alphabet appears together in a row.
B who is opposite to Q, is sitting 2nd to right of D. 2 people are sitting between S & T. F doesn't face U. Only 1 person sits towards left of R. A is adjacent to D. P is facing C who is not adjacent to G.
Who is facing the person who is sitting immediate left of B?
a) U b) S c) T d) V e) R
Question 7 Eight persons Chavi, Charu, Chirag, Chandan, Chandni, Charan, Chameli and Chaya were seated in 2 rows such that four of them were seated in row 1 facing the South and four of them were seated in row 2 facing the North. Chirag was 2nd to the right of Chameli who faced Charan. Charan's neighbour faced Chavi who was at a gap of 1 from Chandan. Chandan faced Charu. Chaya was to the immediate left of Chandni who faced South. Chandan was not neighbouring Chirag. Who was seated opposite to Chandni?
a) Chameli b) Chirag c) Chavi
d) Chandan e) Cannot be determined

Directions [8 to 12]: Eight persons are sitting in two parallel rows, four in each row. Persons sitting in one row are facing north and that of other towards south, such that each person of one row is facing the person of other row.
• M faces the person who is sitting second to right of L.
• S is sitting second to left of O.
• R is facing S, who is not sitting at any extreme ends.
• Q sits in the same row as P.
• N is facing north.
• P and M don't sit in the same row. Also, both do not face each other.

Question 8 Who is facing O?
a) N b) L c) P d) Q e) M
Question 9 What is the position of L with respect to R?
a) Immediate right b) Second to left
c) Second to right d) None of these
e) Immediate left
Question 10 Find the odd one out among the following.
a) M b) L c) O d) S e) N
Question 11 If the persons of the row, which is facing south, are arranged in alphabetical order from left end to right end (Take only this direction as per your left and right) then, who among the following will be on the extreme right of that row?
a) L b) P c) S d) Q e) O
Question 12 Who is facing the person who is to immediate right of R?
a) No one is on immediate right
b) N
c) O
d) M
e) S

Directions [13 to 16]: Eight people A,B,C,D,E,F,G,H were seated two linear rows facing each other such that 4 people were seated in each row. People in row 1 were facing north while people in row 2 were facing south. They were eating different chocolates among silk, munch, galaxy, mars, oreo, amul, bounty and Perk. Further it is known that E who ate bounty was seated at the leftmost end of row 1. D was seated opposite to the person eating Silk who was second to the right of E. C was third to the right of the person eating amul chocolate. F who was seated immediate left of the person eating perk, was seated opposite to the person eating oreo. H who was eating mars was seated in row 1 to the left of A. G was to the immediate left of the person eating munch. B and the person eating galaxy chocolate were seated in same rows.

Question 13 Which chocolate was eaten by the person seated to the immediate left of A?
a) Silk b) Mars c) Bounty
d) Oreo e) None of the above
Question 14 Who was seated opposite to the person eating galaxy chocolate?
a) H b) D c) Person eating silk
d) E e) None of the above
Question 15 Who was seated opposite to A?
a) The person eating galaxy chocolate
b) D
c) C
d) Person eating amul chocolate

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e) H

Question 16 Who among the following were seated in the same row?

I. G

II. Person eating munch chocolate

III. A

a) I only b) I and III

c) II and III d) I and II

e) All three

Directions [17 to 20]: Nine persons P, Q, R, S, T, U, V, W and X, sit in a class in two parallel linear rows having six seats each, given that each seat in one row is behind the other seat of second row. They are sitting facing towards front (or north) and each one sits on different seats and the remaining are left vacant. At least one seat in each row is vacant.

- W sits immediately behind a vacant seat.
- T is sitting at extreme right end and only one person sits between T and S.
- Immediate neighbour of W is facing S's seat.
- R doesn't sit in the same row as T but, sits to immediate right of a vacant seat.
- P sits in immediate front of U, who is sitting second to left of Q.
- V sits second to the right of the seat immediately behind X.
- No two vacant seats are placed immediately front or behind each other.

Question 17 Who sits to immediate left of V?

a) Q b) R c) S d) T e) P

Question 18 Who among the following sit/sits at the extreme left ends?

I. P II. R III. U

a) Only I b) Only II

c) Both I and II d) Both II and III

e) Both I and III

Question 19 What is the position of Q with respect to S?

a) Immediate left b) Second to left

c) Immediately behind d) Immediate right

e) Third to right

Question 20 How many seats are vacant between P and X?

a) One

b) None

c) P and X are not in the same row

d) Two

e) Cannot be determined

Directions [21 to 23]: There are ten teams A, B, C, D, E, P, Q, R, S and T, each playing a different game and each staying in a different room of a hotel. The rooms in which they are staying are in two parallel rows having five rooms in each row and each room of the first row is facing towards the east and exactly towards the other room of the second row.

- The team of chess stays in the room at the corner of the first row, and is neither T nor P.
- Two rooms are there between the rooms of hockey team and P which stays in the same row in which cricket team i.e. R is staying. P doesn't stay in a room at the corners and the hockey team lives in a room at any of the corners.
- Hockey team is not facing the chess team which is an immediate neighbour of the Ludo team.
- Tennis team stays third to the left of team B who stays fourth to the right of team A which is playing basketball.
- Cricket team stays in a room which is to the immediate right of the Ludo team.
- E faces S who doesn't play tennis. Also, Q and T live at the maximum distance.
- S and C are not the rugby teams and C stays to the right of D and in the same row as D.
- There is a football team. B is a carrom team.
- There is also a baseball team, which is not a neighbour of T.

Question 21 Find the odd one out of the following options.

a) Hockey, A b) Rugby, R

c) Ludo, E d) Chess, B

e) Tennis, S

Question 22 _____ is the football team.

a) P b) Q c) C d) S e) R

Question 23 Who among the following pairs are staying in the diagonally opposite rooms?

I. T, B II. R, P III. S, D

a) Only I b) Only II

c) Only III d) Both I and II

e) Both I and III

Directions [24 to 26]: 8 persons A, B, C, D, E, F, G and H are standing in row 1 while 8 persons P, Q, R, S, T, U, V and W are standing in row 2. Every person in row 1 is standing to the north of one of the persons from row 2. All 16 persons are facing north. In row 1, each person is wearing different shirt among Red, Blue, Yellow, Green, Black, White, Violet and Orange not necessarily in the same order. Similarly, in row 2 also, each person is wearing different shirt among Red, Blue, Yellow, Green, Black, White, Violet and Orange not necessarily in the same order.

A is standing 4th to the left of one with red shirt. The one with White shirt is standing 4th to the left of G. A and G are standing adjacent to each other. The one with Green shirt is standing at the gap of 4 persons from C, who is not standing at the end of the row. P is standing exactly behind D, who is

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wearing Black shirt. The one wearing violet shirt is standing 3rd to the right of one wearing Orange shirt in row 1. A is wearing either Violet or Orange. Q is standing 4th to the left of one with Green shirt. The one with green shirt and the one with Red shirt are standing adjacent to each other in row 2. The one with red shirt is standing 4th to the left of S. U is standing adjacent to the one wearing Blue shirt. R and T are standing at the gap of 4 persons from each other. W is not standing adjacent to one wearing green shirt. The one wearing blue shirt is standing exactly ahead of W. C is standing exactly ahead of R. B and E are standing exactly ahead of the one wearing Orange and Violet shirt respectively. Either P or Q or R is wearing violet shirt. Neither Q nor S nor T is wearing Orange shirt. The pair of persons who are standing exactly ahead-behind of each other cannot wear the shirt of the same colour. Neither R nor S are wearing black shirt.

Question 24 Who is standing exactly behind H?
I. T
II. S
III. The one wearing Black
IV. The one wearing Green
a) Only either I or II b) Only I
c) Only III d) Either III or IV
e) Either I and III or II

Question 25 Who is wearing Orange?
a) P b) W c) U d) R e) V

Question 26 For how many persons we can determine the exact positions and the colour of the shirt?
a) 14 b) 13 c) 12 d) 16 e) 10

Directions [27 to 31]: Twelve persons A, B, C, D, E, F, G, H, I, J, K and L were seated in two rows such that five of them were in row 1 and the rest were seated in row 2. The 2 rows started at an equal gap from the western side wall, thus, the five seats in row 1 were exactly in line with the first five seats of row 2. They were seated facing the North.
F was seated 3rd from one of the corners. I was to the immediate right of F. A was seated 3rd to the right of J who was seated exactly behind B. B was to the immediate right of either K or H. C was 2ndto the left of G. Number of persons seated to the left of L was same as the number of persons to the right of B and they were seated in different rows. The person seated exactly behind D was 2nd to the left of E. Number of persons seated to the left of J was equal to the number of persons to the right of H.

Question 27 Four of the following bears a similar relationship and hence form a group, who among the following is not a part of that group?
a) K b) H c) E d) C e) D

Question 28 Who among the following was seated 3rd to the left of H?
a) Nobody b) A c) J d) F e) G

Question 29 What was the position of H with respect to E?
a) Immediate left b) Immediate right
c) Second to the left d) Second to the right
e) Third to the left

Question 30 Who was seated exactly in front of L?
a) K b) H c) I d) D e) Nobody

Question 31 How many persons were seated between A and L?
a) None b) One c) Two
d) Three e) Cannot be determined

Directions [32 to 36]: 10 people A, B, C, D, E, H, I, J, K, L are sitting in two parallel rows five in each row, sitting at equal distances namely 1st row (facing towards south) and 2nd row (facing north). Each members of row 1 faces another member of row 2. They are from five different countries (two from each country) and have distinct number of books with them from 2,9,12,16,17,18,24,25,30 and 36, not necessarily in the same order. Two persons among them are from India. Also, the following is known about them. The persons from same country do not sit in the same row or opposite to each other. A who is from Germany, sits opposite to the person who has the no of books equal to the square of an even number. Person having 18 books sits second to the left of K in 1st row but is not E. B who is from Japan, sits second to the right of D. The person from Germany in 2nd row has the no of books equal to the multiple of books that the person from Nepal in the same row has. E who is in the 1st row, sits adjacent to the person who is from Nepal. J who is from Nepal, sits at a maximum possible distance in different row from H who is in the 1st row having least number of books. J and H are sitting in different rows. D who is from China, sits on the extreme left position in 2nd row and has 24 books. People from Japan have consecutive number of books but doesn't include any square number. The person having second highest number of books sits in the middle of 1st row but is not H or L. Only 1 person has odd number of books in 1st row but is not E. I who is not from Germany sits second to the left of person sitting opposite to E. C is sitting in the second row.

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Question 32 How many books does A have?
a) 25 b) 12 c) 16 d) 18 e) 24
Question 33 E belongs to which country?
a) China b) India c) Nepal
d) Germany e) Japan
Question 34 H belongs to which country?
a) China b) India c) Nepal
d) Germany e) Japan
Question 35 Who has 12 books?
a) E b) A c) C d) K e) L
Question 36 Who is sitting third to the left of person sitting opposite to I?
a) L b) H c) A d) K e) E

Directions [37 to 40]: Ten persons A, B, C, D, E, P, Q, R, S & T are sitting in 2 parallel rows. P, Q, R, S & T are sitting in one row facing north direction while A, B, C, D & E are sitting in another row facing south direction in such a way that the distance between two adjacent neighbours is constant. In giving sitting arrangement each member of row faces a member of another row. They all like different colour Brown, Black, Blue, Red, Yellow, Pink, Purple, White, Silver & Green. They were born on same date & same month of different years 1970, 1974, 1980, 1982, 1988, 1992, 1993, 1994, 1996 & 1999. Their ages were calculated on the same day & same month but in the year 2018.
Person born in the year 1974 is 3rd to left of person who is 30 years old. Person who is 30 years old is facing person whose age is a perfect square. R faces D who is adjacent to person who is 22 years old. R isn't opposite to person who like white colour. Difference in S & T's age is less than 10. One person is sitting between person who like yellow colour & person who is 25-year-old. S was born after 1990 & sits 2nd to right of T. Sum of ages of Immediate neighbours of 48-year-old person is 63 years. P sits at one of the extreme ends & like Green Colour. Person who like black colour doesn't sit at extreme ends. 26-year-old person sits adjacent to person who like silver colour. T is facing the oldest person. Person who like white colour is 3rd to right of person born in 1982. Person who like brown colour & person who like red colour are not adjacent to each other. A is neither youngest nor adjacent to E. Person who like black colour faces person whose age is half of E's age. E doesn't like Yellow Colour. 24-years-old person likes purple colour & sits immediate right of person who likes pink colour. Person who likes red colour sits opposite to the person who likes silver colour. Youngest person likes Blue colour. C's age is not a perfect square.

Question 37 Who among the following is Oldest?
a) P b) R c) E d) C e) D
Question 38 Who is facing R?
a) Person who like Red colour
b) Person who is 38 years old
c) Person who is 2nd to left of person who is 38 years old.
d) A
e) None of these
Question 39 Which of the following statements is/are correct?
i. Person born in 1970 likes black colour
ii. Person who is 30 years old sits 2nd to left of person born in 1982
iii. Person who like White colour sits at one of the extreme ends.
iv. P & Q are immediate neighbours.
a) (i) & (ii)
b) (i) & (iii)
c) (i), (ii) & (iii)
d) (i), (ii) & (iv)
e) (ii), (iii) & (iv)
Question 40 Who is sitting 2nd to right of person born in 1993?
a) A
b) R
c) Person born in 1970
d) Person who like Yellow Colour
e) None of these

ANSWER KEY

1- b	2- d	3- e	4- b	5- e	6- d	7- c	8- c	9- e
10- b	11- a	12- d	13- a	14- a	15- d	16- d	17- b	18- e
19- c	20- a	21- c	22- d	23- e	24- e	25- b	26- c	27- b
28- e	29- a	30- c	31- a	32- a	33- a	34- b	35- a	36- a
37- c	38- b	39- b	40- d					

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Question 1 to 5

A was seated exactly behind the person, who was 2nd to the left of D.
D was seated 3rd to the left of G. Neither A nor N was seated at any extreme.

			D			G
	A					

C was at a gap of 1 person from D. F was seated to the immediate left of C. F, E and H were seated at the end of the row.
So, F must be seated at the leftmost position in 1st row.
So, we get: -

F	C		D			G
E/H	A					E/H

B was seated behind D. Neither B nor D was the neighbour J.
I was the neighbour of H.

F	C		D		J	G
E	A		B		I	H

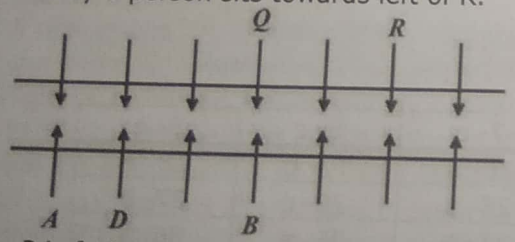
K was seated 2nd to the left of L and was seated behind M.

F	C	M	D	N	J	G
E	A	K	B	L	I	H

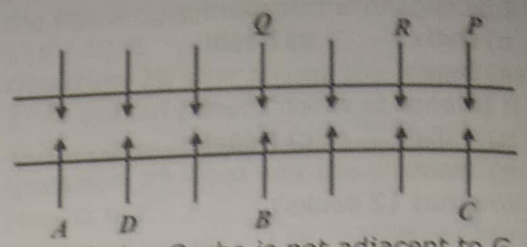
Answer 1 - E, H, I and K were seated in the 2nd row. Only, F was seated in the first row.

Question 6

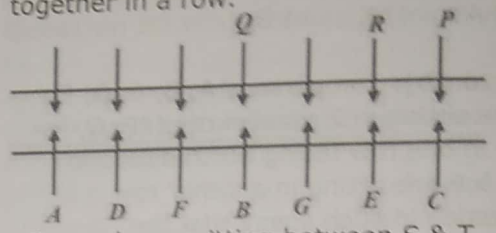
- B who is opposite to Q, is sitting 2nd to right of D.
- A is adjacent to D.
- Only 1 person sits towards left of R.



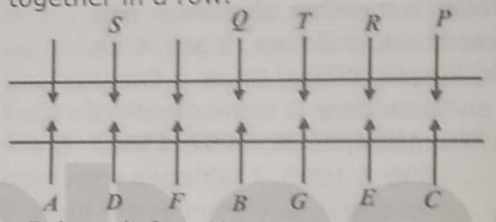
- P is facing C who is not adjacent to G.



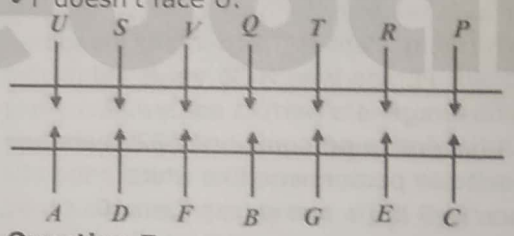
- P is facing C who is not adjacent to G.
- No two consecutive English Alphabet appears together in a row.



- 2 people are sitting between S & T .
- No two consecutive English Alphabet appears together in a row.



- F doesn't face U.



Question 7

- Chirag was 2nd to the right of Chameli who faced Charan.
- Charan's neighbour faced Chavi who was at a gap of 1 from Chandan.
- Chandan was not neighbouring Chirag

Chirag	Chavi	Chameli	Chandan
		Charan	
Chandan	Chirag	Chavi	Chameli
			Charan
Charan			
Chameli	Chavi	Chirag	Chandan
	Charan		
Chandan	Chameli	Chavi	Chirag

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Case 2 and 3 become invalid as Chandan should not be neighbouring Chirag

- Chandan faced Charu.
- Chaya was to the immediate left of Chandni who faced South.

Chirag	Chavi	Chameli	Chandan
Chaya	Chandni	Charan	Charu
Charu	Charan	Chandni	Chaya
Chandan	Chameli	Chavi	Chirag

As Chandni faced South, case 1 is invalid. The final arrangement is as follows:

Row 1 (South)	Charu	Charan	Chandni	Chaya
Row 2 (North)	Chandan	Chameli	Chavi	Chirag

Hence Chavi was opposite to Chandni

Question 8 to 12

- M faces the person who is sitting second to right of L.

We get four possibilities:

Case I:

			L	↓
	M			↑

Case II:

		L		↓
M				↑

Case III:

		M		↓
L				↑

Case IV:

			M	↓
	L			↑

Now,

- S is sitting second to left of O.
- R is facing S, who is not sitting at any extreme ends.

We get,

Case I:

O		S	L	↓
	M	R		↑

Case II:

	R	L		↓
M	S		O	↑

Case III:

	R	M		↓
L	S		O	↑

Case IV:

O		S	M	↓
	L	R		↑

It is given,

- Q sits in the same row as P.
- N is facing north.

Thus, in case I and case IV, N sits in row facing south. Hence, become invalid.

We get,

case II:

Q/P	R	L	P/Q	↓
M	S	N	O	↑

case III:

Q/P	R	M	P/Q	↓
L	S	N	O	↑

Now,

- P and M don't sit in the same row. Also, both do not face each other.

Thus, case III above is eliminated and, we get the final arrangement as follows:

Q	R	L	P	↓
M	S	N	O	↑

Answer 10 - Except 'L' all sit in same row.

Answer 11 - Q, R, L, P are facing south. When arranged alphabetically, it becomes L→P→Q→R, L been on the extreme right.

Question 13 to 16

E who ate bounty was seated at the leftmost end of row 1. D was seated opposite to the person eating Silk who was second to the right of E.

		D		ROW 2 ↓
E				ROW 1 ↑
BOUNTY		SILK		

C was third to the right of the person eating amul chocolate. This means that both were seated at the ends. This is possible as:

			AMUL	
C		D		ROW 2 ↓
E				ROW 1 ↑
BOUNTY		SILK		

F who was seated immediate left of the person eating perk, was seated opposite to the person eating oreo.

Case 1:

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C	___	PERK D	AMUL F	ROW 2 ↓
E	___	___	___	ROW 1 ↑
BOUNTY		SILK	OREO	

Case 2:

C	___	OREO D	AMUL ___	ROW 2 ↓
E	___	F	___	ROW 1 ↑
BOUNTY		SILK	PERK	

H who was eating mars was seated in row 1 to the left of A. G was to the immediate left of the person eating munch.

Case 1:

MUNCH C	GALAXY G	PERK D	AMUL F	ROW 2 ↓
E	H	B	A	ROW 1 ↑
BOUNTY	MARS	SILK	OREO	

But B and the person eating galaxy chocolate were seated in same rows. Hence this case is invalid.

Case 2:

MUNCH C	GALAXY G	OREO D	AMUL B	ROW 2 ↓
E	H	F	A	ROW 1 ↑
BOUNTY	MARS	SILK	PERK	

Question 17 to 20

It is given that,

- T is sitting at extreme right end and only one person sits between T and S.

So, T can sit on extreme right of either first row or on that of second row.

And, S sits in the same row as T.

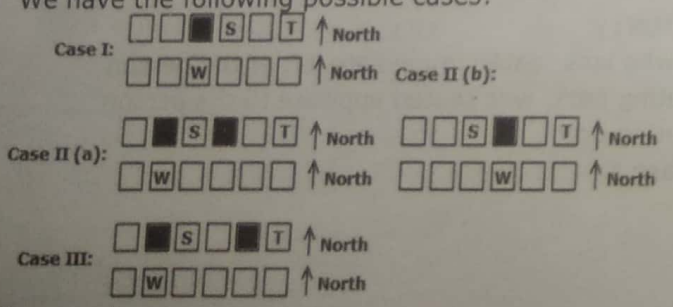
Further, we know that,

- W sits immediately behind a vacant seat.
- Immediate neighbour of W is facing S's seat.

So, W sits in row behind the front row, and S sits in the front row, hence, T also sits in the front row.

→ The vacant seats are shown by shaded portion.

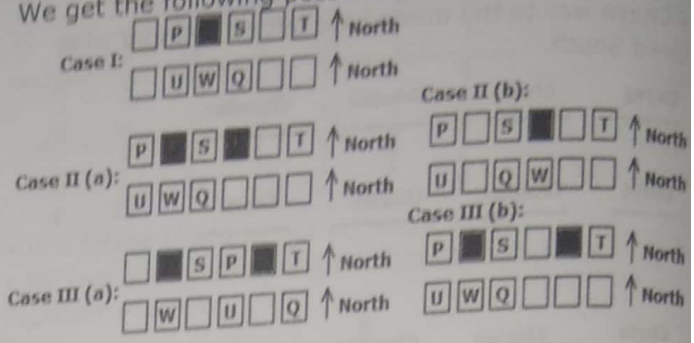
We have the following possible cases:



Now, we have,

- P sits in immediate front of U, who is sitting second to left of Q.

We get the following possibilities,



Now,

- R doesn't sit in the same row as T but, sits to immediate right of a vacant seat.

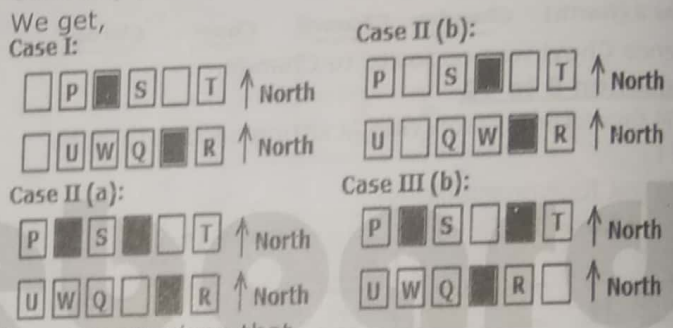
So, R doesn't sit in front row.

Also,

- No two vacant seats are placed immediately front or behind each other.

Case III(a) thus, becomes invalid.

We get,



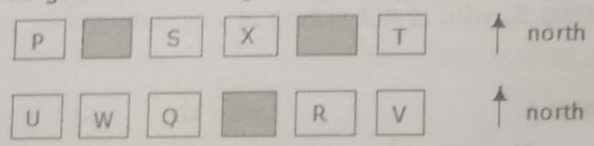
Now, we are given that,

- V sits second to the right of the seat immediately behind X.

So,

All the above cases except case III(b), becomes invalid.

We get the following final arrangement:



Question 21 to 23

The team of chess stays in the room at the corner of the first row.

Chess team is not T or P.

Also,

There are two rooms between the hockey team and the room of P.

Since, P is not at the corner and Hockey team is at the corner and not facing the chess team, we get the following cases:

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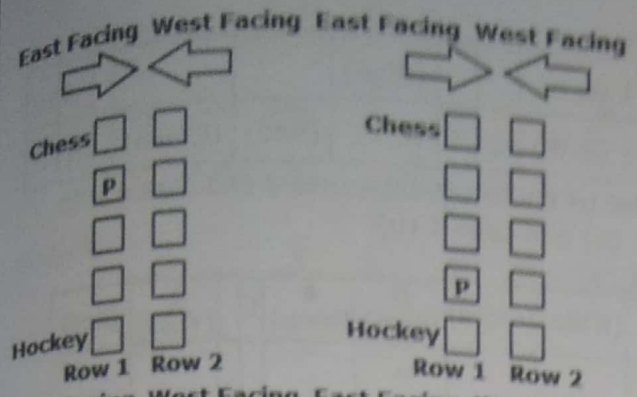
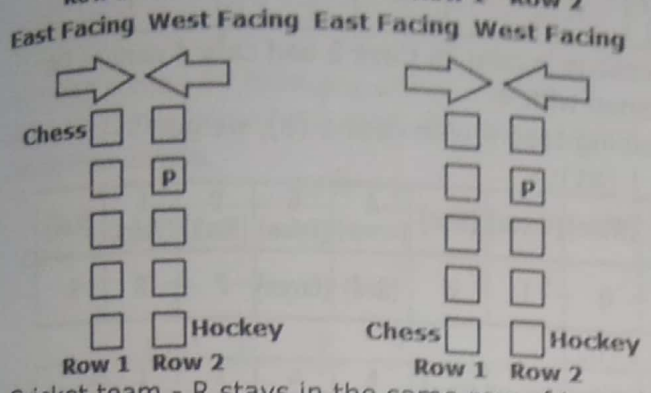




Cricket team - R stays in the same row of team P and the hockey team.

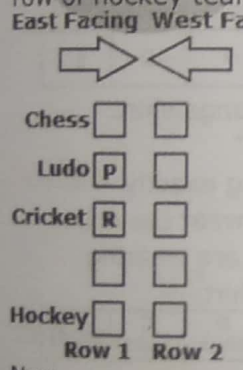
Cricket team stays to the immediate right to Ludo team.

Ludo team is an immediate neighbour of chess team.

So, only the first case is true according to the given conditions, as,

In second case P becomes the ludo team but immediate right to it is chess.

In other two cases the cricket team is not in the row of hockey team and P, hence it will be invalid.



Now,

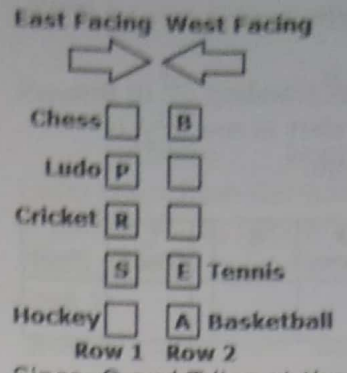
Tennis team stays third to the left of team B

Team B stays fourth to the right of team A which is of basketball.

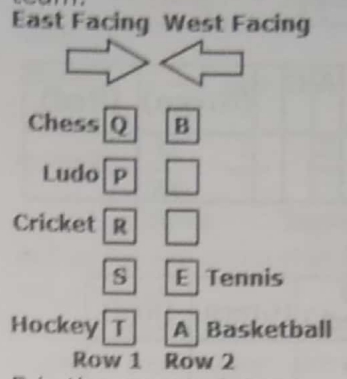
Team A cannot stay in row 1 as there will be no room fourth to right of A

So, A stays in row 2

E faces S, so S is in row 1 and E is the tennis team



Since, Q and T live at the maximum distance so, they are at the corners and T is not the team of chess so, T is the hockey team and Q is the chess team.



B is the carrom team

Now, three teams are left - Rugby, football and baseball.

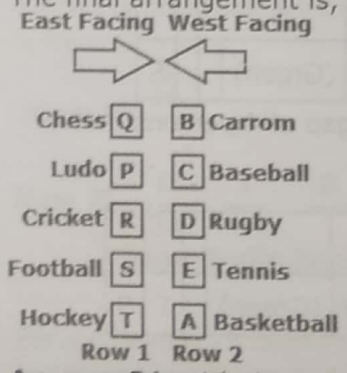
C stays in the same row as D.

C stays to the right of D and so C faces P and D faces R

C and S are not rugby teams so, D will be the rugby team

Baseball team is not a neighbour of T. So, C plays baseball and S plays football

The final arrangement is,



Answer 21 - 1st element faces the other except Ludo. Ludo doesn't face E.

Question 24 to 26

A is standing 4th to the left of one with red shirt.

The one with White shirt is standing 4th to the left of G.

A and G are standing adjacent to each other.

Case 1: -

Row 1 (A-H)	(White)			A	G			(Red)
Row 2 (P-W)								

The one with Green shirt is standing at the gap of 4 persons from C, who is not standing at the end

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of the row. P is standing exactly behind D, who is wearing Black shirt.
The one wearing violet shirt is standing 3rd to the right of one wearing Orange shirt in row 1. A is wearing either Violet or Orange.

Case 1 (a): -

Row 1 (A-H)	(White)	(Green)	D (Black)	A (Orange)	G		C (Violet)	(Red)
Row 2 (P-W)			P					

Case 1 (b): -

Row 1 (A-H)	(White)	(Green)		A (Orange)	G	D (Black)	C (Violet)	(Red)
Row 2 (P-W)						P		

Case 2 (a): -

Row 1 (A-H)	(White)	C	D (Black)	A	G		(Green)	(Red)
Row 2 (P-W)								

This case is invalid.

Case 2 (b): -

Row 1 (A-H)	(White)	C		A	G	D (Black)	(Green)	(Red)
Row 2 (P-W)						P		

This case is invalid.
Now keeping case 1 (a) and case 1 (b) as it is, let us try to arrange other elements.
Q is standing 4th to the left of one with Green shirt.
The one with green shirt and the one with Red shirt are standing adjacent to each other in row 2.
The one with red shirt is standing 4th to the left of S.

So, we get: -

Row 1 (A-H)								
Row 2 (P-W)	Q			(Red)	(Green)			S

R and T are standing at the gap of 4 persons from each other.

Case 3: -

Row 1 (A-H)								
Row 2 (P-W)	Q	R		(Red)	(Green)		T	S

Case 4: -

Row 1 (A-H)								
Row 2 (P-W)	Q	T		(Red)	(Green)		R	S

W is not standing adjacent to one wearing green shirt.
The one wearing blue shirt is standing exactly ahead of W.

Case 3: -

Row 1 (A-H)			(Blue)					
Row 2 (P-W)	Q	R	W	(Red)	(Green)		T	S

Case 4: -

Row 1 (A-H)			(Blue)					
Row 2 (P-W)	Q	T	W	(Red)	(Green)		R	S

Now, let us try to combine case 3 and case 4 with case 1 (a) and case 1 (b).

Case 1 (a): -

Row 1 (A-H)	(White)	(Green)	D (Black)	A (Orange)	G		C (Violet)	(Red)
Row 2 (P-W)			P					

This case is invalid as Case 3 and case 4 cannot be combined with it.
Combining case 4 with case 1 (b), we get: -

Case 1 (b1): -

Row 1 (A-H)	(White)	(Green)	(Blue)	A (Orange)	G (Yellow)	D (Black)	C (Violet)	(Red)
Row 2 (P-W)	Q	T	W	(Red)	(Green)	P	R	S

Case 1 (b2): -

Row 1 (A-H)	(White)	(Green)	(Blue)	A (Orange)	G (Yellow)	D (Black)	C (Violet)	(Red)
Row 2 (P-W)	Q	R	W	(Red)	(Green)	P	T	S

C is standing immediately ahead of R. So, this case is invalid.
Continuing case 1 (b1): -
B and E are standing exactly ahead of the one wearing Orange and Violet shirt respectively.
Either P or Q or R is wearing violet shirt.
Since, E is standing exactly ahead of one violet shirt. So, clearly Q is wearing violet shirt.

Row 1 (A-H)	E (White)	(Green)	(Blue)	A (Orange)	G (Yellow)	D (Black)	C (Violet)	(Red)
Row 2 (P-W)	Q (Violet)	T	W	(Red)	(Green)	P	R	S

Neither Q nor S nor T is wearing Orange shirt.
So, W is wearing Orange shirt.
The pair of persons who are standing exactly ahead-behind of each other cannot wear the shirt of the same colour. Neither R nor S are wearing black shirt. So, T is wearing black shirt.

Row 1 (A-H)	E (White)	(Green)	B (Blue)	A (Orange)	G (Yellow)	D (Black)	C (Violet)	(Red)
Row 2 (P-W)	Q (Violet)	T (Black)	W (Orange)	(Red)	(Green)	P	R	S

U is standing adjacent to the one wearing Blue shirt.

Final Solution:

Row 1 (A-H)	E (White)	F/H (Green)	B (Blue)	A (Orange)	G (Yellow)	D (Black)	C (Violet)	F/H (Red)
Row 2 (P-W)	Q (Violet)	T (Black)	W (Orange)	V (Red)	U (Green)	P (Blue)	R (White/ Yellow)	S (White/ Yellow)

Answer 26 - For 12 persons we can determine the exact position as well as the colour of the shirt.

Question 27 to 31

- A was seated 3rd to the right of J who was seated exactly behind B
- B was to the immediate right of either K or H

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Case 1
_ _ K/H B _
_ _ _ J _ _ A

Case 2
_ K/H B _ _
_ _ J _ _ A _
K/H B _ _ _

Case 3
_ J _ _ A _ _

• F was seated 3rd from one of the corners
• I was to the immediate right of F, thus, case 2 becomes invalid.

Case 1
_ _ K/H B _
_ _ _ J F I A
K/H B F I _

Case 3
_ _ J _ _ A _
K/H B _ _ _

Case 3a
_ J F I A _ _

• C was 2nd to the left of G
• Number of persons seated to the left of L was same as the number of persons to the right of B and they were seated in different rows.

Case 1
_ _ K/H B _
C L G J F I A
K/H B F I _

Case 3
C J G L A _ _
K/H B C _ G

Case 3a
_ J F I A _ _

Case 3a is invalid as L cannot be placed in it
• The person seated exactly behind D was 2nd to the left of E. Thus, case 1 is invalid.
• Number of persons seated to the left of J was equal to the number of persons to the right of H.

Row 1 K B F I D

Row 2 C J G L A H E

Answer 27 - Apart from H others were seated at the corners

Question 32 to 36

B who is from Japan, sits second to the right of D. D who is from China, sits on the extreme left position in 2nd row and has 24 books.

Row I _ _ _ _ _
Row II D(24) _ B _ _
China Japan

I who is not from Germany sits second to the left of person sitting opposite to E.
There are two cases for this:
Case 1:
Row I _ _ _ I _ ↓
Row II D(24) E B _ _ ↑
China Japan

Case 2:
Row I _ _ _ E _ ↓
Row II D(24) I B _ _ ↑
China Japan

But as we are given that E is in row 1, so Case 1 is not possible.
Moving ahead with case 2:
J who is from Nepal, sits at a maximum possible distance in a different row to H who is in the 1st row having least number of books. J and H are sitting in different rows.
C is sitting in the second row.

Row I 2 H _ _ E _ ↓
Row II D(24) I B C J ↑
China Japan Nepal

Since I is not from Germany, I is from India and C is from Germany.

Row I 2 H _ _ E _ ↓
Row II D(24) I B C J ↑
China India Japan Nepal
Germany

Person having 18 books sits second to the left of K in 1st row but is not E, from this we get the position of K and person having 18 books.

Row I 2 H _ K E 18 ↓
Row II D(24) I B C J ↑
China India Japan Nepal
Germany

People from Japan have consecutive number of books but doesn't include any square number, this implies that consecutive no of books can be

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Case 1
_ _ K/H B _
_ _ _ J _ _ A

Case 2
_ K/H B _ _
_ _ J _ _ A _

Case 3
K/H B _ _ _
_ J _ _ A _ _

- F was seated 3rd from one of the corners
- I was to the immediate right of F, thus, case 2 becomes invalid.

Case 1
_ _ K/H B _
_ _ _ J F I A

Case 3
K/H B F I _
_ _ J _ _ A _

Case 3a
K/H B _ _ _
_ J F I A _ _

- C was 2nd to the left of G
- Number of persons seated to the left of L was same as the number of persons to the right of B and they were seated in different rows.

Case 1
_ _ K/H B _
C L G J F I A

Case 3
K/H B F I _
C J G L A _ _

Case 3a
K/H B C _ G
_ J F I A _ _

Case 3a is invalid as L cannot be placed in it

- The person seated exactly behind D was 2nd to the left of E. Thus, case 1 is invalid.
- Number of persons seated to the left of J was equal to the number of persons to the right of H.

Row 1 K B F I D

Row 2 C J G L A H E

Answer 27 - Apart from H others were seated at the corners

Question 32 to 36

B who is from Japan, sits second to the right of D. D who is from China, sits on the extreme left position in 2nd row and has 24 books.

Row I _ _ _ _ _

Row II D/24 _ B _ _
China Japan

I who is not from Germany sits second to the left of person sitting opposite to E.
There are two cases for this:
Case 1:

Row I _ _ _ I _ ↓

Row II D/24 E B _ _ ↑
China Japan

Case 2:

Row I _ _ _ E _ ↓

Row II D/24 I B _ _ ↑
China Japan

But as we are given that E is in row 1, so Case 1 is not possible.
Moving ahead with case 2:
J who is from Nepal, sits at a maximum possible distance in a different row to H who is in the 1st row having least number of books. J and H are sitting in different rows.
C is sitting in the second row.

Row I 2/H _ _ E _ ↓

Row II D/24 I B C J ↑
China Japan Nepal

Since I is not from Germany, I is from India and C is from Germany.

Row I 2/H _ _ E _ ↓

Row II D/24 I B C J ↑
China India Japan Nepal
Germany

Person having 18 books sits second to the left of K in 1st row but is not E, from this we get the position of K and person having 18 books.

Row I 2/H _ K E 18 ↓

Row II D/24 I B C J ↑
China India Japan Nepal
Germany

People from Japan have consecutive number of books but doesn't include any square number, this implies that consecutive no of books can be

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16,17,18 but since it doesn't include a square so 16 is ruled out. Hence, we get the number of books for B i.e. 17. And the person having 18 books is from Japan.

					18
Row I	2 H	—	K	E	Japan
Row II	D 24	I	B 17	C	J Nepal
	China	India	Japan		

Germany

E who is in the 1st row, sits adjacent to the person who is from Nepal.
The person having second highest number of books sits in the middle of 1st row but is not H or L.

		Nepal		Japan	
					18
Row I	2 H	—	30 K	E	—
Row II	D 24	I	B 17	C	J Nepal
	China	India	Japan		

Germany

A who is from Germany, sits opposite to the person who has the no of books equal to the square of an even number.
From this we get we get the position of A and L and also the country to which A belongs. Now since D is from China so H cannot be from China and is from India. Hence E is from China.
This also implies that I has either 16 or 36 books.

	India		Nepal	China	Japan
					18
Row I	2 H	Germany A	30 K	E	L
Row II	D 24	I 16/36	B 17	C	J Nepal
	China	India	Japan		

Germany

From the statement that the person from Germany in 2nd row has the no of books equal to the multiple of books that the person from Nepal in the same row has,
we can infer that C should have 36 books which in turn implies that I has 16 books.

	India		Nepal	China	Japan
					18
Row I	2 H	Germany A	30 K	E	L
Row II	D 24	I 16	B 17	C 36	J Nepal
	China	India	Japan		

Germany

Now according to the statement, the person from Germany in 2nd row has the no of books equal to the multiple of books that the person from Nepal in the same row has, J can have either 12 or 9 books. But if he has 12 books it will contradict the statement that Only 1 person has odd number of books in 1st row but is not E. So, J has 9 books.

	India		Nepal	China	Japan
					18
Row I	2 H	Germany A	30 K	E	L
Row II	D 24	I 16	B 17	C 36	J 9 Nepal
	China	India	Japan		

Germany

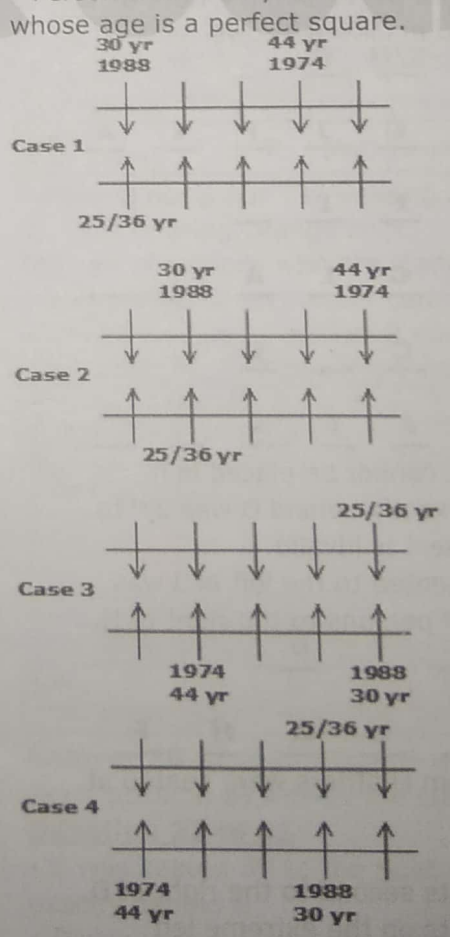
Only 1 person has odd number of books in 1st row but is not E.
So finally, we have:

		Germany			
	India		Nepal	China	Japan
	2 H	25 A	30 K	12 E	18 L
Row I					
Row II	D 24	I 16	B 17	C 36	J 9 Nepal
	China	India	Japan		

Germany

Question 37 to 40

- Person born in the year 1974 is third to left of person who is 30 years old.
- Person who is 30 years old is facing person whose age is a perfect square.



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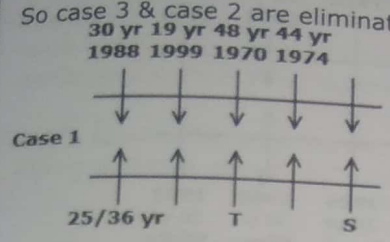
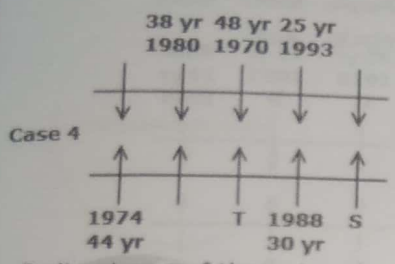
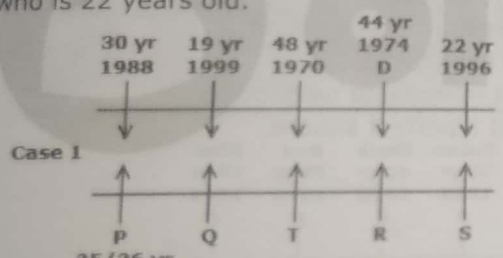
- S who was born after 1990 is sitting 2nd to right of T.
- Difference in ages of S & T is less than 10.
- T is facing the oldest person.
- Sum of ages of Immediate neighbours of person whose age is 48 is 63 years.
- P, Q, R, S & T are sitting in one row facing north direction

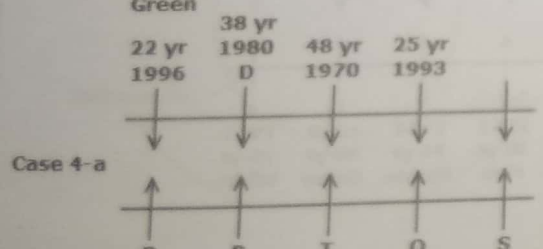
So case 3 & case 2 are eliminated.

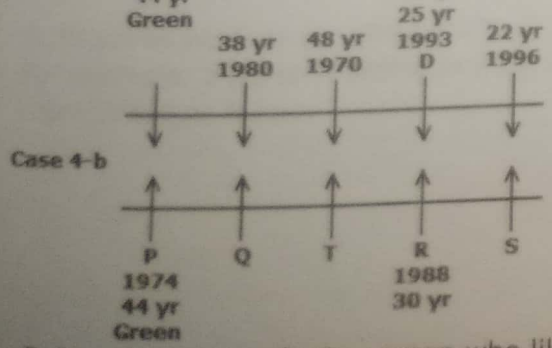




- P sits at one of the extreme ends & like Green Colour.
- R faces D who is immediate neighbour of person who is 22 years old.

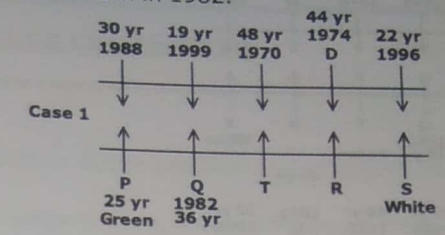


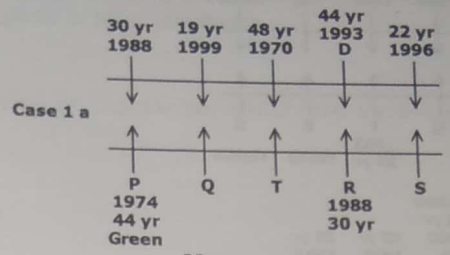


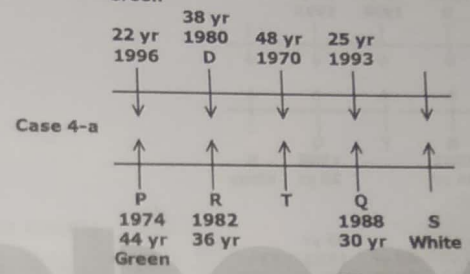


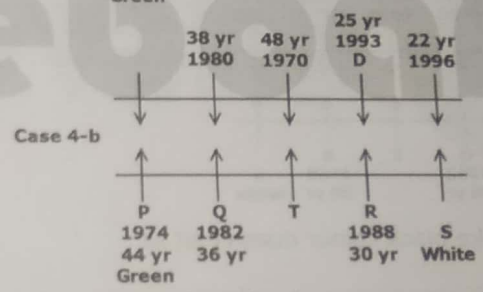
- R doesn't sit opposite to person who like white colour.

- Person who like white colour is third to right of person born in 1982.









- One person is sitting between person who like yellow colour & person who is 25-year-old.

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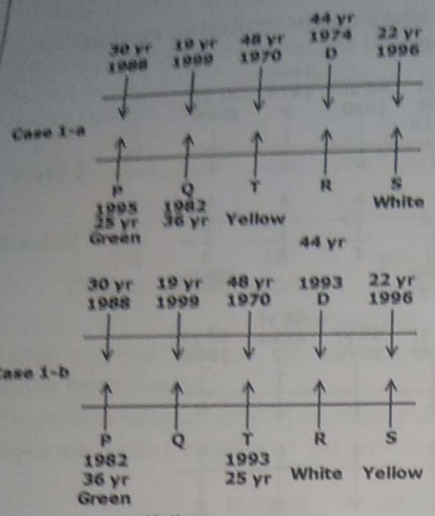
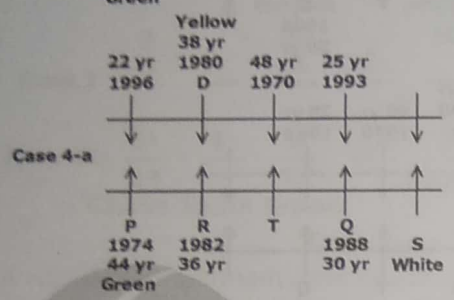
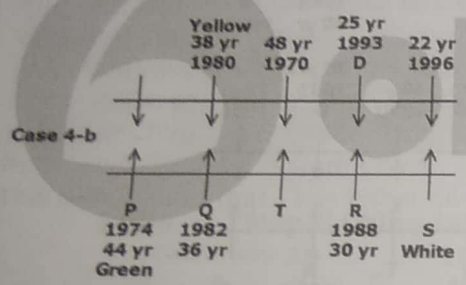
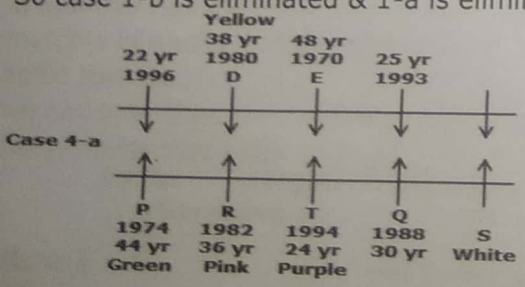


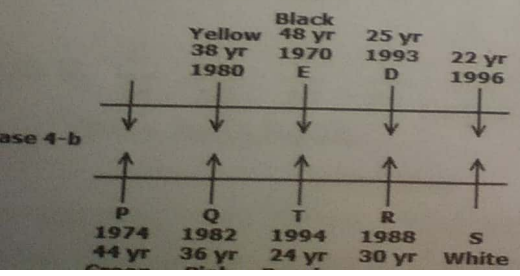




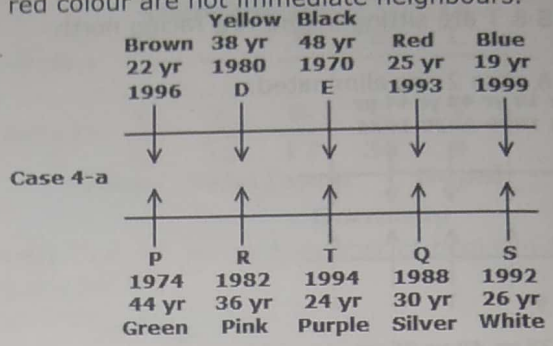
- Person who like black colour doesn't sit at extreme ends.
- Person who like black colour faces the person whose age is half of E's age.
- E doesn't like Yellow Colour.
- Person whose Age is 24 likes purple colour & sits immediate right of person who like pink colour.

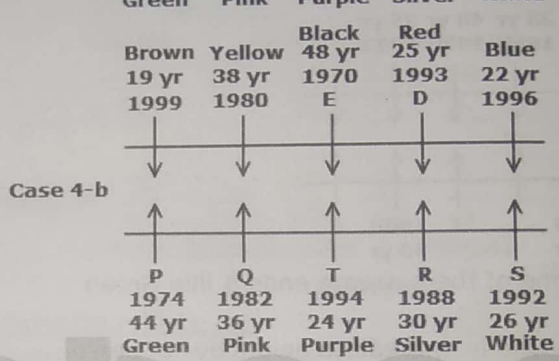
So case 1-b is eliminated & 1-a is eliminated.





- Person who like red colour sits opposite to the person who like silver colour.
- Person who is 26-year-old sits immediate right of person who like silver colour.
- Person who like brown colour & person who like red colour are not immediate neighbours.

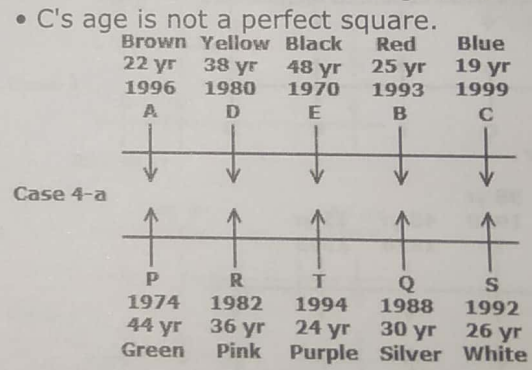




- A is not the youngest.
- Youngest person like Blue colour.

So case 4-b is eliminated.

- A & E are not immediate neighbours.
- C's age is not a perfect square.



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PART II – CLOSED FIGURE ARRANGEMENTS

CHAPTER 2.3 - CIRCULAR ARRANGEMENTS

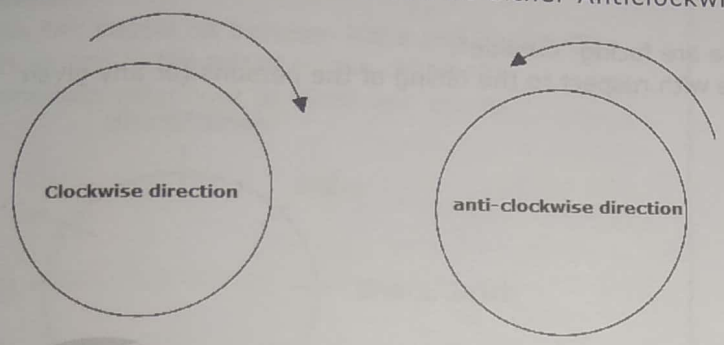
What is Circular Arrangement?

These type of arrangements are those, in which persons or other entities are arranged in a circular manner.

Here, we don't have any extreme end, thus, this is an arrangement along a closed figure. (Similar type of arrangements are along square, rectangle, etc. which are given in later chapters)

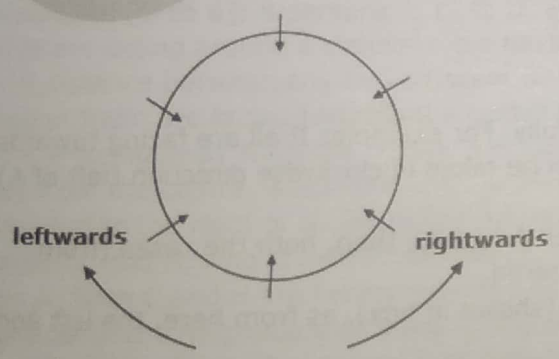
Let's learn the approach...

Along a circle, the directions can be either Anticlockwise or Clockwise, which are shown as follows:



Here comes the pattern of arrangements been asked in the exams

I. When all persons (or given entities) are facing "towards the centre of the circle" or "facing inside".
For example: 6 persons sitting in a circular manner, facing towards the centre of the circle, can be represented as follows:
(the arrow heads denote the direction of facing)



Thus, "to the right" → in anti-clockwise direction and "to the left" → in clockwise direction

II. When all persons (or given entities) are facing "away from the centre of the circle" or "facing outside".
For example: 6 persons sitting in a circular manner, facing away from the centre of the circle, can be represented as follow:

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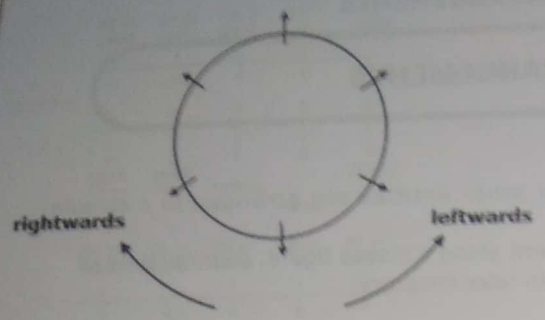
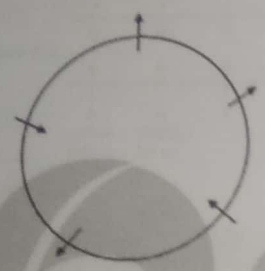


Thus, "to the right" → in clockwise direction and "to the left" → in anti-clockwise direction

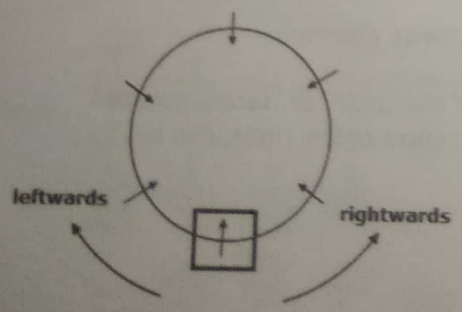
III. When some persons are facing "inside" while some are facing "outside".
In this case the rightwards and leftwards direction are with respect to the facing of the persons (or any given entity). Representation can be done as follows:
(the arrow heads denote the direction of facing)



The parameters and variables given in the questions might vary in terms of number and types. The questions might be asked with concentric circular arrangements as well, which we will learn in the chapter of Concentric arrangements later.

KEY POINTERS

- The conditions given in the questions must be comprehended carefully. For example: If all are facing towards the centre, and condition is – "second to left of person A" then, it will be taken in clockwise direction (left of A) as shown in above figures.
- If condition is given, for example – "two persons are sitting between A and B", then, both the cases (from clockwise as well as anticlockwise direction of A or B) must be considered.
- Always try to start solving the question from the following position (shown in box), as from here, the left and right directions can be easily seen, which will not create confusion.



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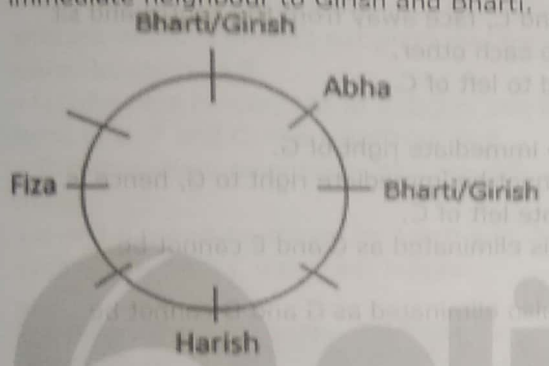
Solved Examples

TYPE 1: ALL FACING IN SAME SIDE: INSIDE OR OUTSIDE

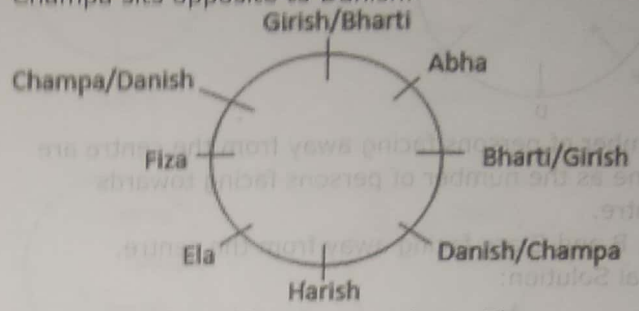
Question 1 Abha, Bharti, Champa, Danish, Ela, Fiza, Girish and Harish are sitting around a circular table facing the centre. Only two people sit between Abha and Harish. Fiza sits second to the left of Harish. Champa sits opposite to Danish. Abha sits as an immediate neighbour to Girish and Bharti. Who sits opposite to Ela?

Solution:

Only two people sit between Abha and Harish. Fiza sits second to the left of Harish. Abha sits immediate neighbour to Girish and Bharti.



Champa sits opposite to Danish.



We can see that Abha sits opposite to Ela

TYPE 1: BOTH SIDE FACING: SOME FACING INSIDE WHILE SOME OUTSIDE

Directions [2 to 6]: 8 persons A, B, C, D, E, F, G and H are sitting around a circular table having an equal distance between any two adjacent persons. Some of them are facing towards the centre while rest are facing away from the centre. A is facing away from the centre. B is sitting 2nd to the left of A and 2nd to the right of D. There are two persons between C and H, who is neither the neighbour of B nor A. Both C and H are facing towards the centre. Both the neighbours of B are facing in the same direction. (i.e. either towards or away from the centre) F is sitting to the immediate right of H and is facing towards E. Number of persons facing away from the centre are same as the number of persons facing towards centre.

Question 2 Who is standing diagonally opposite to D?

Question 3 Find the odd one out.

a) A b) B c) C d) D e) G

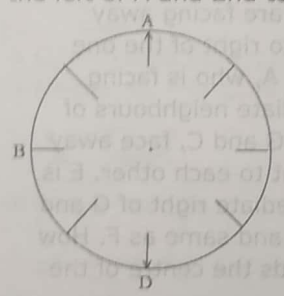
Question 4 Who is sitting 2nd to the right of H?

Question 5 What is the position of B with respect to G?

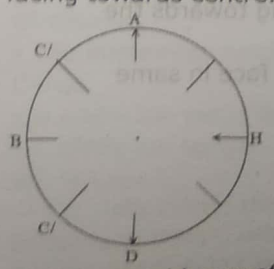
Question 6 What is the position of F with respect to C?

Solution:

A is facing away from the centre. B is sitting 2nd to the left of A and 2nd to the right of D.



C is sitting at the gap of 2 persons H, who is neither the neighbour of B nor A. Both C and H are facing towards centre.



Both the neighbours of B are facing in the same direction. (i.e. either towards or away from the centre)

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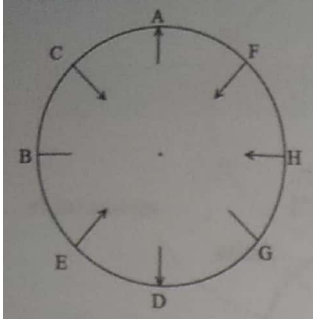
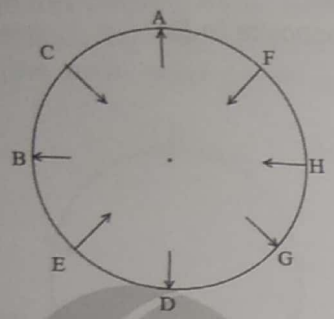
F is sitting to the immediate right of H and is facing towards E.



Number of persons facing away from the centre are same as the number of persons facing towards centre.

So, B and G are facing away from the centre.

Final Solution:



Answer 2: A is standing diagonally opposite to D.

Answer 3: Only C is facing towards centre. Rest are facing away from the centre.

Answer 4: A is sitting 2nd to the right of H.

Answer 5: B is standing 3rd to the right of G.

Answer 6: F is standing 2nd to the left of C.

Question 7 Seven persons A, B, C, D, E, F and G are sitting around a circular table. Some are facing towards the centre while some are facing away from the centre. F sits second to right of the one who is sitting immediate left to A, who is facing towards the centre. The immediate neighbours of F, face in same direction. Both G and C, face away from the centre and sit adjacent to each other. E is third to left of C. D sits to immediate right of G and faces in direction opposite to E and same as F. How many persons are facing towards the centre of the circular table?

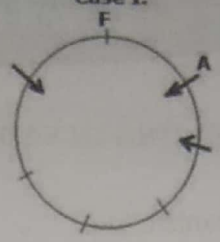
Solution:

F sits second to right of the one who is sitting immediate left to A, who is facing towards the centre.

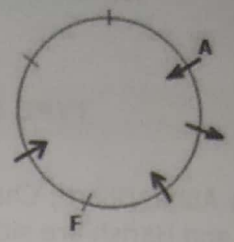
The immediate neighbours of F, face in same direction.

We get,

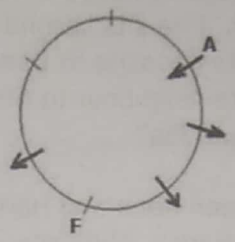
Case I:



Case II:



Case III:



Now,

- Both G and C, face away from the centre and sit adjacent to each other.
- E is third to left of C.

And,

- D sits to immediate right of G.

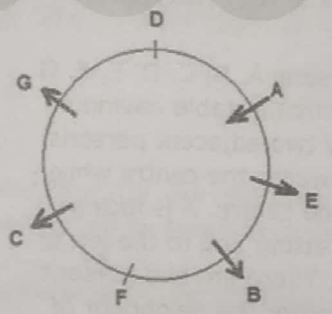
Thus, C cannot be immediate right to G, hence is to immediate left of G.

So, case I is eliminated as C and E cannot be placed.

Case II is also eliminated as G and D cannot be placed.

Thus, we get,

Case III:

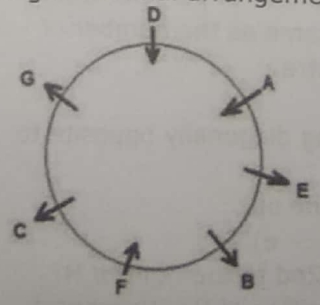


Now,

- D faces in direction opposite to E and same as F.

So, D faces towards the centre and F also faces towards the centre.

We get the final arrangement as follows:



Number of persons facing towards the centre = three = D, A and F.

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CIRCULAR ARRANGEMENT (WITH MORE THAN ONE VARIABLE)

Directions [8 to 12]: Eight persons - A, B, C, D, E, F, G and H, sat in a circular manner to have lunch. Lunch was kept at the centre of this circle. Some were sitting facing towards the centre while some away from the centre. There was pizzas, breads and burgers for lunch, and each person ate only one thing. Three persons ate burgers, two ate pizzas and the remaining ate breads.

- The ones who ate pizzas, sat together, and faced opposite sides.
- B ate pizza and E ate bread, who sat second to right of B and faced towards the centre.
- H is sitting at a position opposite to A, who faces towards the centre.
- H is the immediate neighbour of E and the one who ate pizza. H doesn't eat pizza and faces in the same direction as B.
- G, who eats burger, sits at a gap of two from F. None of G, F and C, is a neighbour of E.
- The immediate neighbours of E ate different things.
- H and A ate same things for lunch and didn't face each other. And, C didn't eat burger.

Question 8 Which among the following pairs ate pizza in lunch?

a) C, D b) A, D c) B, F
d) B, G e) A, G

Question 9 Position of C with respect to B is _____.

Question 10 How many persons are facing away from the centre?

Question 11 The person who sits at the position opposite to F, eats _____.

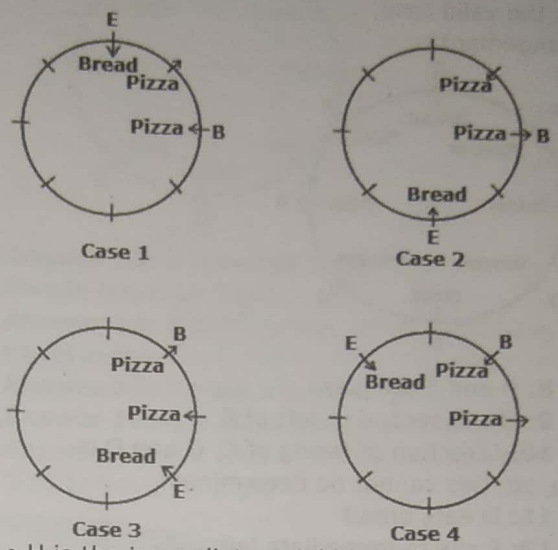
Question 12 The person sitting to immediate left of B is _____.

Solution:

Burgers - 3 persons
Bread - 3 persons
Pizza - 2 persons

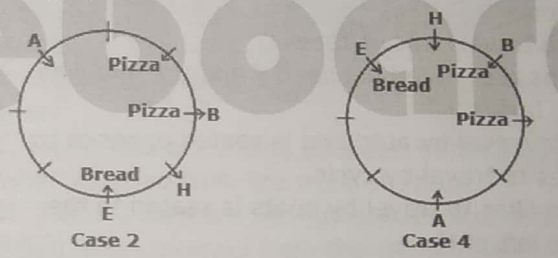
- The ones who ate pizzas, sat together, and faced in opposite sides.
- B ate pizza and E ate bread.
- E sat second to right of B and faced towards centre.

So, we get following cases:

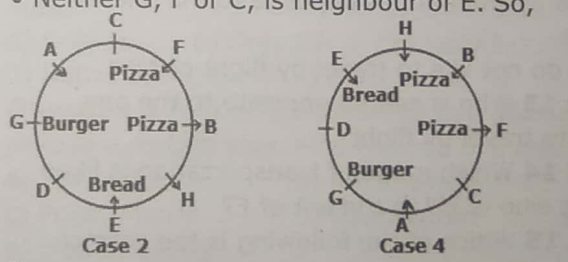


- H is the immediate neighbour of E and the one who ate pizza.
- H doesn't eat pizza and faces in same direction as B.
- H is sitting at the position opposite to A.
- A face towards centre.

So, two of the above cases 1 and 3 get eliminated. we get,



- G, who eats burger, sits at a gap of two from F.
- Neither G, F or C, is neighbour of E. So,



Now,

- H and A didn't face each other so, case 4 is eliminated.
- The immediate neighbours of E ate different things.
- H and A ate same things for lunch.
- C didn't eat burger.

So, in case 2:

→ If H eats bread, then, A eats bread and, D eats burger and then C will be left, who must eat burger, but C didn't eat burger, hence, invalid.

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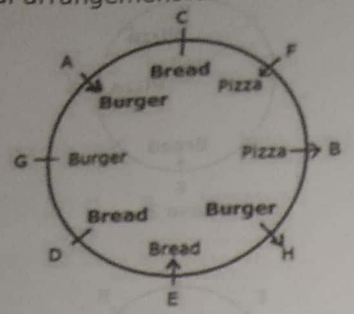
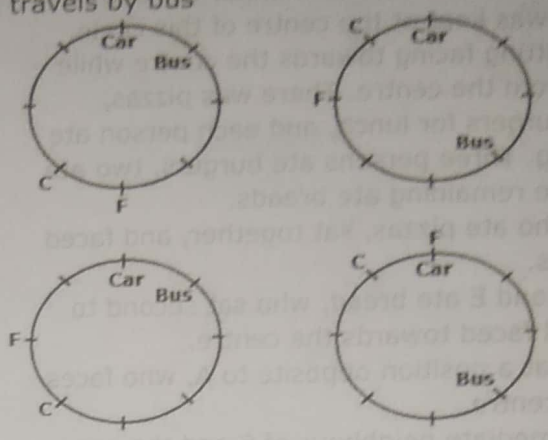
→ If H eats burger, then, A eats burger and, D eats bread and then C will be left, who must eat bread, so this is the valid case.
Final arrangement is:



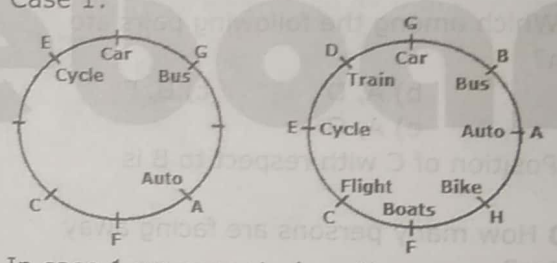
Answer 8: B and F ate pizza
Answer 9: C sits second to left of B
Answer 10: Direction of facing of C, G and D is Unknown, so, this cannot be determined
Answer 11: D eats bread
Answer 12: F sits to immediate left of B

Directions [13 to 17]: Eight persons A, B, C, D, E, F, G and H are seated around a circular table facing the centre. They like to travel via different modes of transport train, bus, cycle, flight, boat, bike, car and auto not necessarily in the same order.
• One who likes to travel by car is 2nd to the left of C's neighbour
• One who travels by bus faces C
• 2 persons are seated between F and the one who travels by bus
• A likes to travel by auto and is seated opposite to E who likes to travel by cycle.
• One who likes to travel by boats is seated to the immediate left of H
• G is 2nd to the left of E
• D travels by train and is opposite to the one who likes bikes
• C and B do not like to travel by flight or bike.

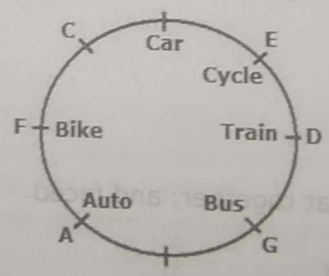
Question 13 Who is seated opposite to the one who likes to travel by flight?
Question 14 Which mode of transportation is liked by the one who is 2nd to the left of F?
Question 15 Which of the following is the correct combination of name: mode of transportation?
a) D: bus b) F: car c) H: bus
d) C: boat e) G: flight
Question 16 In which of the following groups is the 3rd person seated exactly in between the 1st and the 2nd person?
a) DFE b) BHA c) CAF
d) BDG e) GCB
Question 17 What is the position of A with respect to the one who likes to travel by flight?
Solution:
We know that:
• One who likes to travel by car is 2nd to the left of C's neighbour
• One who travels by bus faces C
• 2 persons are seated between F and the one who travels by bus



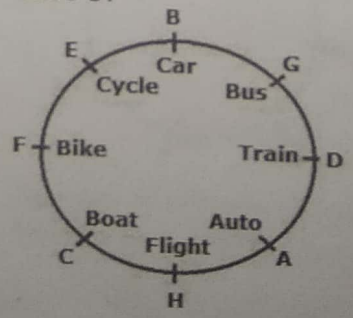
We also know that:
• A likes to travel by auto and is seated opposite to E who likes to travel by cycle.
• One who likes to travel by boats is seated to the immediate left of H
• G is 2nd to the left of E
• D travels by train and is opposite to the one who likes bikes
Taking all the cases one by one:
Case 1:



In case 1 we cannot place H as per the given conditions and in case 2 C cannot travel by flight hence the cases become invalid.
Case 2:



We cannot place H as per the given conditions hence the case becomes invalid.
Case 3:



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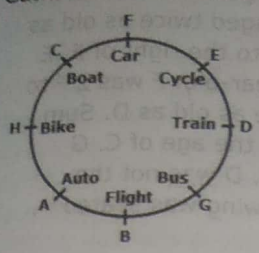
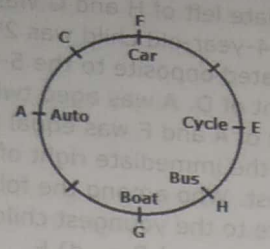
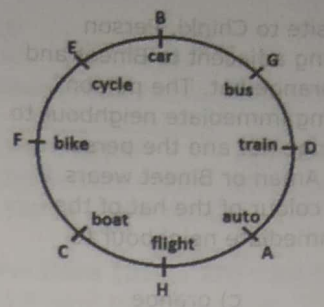
Case 4:





In scenario 1 B cannot like flight and in scenario 2 B cannot like bike, thus the cases are invalid. Hence the final arrangement is as follows:



Answer 13: B is seated opposite to the one who likes to travel by flight

Answer 14: B is 2nd to the left of F and likes to travel in car

Answer 15: C travels in boat

Answer 16: G is seated between B and D

Answer 17: A is to the immediate right of H who likes to travel by flight

Practice Yourself

Question 1 Nine persons Pooja, Payal, Prerna, Pammi, Preeti, Pushpa, Padmini, Pinki and Parul were seated around a circular table facing towards the centre. Payal was 3rd to the left of Pinki and 3rd to the right of Prerna. Pooja was neighbouring Prerna and was at a gap of 2 from Pushpa. Pammi was neighbouring Parul and Pinki. Padmini was 2nd to the left of Pammi. Pushpa was not neighbouring Pinki. Who was to the immediate left of Preeti?

a) Prerna b) Pammi c) Pushpa
d) Pooja e) Padmini

Question 2 Eight persons are sitting around a circular table facing outside. F is sitting second to the left of A. G is a neighbour of N and sitting opposite to I. L is sitting to the immediate right of E but not opposite to R. R is a neighbour of A. What is the four-letter word formed by the names of the four persons sitting to the immediate(4 neighbouring persons) left of R in the same order?

a) AGNE b) LIFE c) FANG
d) GALE e) FILE

Directions [3 to 7]: Eight friends are sitting around a circular table facing the outside of the table. Among them Arjun, Varun, Luv are males, rest are females. Kajal is sitting second to the left of Priya. The immediate neighbours of Varun are females but Priya is not one of them. Meher is sitting third to the right of Arjun. Luv is sitting to the immediate right of Shelly. Priya is not sitting to the immediate right of Rani.

Question 3 How many persons are sitting between Rani and Shelly (counting from the right of Rani)?

a) Nobody b) One c) Two
d) Three e) More than three

Question 4 Who is sitting second to the right of Luv?

a) Arjun b) Rani c) Meher
d) Varun e) None of the above

Question 5 Which of the following statements are true?

I. Two males are sitting between Varun and Kajal when counted from the right of Varun.
II. Two females are sitting between Meher and Arjun when counted from the left of Meher.
III. Both the immediate neighbours of Kajal are males.

a) Only II b) Only III c) Only I
d) Both I and III e) Both II and III

Question 6 Four of the following five pairs are alike in a certain way. Find the odd one out.

a) Luv, Arjun b) Kajal, Shelly
c) Priya, Meher d) Rani, Varun
e) Meher, Shelly

Question 7 Starting from Arjun, if all the persons are made to sit alphabetically (clockwise), then which of the following persons will not have any of his/her previous neighbours as his/her new neighbour?

a) Luv b) Shelly c) Varun
d) Meher e) Both (c) and (d)

Question 8 Aman, Bineet, Chinki, Mintu, Priti and Raman are sitting around a round table facing the centre. Six seats are kept equally spaced around the table. They were wearing red, pink, orange, green, yellow and blue hat. Raman sits opposite to

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Mintu. Bineet sits opposite to Chinki. Person wearing blue hat is sitting adjacent to Bineet and Priti. Mintu is wearing orange hat. The person wearing pink hat is sitting immediate neighbour to the person wearing orange hat and the person wearing red hat. Either Aman or Bineet wears yellow hat. What is the colour of the hat of the person who is sitting immediate neighbour to Chinki and Raman?

a) red b) pink c) orange
d) green e) yellow

Directions [9 to 13]: Six different coloured boxes are kept in a circular manner. (towards the left of the box is to be taken in clockwise direction and towards the right of the box is to be taken in anticlockwise direction). Each box contains certain number of balls.

Blue box is kept second to the right of orange box. Only one box is kept between red and black box. Green box is kept at a gap of two boxes from black box. Yellow box is not kept immediate next to blue box. Sum of number of balls in red box and the box immediate right to red box is 140. The red box contains the minimum number of balls among all boxes and starting from the left of the red box, the boxes contain balls in increasing order and in consecutive multiples of 20.

Question 9 What is the difference in number of balls in orange box and blue box?

a) 20 b) 40 c) 60
d) None of these e) 100

Question 10 How many balls does the box which is to immediate left of green box, contains?

a) 20 b) 120 c) 180 d) 100 e) 80

Question 11 Which of the following pair is pair of boxes immediate next to orange box?

a) Red, green b) Green, yellow
c) Black, green d) Yellow, black
e) Black, red

Question 12 What is the position of yellow box with respect to blue box?

a) At a gap of three boxes b) At a gap of one box
c) Third to the left d) None of these
e) Fourth to the left

Question 13 Which box contains second lowest number of balls?

a) Green b) Black c) Orange
d) Blue e) Yellow

Question 14 Eight children A, B, C, D, E, F, G and H were seated around a circular table facing the centre. They were of different age 1, 2, 3, 4, 5, 6, 7 and 8 years not necessarily in the same order. A was 3rd to the right of H who was 7 years old. G and H were born in consecutive years. B was to the immediate left of H and G was aged twice as old as B. The 4-year-old child was 2nd to the right of E. E was seated opposite to the 5-year-old. F was 2nd to the right of D. A was aged twice as old as D. Sum of ages of A and F was equal to the age of C. G was to the immediate right of E. D was not the youngest. Who among the following was seated opposite to the youngest child?

a) A b) F c) B d) E e) G

Question 15 Eight persons Raj, Rahul, Deep, Jaya, Guru, Jay, Hari and Ram are sitting around a circular table in such a way that four are facing outwards while other four are facing the center. Each belongs to different profession say CA, Doctor, Clerk, PO, Advocate, Engineer, MR and Teacher. Jaya sits third to the right of engineer, who sits second to the right of Rahul. CA sits second to the right of clerk, who sits third to the left of Deep and PO sits second to the left of Engineer. Ram who is a doctor sits third to the right of Guru who sits facing outwards. Teacher sits second to the right of engineer, who sits third to the left of Hari and PO sits facing the center. Raj who is an Advocate sits second to the left of clerk. Ram facing center sits second to the left of Jaya, who sits immediate left of Deep who sits facing outwards and Rahul sits second to the left of Guru. How many persons sit between the one who is a MR and the one who is an Advocate when counted from left of advocate?

a) 4 persons b) 2 persons c) 1 person
d) 5 persons e) 3 persons

Directions [16 to 20]: Lalit, Tripti, Karan, Piyush, Jaya, Raghav, Manu and Charu sit around a circular table, not necessarily in the same order. Four of them are facing towards the table, four of them are facing away from the table. For each pair of person sitting opposite to each other, one person faces towards the table and another person faces away from the table.

i) Jaya sits to the immediate right of Lalit and Piyush.
ii) Manu sits to the immediate right of Charu.
iii) Tripti sits at a place which is equidistant from Charu and Piyush.
iv) Karan sits third to the left of Charu. Raghav faces towards the table.
v) Piyush and Karan are facing the same direction.

Question 16 Who sits opposite to Raghav?

a) Manu b) Jaya c) Karan
d) Tripti e) Charu

Question 17 If Tripti faces away from the table, who sits to second to the right of Jaya?

a) Charu b) Karan c) Manu

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d) Lalit e) Piyush

Question 18 Who sits second to the left of Piyush?
a) Tripti b) Lalit c) Karan
d) Raghav e) Manu

Question 19 Who sits opposite to Lalit?
a) Raghav b) Karan c) Manu
d) Charu e) Tripti

Question 20 If Manu is facing away from the centre, who sits second to the right of Raghav?
a) Charu b) Karan c) Manu
d) Lalit e) Piyush

Directions [21 to 25]: Twelve persons A, B, C, D, E, F, G, H, I, J, K and L are sitting around a circular table, not necessarily in the given order. Four of them are facing towards the centre and rest others are facing away from the centre. Facing in same directions means if one faces inside or outside, other also faces inside or outside respectively. Facing in opposite directions means if one faces inside, other faces outside and, vice versa. Immediate neighbours of D face in same direction. Not more than three persons facing in same direction are sitting together. K faces away from the centre. D sits third to the right of C, who sits to immediate left of I, who faces towards the centre. E, A and K sit consecutively such that A is neighbouring both E and K, who sits second to left of C. E is second to right of B, and both face in opposite direction. J is immediate right to L, who is a neighbour of neither D nor B. H and F face in opposite directions. G, who doesn't sit next to F, is second to left of H.

Question 21 What is the position of G with respect to D?
a) Fourth to the right b) Fifth to the right
c) Seventh to the right d) Fourth to the left
e) Both (c) and (d)

Question 22 How many persons sitting between A and B if taken from right of A, are facing away from the centre?
a) 4 b) 5 c) 1 d) 3 e) None of these

Question 23 Which of the following pair is odd one out?
a) G, H b) F, D c) D, L
d) I, L e) A, K

Question 24 Who sits sixth to right of L?
a) E b) B c) None of these
d) G e) H

Question 25 Position of J with respect to D is _____.
a) Third to left b) Immediate left
c) Immediate right d) Second to the left
e) Eighth to the right

Directions (26 to 29) : Six friends A, B, C, D, E and F went to a restaurant. There was a waiting time of 15minutes. Thus, they were made to sit in a row on the sofas facing the north. After 15 minutes, they were allotted their table where they sat in a circular manner facing the centre.
- The person who was 2nd to the left of A in the sofa was seated opposite to C on the table.
- On the table, C was 2nd to the right of the one who was seated at the extreme right end of the sofa.
- B and F were neighbours in both the arrangements.
- F was 3rd to the left of E on the sofa and they were at a gap of 1 on the table.
- On the sofa, A was 2nd to the left of the one who was 2nd to the left of C on the table.
- A and D were neighbours on the table.
- The person seated opposite to F on the table was seated at either of the extreme ends on the Sofa.

Question 26 On the sofa, what was the position of B with respect to the person who was seated opposite to D on the table?
a) Immediate right b) Immediate left
c) Second to the right d) Third to the left
e) Second to the left

Question 27 On the sofa, how many persons were seated to the left of the one who was seated 2nd to the right of D on the table?
a) None b) One c) Two
d) Three e) More than three

Question 28 Who among the following were seated at the extreme ends of the sofa?
a) C, E b) D, E c) C, D
d) F, D e) F, E

Question 29 Who were the immediate neighbours of C on the table?
a) A,D b) D,E c) E,B
d) A,E e) E,F

ANSWER KEY

1- d	2- e	3- c	4- a	5- e	6- b	7- d	8- a	9- b	10- a
11- d	12- c	13- d	14- e	15- a	16- b	17- c	18- a	19- e	20- b
21- d	22- b	23- e	24- d	25- c	26- e	27- a	28- c	29- d	

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d) Lalit e) Piyush

Question 18 Who sits second to the left of Piyush?
a) Tripti b) Lalit c) Karan
d) Raghav e) Manu

Question 19 Who sits opposite to Lalit?
a) Raghav b) Karan c) Manu
d) Charu e) Tripti

Question 20 If Manu is facing away from the centre, who sits second to the right of Raghav?
a) Charu b) Karan c) Manu
d) Lalit e) Piyush

Directions [21 to 25]: Twelve persons A, B, C, D, E, F, G, H, I, J, K and L are sitting around a circular table, not necessarily in the given order. Four of them are facing towards the centre and rest others are facing away from the centre. Facing in same directions means if one faces inside or outside, other also faces inside or outside respectively. Facing in opposite directions means if one faces inside, other faces outside and, vice versa. Immediate neighbours of D face in same direction. Not more than three persons facing in same direction are sitting together. K faces away from the centre. D sits third to the right of C, who sits to immediate left of I, who faces towards the centre. E, A and K sit consecutively such that A is neighbouring both E and K, who sits second to left of C. E is second to right of B, and both face in opposite direction. J is immediate right to L, who is a neighbour of neither D nor B. H and F face in opposite directions. G, who doesn't sit next to F, is second to left of H.

Question 21 What is the position of G with respect to D?
a) Fourth to the right b) Fifth to the right
c) Seventh to the right d) Fourth to the left
e) Both (c) and (d)

Question 22 How many persons sitting between A and B if taken from right of A, are facing away from the centre?
a) 4 b) 5 c) 1 d) 3 e) None of these

Question 23 Which of the following pair is odd one out?
a) G, H b) F, D c) D, L
d) I, L e) A, K

Question 24 Who sits sixth to right of L?
a) E b) B c) None of these
d) G e) H

Question 25 Position of J with respect to D is _____.
a) Third to left b) Immediate left
c) Immediate right d) Second to the left
e) Eighth to the right

Directions (26 to 29) : Six friends A, B, C, D, E and F went to a restaurant. There was a waiting time of 15minutes. Thus, they were made to sit in a row on the sofas facing the north. After 15 minutes, they were allotted their table where they sat in a circular manner facing the centre.
- The person who was 2nd to the left of A in the sofa was seated opposite to C on the table.
- On the table, C was 2nd to the right of the one who was seated at the extreme right end of the sofa.
- B and F were neighbours in both the arrangements.
- F was 3rd to the left of E on the sofa and they were at a gap of 1 on the table.
- On the sofa, A was 2nd to the left of the one who was 2nd to the left of C on the table.
- A and D were neighbours on the table.
- The person seated opposite to F on the table was seated at either of the extreme ends on the Sofa.

Question 26 On the sofa, what was the position of B with respect to the person who was seated opposite to D on the table?
a) Immediate right b) Immediate left
c) Second to the right d) Third to the left
e) Second to the left

Question 27 On the sofa, how many persons were seated to the left of the one who was seated 2nd to the right of D on the table?
a) None b) One c) Two
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Question 28 Who among the following were seated at the extreme ends of the sofa?
a) C, E b) D, E c) C, D
d) F, D e) F, E

Question 29 Who were the immediate neighbours of C on the table?
a) A,D b) D,E c) E,B
d) A,E e) E,F

ANSWER KEY

1- d	2- e	3- c	4- a	5- e	6- b	7- d	8- a	9- b	10- a
11- d	12- c	13- d	14- e	15- a	16- b	17- c	18- a	19- e	20- b
21- d	22- b	23- e	24- d	25- c	26- e	27- a	28- c	29- d	

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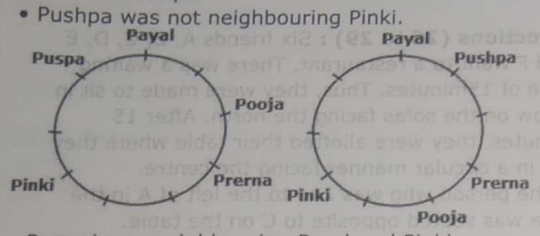
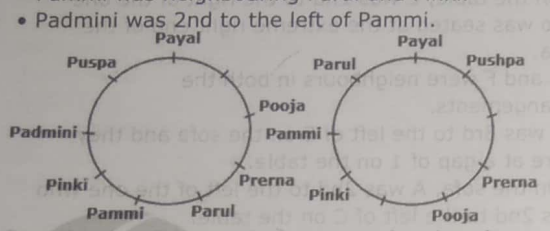
DETAILED SOLUTIONS

QUESTION 1

- Payal was 3rd to the left of Pinki and 3rd to the right of Prerna.
- Pooja was neighbouring Prerna and was at a gap of 2 from Pushpa.
- Pushpa was not neighbouring Pinki.

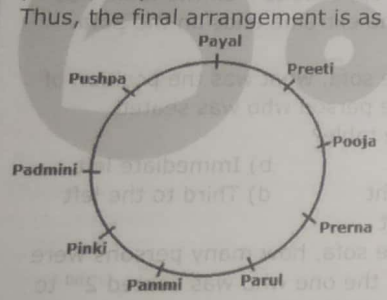


- Pammi was neighbouring Parul and Pinki.
- Padmini was 2nd to the left of Pammi.



Case 2 is invalid as Padmini cannot be placed as per the required conditions

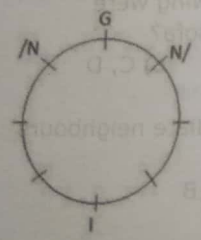
Thus, the final arrangement is as follows:



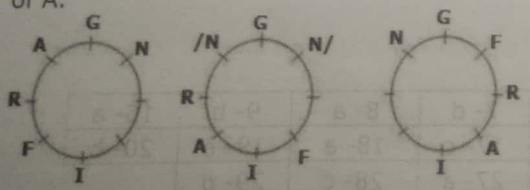
Hence, Pooja was to the immediate left of Preeti

QUESTION 2

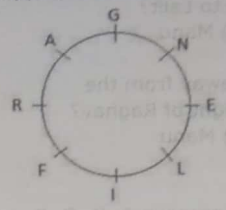
G is a neighbour of N and sitting opposite to I.



F is sitting second to the left of A. R is a neighbour of A.



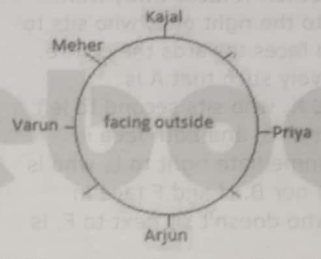
L is sitting to the immediate right of E but not opposite to R.



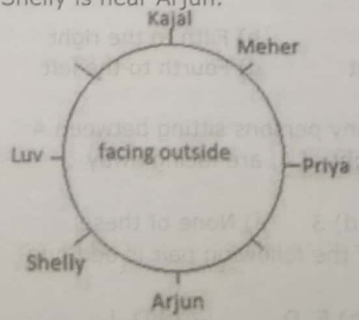
The four-letter word formed by the names of the four persons sitting to the immediate left of R is FILE.

QUESTION 3 TO 7

Kajal is sitting second to the left of Priya.
The immediate neighbours of Varun are females but Priya is not one of them.
Meher is sitting third to the right of Arjun.
Luv is sitting to the immediate right of Shelly.
Case 1: Meher is sitting to the left of Kajal.
Varun is not near Priya.



But Luv is to the immediate right of Shelly. Thus case 1 is invalid.
Case 2a: Meher is sitting to the right of Kajal.
Shelly is near Arjun.



But both the neighbours of Varun are females. Thus case 2a is invalid.
Case 2b: Meher is sitting to the right of Kajal. Luv is near Kajal.

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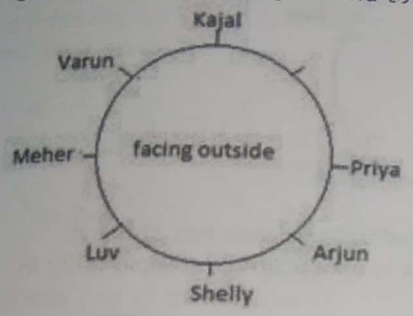
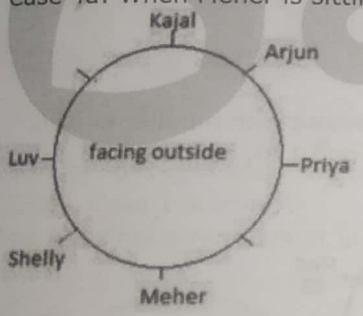
But both the neighbours of Varun are females. Thus case 2b is invalid.

Case 3: Meher is sitting second to the left of Kajal.



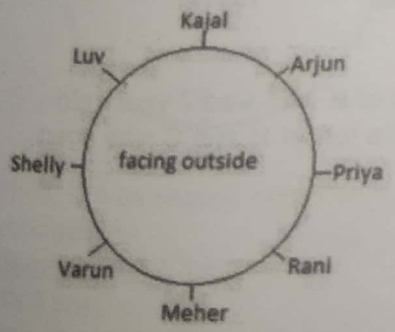
Priya is not sitting to the immediate right of Rani. Thus case 3 is invalid.

Case 4a: When Meher is sitting opposite to Kajal.



But the immediate neighbours of Varun are females and Priya is not one of them. Thus case 4a is invalid.

Case 4b: When Luv is next to Kajal.



The final arrangement is thus case 4b.

QUESTION 6

The first person sits second to the left of the second person. In (b), Kajal is sitting second to the right of Shelly.

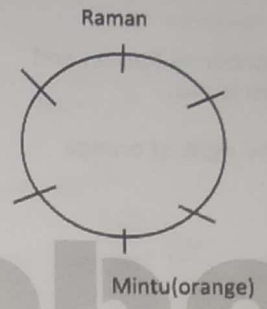
QUESTION 7

After the rearrangement:

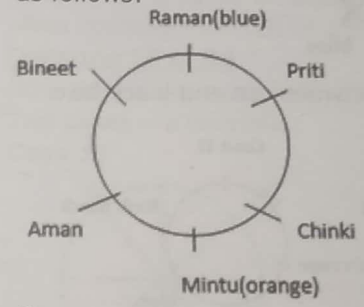
Except Meher, all other persons will have at least one of their previous neighbours as neighbour again.

QUESTION 8

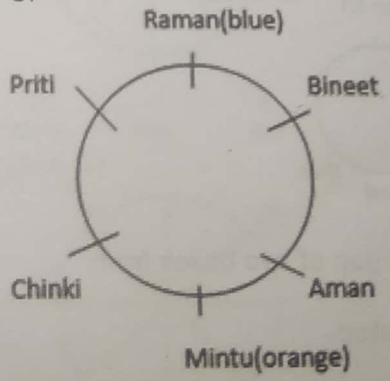
Raman sits opposite to Mintu. Mintu is wearing orange hat. This information can be arranged as follows:



Person wearing blue hat is sitting adjacent to Bineet and Priti. This information can be arranged as follows:



Or



Either Aman or Bineet wears yellow hat. The person wearing pink hat is sitting immediate neighbour to the person wearing orange hat and the person wearing red hat.

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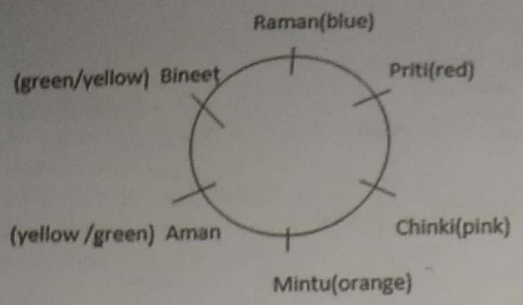
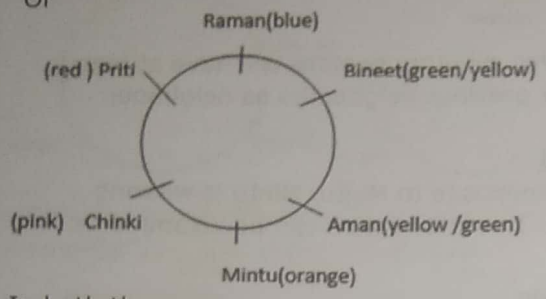


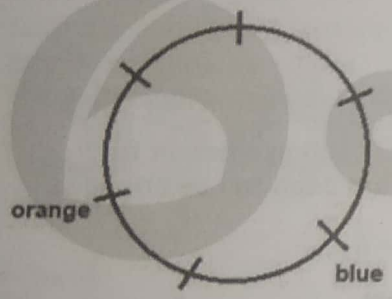
Or



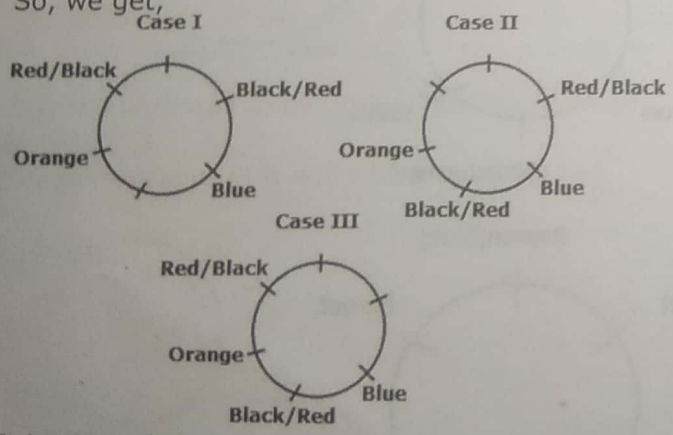
In both the cases,
Priti sits as an immediate neighbor to Raman and Chinki. Colour of the hat of Priti is red.

QUESTION 9 TO 13

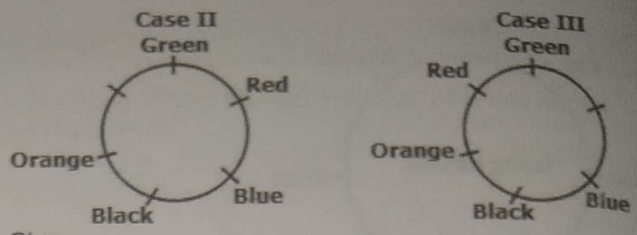
• Blue box is kept second to the right of orange box.



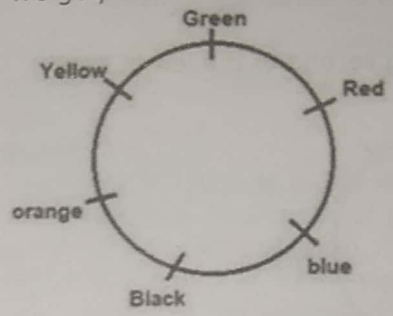
• Only one box is kept between red and black box.
So, we get,



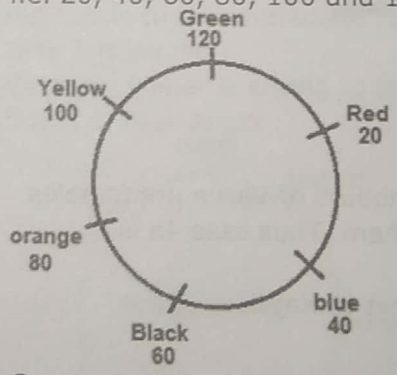
It is given that,
• Green box is kept at a gap of two boxes from black box.
Thus, case I gets eliminated.
We get,



Since,
• Yellow box is not kept immediate next to blue box.
Thus, case III shown above gets eliminated.
We get,

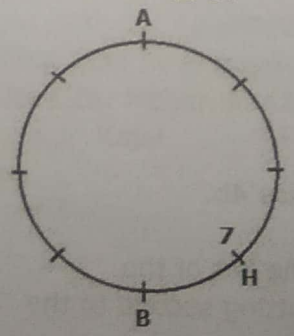


Since, the number of balls in each box starting from left of red box is consecutive multiple of 20 in increasing order.
And,
Red box has minimum number of balls - let N
Then, box to immediate right of red box has maximum number of balls - (N+20*5)
So, N + (N + 20*5) = 140
2N = 140 - 100 = 40
N = 20
We get the final arrangement with number of balls i.e. 20, 40, 60, 80, 100 and 120, as follows:



QUESTION 14

• A was 3rd to the right of H who was 7 years old.
• B was to the immediate left of H and G was aged twice as old as B.



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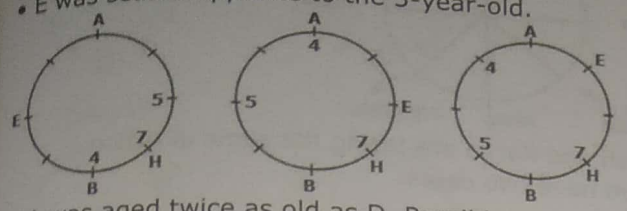
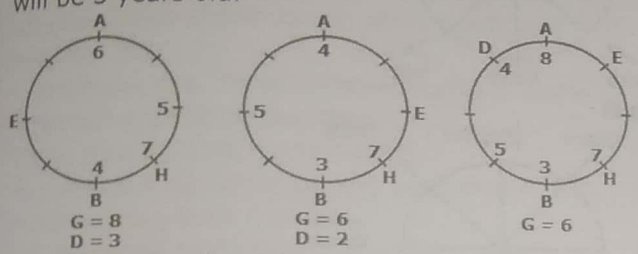
G and H were born in consecutive years; hence G could be 6 or 8 years old.

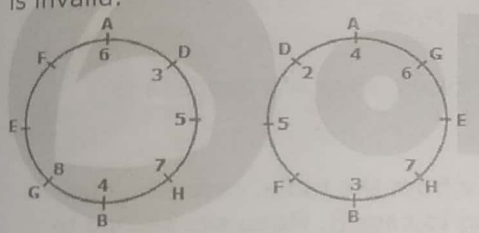
- The 4-year-old child was 2nd to the right of E.
- E was seated opposite to the 5-year-old.



- A was aged twice as old as D. Possible cases (2, 4) (3, 6) (4, 8). As D was not the youngest (1, 2) is not possible.
- G was aged twice as old as B. In case 1, G will be 8 years old. In 2 and 3, G will be 6 years old and B will be 3 years old.

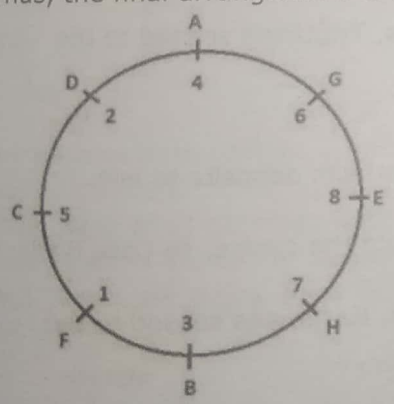


- F was 2nd to the right of D.
- G was to the immediate right of E. Thus, case 3 is invalid.



- Sum of ages of A and F was equal to the age of C. Thus, Case 1 is invalid.

Thus, the final arrangement is as follows:



Thus, G was seated opposite to F who was the youngest.

QUESTION 15

We have:

Ram is a doctor and sits third to the right of Guru who faces outwards.

Rahul sits second to the left of Guru and Ram sits second to the left of Jaya.

Jaya sits immediate left of Deep then Jaya must be facing the center.

Clerk sits third to the left of Deep and PO is facing center.

Jaya sits third to the right of Engineer and Engineer sits second to the right of Rahul.

Then Rahul must be facing center and Engineer sits third to the left of Hari.

Then Hari is a clerk facing outwards and CA sits second to the right of clerk.

PO sits second to the left of engineer then Rahul must be a PO.

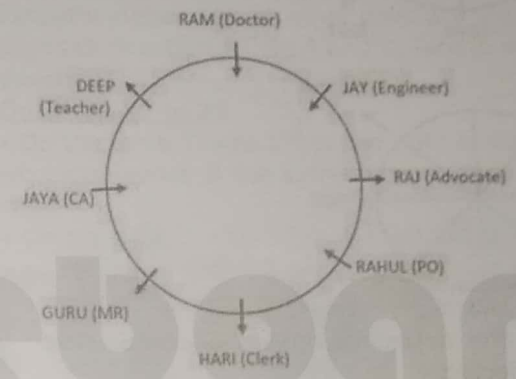
Then Deep is a teacher and Engineer must face center.

Raj who is an advocate sits second to the left of clerk.

Ram is facing center then Raj must be facing outwards.

Then Jay must be an engineer and Guru is a MR.

Based on above data we get:



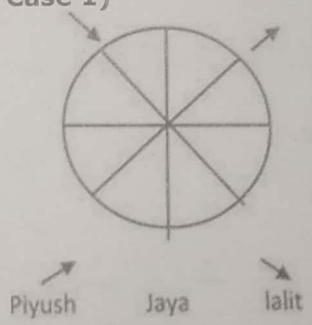
Hence, four persons sit between Advocate and MR when counted from left of advocate.

QUESTION 16 TO 20

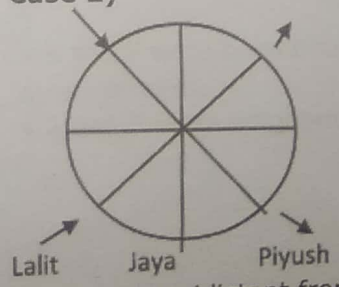
Jaya sits to the immediate right of Lalit and Piyush.

Two cases are possible

Case 1)



Case 2)



Tripti sits equidistant from Charu and Piyush. Karan sits third to the left of Charu.

Case 1a)

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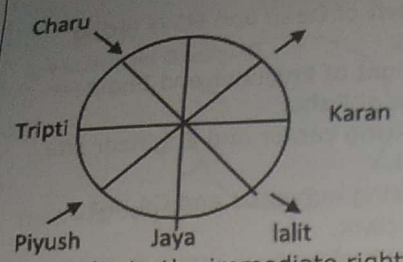
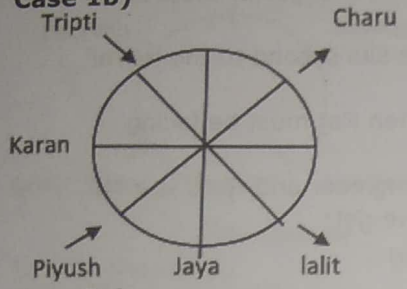
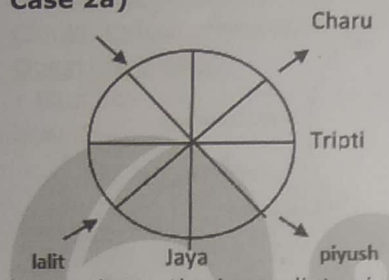


Manu sits to the immediate right of Charu. So case 1a will be rejected

Case 1b)

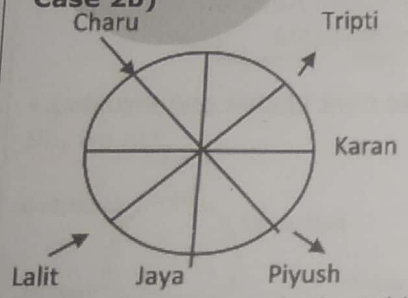


Case 2a)



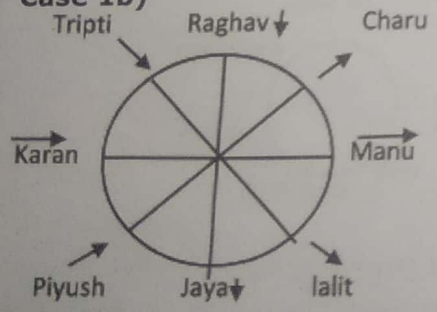
Manu sits to the immediate right of Charu. So case 2a will be rejected

Case 2b)

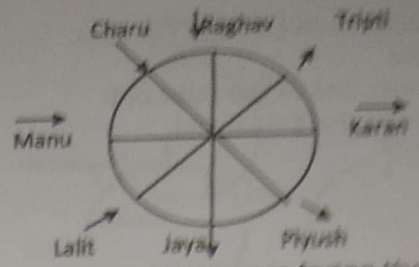


Raghav faces towards the table.

Case 1b)

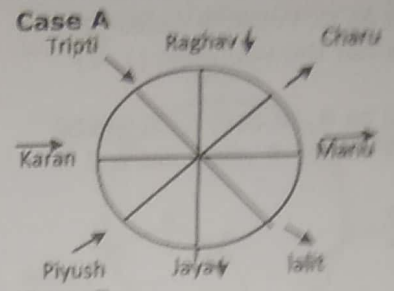


Case 2b)

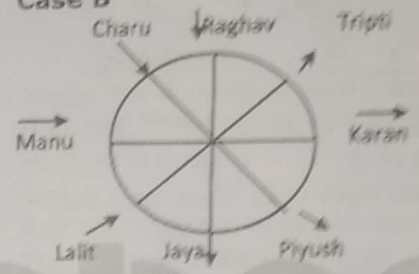


Piyush and Karna are facing the same direction. So we have two cases:

Case A



Case B



QUESTION 16

In both the above cases, Jaya sits opposite to Raghav

QUESTION 17

If Tripti faces away from the table, case A will be rejected. According to case B, Manu sits second to the right of Jaya.

QUESTION 18

We have two cases :

In both the above cases, Tripti sits second to the left of Piyush.

QUESTION 19

We have two cases :

In the either cases, Tripti sits opposite to lalit.

QUESTION 20

Manu is facing away from the centre, so Case B will be rejected.

According to the case A, Karan sits second to the right of Raghav

QUESTION21 TO 25

- Immediate neighbours of D face in same direction.
- D sits third to the right of C, who sits to immediate left of I, who faces towards the centre.
- K sits second to left of C and faces away from the centre.

We get,

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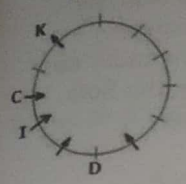
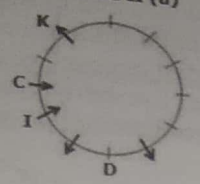
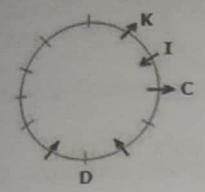
Case I (a)



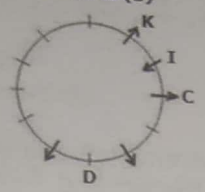
Case II (a)



Case I (b)



Case II (b)



Now,

Since, 4 are facing centre, thus, in case I(a) all others except shown facing centre, will face outside. But,

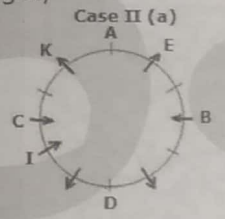
- Not more than three persons facing in same direction are sitting together.

Thus, case I(a) becomes invalid.

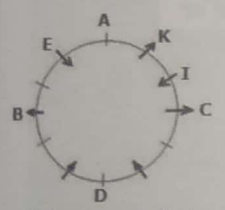
- E, A and K sit consecutively such that A is neighbouring both E and K.
- E is second to right of B, and both face in opposite direction.

Thus, we get,

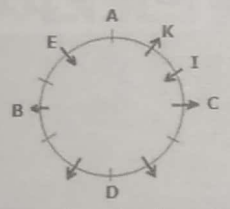
Case II (a)



Case I (b)



Case II (b)



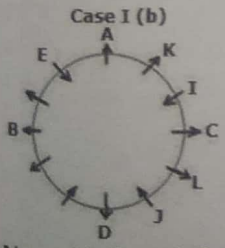
- J is immediate right to L, who is a neighbour of neither D nor B.

Thus, case II(a) becomes invalid.

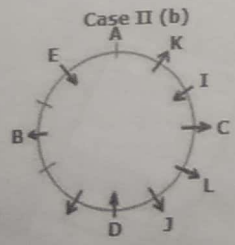
Four of them are facing towards the centre and rest others are facing away from the centre.

We get,

Case I (b)



Case II (b)



Now, H, F and G are remaining to be placed.

- H and F face in opposite directions.

In case I(b), thus, H will come next to B at either position and, F will come next to D.

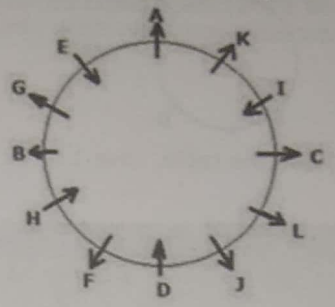
Since,

- G, who doesn't sit next to F, is second to left of H.

Thus, this case I(b) becomes invalid.

In case II(b): G will come beside B and E. H will be immediate left to B, facing inside.

We get the final arrangement as follows:



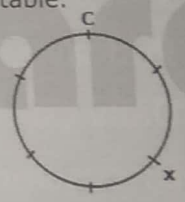
QUESTION23

Except in option (e), all other pairs are facing in opposite direction. While A and K, face in same direction.

QUESTION 26 TO 29

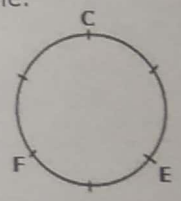
- On the table, C was 2nd to the right of the one who was seated at the extreme right end of the sofa.
- On the sofa, A was 2nd to the left of the one who was 2nd to the left of C on the table.

_ _ _ A _ x

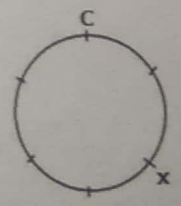


- F was 3rd to the left of E on the sofa and they were at a gap of 1 on the table.

_ _ F A _ E



_ F _ A E x



- B and F were neighbours in both the arrangements.
- A and D were neighbours on the table.

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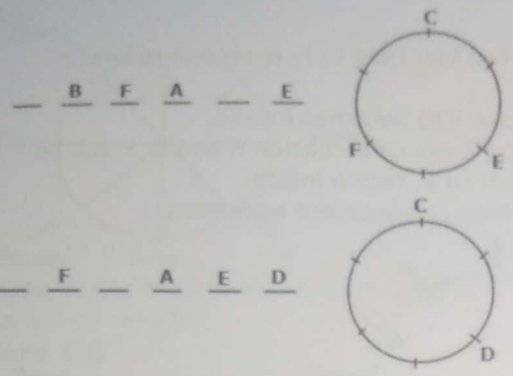
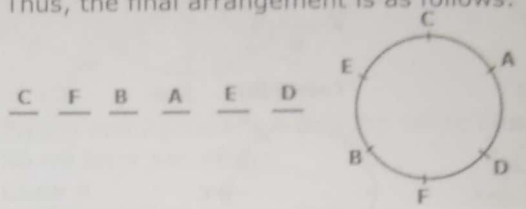


As A and D were neighbours on the table, case 1 becomes invalid.

- The person who was 2nd to the left of A in the sofa was seated opposite to C on the table.
- The person seated opposite to F on the table was seated at either of the extreme ends on the Sofa.

Thus, the final arrangement is as follows:



QUESTION27

C was at the extreme left end of the sofa hence, nobody was to the left of C.

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CHAPTER 2.4 - ARRANGEMENT IN 2-D SHAPES

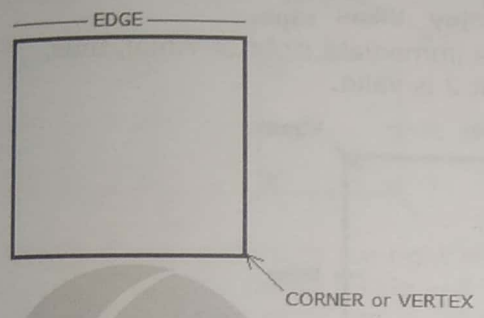
What is 2-Dimensional shapes Arrangement?

These are the arrangements done in or along the shapes such as Square, Rectangle or Triangle. Similar to circular arrangement, these also are along a closed shape and don't have any extreme ends such as in Linear arrangements.

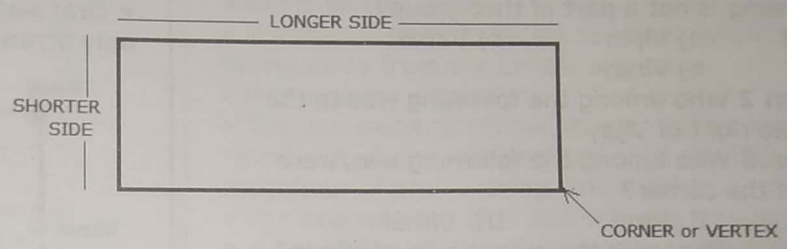
Let's learn the approach...

I. SQUARE/RECTANGLE ARRANGEMENT

Along a square we must know the difference between edges/sides and, the corners/vertex of square or rectangle. Also, in a rectangle we have longer as well as shorter sides.

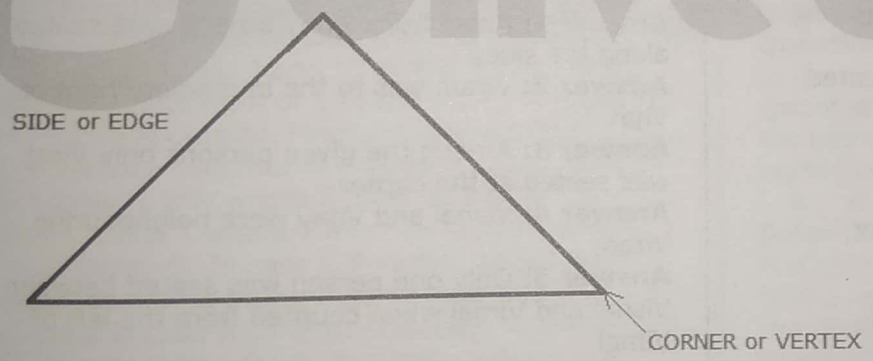


(a) Square Arrangement



(b) Rectangular Arrangement

II. TRIANGULAR ARRANGEMENT



(c) Triangular Arrangement

These arrangements can be asked as follows –

I. When all persons (or given entities) are facing in "towards the centre of the given shape" or "facing inside".

II. When all persons (or given entities) are facing in "away from the centre of the given shape" or "facing outside".

III. When some persons (or given entities) are facing in "towards the centre" or "facing inside", while some are "away from the centre" or "facing outside".

IV. When persons (or given entities) sitting at the corners/vertices are facing in one direction and, the rest at the edges are facing in another direction.

Directions (anti-clockwise and clockwise) to be taken while solving the questions, are similar to that in previous chapter (Circular arrangement).

KEY POINTERS

⇒ "Diagonally opposite" in case of square and rectangular arrangements means – both the persons or any given thing are at the corners along the diagonal of the given shape.

⇒ "sitting on the same side" means on the same edge/side of the given shape.

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Solved Examples

TYPE 1: SQUARE ARRANGEMENT

Directions [1 to 5]: Eight persons Vishal, Viraj, Viram, Vinay, Vipin, Vikas, Vimal and Vijay were seated around a square table facing the centre. There was one person at each corner and one person on each of the side.
Vijay was 2nd to the right of Vipin who was seated opposite to Vishal. Vishal was neighbouring Vinay who was seated opposite to Vikas. Viraj was to the immediate right of Vimal. Viram was at one of the corners but was not neighbouring Vipin.

Question 1 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) Vishal b) Vipin c) Vimal
d) Vijay e) Vinay

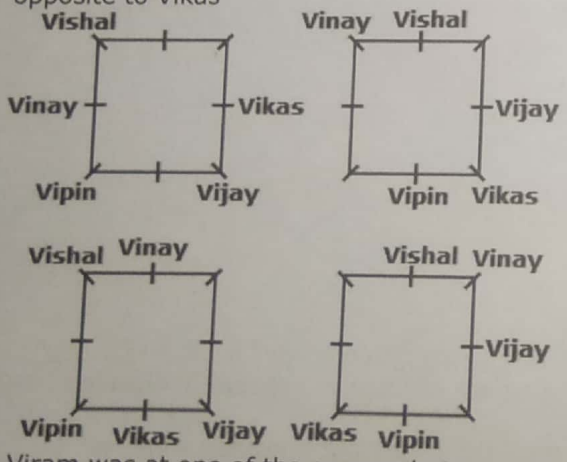
Question 2 Who among the following was to the immediate right of Vijay?

Question 3 Who among the following was/were seated at the corner?
I. Vishal II. Viraj III. Vimal

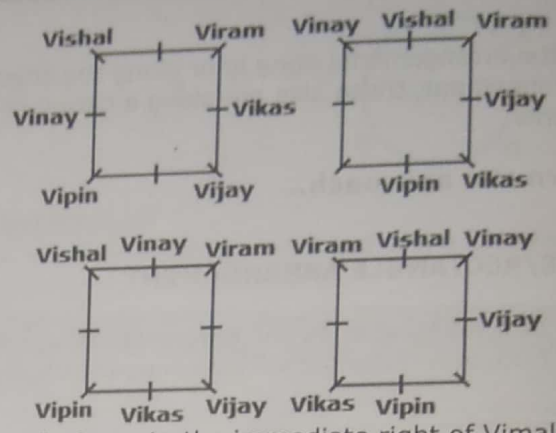
Question 4 Who were the neighbours of Viram?

Question 5 How many persons were seated between Vishal and Vimal when counted from the left of Vimal?

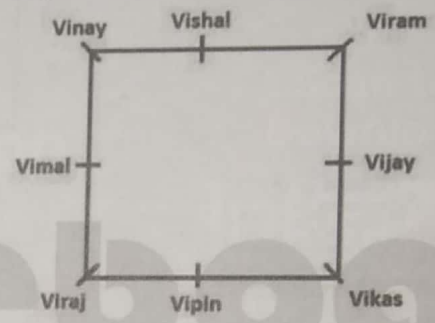
Solution:
• Vijay was 2nd to the right of Vipin who was seated opposite to Vishal
• Vishal was neighbouring Vinay who was seated opposite to Vikas



• Viram was at one of the corners but was not neighbouring Vipin.



• Viraj was to the immediate right of Vimal, thus, only arrangement 2 is valid.



Answer 1: Apart from Vinay others were seated along the sides
Answer 2: Viram was to the immediate right of Vijay
Answer 3: Among the given persons only Viraj was seated at the corner
Answer 4: Vishal and Vijay were neighbouring Viram
Answer 5: Only one person was seated between Vishal and Vimal when counted from the left of Vimal

Directions [6 to 10]: Eight people are sitting around a square table with any two neighbours having equal distances between them. Three of them are facing inside while the rest are facing outside the centre. T doesn't face Q. A is sitting third to the left of W, who is sitting at the corner of the table. E is facing exactly opposite to the direction where D is facing i.e. if E faces towards north then D must be facing towards south and if E faces towards east then D must towards west and vice versa. S is facing towards south-west direction and D is not his immediate neighbour. Immediate neighbours of F is facing S and Q. T is sitting third to the right of A. A is the immediate neighbour of S.

Question 6 Who is sitting third to the left of Q?

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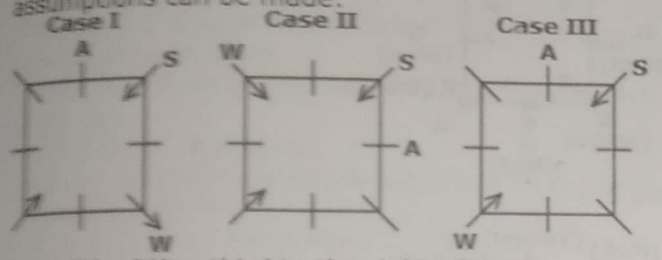
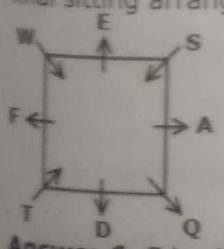
Question 7 How many person(s) are sitting between A and F?
Question 8 Who is sitting exactly between S and W?
Question 9 S is facing whom?
Question 10 Towards which direction T must be facing?
Solution:
S is facing towards south-west direction and immediate neighbors of F is facing S means S must be sitting at the corner of the table facing towards the center which is directing towards south-west and the person sitting exactly opposite to S must be facing inside. A is the immediate neighbor of S means A sits either to the immediate left or right of S. Now, A is sitting third to the left of W, who is sitting at the corner of the table means following assumptions can be made:



Now, T is sitting third to the right of A means in case I, A must be facing inside and T must sit second to the right of W and in case II and III, A must be facing outside and T must be sitting second to the right of W. Further, E is facing exactly opposite to the direction where D is facing and D is not the immediate neighbor of S means E (facing outside) must be sitting to the immediate left of S in both case I and III or E must be sitting to the immediate right of S in case II. Both E and D must be facing outside. Finally, T doesn't face Q and immediate neighbor of F faces Q and S holds true in case II only where F must be sitting between W and T where T must be facing S and W must be facing Q. In case I, F cannot sit between W and T since W is facing outside thus he won't face Q and in case III, if F sits between W and T then T will be facing Q which is false. Hence, the final sitting arrangement will be:

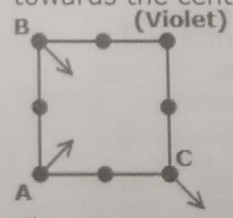


Answer 6: E is sitting third to right of Q.
Answer 7: Three persons are sitting between A and F.
Answer 8: Both E and D is sitting exactly between S and W.
Answer 9: S is facing T.
Answer 10: T is facing North-east.

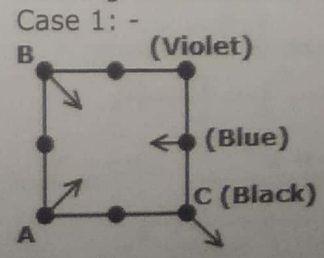
Directions [11 to 15]: 8 persons A, B, C, D, E, F, G and H are sitting around the square table. Some of them are facing towards the centre and rest are facing away from the centre. 4 persons are sitting along the side of the table and remaining 4 are sitting at the corner of the table. Each one is wearing shirt of different colours among Red, Green, Yellow, Pink, Violet, White, Black and Blue not necessarily in the same order.

- A is sitting 2nd to the right of both C and B.
- A is facing the one wearing Violet shirt, who is sitting in the corner of the square.
- Neither D nor C is facing towards the centre.
- The one wearing Blue shirt and the one wearing Black shirt are sitting to the left of each other.
- C is wearing either Blue or Black shirt.
- H is sitting opposite F, who is not the neighbour of C.
- G is wearing either Black or Blue shirt.
- D is wearing Green shirt and is sitting to the immediate left of one wearing White shirt.
- Only one person sitting in the corner is facing away from the centre.
- Number of persons facing towards centre and facing away from the centre are same.
- H is wearing either Pink or Red shirt.
- The one wearing Yellow shirt is neither the neighbour of one wearing Red shirt nor the neighbour of one wearing Green shirt.
- The one wearing Pink and the one wearing Blue are not sitting diagonally opposite to each other.

Question 11 Who is sitting 2nd to the right of the one wearing Pink shirt?
Question 12 Who is wearing white shirt?
Question 13 Who is wearing Red shirt?
Question 14 What is the position of F with respect to the one wearing Pink shirt?
Question 15 Who among the following is sitting at the gap of 1 person from G(Means there is one person between G and that person)?
I. A II. B III. F IV. H
Solution:
A is sitting 2nd to the right of both C and B. A is facing the one wearing Violet shirt, who is sitting in the corner of the square. Neither D nor C is facing towards the centre.



The one wearing Blue shirt and the one wearing Black shirt are sitting to the left of each other. C is wearing either Blue or Black shirt.
Case 1: -



Case 2: -

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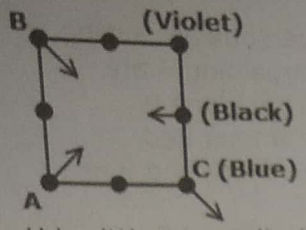
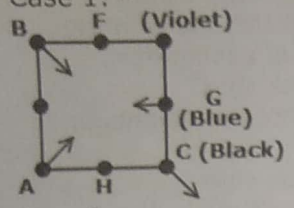
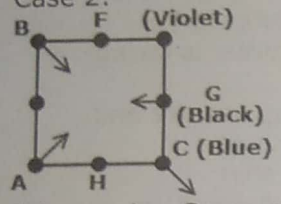


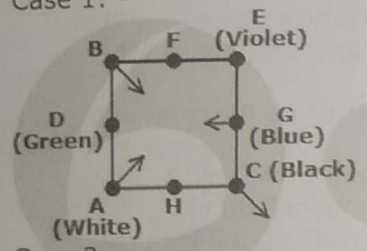
H is sitting opposite to F, who is not the neighbour of C.
G is wearing either Black or Blue shirt.
Case 1: -



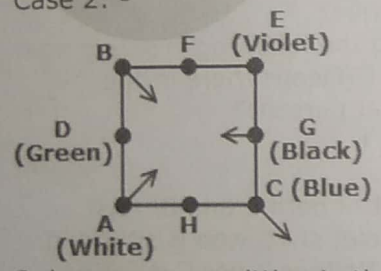
Case 2: -



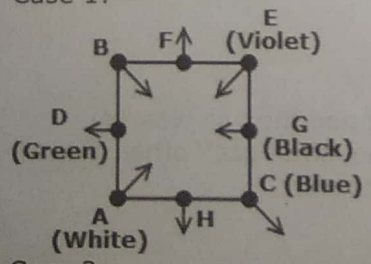
D is wearing Green shirt and is sitting to the immediate left of one wearing White shirt.
Case 1: -



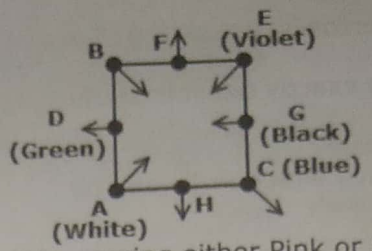
Case 2: -



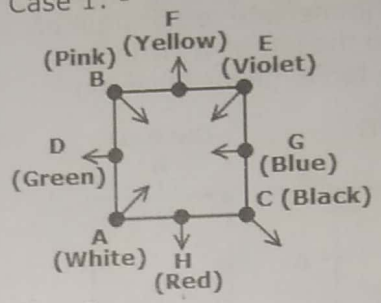
Only one person sitting in the corner is facing away from the centre.
Number of persons facing towards centre and facing away from the centre are same.
Case 1: -



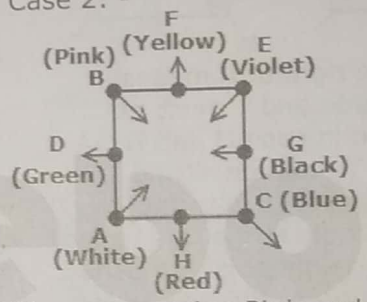
Case 2: -



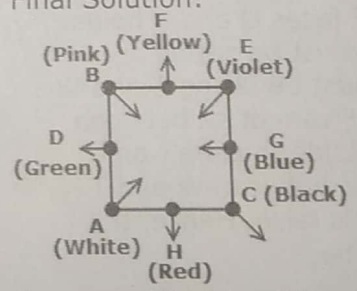
H is wearing either Pink or Red shirt.
The one wearing Yellow shirt is neither the neighbour of one wearing Red shirt nor the neighbour of one wearing Green shirt.
So, F is wearing Yellow shirt.
So, H is wearing Red shirt.
Case 1: -



Case 2: -



The one wearing Pink and the one wearing Blue are not sitting diagonally opposite to each other.
So, case 2 is invalid.
Final Solution:



Answer 11: A is sitting 2nd to the right of one wearing Pink.
Answer 12: A is wearing White shirt.
Answer 13: H is wearing Red shirt.
Answer 14: F is sitting to the immediate left of one wearing Pink shirt.
Answer 15: Both, F and H are sitting at the gap of 1 person form G.

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TYPE 2: RECTANGULAR ARRANGEMENT

Directions [16 to 19]: 8 Friends A, B, C, D, E, F, G & H sit around a rectangular table with 3 people on each longer side & 1 person on each shorter side. Some faces towards the centre while others outside. They all play different games viz. cricket, football, badminton, chess, tennis, squash, carrom & basketball. All people on one side doesn't face same direction.

- C sits 3rd to right of person who plays basketball.
- Both immediate neighbour of person who plays cricket faces opposite directions
- Person who sits third to right of E plays Tennis.
- Person who plays chess & person who plays Squash sits on same side but are not immediate neighbours
- Both A & E are not adjacent to C but have 3 people between them.
- There are three people between D & person who plays cricket.
- G & F faces each other.
- Person who likes carrom is not G but faces towards the centre.
- H faces outside the centre.
- Person who plays basketball doesn't sit at longer side.
- C plays neither Chess nor squash.
- Person who plays football sits 2nd to left of A who faces outside the centre.
- D sits to immediate right of C.

Question 16 Person playing Squash is facing _____ the centre while person playing basketball is facing _____ the centre.

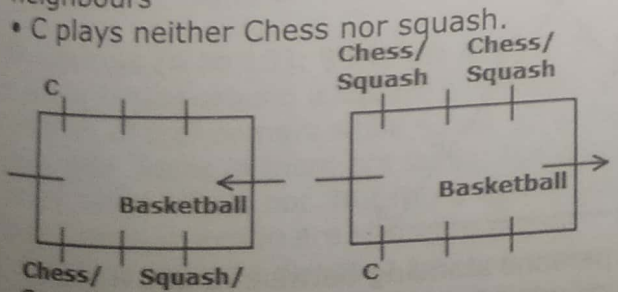
Question 17 Who among the following plays Basket Ball?

Question 18 Who sits to immediate left of the person who play squash?

Question 19 How many people sits between A & H when counted toward right of A?

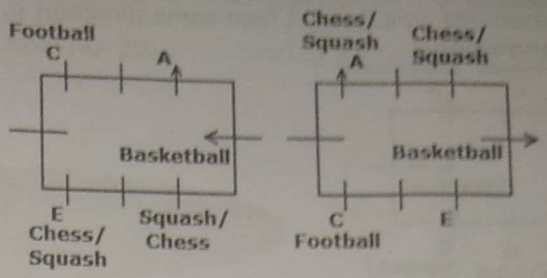
Solution:

- Person who plays basketball doesn't sit at longer side.
- C sits 3rd to right of person who plays basketball.
- Person who plays chess & person who plays Squash sits on same side but are not immediate neighbours
- C plays neither Chess nor squash.



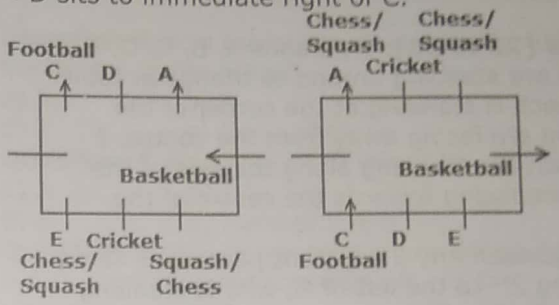
Case 1 Case 2

- Both A & E are not adjacent to C but have 3 people between them.
- Person who plays football sits 2nd to left of A who faces outside the centre.



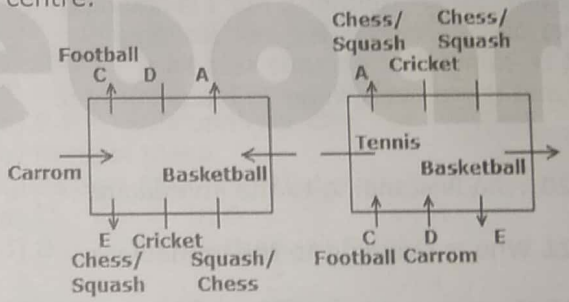
Case 1 Case 2

- There are three people between D & person who plays cricket.
- D sits to immediate right of C.



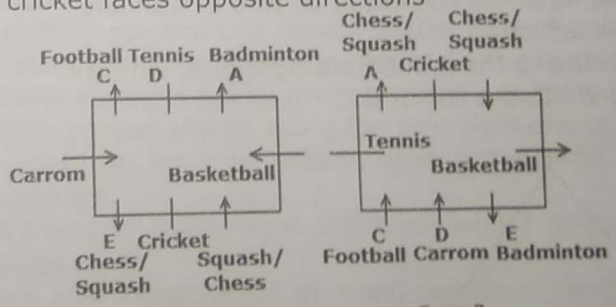
Case 1 Case 2

- Person who sits third to right of E plays Tennis.
- Person who likes carrom faces towards the centre.



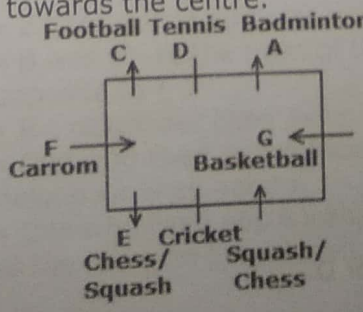
Case 1 Case 2

- Both immediate neighbour of person who plays cricket faces opposite directions



Case 1 Case 2

- G & F faces each other.
- Person who likes carrom is not G but faces towards the centre.



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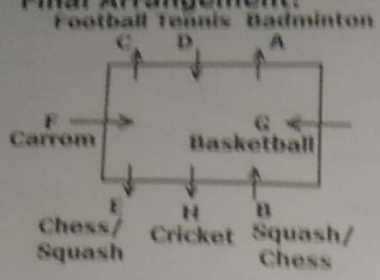
Case 2 is eliminated because G & F face each other but no such place available there

- H faces outside the centre.
- All people on one side doesn't face same direction

Final Arrangement:



Answer 16: Person playing Squash faces Either towards or Outside the centre, person playing basketball faces Towards the centre

Answer 17: G plays Basketball

Answer 18: Either E or B plays Squash & H sits to immediate left of both E & B

Answer 19: 2 people sits between A & H when counted towards right of A.

TYPE 3: TRIANGULAR ARRANGEMENT

Directions [20 to 22]: 9 persons A, B, C, D, E, F, G, H and J are standing around to triangular table. 1 person each is standing at the corner of the triangle and are facing away from the centre. 2 persons each are standing along the side of the table and are facing towards the centre of the triangle.

Distance between Any 2 adjacent persons is same. A is standing 2nd to the left of G, who is standing 2nd to the left of A. G is standing to the immediate right of F, who is standing 2nd to the left of B. C is standing 2nd to the left of D. Neither C nor D is standing at the corner. Neither E nor J is standing at the corner of the triangle. E is not standing adjacent to H. Number of persons standing between G and H are even when counted from the left of H.

Question 20 Who is standing to the immediate right of A?

Question 21 Who is standing to the immediate right of D?

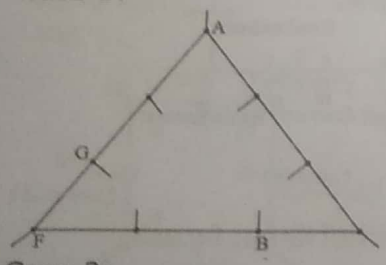
Question 22 Who is standing 2nd to the right of G?

Solution:

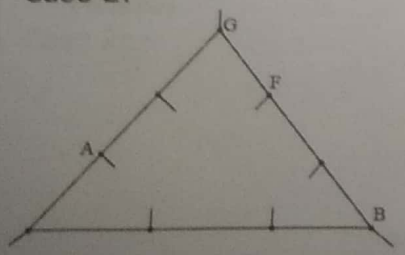
A is standing 2nd to the left of G, who is standing 2nd to the left of A.

G is standing to the immediate right of F, who is standing 2nd to the left of B.

Case 1: -



Case 2: -

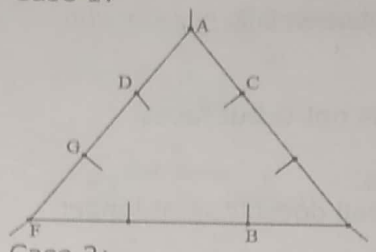


C is standing 2nd to the left of D.

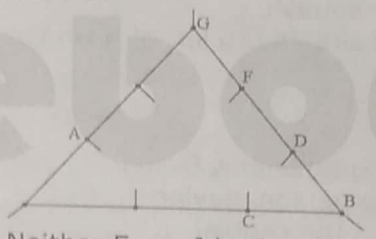
Neither C nor D is standing at the corner.

So, we get: -

Case 1: -



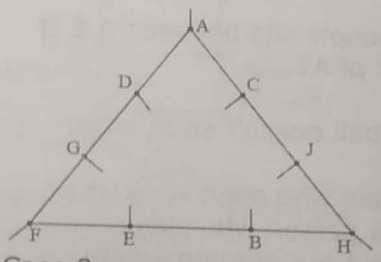
Case 2: -



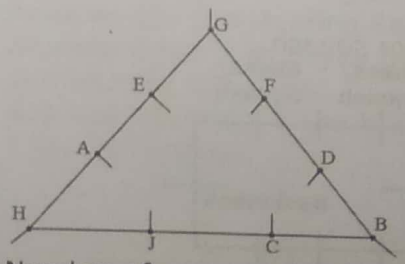
Neither E nor J is standing at the corner of the triangle.

E is not standing adjacent to H.

Case 1: -



Case 2: -



Number of persons standing between G and H are even when counted from the left of H.

So, case 2 is invalid.

Final Solution:

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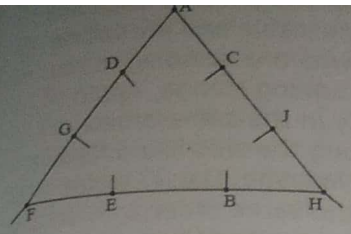

Answer 20: C is standing to the immediate right of A.
Answer 21: G is standing to the immediate right of D.
Answer 22: E is standing 2nd to the right of G.

Practice Yourself

Directions [1 to 5]: Six musicians A, B, C, D, E, F were sitting around a rectangular carpet facing inside such that 2 people were sitting on each longer edge and 1 person each on the shorter side. They were playing different musical instruments among Flute, violin, tabla, sitar, piano and bongo such that each of them was playing a different musical instrument from the rest. E was sitting second to the left of tabla player while F was sitting opposite to C. A played violin and was to the immediate left of C.E was not sitting on the longer side. The one who played flute which was not C, was sitting immediate left of the person sitting opposite to the piano player. The sitar player was to the immediate right of B.Only two players were seated between the bongo player and F.

Question 1 Who was the bongo player?
a) B b) C c) E
d) D e) Cannot be determined

Question 2 Who was sitting third to the right of Sitar player?
a) C b) D c) F d) A e) B

Question 3 Who among the following was seated on the shorter side of the carpet?
a) B b) D c) C d) F e) A

Question 4 Which instrument was played by the person who was 4th to the left of the person sitting opposite to D?
a) Sitar b) Tabla c) Violin
d) Flute e) Piano

Question 5 Which pair among the following is odd from the rest?
a) B, C b) Violin, F c) Bongo, E
d) Tabla, D e) A, B

Directions [6 to 10]: 8 friends A, B, C, D, E, F, G & H are sitting around a square table such that 4 of them sit at four corners while 4 four sit at centre of each side. Some of them are facing towards the centre while others not. Not more than 3 person facing same direction are sitting together.
D & G face opposite direction i.e. one person is facing inside and other is facing outside. Neither B nor G is adjacent to C. A faces outside the centre of table. A is neither adjacent to D nor H. H is not 3rd to left of A. C is 2nd to left of D. F who faces inside the centre, doesn't sit at any corner. G sits 2nd to right of B who is neighbour of D. H & E faces same direction. H is immediate right of C. Neither H nor E is adjacent to D.

Question 6 How many people are facing towards the centre of the table?
a) 3 b) 4 c) 5
d) 2 e) None of these

Question 7 Who sits 2nd to left of F?
a) A b) D c) E
d) B e) None of these

Question 8 How many people are sitting between F & G when counted towards left of F?
a) None b) 1 c) 2
d) 3 e) More than 3

Question 9 Which of the following statement is true?
a) E faces towards the centre of the table
b) B is 2nd to left of G
c) A and C are facing each other
d) E & A faces opposite direction
e) None of these

Question 10 F is immediate left of _____
a) C b) D c) H
d) B e) Both (a) & (b)

Directions [11 to 15]: Eight persons A, B, D, F, K, L, R and Z were seated around a square table facing the centre. There was one person seated at each corner and one person seated at each side. Each person seated at the corner liked one of the fruits amongst apple, grapes, peach and banana. Each person seated along the side liked one of the vegetables amongst potato, peas, tomato and cabbage.

- F was 3rd to the right of the one whose neighbour liked apple.
- K was 3rd to the left of A and neither of them was neighbouring F.
- One who liked banana was 3rd to the right of L.
- L faced the one who liked cabbage.
- Z liked a fruit and was neighbouring D.
- B was 2nd to the right of the one who was seated opposite to K.
- R's neighbour liked peas.
- One who liked peach faced the one whose neighbour liked potato.
- One who liked apple was to the immediate right of the one who liked tomato.

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Question 11 Who among the following was 2nd to the right of the one who liked grapes?
a) Z b) D c) F d) R e) A

Question 12 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) L b) K c) D d) B e) R

Question 13 Which of the following fruit/vegetable was liked by the one who was seated opposite to R?
a) Peach b) Potato c) Apple
d) Banana e) Tomato

Question 14 In which of the following groups is the 3rd person seated exactly in between (neighbouring) the 1st and the 2nd person?
a) FAD b) AZD c) ZRB
d) RBK e) BLA

Question 15 Who among the following liked peas?
a) A b) L c) B d) D e) K

Directions [16 to 20]: 10 friends A, B, C, D, E, F, G, H, I and J sits around a rectangular table such that 4 sits at 4 corners and 2 on each longer side and 1 on each smaller side. All people sitting at corner faces same direction. People sitting on same side face opposite direction. People sitting on smaller side face opposite direction. Immediate neighbours of person sitting at corner faces same directions.

- A who sits at one of the longer sides sits 4th to right of D who doesn't sits at smaller side.
- One person sits between D & B
- I sits 4th to right of J.
- H who sits at one of the corner sits 4th to right of C who face centre.
- D & G are neither immediate neighbours nor faces same direction.
- Neither A nor D is an immediate neighbour of H.
- Both I & F are not immediate neighbours of B but have 1 person between them.
- G sits 3rd to right of B & both faces same direction

Question 16 Who sits to immediate right of E?
a) B b) D c) F d) C e) G

Question 17 How many people faces outside?
a) 3 b) 7 c) 5
d) 8 e) Cannot be determined

Question 18 Who among the following faces same direction?
a) A & G b) D & F c) B & H
d) C & J e) H & D

Question 19 Who among the following doesn't sit at corner?
a) C b) I c) F d) B e) H

Question 20 How many people sits between G & H when counted clockwise from G?
a) 8 b) 2 c) 4 d) 3 e) 5

Directions [21 to 23]: 9 persons P, Q, R, S, T, U, V, W and X are standing around the triangular table. 1 person each is standing in the corner and is facing away from the centre. 2 persons each are standing along the side of the table and are facing towards the centre. Those who are standing in the corner likes different fruits among Mango, Apple and Banana, not necessarily in the same order. Those who are standing along the side like different flowers among Lilly, Rose, Jasmine, Daisy, Violet and Ivy not necessarily in the same order.
P is standing to the immediate left of the person who likes Violet and is standing at the corner of the table. Q is standing 3rd to the right of W, who is standing in the corner of the table. 3 persons are standing between S and T, when counted from the left of T. Neither S nor T is standing adjacent to Q. The one who likes Rose is standing to the immediate right of the one who likes Daisy. Only 1 person is standing between the one who likes Rose and the one who likes Ivy. 2 persons are standing between R and X, when counted from the left of X. Only 1 person is standing between U and the one who likes Apple. The one who likes Mango is standing adjacent to the one who likes Lilly. U likes Jasmine.

Question 21 Who likes Banana?
a) P b) Q c) V
d) U e) None of these

Question 22 Who among the following does not like flower?
a) S b) R c) T d) V e) Q

Question 23 W likes ___.
a) Daisy b) Apple c) Banana
d) Lilly e) Jasmine

Directions [24 to 27]: Eight persons - P, Q, R, S, T, U, V and W, went to either of four places - Mysore, Ooty, Coorg and Hampi, on their weekend trips. At least two persons went to each place. They were sitting around a square table discussing about their trips such that four of them, each sat at the centre of the edges and remaining four, each sat at the corners. The ones sitting at corners face inside while the ones sitting at the edges face outside.

- Both the immediate neighbours of T went to Hampi.
- P, who sits on one of the edges, went to Ooty and is immediate left of the one who went to Mysore.
- Neither S nor Q sit immediate next to R.
- W sits second to right of T and, both went to same places.
- V sits third to right of P.
- U, who sits at one of corners and R, both didn't go to Mysore.
- R faces in the direction opposite to T. (if T faces inside, R faces outside, and, vice-versa)
- Neither S and Q, nor V and Q, sit together.

Question 24 Which among the following pair went to Coorg?
a) V, Q b) T, W c) P, U

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d) S, V e) Cannot be determined

Question 25 How many persons are sitting between the persons who went Ooty?

a) None b) Four
c) Either none or six d) Six
e) Either four or two

Question 26 If all the persons are arranged in alphabetical order in anticlockwise direction starting from P then, how many persons including P, will not change their positions?

a) More than 4 b) 1 c) 2
d) 4 e) 3

Question 27 Fill in the respective blanks.

W went _____ and U went _____ respectively.

a) Coorg, Ooty b) Mysore, Coorg
c) Ooty, Mysore d) Mysore, Ooty
e) Ooty, Hampi

Directions [28 to 31]: There are eight people P,Q,R,S,T,U,V,W seated around a square table such that exactly one person is seated on each edge and each corner all facing inwards. They are from different places among Udaipur, Delhi, Jaipur, Agra, Coorg, Konark, Raipur and Shimla(not necessarily in the same order). Further it is known that they were teachers of different subjects among history, hindi, maths, biology, physics, Sanskrit, chemistry and arts. S was from delhi and was to the immediate left of Q. The person from Jaipur was seated at one of the corners. U who taught maths was opposite to the person from Udaipur and was seated at one of the edge. The hindi teacher who was not P, was to the immediate left of R. The chemistry teacher was at one of the corners and third to the right of Q. V was adjacent to the person from Shimla who was not U or W. The physics teacher was to the immediate right of the person from Agra. The history teacher was opposite to the person from Raipur. The person from coorg taught Sanskrit. P was second to the right of the person from Konark. P and T were seated opposite to each other. The arts teacher was at one of the edges but was not Q. W was a biology teacher and was seated at one of the edges.

Question 28 Who was seated to the immediate left of the person from Jaipur?

a) Q b) U c) R
d) W e) none of the above

Question 29 From which place was the person , who was seated third to the left of V?

a) Agra b) Udaipur c) Jaipur
d) Coorg e) None of the above

Question 30 Which subject was taught by the person from Agra?

a) Maths b) Biology c) Hindi
d) History e) Arts

Question 31 Who among the following are seated on the corner?

I. the person from Jaipur II. P III. R

a) I only b) III only c) I and III
d) I and II e) II and III

Directions [32 to 34]: Eight persons - P, Q, R, S, T, U, V and W, who have different ages, are sitting for dinner around a square table such that, four of them at each of the corners of the square table and four of them sit at the middle of each edge of the table. The ones sitting at the corners are facing towards the centre of the table while the others sitting at the edges are facing away from the centre. Each one likes a different game to play one of which is Carrom.

The one who likes chess, is 3 years younger than V, who doesn't sit immediate next to R. U sits at one of the corners and P is 3 years elder than U. W, who doesn't like cricket is the eldest one who is 60 years old and sits to immediate left of R. Three persons sit between the one who likes Football and the one who likes Golf. U doesn't sit immediate next to the one who likes Football. P sits third to left of Q. The one who likes Golf is half the age of the one who likes Cricket and sits to immediate left of the one who like monopoly, who is 29 years old. The one who likes hockey is 2 years older than S. The one who likes Chess sits second to right of the one who likes Ludo, who is not sitting adjacent to the person who like Hockey. V is sitting second to the right of S, who is immediate neighbour of neither R nor W. V doesn't like hockey and T is 50 years old. The person who is in same line of sight of R, is 40 years old. W, U as well as R, all three like neither football nor golf. S is an immediate neighbour of Q. One who likes hockey sits to immediate right of U. Person sitting to immediate right of the one who likes Chess, is less than 40 years of Age.

Question 32 The one who sits second to the left of W, likes _____.

a) Chess b) Ludo c) Cricket
d) Hockey e) Monopoly

Question 33 What is the sum of ages of the ones who like Ludo and hockey?

a) 72 b) 70 c) 90 d) 92 e) 80

Question 34 If carrom, Ludo, monopoly and Chess are the indoor games, then who among the following like indoor games?

I: S II: Q III: T

a) Only I b) Only II
c) Both II and III d) Both I and III
e) All the given

Directions [35 to 37]: During the annual board meeting of company ABC Ltd. Ten directors A, B, C, D, E, F, G, H, I and J were seated around a rectangular table facing the centre. Four of them were seated at the corners, 1 each on the 2 small sides and 2 each on the larger sides. Each of them nominated a person among P, Q, R and S for the position of managing director. The person who received the maximum votes won. Neighbours did

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not nominate the same person. Nobody got more than 4 votes.

- A was 3rd to the right of J who nominated R.
- Number of persons who nominated R was twice that of the number of the persons who nominated S.
- There is one person between F and J and F's neighbours nominated Q.
- C was 2nd to the left of B whose neighbour faced D.
- There are 2 persons between D and E.
- H nominated P and was 2nd to the right of B.
- I was facing E.
- E's neighbours nominated P and S.
- A was seated along one of the longer sides.
- P got three nominations.
- C nominated Q.
- A's neighbours did not nominate R.

Question 35 Who among the following nominated S?

a) E b) C c) I d) B e) G

Question 36 Four of the following bear a similar relationship and hence form a group, which of the following is not a part of that group?

a) E b) D c) B d) A e) C

Question 37 What is the position of J with respect to the one who nominated S?

a) Immediate right b) Opposite
c) 2nd to the right d) 3rd to the right
e) 2nd to the left

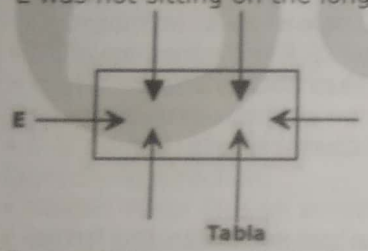
ANSWER KEY

1- a	2- d	3- e	4- d	5- e	6- a	7- d	8- d	9- e
10- e	11- d	12- e	13- c	14- b	15- c	16- a	17- b	18- c
19- a	20- a	21- a	22- e	23- b	24- b	25- c	26- e	27- a
28- a	29- b	30- b	31- d	32- e	33- a	34- c	35- d	36- c
37- d								

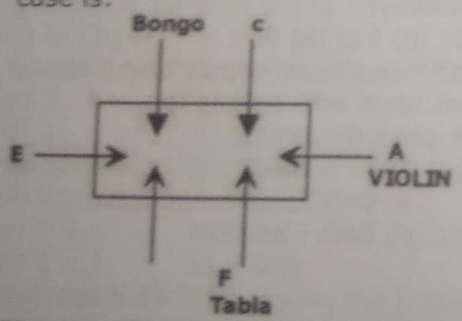
DETAILED SOLUTIONS

Question 1 to 5

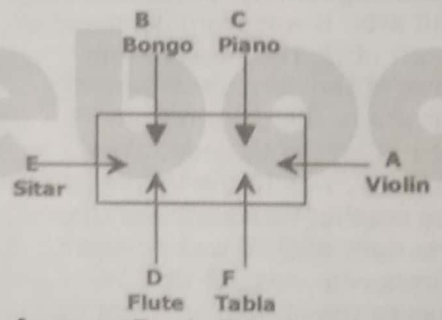
E was sitting second to the left of tabla player
E was not sitting on the longer side.



F was sitting opposite to C.
A played violin and was to the immediate left of C
Only two players were seated between the bongo player and F. So only possible condition for this case is:



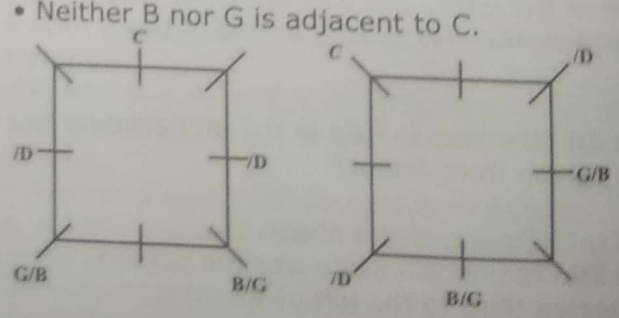
The one who played flute which was not C, was sitting immediate left of the person sitting opposite to the piano player.
The sitar player was to the immediate right of B.
So finally, the arrangement would be as:



Answer 5 - A, B is the odd pair as the rest of the pairs are sitting adjacent to each other.

Question 6 to 10

- G sits 2nd to right of B who is neighbour of D.
- D & G face opposite direction.
- C is 2nd to left of D.
- Neither B nor G is adjacent to C.



Case 1 Case 2

- H is immediate right of C.
- Neither H nor E is adjacent to D.
- A faces outside the centre of table.
- C is 2nd to left of D.
- A is neither adjacent to D nor H.

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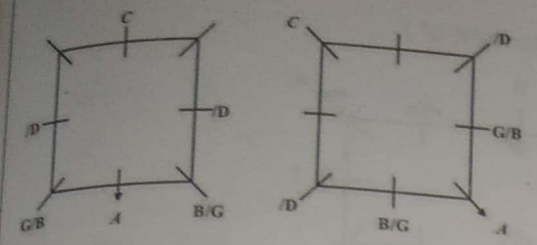
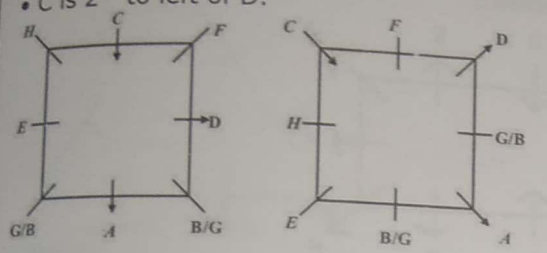


Case 1 Case 2

- H is not 3rd to left of A.
- H is immediate right of C.
- Neither H nor E is adjacent to D.
- C is 2nd to left of D.

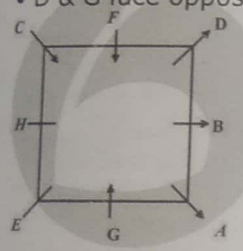


Case 1 Case 2

- F who faces inside the centre, doesn't sit at any corner.

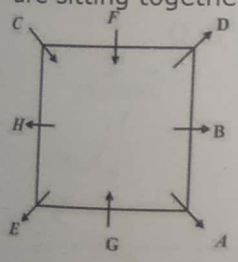
So case 1 is eliminated.

- G sits 2nd to right of B who is neighbour of D.
- D & G face opposite direction.



Case 2

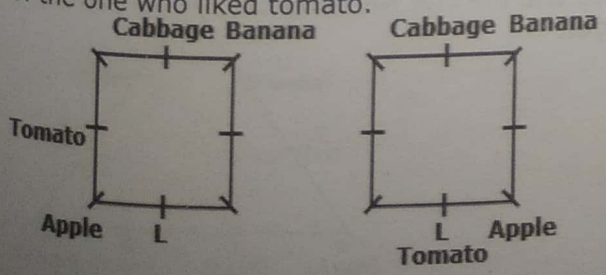
- H & E faces same direction.
- Not more than 3 person facing same directions are sitting together.



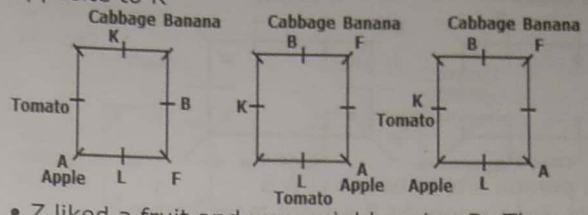
Case 2

Question 11 to 15

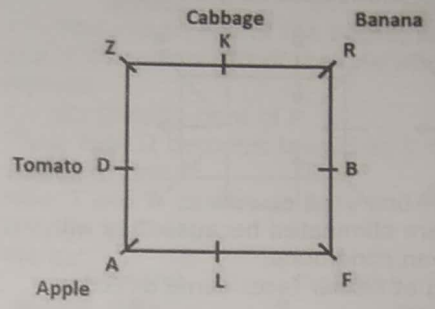
- One who liked banana was 3rd to the right of L
- L faced the one who liked cabbage
- One who liked apple was to the immediate right of the one who liked tomato.



- F was 3rd to the right of the one whose neighbour liked apple
- K was 3rd to the left of A and neither of them was neighbouring F
- B was 2nd to the right of the one who was seated opposite to K

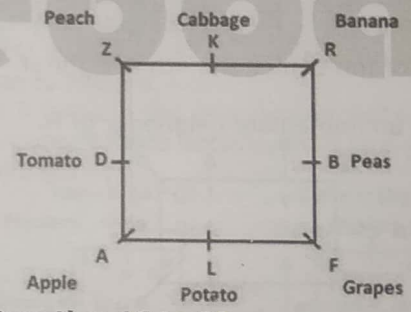


- Z liked a fruit and was neighbouring D. Thus, case 2 and 3 become invalid



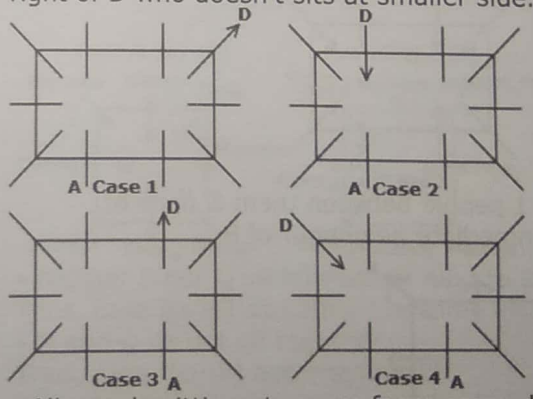
- R's neighbour liked peas
- One who liked peach faced the one whose neighbour liked potato

Thus, the final arrangement is as follows:



Question 16 to 20

- A who sits at one of the longer sides sits 4th to right of D who doesn't sits at smaller side.



- All people sitting at corner faces same direction.
- People sitting on same side face opposite direction.
- Immediate neighbours of person sitting at corner faces same directions.

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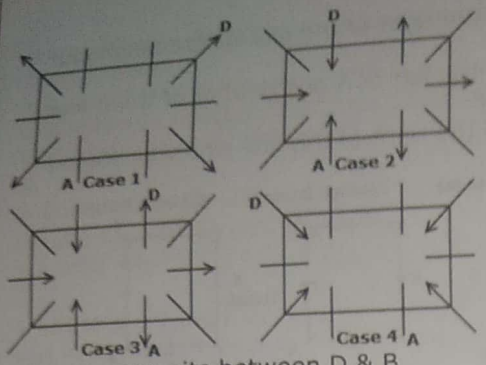
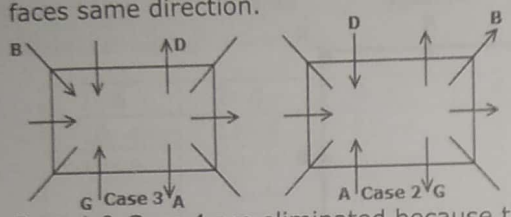


• One person sits between D & B

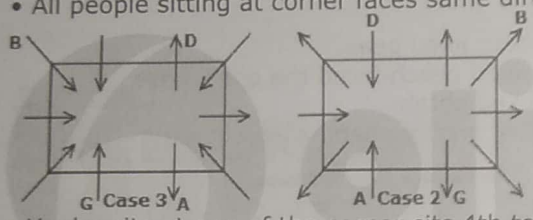
• G sits 3rd to right of B & both faces same direction.

• D & G are neither immediate neighbours nor faces same direction.



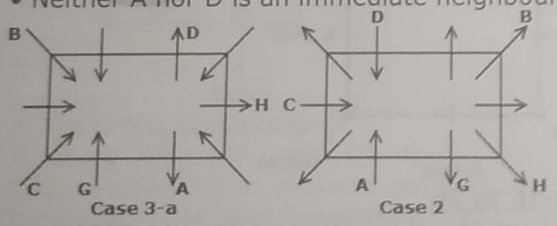
Case 1 & Case 4 are eliminated because they will not satisfy the given conditions.

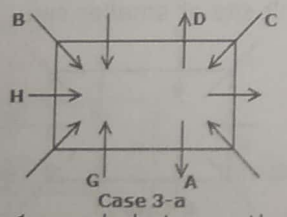
• All people sitting at corner faces same direction.



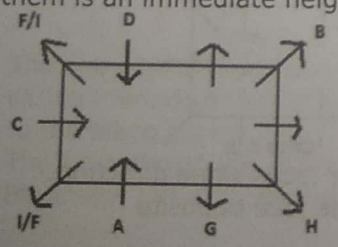
• H who sits at one of the corner sits 4th to right of C who face centre.

• Neither A nor D is an immediate neighbour of H.





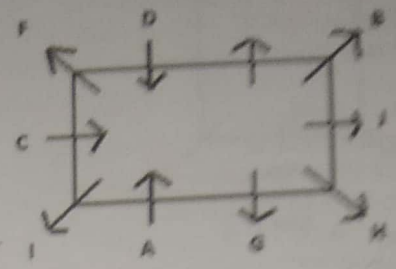
• I & F have 1 people between them & none of them is an immediate neighbour of B.



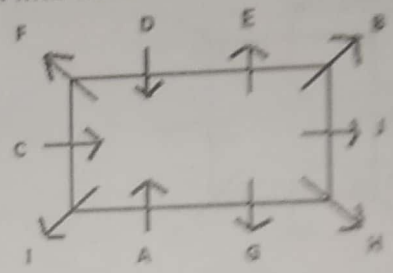
Case 2

Case 3-a & 3-b are eliminated because they don't satisfy given condition

• I sits 4th to right of J.



Final Solution::

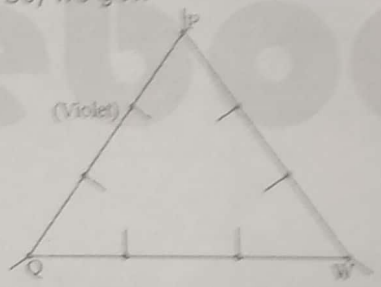


Question 21 to 23

P is standing to the immediate left of the person who likes Violet and is standing at the corner of the table.

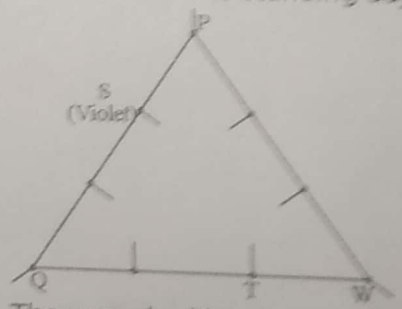
Q is standing 3rd to the right of W, who is standing in the corner of the table.

So, we get:



3 persons are standing between S and T, when counted from the left of T.

Neither S nor T is standing adjacent to Q.



The one who likes Rose is standing to the immediate right of the one who likes Daisy.

Only 1 person is standing between the one who likes Rose and the one who likes Ivy.

So, we get:

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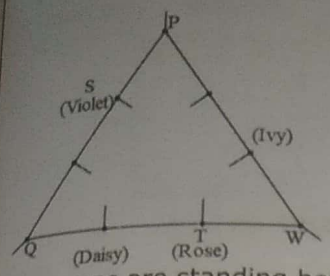
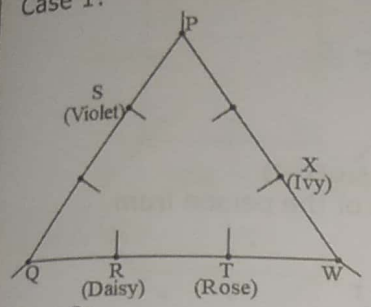
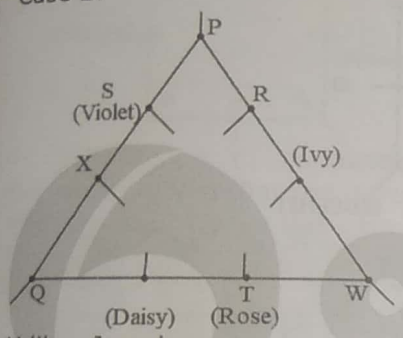


2 persons are standing between R and X, when counted from the left of X.

Case 1:



Case 2:



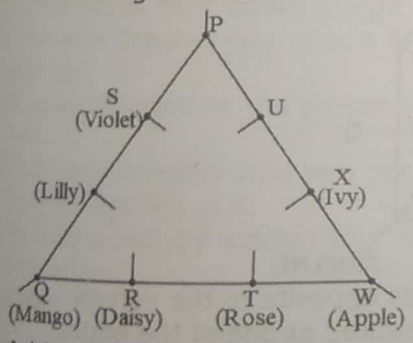
U likes Jasmine.

So, case 2 is invalid.

Only 1 person is standing between U and the one who likes Apple.

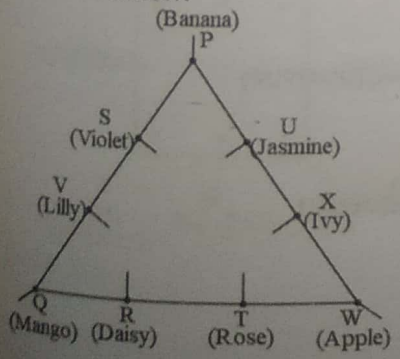
The one who likes Mango is standing adjacent to the one who likes Lilly.

Continuing with case 1:



Adding the remaining variables, we get the final solution.

Final Solution:



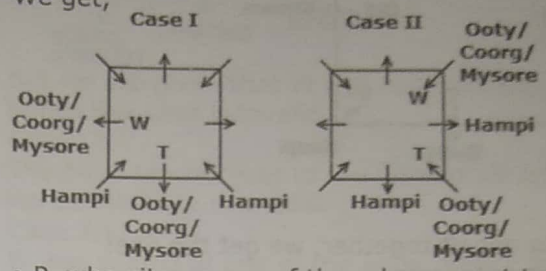
Question 24 to 27

• Both the immediate neighbours of T went to Hampi.

Here, T can either sit at corner or edge, thus we get two cases.

• W sits second to right of T and, both went to same places.

We get,



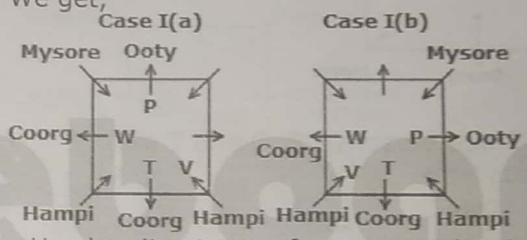
• P, who sits on one of the edges, went to Ooty and is immediate left of the one who went to Mysore.

• V sits third to right of P.

Thus, case II becomes invalid as V cannot be seated in case II.

Also, T and W cannot go Ooty and Mysore. Thus, they go to Coorg.

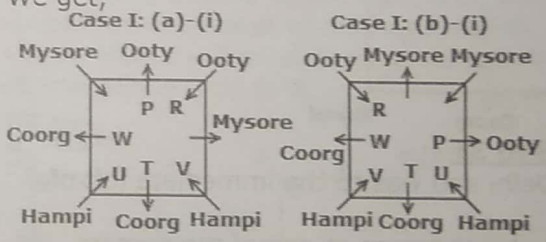
We get,

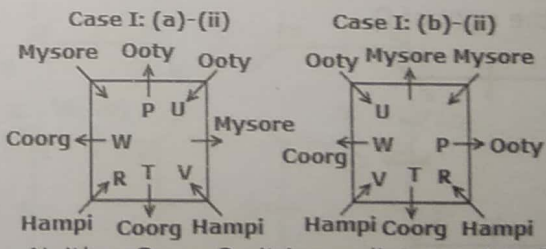


• U, who sits at one of corners and R, both didn't go to Mysore.

• R faces in the direction opposite to T. (if T faces inside, R faces outside, and, vice-versa)

We get,





• Neither S nor Q sit immediate next to R.

Thus, case I(a)(i) and I(b)(i) become invalid.

• S and Q do not sit together.

Thus, case I(b)(ii) become invalid.

We get,

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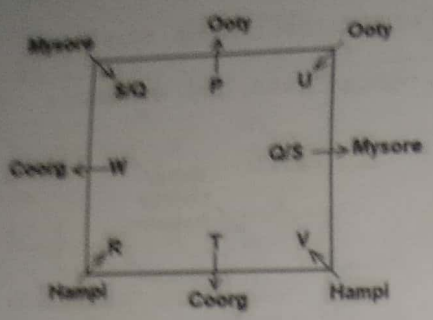
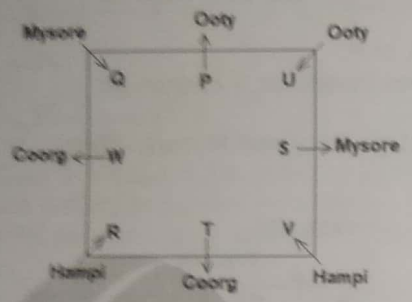
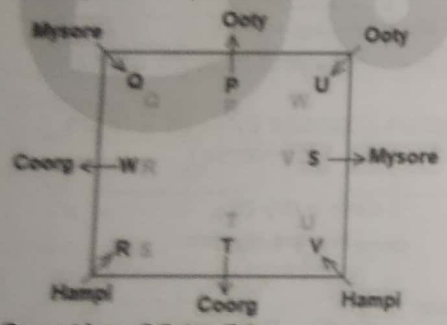
Case I: (a)-(ii)



Since,
• V and Q do not sit together, we get the final arrangement as follows:

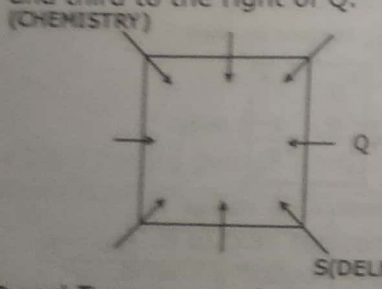


Answer 26 - Three persons - P, Q and T will not change their positions.

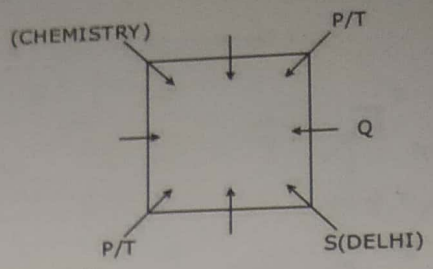


Question 28 to 31

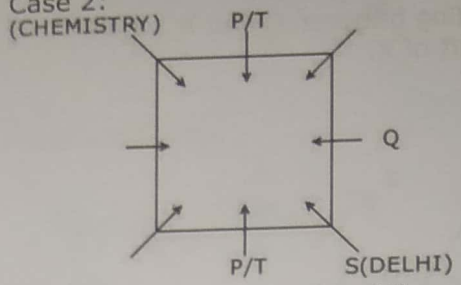
S was from Delhi and was to the immediate left of Q.
The chemistry teacher was at one of the corners and third to the right of Q.



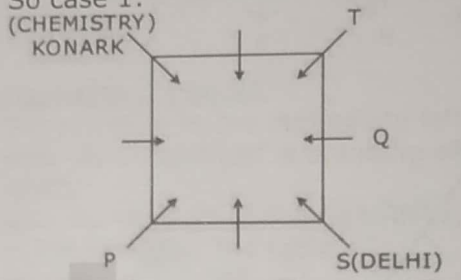
P and T were seated opposite to each other.
Case 1:



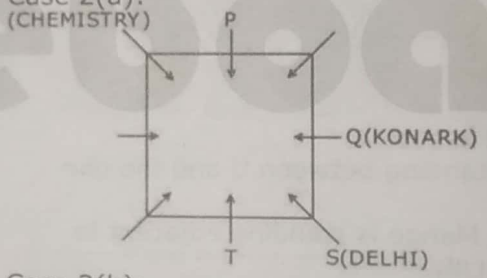
Case 2:



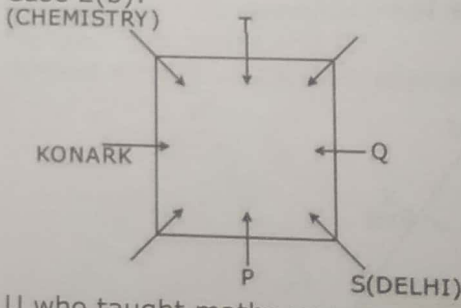
P was second to the right of the person from Konark.
So case 1:



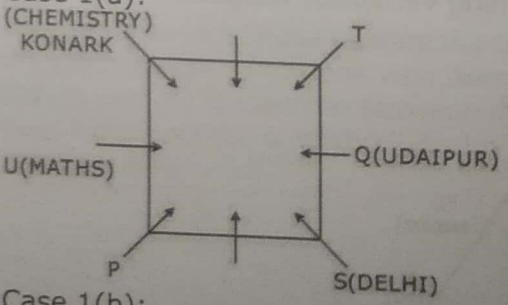
Case 2(a):



Case 2(b):



U who taught maths was opposite to the person from Udaipur and was seated at one of the edge.
Case 1(a):



Case 1(b):

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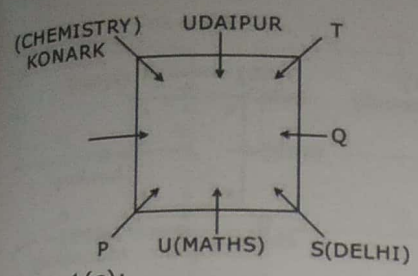
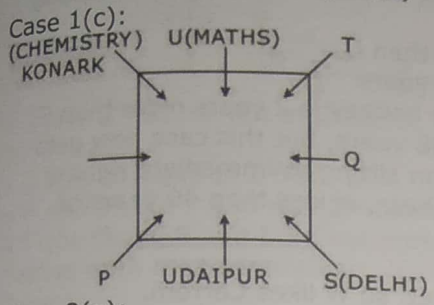
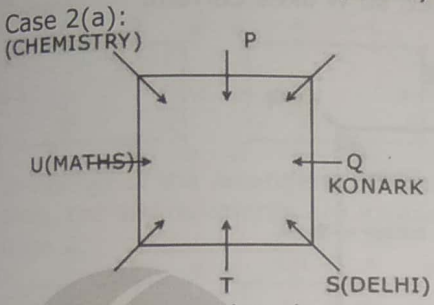


Case 1(c):

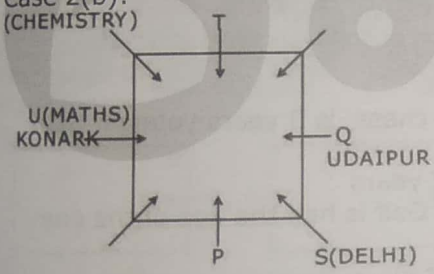


Case 2(a):



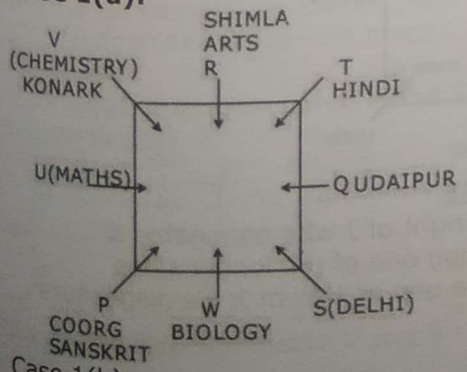
But we are given that the person from Udaipur was opposite to U. Hence this case is invalid.

Case 2(b):

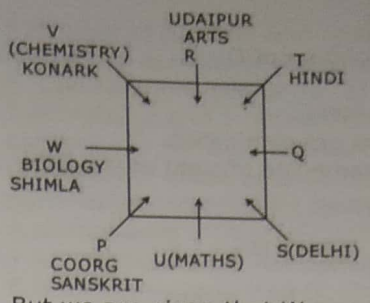


The person from coorg taught Sanskrit.
The arts teacher was at one of the edges but was not Q.
V was adjacent to the person from Shimla who was not U.
The hindi teacher who was not P, was to the immediate left of R.
W was a biology teacher and was seated at one of the edges.

Case 1(a):



Case 1(b):



But we are given that W was not from Shimla, hence this case is invalid.

Case 1(c):

The hindi teacher was to the immediate left of R, hence this case is invalid.

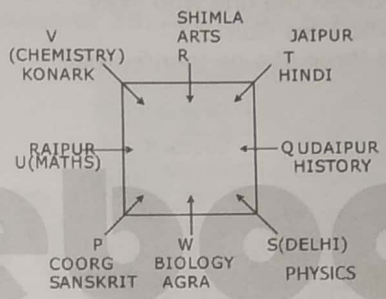
Case 2(b):

W was seated at one of the ends. Hence this case is invalid.

So finally moving ahead with case 1(a):

The history teacher was opposite to the person from Raipur.

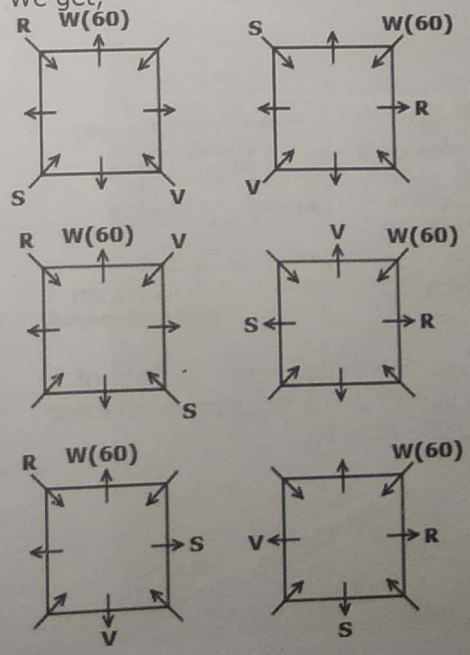
W was not from Jaipur as the person from Jaipur was sitting on the corner.



Question 32 to 34

- W, who doesn't like cricket is the eldest one who is 60 years old and sits to immediate left of R.
- V is sitting second to the right of S, who is immediate neighbour of neither R nor W.
- Also, from the first statement we get, V doesn't sit immediate next to R.

We get,



Now,

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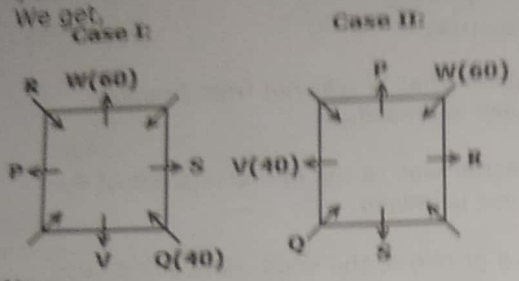
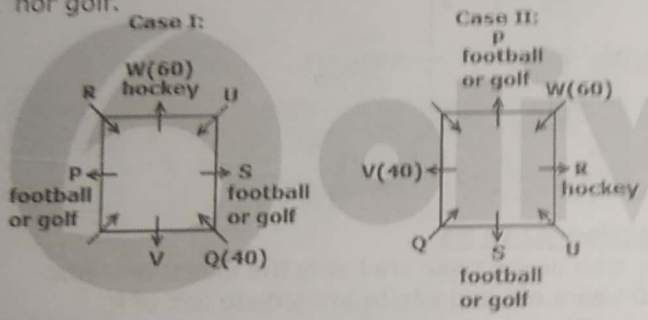
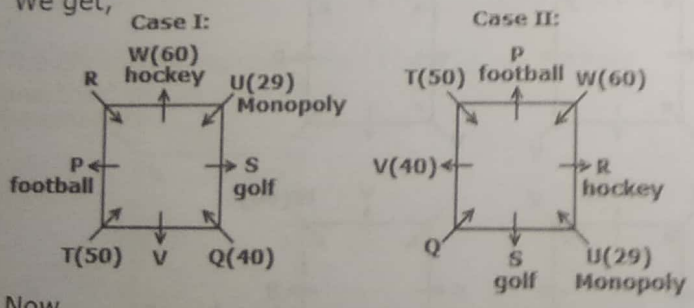
• P sits third to left of Q.
• S is an immediate neighbour of Q.
Also,
• U sits at one of the corners.
Thus, few cases of above get eliminated.
• The person who is in same line of sight of R, is 40 years old.
We get,



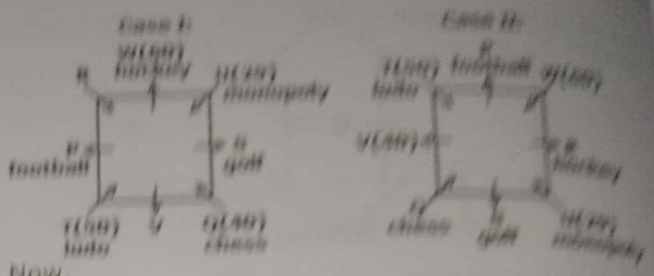
Now,
• One who likes hockey sits to immediate right of U.
• U sits at corner.
• V doesn't like hockey.
Also,
• Three persons sit between the one who likes Football and the one who likes Golf.
• W, U as well as R, all three like neither football nor golf.



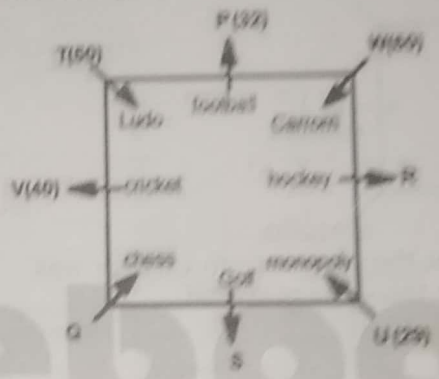
Now,
• The one who likes golf sits immediate left to one who likes monopoly, who is 29 years old.
• U doesn't sit immediate next to the one who likes Football.
• T is 50 years old.
We get,



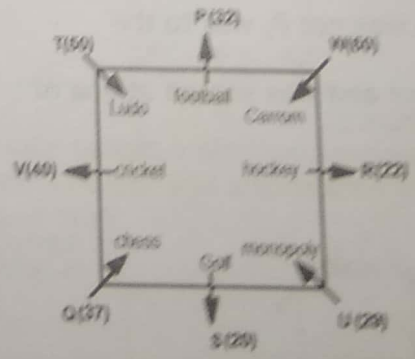
Now,
• The one who likes Chess sits second to right of the one who likes Ludo, who is not sitting adjacent to the person who like Hockey.



Now,
• P is 3 years elder than U.
So, P = 29+3 = 32 years
• The one who likes hockey is 2 years older than S.
So, in case I: S = 58 years, but this case now gets eliminated as, Person sitting to immediate right of the one who likes Chess, is less than 40 years of Age.
Also,
W doesn't like Cricket, so W likes Carrom.
We thus get,



Now,
• The one who likes chess, is 3 years younger than V.
So, Q = 40 - 3 = 37 years
• The one who likes Golf is half the age of the one who likes Cricket.
S = 40/2 = 20 years
And,
• The one who likes hockey is 2 years older than S.
So, R = 20+2 = 22 years.
Final arrangement is as follows:



Question 35 to 37
• A was 3rd to the right of J who nominated R.
• A was seated along one of the longer sides
• F was seated at a gap of 1 from J, F's neighbours nominated Q

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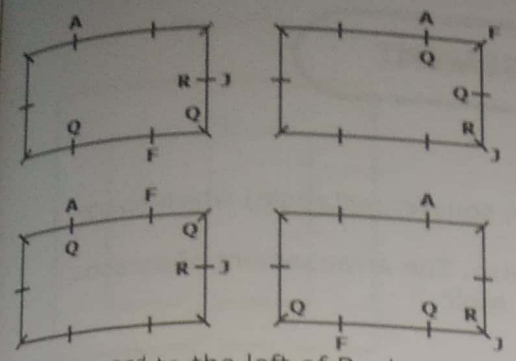
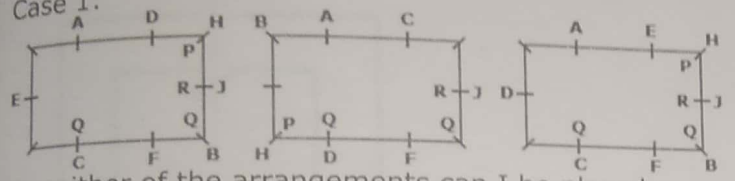


- C was 2nd to the left of B whose neighbour faced D
- D was at a gap of 2 from E
- H nominated P and was 2nd to the right of B
- I was facing E and I did not nominate S

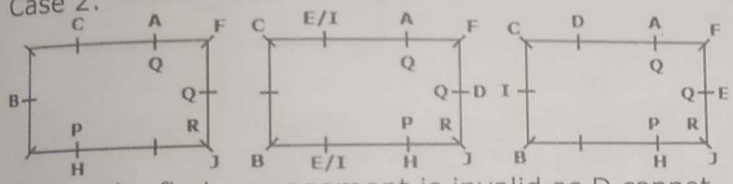
Taking each case separately:

Case 1:



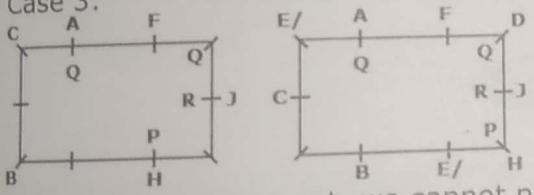
In neither of the arrangements can I be placed; thus, the arrangements are invalid.

Case 2:



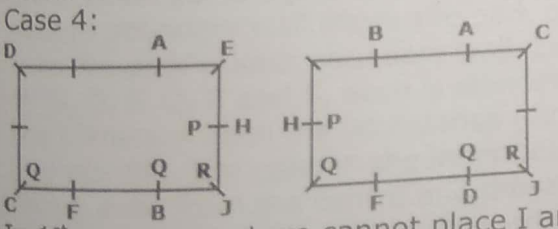
In this, the first arrangement is invalid as D cannot be placed in that

Case 3:



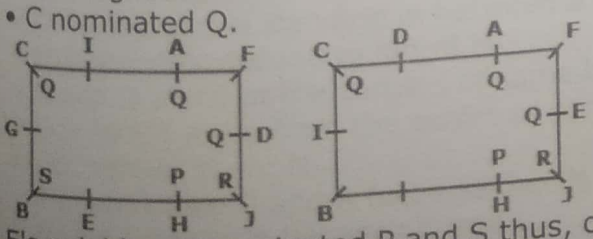
In the first arrangement, we cannot place D and in the 2nd arrangement we cannot place I, thus, the cases are invalid.

Case 4:



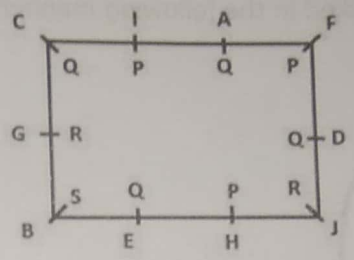
In 1st arrangement we cannot place I and in the 2nd arrangement we cannot place E, thus, the cases are invalid.

- E's neighbours nominated P and S.
- C nominated Q.

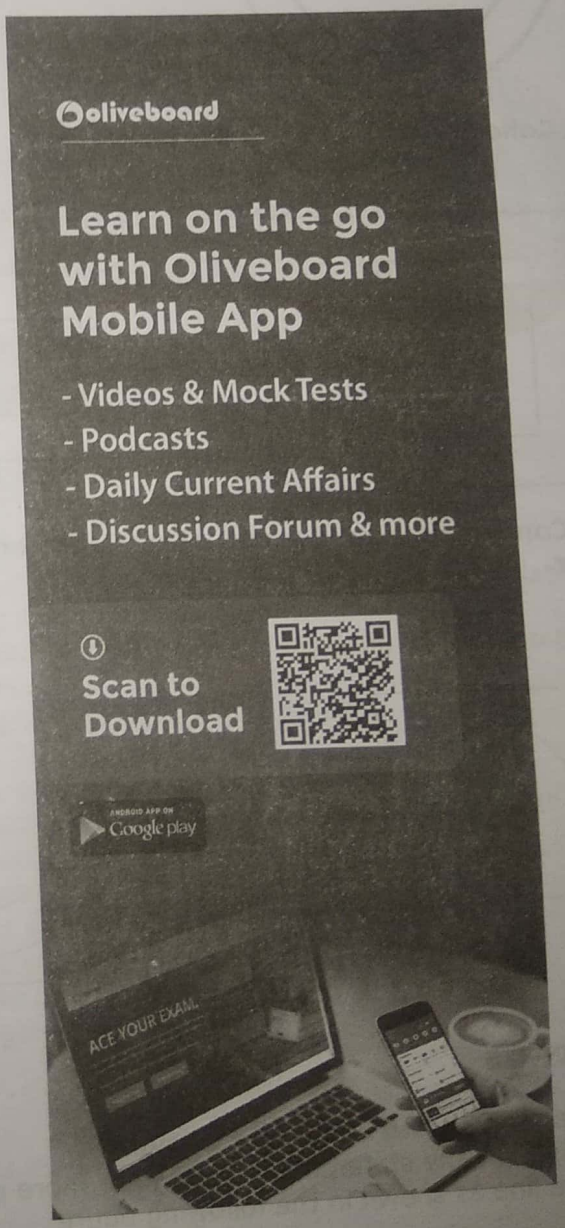


E's neighbours nominated P and S thus, case 2nd is invalid.

- P got three nominations.
- Number of persons who nominated R was twice that of the number of the persons who nominated S. Combinations can be (1, 2) (2, 4). If 4 people nominated R and 2 people nominated S, then we get 4+2+3+3=12 nominations; as Q already has 3 nominations in the arrangements. Thus, R had 2 nominations and S got 1 nomination. Thus, Q had 4 nominations
- As neighbours did not nominate the same person, E must have nominated Q.
- A's neighbours did not nominate R. They must have nominated P and G must have nominated R. Thus, the final arrangement is as follows:



Answer 36: Apart from B others nominated Q.



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CHAPTER 2.5 - CONCENTRIC ARRANGEMENT

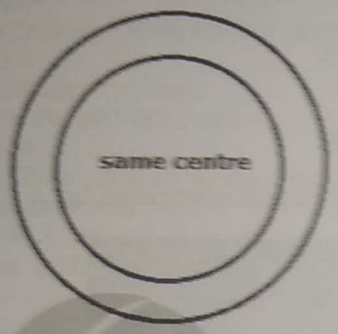
What is concentric arrangement?

Concentric arrangement is an arrangement done along the shapes (circular, square, rectangle) which share the same centre where, the larger one surrounds the smaller one.
For Example: Concentric circles – here, both the circles share the same centre. The arrangement of persons sitting along both the circles, can be asked, which is categorized under this topic.

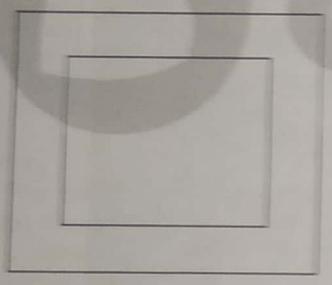
Let's learn the approach...

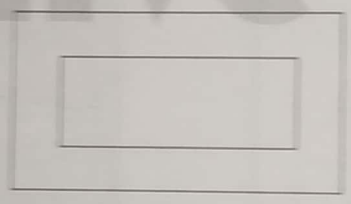
The concept of this arrangement is same as that of circular arrangement, square arrangement, etc.
The questions might be asked in the following manner:

I. Concentric circles

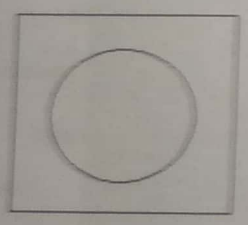


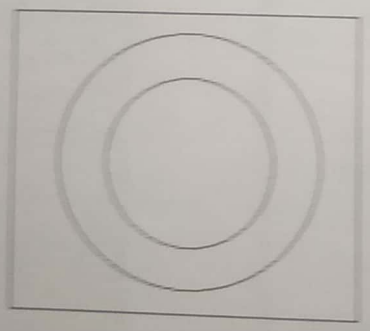
II. Concentric Squares or Rectangles





III. Concentric arrangement of two different shapes having same centre one surrounding the other.





KEY POINTERS

⇒ Concept of **"in the same line of sight"**
If it is given in any statement that, "two or more persons are in the same line of sight", then it means along the same line as shown in the following figure.

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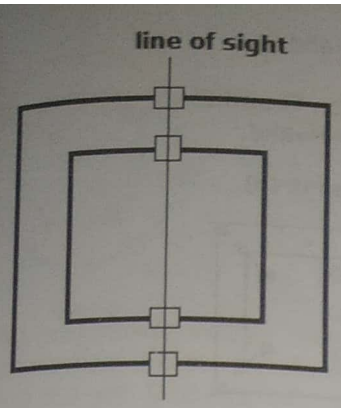
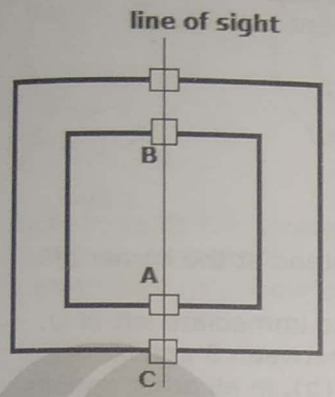


⇒ In concentric arrangements, "sitting in between" is taken within the same line of sight, if mentioned in the question.

For Example: A is between B and C is represented as,



⇒ In the above example, if it is given that, "A is facing C", then it means, A is facing away from the centre and, C is facing towards the centre.

⇒ Similarly, if in the above example, it is given that, "A is sitting behind C", then it means, C is facing away from the centre and A is sitting behind C.

⇒ Thus, it is important to comprehend the hints properly in case of these type of questions.

Solved Examples

CONCENTRIC SQUARES

Directions [1 to 5]: In a square park, there is square boundary wall inside the park concentric with the park's outer boundary wall. Eight cows - L, M, N, O, P, Q, R and S, each is standing at each the corners of both the boundaries (inner and outer boundaries). The cows in the inner boundary are facing away from the centre and those standing on the outer boundary are facing towards the centre of the park. It is given that 'in between' two cows, is written for cows within the same line of sight.

- S is standing to immediate right of L.
- Only one cow is standing in between S and M.
- Q is standing second to left of M.
- N and Q stand at the corners of same boundary.
- O is facing away from the centre of park and it faces neither M nor N.
- P doesn't face O and R faces neither M nor N.
- No cow stands in between O and L.

Question 1 Which of the following cows are standing at the corners of the inner boundary?

I. N II. P III. L

Question 2 Which cow is standing to immediate left of O?

Question 3 Which cow is standing in between S and M?

Question 4 Find the odd one out.

a) M, P b) S, N c) Q, S
d) O, R e) L, N

Question 5 What is the position of cow N with respect to cow R?

Solution:

- S is standing to immediate right of L.

So, L can be on either of the two boundaries.

- One cow is standing in between S and M.

We get,

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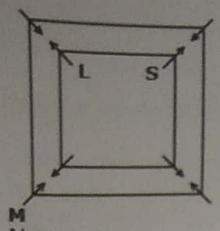
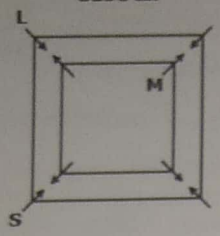
oliveboard

Case I:



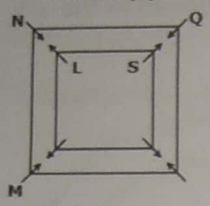
Case II:



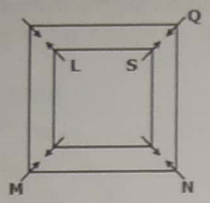
Now,
- Q is standing second to left of M.
- N and Q stand at the corners of same boundary.

We get,

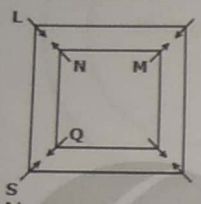
Case I: (a)



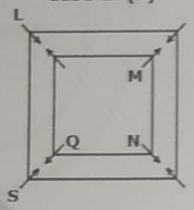
Case I: (b)



Case II: (a)



Case II: (b)

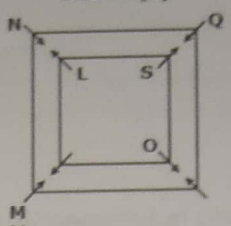


Now,
- O is facing away from the centre of park and it faces neither M nor N.

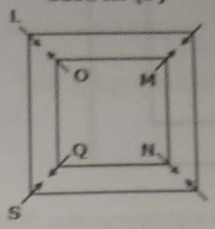
So, case I(b) becomes invalid.
Also,
- No cow stands in between O and L.

Thus, case II(a) becomes invalid.
We get,

Case I: (a)

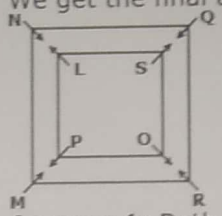


Case II: (b)



Now,
- P doesn't face O and R faces neither M nor N.

So, case II(b) becomes invalid.
We get the final arrangement as follows:



Answer 1: Both P and L stand at the corner of inner boundary.
Answer 2: S is standing to immediate left of O.
Answer 3: P is standing between S and M.
Answer 4: Except option (b), in all other options, both cows are facing each other.
Answer 5: N is 2nd to right of R.

CONCENTRIC CIRCLES

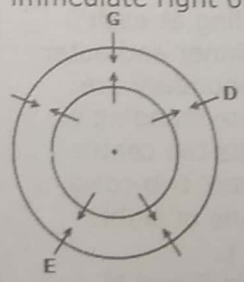
Directions [6 to 8]: 10 friends A, B, C, D, E, F, G, H, I & J are sitting around 2 concentric circular table such that 5 persons sit on the outer table facing towards the centre of the table & 5 on the inner table facing away from the centre of the table. No two person whose names are in consecutive alphabetical order are adjacent to each other. Each person sitting in outer table is facing a person sitting in the inner table.
(2 persons facing same direction means that either both are facing towards centre of the table or both are facing away from the centre of the table. Also 2 persons facing different direction means one is facing towards the centre of the table while other is facing away from the centre of the table.)
{Note: Z & X are facing each other means Z & X are sitting in different tables & are facing each other.)
One person is sitting between E & G who is to the immediate right of D. C is 2nd to right of A. I faces towards the centre of the table. J's immediate neighbour doesn't face B. A & H are facing each other.

Question 6 Four of the following are similar in some way. Find the odd one.
a) I , A b) J, C c) G, E
d) C, F e) B & A

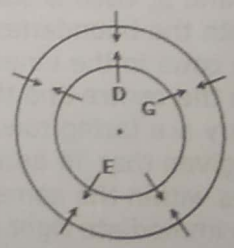
Question 7 Which of the following statement is true?
I. E faces C
II. G faces C
III. D faces immediate neighbour of C

Question 8 Who faces the person sitting 2nd to the right of I?

Solution:
- One person is sitting between E & G who is to the immediate right of D.



Case 1



Case 2

- A & H are facing each other.
- C is 2nd to right of A.
- No two person whose names are in consecutive alphabetical order are adjacent to each other.

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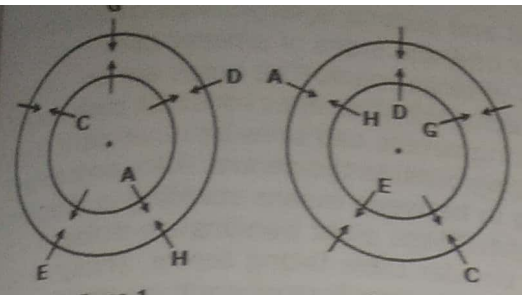
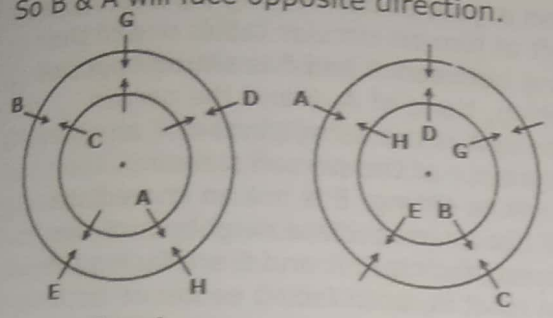


Case 1 Case 2

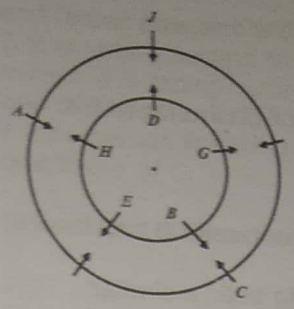
• No two person whose names are in consecutive alphabetical order are adjacent to each other. So B & A will face opposite direction.



Case 1 Case 2

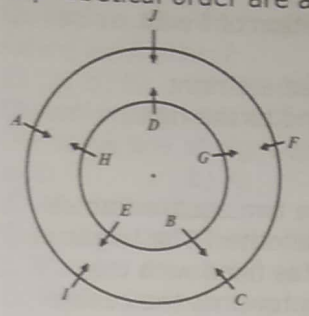
• I faces towards the centre of the table. So case 1 is eliminated.

• J's immediate neighbour doesn't face B



Case 2

• No two person whose names are in consecutive alphabetical order are adjacent to each other.



Case 2

Answer 6: Except in option (e), both people are facing same direction.

Answer 7: None of these is correct.

Answer 8: G faces the person sitting 2nd to the right of I.

Practice Yourself

Directions [1 to 4]: A small rectangular slab is kept above a large rectangular slab such that their centres coincide with each other. Twelve points are marked on the edges of the slabs, six on each slab, such that, the longer sides of both the slabs have two points each, and the shorter side has one point each. Each point of one slab is in same line of sight on other slab. Also, point marked in between two points is to be considered in the same line of sight. (to the right of any point - anticlockwise, to the left of any point - clockwise)

V is marked to immediate left of R. T is marked in between V and P, which is marked second to right of X. O and Q are marked on the longer side of same slab. T and X, are marked on the same slab. Y is not marked at any point immediately left/right of X. U and S are maximum possible distance apart. O is not marked in front of either Z or W. Z is not marked in front of R.

Question 1 Which of the following points is in between X and Y?

a) None b) T c) S d) U e) V

Question 2 Which point is marked to immediate right of R?

a) S b) X c) U d) P e) Either (a) or (c)

Question 3 What is the position of point Y with respect to point W.

a) Second to the right b) Second to the left
c) Immediate left d) Third to the left
e) None of these

Question 4 Find the odd pair out of the following.

a) Q, O b) T, W c) T, Y
d) X, Z e) V, R

Directions [5 to 6]: 12 children A, B, C, D, E, F, G, H, I, J, K and L were seated in a giant swing. The swing had 12 seats arranged in form of 2 squares such that the smaller square was inside the larger square. The children seated on the seats in the inner square were facing outside the centre and the children seated on seats in the outer square were facing inside the centre. The seats of inner squares were built on the sides thus, 4 children were in the inner square and the outer square had 4 seats along the side and 4 seats on the corners. Any child facing another child must be on the same side of the swing and any child is said to be between 2 children when all of them are along the same square.

• F was seated at one of the corners and was 2nd to the left of K whose neighbour faced J.

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• J was exactly between A and the one who faced G.
• I was 2nd to the right of G.
• L was to the immediate right of C who faced E's neighbour.
• A and H were neighbours.
• B was 3rd to the left of D.
• There are two children sitting between D and L.

Question 5 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) D b) H c) C d) I e) G

Question 6 What was the position of I with respect to B?
a) Immediate left b) Immediate right
c) Second to the left d) Second to the right
e) Third to the left

Directions [7 to 8]: There are two square frames such that one is bigger than the other. The larger square frame is kept on the table fixed with the help of nails which are pointing towards the centre of frame. The smaller frame is also fixed on the table inside the larger frame concentric with the larger one with the help of nails which are pointing outside the centre of the frame. The nails are put at the corners of both the frames. There are eight nails - M, N, O, P, Q, R, S and T. The colour of nails is either blue, black or red. At least two nails are there of each colour. (towards left of nail means if nail is pointing towards the centre then your left and nail's left will be same)
M is put to immediate left of a red nail. R is put on the outer frame and is blue, not facing O. P and Q are put on the same frame and are of same colour which is not red. T is put to immediate right of a black nail, which is O and, is facing the nail of blue colour, which is not M. M is facing a blue colour nail, which is not N. T and N are put on the same frame. N is facing a red nail. S is facing the nail of the same colour as it is, which is not blue. A black nail is there to immediate right of R. Nail immediate left to N is red. Q and T are not facing each other.

Question 7 Which nails among the following are not put to fix the smaller frame?
I: N
II: Q
III: S
a) Only I b) Both II and III
c) Only III d) Only II
e) Both I and III

Question 8 Which among the following nails are in same line of sight?
a) T, R, M, S b) S, Q, O, P c) N, Q, O, S
d) R, Q, S, N e) T, P, S, M

Directions [9 to 10]: There are 8 persons - A, B, C, D, E, F, G, and H **standing** on gates of 2 rectangular parks. The rectangular parks are such that one is small and second is large, with small inside the larger one and sides of smaller park facing the sides of larger park. The gates are on the 4 sides of each park. The ones on outer park are standing facing centre and ones on inner park are standing facing outside the centre. Also, any person standing in between means standing in the same line of sight. These eight persons are made to **sit** around a circular table facing centre. Thus, we have two arrangements first where they stand on gates of rectangular park and second where they sit around circular table.
E is standing on a gate of park facing a person who sits third to left of him on circular table. one of the person standing between A and F is sitting opposite to A. While sitting, None of A, F and the person sitting opposite to A is the same person or an immediate neighbour of the person standing opposite to E. While sitting, E is not an immediate neighbour of F but an immediate neighbour of the person who stands facing F. A and E are facing the same direction (that is, both facing center or both facing outside center) in both arrangements. B is facing same person in both arrangements but that person is not F. C is an immediate neighbor of both, the persons standing immediate right of A and D while sitting. G and D are not immediate neighbours of A while sitting. D and B are not immediate neighbours of any person facing inward while standing.

Question 9 Who is facing H while standing?
a) G b) F c) D d) C e) None of these

Question 10 Who are immediate neighbours of E on table?
a) A-H b) G-C c) G-D
d) A-B e) None of these

Directions [11 to 15]: 2 concentric circles marked on a playing ground and 6 persons each are standing on both the circles. A person standing on inner circle is facing away from the centre and the one standing on outer circle is facing towards the centre. For every person standing on outer circle, there are 3 persons in his line of sight and 2 of them are facing towards him. Any two persons are called as neighbour only if they are standing on a same circle.
• E is the neighbour of K, but is not facing C.
• D is facing J. G is not the neighbour of L.
• I is standing 2nd to the left of G.
• L is facing H.
• A is standing to the immediate left of H.
• C is standing on outer circle. B and C are facing towards each other.
• L is standing 2nd to the left of B.
• F is neither the neighbour of L nor the neighbour of B, but is standing on the same circle as that of L and B.
• F is facing K, who is the neighbour of D.

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Question 11 E is facing___.
a) C b) D c) G
d) H e) More than one of the above

Question 12 Who is standing 2nd to the right of D?
a) G b) H c) E d) K e) A

Question 13 Who among the following is the neighbour of F?
a) J and H b) G and J c) D and G
d) A and H e) B and L

Question 14 Who is standing to the immediate right of L?
a) B b) C c) E d) K e) None of these

Question 15 Who is facing L?
a) H b) G c) E
d) D e) More than one of the above

Directions [16 to 20]: Two concentric triangles are marked on the floor such that one chair is placed on each corner and one on each edge of both the triangles. Now, 12 persons sit on these chairs such that every alternative person is facing opposite directions (If first person is facing outside the centre, second is facing towards the centre, and so on).
D is facing the centre and is on the outer triangle. H is sitting third to the right of J. O is sitting third to the right of I. K is sitting immediately behind A and facing outside. N is sitting immediately behind I. R is sitting second to the left of C. L is sitting at a corner. J is facing outside. E is a neighbour of D and sitting at an edge. E is not a neighbour of H or I. One person is sitting between C and J.A is not a neighbour of C.

Question 16 Who is sitting immediately in front of J?
a) C b) L c) O d) D e) R

Question 17 Who is sitting to the immediate left of A?
a) R b) J c) N d) H e) O

Question 18 Which of the following people are facing each other?
a) OC b) EJ c) AK d) RO e) LD

Question 19 Which of the following is sitting at the same line of sight as C?
a) D b) K c) A
d) All of the above e) Both (a) and (b)

Question 20 Which of the following is true?
I. H and L are sitting at the inner triangle.
II. R and O are sitting at the corners.
III. K and L are neighbours.
a) Only I b) Only II c) Only III
d) Both I and III e) Both II and III

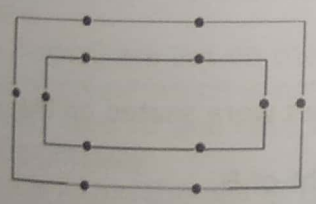
ANSWER KEY

1- a	2- e	3- b	4- c	5- b	6- b	7- a	8- c	9- c
10- e	11- e	12- c	13- b	14- e	15- a	16- b	17- a	18- d
19- d	20- e							

DETAILED SOLUTIONS

QUESTION 1 TO 4

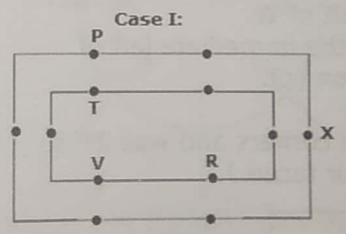
The given arrangement makes a concentric rectangular arrangement shown as follow:



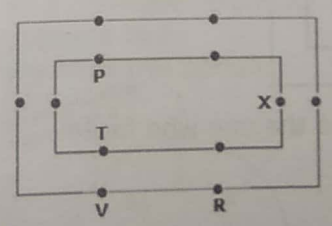
It is given,
- V is marked to immediate left of R.
- T is marked in between V and P, which is marked second to right of X.

So, we get two cases, either V and R can be on small slab or on large one.

Case I:



Case II:



Now,
Since, T and X are marked on the same slab.
So, case I becomes invalid.
But,
We are given that,
- O and Q are marked on the longer side of same slab.
- U and S are maximum possible distance apart. i.e., U and S have two points in between them, and are on shorter sides, of larger slab.

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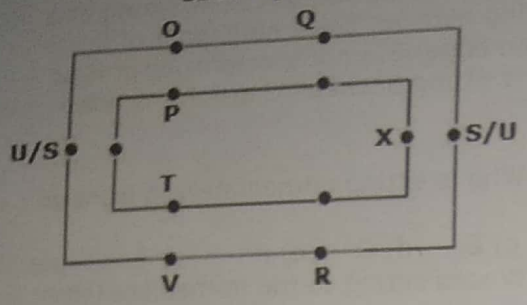
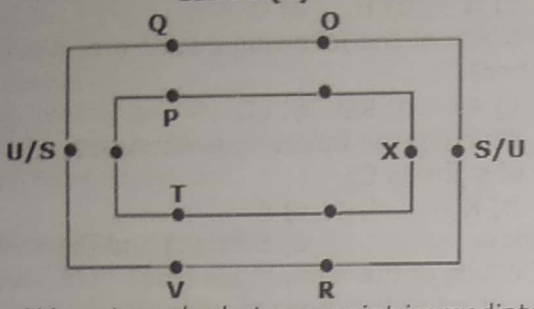
This gives us two subcases as follows, from case II.

Case II(a:)



Case II(b):

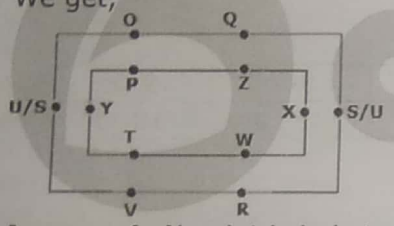


- Y is not marked at any point immediately left/right of X.
- O is not marked in front of either Z or W, so, case II(b) becomes invalid and the final arrangement is as follow:

Also,

- Z is not marked in front of R.

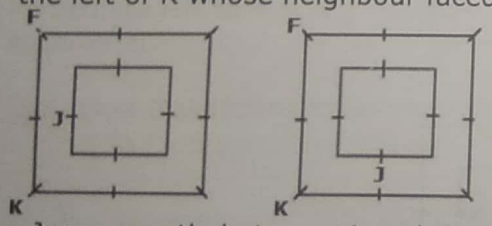
We get,



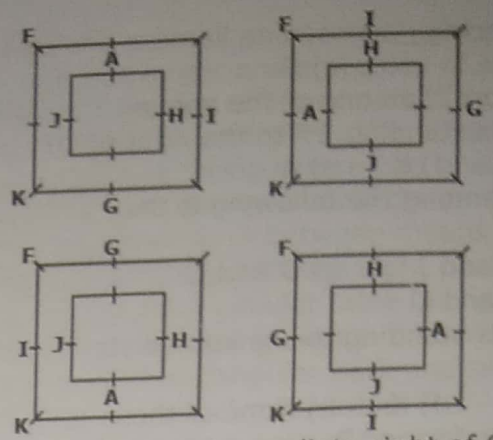
Answer 1: No pint is in between the X and Y.
Answer 2: Either S or U sits immediate right of R.
Answer 3: Y is 2nd to the left of W.
Answer 4: First point is to the immediate left of second point, except in option (c).

QUESTION 5 TO 6

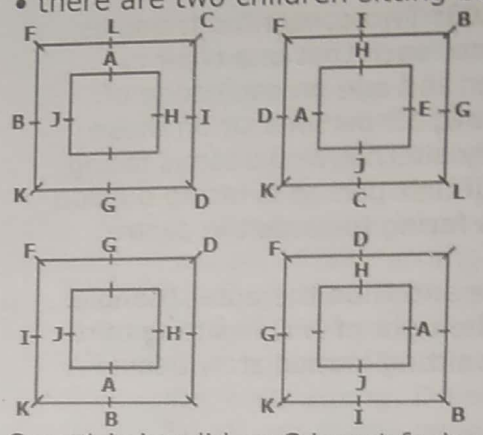
- F was seated at one of the corners and was 2nd to the left of K whose neighbour faced J



- J was exactly between A and the one who faced G
- I was 2nd to the right of G
- A and H were neighbours

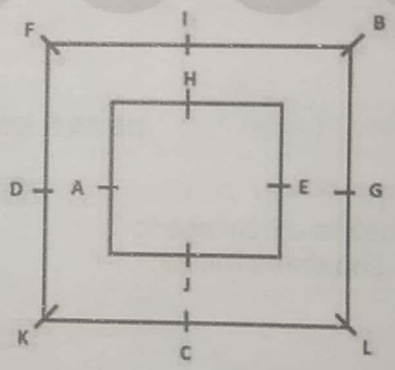


- L was to the immediate right of C who faced E's neighbour
- B was 3rd to the left of D
- there are two children sitting between D and L.



Case 1 is invalid as C is not facing E's neighbour, case 3 and 4 are invalid because L cannot be placed in the arrangement.

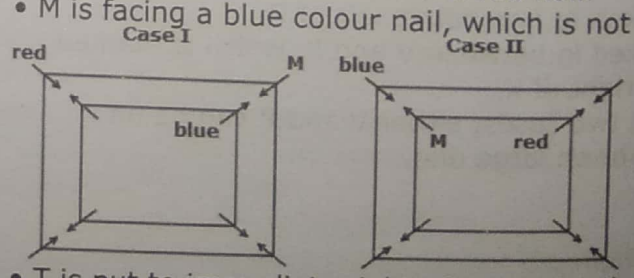
Thus, the final arrangement is as follows:



Answer 5: Apart from H others were seated on the seats along the outer square.
Answer 6: I is immediate right of B.

QUESTION 7 TO 8

- M is put to immediate left of a red nail.
- M is facing a blue colour nail, which is not N.



- T is put to immediate right of a black nail, which is O and, is facing the nail of blue colour, which is not M.

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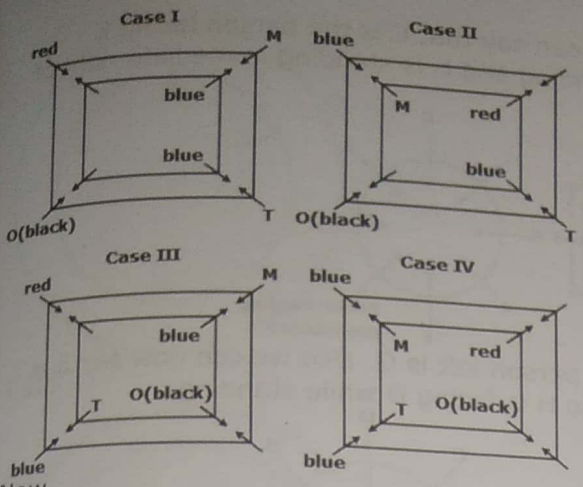
oliveboard



Now,

- T and N are put on the same frame.
- N is facing a red nail and M is not facing N.

And,

- R is put on the outer frame and is blue, not facing O.

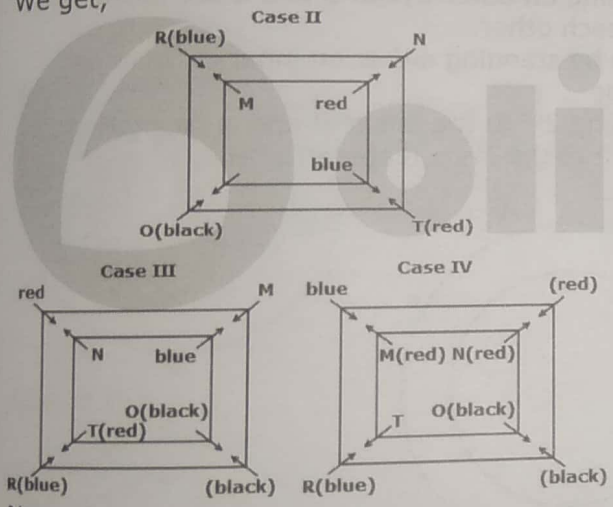
Thus,

Case I becomes invalid.

Also,

- A black nail is there to immediate right of R.
- Nail immediate left to N is red.

We get,



Now,

- P and Q are put on the same frame and are of same colour which is not red.

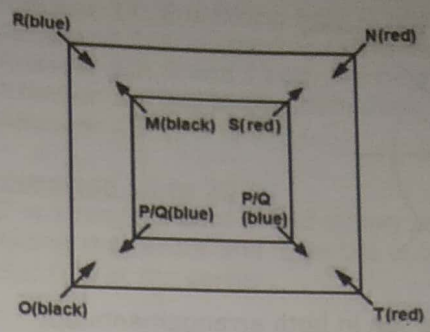
Thus, case III and case IV get eliminated straightaway.

- S is facing the nail of the same colour as it is, which is not blue.

S might be red facing N. and, P and Q must be blue.

Since, at least two nails are there of each colour so, M is black.

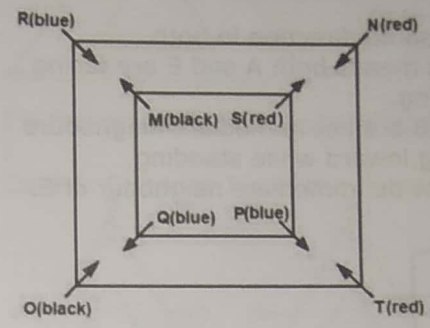
We get,



Since,

- Q and T are not facing each other.

Final arrangement is as follows:

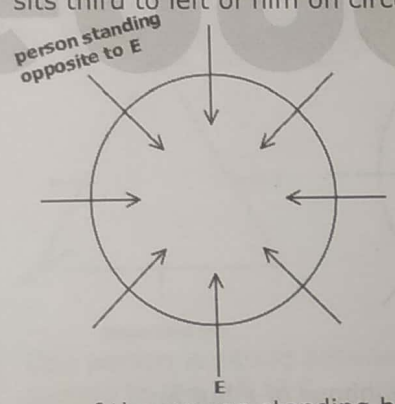


Answer 7: N is in larger frame.

Answer 8: N, Q, O, S are in same line. Rest are not.

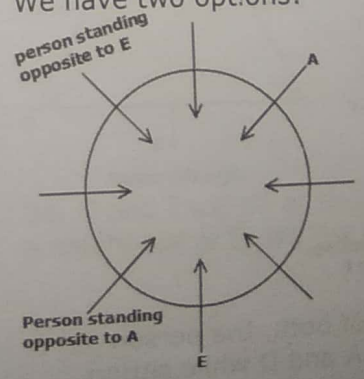
QUESTION 9 TO 10

E is standing on a gate of park facing a person who sits third to left of him on circular table.



one of the person standing between A and F is sitting opposite to A. None of them is the person or an immediate neighbour the person standing opposite to E.

We have two options:



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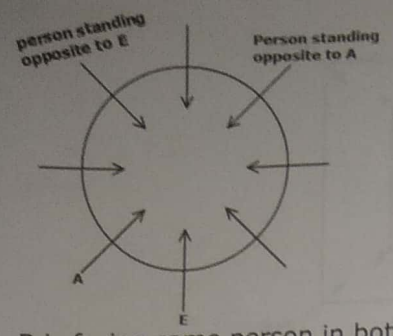


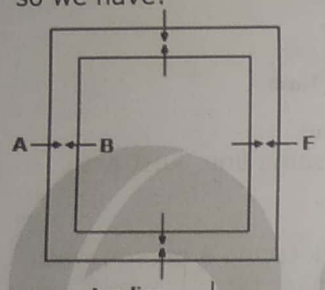
B is facing same person in both arrangements but that person is not F. We see closely we can see that A is also facing same person in both arrangements, thus we can say that A and B are facing each other.

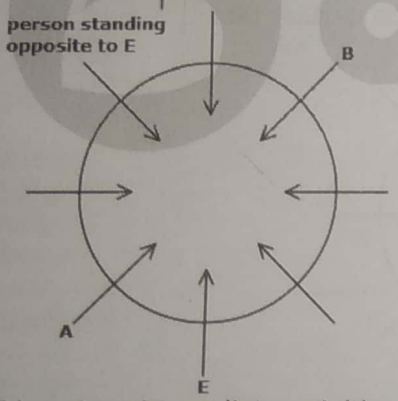
A and E are facing same direction in both arrangements. This means both A and E are facing inward while standing.

while sitting D and B are not immediate neighbours of any person facing inward while standing.

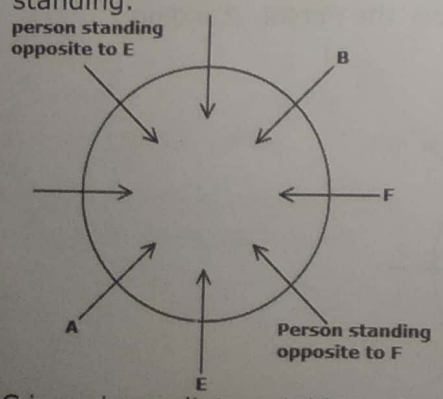
This means B cannot be immediate neighbour of E.

so we have:





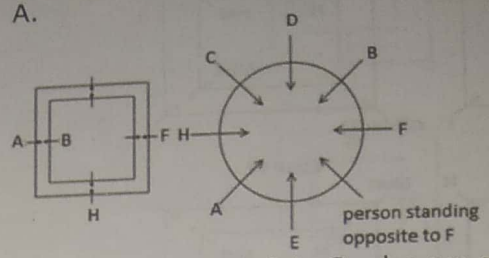
E is not an immediate neighbour of F but an immediate neighbour of person facing F while standing.



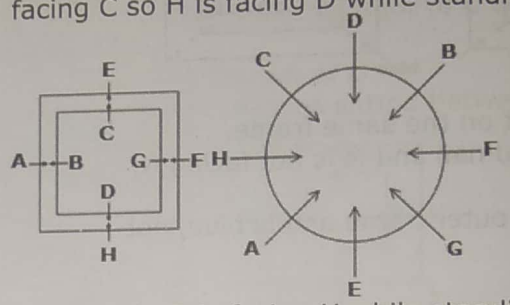
C is an immediate neighbor of both, the person standing immediate right of A and D while sitting.

G and D are not immediate neighbours of A while sitting.

Thus, we can say that C is the person facing E while standing and H is standing immediate right of A.



Now only person left is G. also we can now say E is facing C so H is facing D while standing.



Answer 9: D is facing H while standing.

Answer 10: A and G are immediate neighbour of E on table.

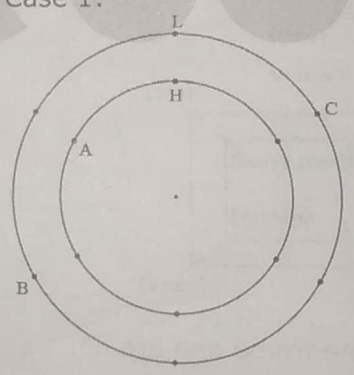
<u>QUESTION 11 TO 15</u>

C is standing on outer circle. B and C are facing towards each other.

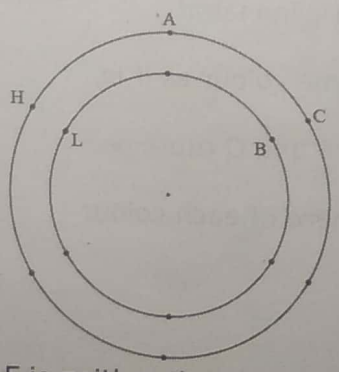
So, B can be standing either on inner circle or on outer circle.

L is standing 2nd to the left of B and is facing H. A is standing to the immediate left of H.

Case 1: -



Case 2: -



F is neither the neighbour of L nor the neighbour of B, but is standing on the same circle as that of L and B.

F is facing K, who is the neighbour of D and E.

Case 1: -

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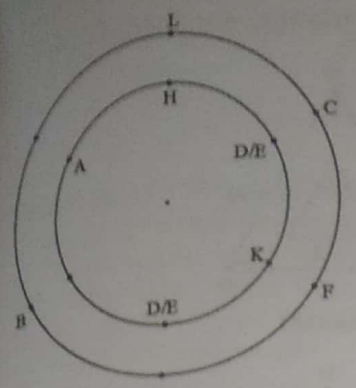
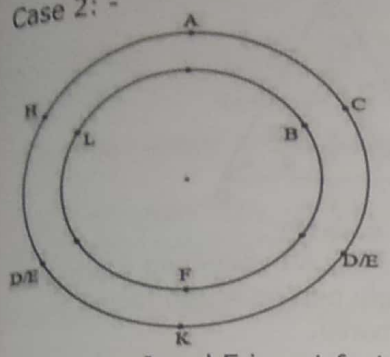
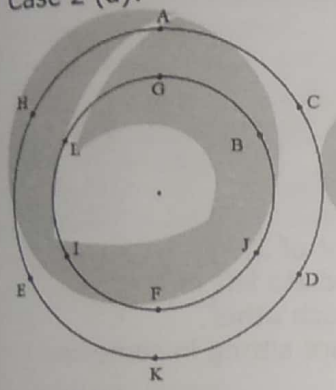


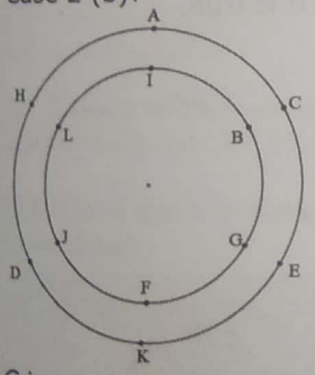
Case 2: -



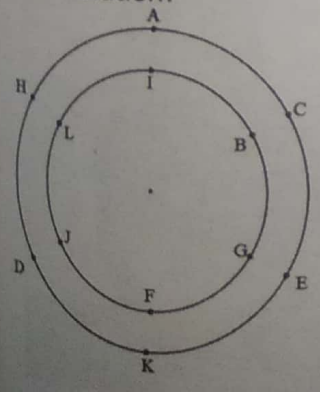
D is facing J and E is not facing C.
So, case 1 is invalid.
I is standing 2nd to the left of G.
Case 2 (a): -



Case 2 (b): -



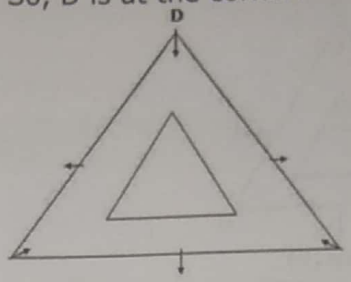
G is not the neighbour of L. So, case I is invalid.
Final Solution:



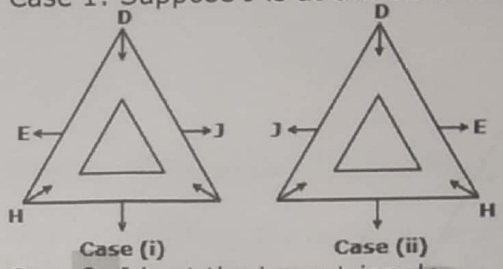
Answer 11: E is facing both G and H.
Answer 12: E is standing 2nd to the right of D.
Answer 13: G and J both are neighbour of F.
Answer 14: J is to the immediate right of L.
Answer 15: H is facing L.

QUESTION 16 TO 20

E is a neighbour of D and sitting at an edge. D is facing the centre and is on the outer triangle.
So, D is at the corner.

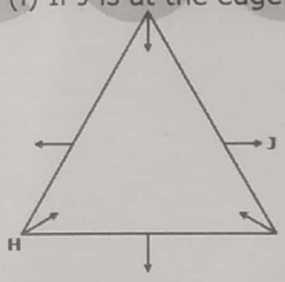


J is facing outside. H is sitting third to the right of J.
Case 1: Suppose J is at the outer triangle.



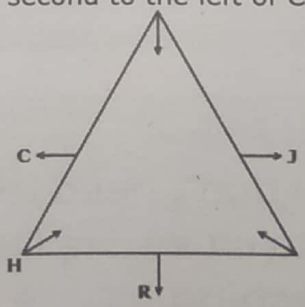
Case (i) Case (ii)

Case 2: J is at the inner triangle.
But H is not a neighbour of E. So, case 1 is invalid.
Let us consider only the inner triangle.
(i) If J is at the edge.



Inner triangle

One person is sitting between C and J. R is sitting second to the left of C.



Inner triangle

So, O and I will be at the outer triangle. As I is not a neighbour of E, we get two cases:

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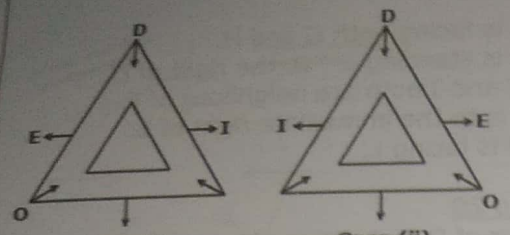
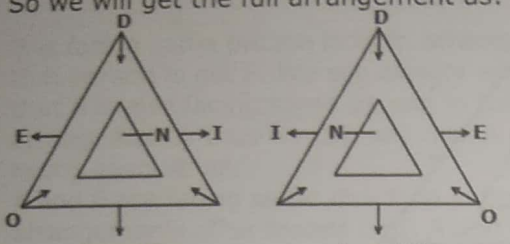


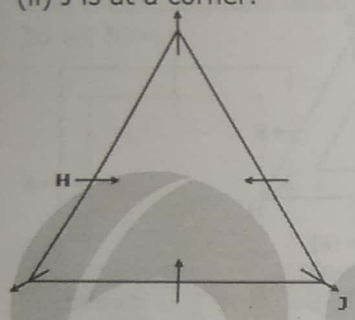
Case (i) Case (ii)

N is sitting behind I.
So we will get the full arrangement as:



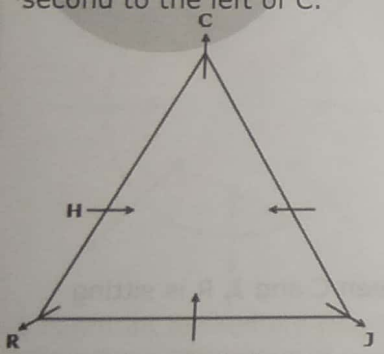
Case (i) Case (ii)

Carrying on with these 2 cases with one more possibility
(ii) J is at a corner.



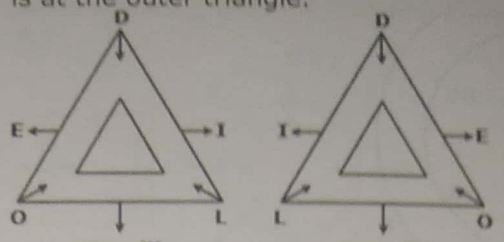
Inner traingle

One person is sitting between C and J. R is sitting second to the left of C.



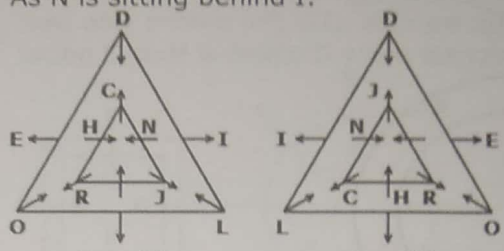
Inner traingle

All the corners of the inner triangle are filled. So, L is at the outer triangle.



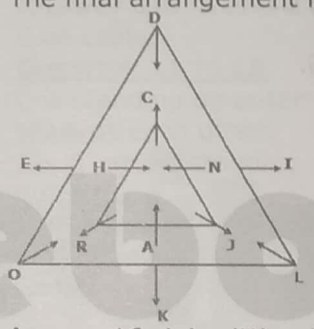
Case (i) Case (ii)

As N is sitting behind I:



Case (i) Case (ii)

A is not a neighbour of C. So, A is between R and J. But K is sitting immediately behind A and facing outside. So, case (ii) is invalid.
The final arrangement is:



Answer 16: L is sitting in front of J.
Answer 17: R is sitting immediate left of A.
Answer 18: R and O facing each other.
Answer 19: All D,C,A and K are sitting in same line of sight.
Answer 20: Statement II and III is true.

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CHAPTER 3 - FLOORS AND STACKS

This is one of the most asked topics of any government examination.
In previous chapters, we saw arrangement in various manners. Now, in this type of arrangement, the persons or things are to be arranged in a vertical manner. In linear arrangements we saw hints given with respect to 'left' and 'right' sides. Here, the hints will be given with respect to the keywords such as 'above' and 'below'.
These can be of two types –
(i) Floors Arrangement
(ii) Stacks Arrangement

FLOORS

What is floors arrangement?

In this arrangement, we need to arrange persons in a building. The building will have certain number of floors which will be numbered 1, 2, 3 and so on.

Let's learn the approach...

Floor arrangements can be of the following types:

I. One person living on each floor – Here, the number of floors will be equal to the number of persons and no floor will be vacant.
For example: Seven persons – A, B, C, D, E, F and G, live on different floors of a building having seven floors, such that bottommost floor is numbered 1 and the topmost floor is numbered 7.
Thus, we can represent this as follows:

Floor	Person
7	E
6	A
5	B
4	F
3	D
2	G
1	C

II. A floor with a vacant flat or a completely vacant floor – In this case, in one or more than one floor of the building, no one might be living, which means those floors become vacant.

III. More than one person living on each floor – In this case, more than one person might be living n given floors.

IV. Floors with flats – In this case, the building might have two or more flats on each floor. Thus, there may be multiple persons on each floor and, there can be multiple persons in each flat too.
For example: Following represents a seven floored building with two flats on each floor.

	Flat (i)	Flat (ii)
7	E	H
6	A	M
5	B	K
4	F	I
3	D	N
2	G	J
1	C	L

Note: We will study this case under Chapter 10.

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STACKS

What is stack arrangement?

In this arrangement, we need to arrange certain things in a vertical manner one above the other. These things can be different books, cartons, garments, etc. The arrangement can also involve different variables like colour, material etc.

Let's learn the approach...

Stack arrangement can be of the following types:
I. Single stack of items – Here, different items are arranged one above the other in one single stack.
For example – 8 items arranged one above the other can be represented as follows:

Item 8
Item 7
Item 6
Item 5
Item 4
Item 3
Item 2
Item 1

II. Multiple stacks (same or different heights) of items – In this type, we have more than one stack of items kept side by side, represented below as an example.

Stack 1	Stack 2
Item 7	Item 8
Item 6	Item 9
Item 5	Item 10
Item 4	Item 11
Item 3	Item 12
Item 2	Item 13
Item 1	Item 14

or

Stack 1	Stack 2
Item 7	
Item 6	
Item 5	
Item 4	Item 8
Item 3	Item 9
Item 2	Item 10
Item 1	Item 11

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KEY POINTERS

The following points are to be taken care for both Floors and Stack arrangements.

⇒ Always start with the fixed information.
For example, D lives on floor 5. Place D on floor 5 and then look for the paired data with D. If you find a paired data with D, use the data, else go for the data of the person which has been used in the maximum number of hints. For example, if G is mentioned in 3 different hints, then try to fix G's position.
⇒ If the phrase 'at a gap of' or 'in between' is mentioned, the position can be below or above the mentioned place.
For example: 'B was at a gap of 2 floors from F' or, 'there are two floors in between B's and F's floor' then, B can be below or above F.
OR, if given that, 'there are two boxes in between red and blue box', then red box can be either above or below the blue box.
⇒ If it is mentioned that 'one person lived above/below another person' or 'one box is above/below another box', then it does not necessarily mean immediately above/below.
⇒ The question can use the terms 'odd numbered', 'even numbered' or 'prime numbered floor/positions'. Even numbers: 2, 4, 6....so on. Odd numbers 1, 3, 5, 7... so on. Prime numbers: 2, 3, 5, 7 and so on.
⇒ If the question has a mention of a vacant floor, then be cautious about the number of persons living below/above someone.
For example, 'only 5 persons lived below A'. Thus, there can be 2 cases. A can be on floor 6 with 5 floors below him with no vacant floor or A can be on floor 7 with 6 floors below him of which one is vacant.
OR, if it is given – 'No one lives between A and B' and the building has one vacant floor, then A and B can either be on consecutive floors, or there might be one vacant floor in between them.

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⇒ Read the main text of the question carefully. The numbering of the floors can be top to bottom or bottom to top. Similarly, in stacks if boxes/things are given numbers, then that can be from either sides.
⇒ If a building has six floors and the floors are numbered from bottom to top having a 'ground floor' too, then, the topmost floor will be fifth floor.

Solved Examples

STACKS

Directions [1 to 5]: Eight boxes numbered 1-8 were stacked one over another such that the lowest box was numbered 1, then 2 and so on. Each box contained a different type of garment; Sherwani, Trouser, Shirt, Chinos, Cardigan, Gown, T-Shirt and Kurta not necessarily in the same order.
Sherwani was kept just above the cardigan. There were 3 boxes in between Cardigan and T-shirt. Box number of trouser was 4 times as that of the box number of kurta. There were 2 boxes in between box with Shirt and box with Kurta. Box with Shirt is above the box with Kurta. Chinos was not in the lowest box.

Question 1 _____ was kept in box number _____
a) Sherwani, 4 b) Chinos, 1
c) Trouser, 3 d) Shirt, 2
Question 2 Which of the following garment was kept in box number 1?
Question 3 Which of the following garment/garments was/were kept above Chinos?
I. Trouser II. Gown III. T-Shirt
Question 4 How many boxes were kept below the box containing cardigan?
Question 5 Which of the following garment was just above the shirt?
Solution:
• Box number of trouser was 4 times as that of the box number of kurta. Possible combinations will be (1, 4) or (2, 8)
• Shirt was in a box that was 3 boxes above the box with kurta, thus, kurta cannot be in box 1 else the shirt will not be placed.

8	Trouser
7	
6	
5	Shirt
4	
3	
2	Kurta
1	

• Sherwani was kept just above the cardigan

Case 1:

8	Trouser
7	Sherwani
6	Cardigan
5	Shirt
4	
3	
2	Kurta
1	

Case 2:

8	Trouser
7	
6	
5	Shirt
4	Sherwani
3	Cardigan
2	Kurta
1	

• Cardigan and T-shirt were at a gap of 3 boxes, thus, case 1 is invalid.
• Chinos was not in the lowest box
Thus, the final arrangement is as follows:

8	Trouser
7	T-Shirt
6	Chinos
5	Shirt
4	Sherwani
3	Cardigan
2	Kurta
1	Gown

Answer 1: Sherwani was kept in box number 4
Answer 2: Gown was kept in box 1

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Answer 3: T-shirt and trouser were kept above chinos
Answer 4: Two boxes were kept below the box containing cardigan
Answer 5: Chinos was just above the shirt

Directions [6 to 10]: Six boxes are kept one above another. The boxes are labelled as A, B, C, D, E and F. The box belongs to Richa, Ruhi, Beenu, Kajal, Payal and Tina, not necessarily in the same order. Each of them gifts their box to another person.
i) Box A is kept just below the box gifted by Richa to Kajal.
ii) The box gifted to Ruhi is kept just below the box that is gifted by Tina.
iii) Box E is kept above the box gifted to Richa. Box B is kept exactly between Box C and Box D
iv) Box gifted by Ruhi to Payal is kept just above the box gifted by Payal.
v) Box E is kept exactly between the box B and the box gifted to Richa. Box A and Box F is not kept at the bottom
vi) The gift gifted by Beenu is kept above the gift gifted by Kajal.

Question 6 If Box D is gifted by Payal, who gets Box C as a present?
Question 7 Which box is gifted to Tina?
Question 8 Which box is kept just above box B?
Question 9 Which box is gifted by Beenu?
Question 10 Who gifts Box E?
Solution:
Box E is kept exactly between the box B and the box gifted to Richa. Box E is kept above the box gifted to Richa. Box B is kept exactly between Box C and Box D. So the possible cases are as follows:
Case 1:

Position of the box	Box Label	Gifted by	Gifted to
Top 6			
5	D/C		
4			
3	B		
2	E		
Bottom 1	C/D		Richa

Case 2:

Position of the box	Box Label	Gifted by	Gifted to
Top 6	D/C		
5			
4	B		
3	E		
2	C/D		Richa
Bottom 1			

Case 3:

Position of the box	Box Label	Gifted by	Gifted to
Top 6	D/C		
5	B		
4	C/D		
3	F		
2			
Bottom 1			Richa

Box A is kept just below the box gifted by Richa to Kajal. Box A and Box F is not kept at the bottom. So the above cases can be modified as follows:
Case 1:

Position of the box	Box Label	Gifted by	Gifted to
Top 6	F		
5	D/C	Richa	Kajal
4	A		
3	B		
2	E		
Bottom 1	C/D		Richa

Case 2:

Position of the box	Box Label	Gifted by	Gifted to
Top 6	D/C	Richa	Kajal
5	A		
4	B		
3	E		
2	C/D		Richa
Bottom 1	F		

Box F is not kept at bottom so case 2 is rejected
Case 3:

Position of the box	Box Label	Gifted by	Gifted to
Top 6	D/C		
5	B		
4	C/D		
3	E	Richa	Kajal
2	A		
Bottom 1	F		Richa

Box F is not kept at bottom so case 3 is rejected
Box gifted by Ruhi to Payal is kept just above the box gifted by Payal. The box gifted to Ruhi is kept just below the box that is gifted by Tina. Above case can be modified as follows:
Case 1(a)

Position of the box	Box Label	Gifted by	Gifted to
Top 6	F		
5	D/C	Richa	Kajal
4	A	Ruhi	Payal
3	B	Payal	
2	E		
Bottom 1	C/D		Richa

We cannot apply the condition that the box gifted to Ruhi is kept just below the box that is gifted by Tina. Hence case 1(a) will be rejected

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Case 1(b)

Position of the box	Box Label	Gifted by	Gifted to
Top 6	F		
5	D/C	Richa	Kajal
4	A		
3	B	Ruhi	Payal
2	E	Payal	
Bottom 1	C/D		Richa

We cannot apply the condition that the box gifted to Ruhi is kept just below the box that is gifted by Tina. Hence case 1(b) will be rejected

Case 1(c)

Position of the box	Box Label	Gifted by	Gifted to
Top 6	F		
5	D/C	Richa	Kajal
4	A	Tina	
3	B		Ruhi
2	E	Ruhi	Payal
Bottom 1	C/D	Payal	Richa

The gift gifted by Beenu is kept above the gift gifted by Kajal. So the above case can be modified as follows:

Position of the box	Box Label	Gifted by	Gifted to
Top 6	F	Beenu	Tina
5	D/C	Richa	Kajal
4	A	Tina	Beenu
3	B	Kajal	Ruhi
2	E	Ruhi	Payal
Bottom 1	C/D	Payal	Richa

Answer 6: If Box D is gifted by Payal, Kajal gets Box C as a present

Position of the box	Box Label	Gifted by	Gifted to
Top 6	F	Beenu	Tina
5	C	Richa	Kajal
4	A	Tina	Beenu
3	B	Kajal	Ruhi
2	E	Ruhi	Payal
Bottom 1	D	Payal	Richa

Answer 7: Box F is gifted to Tina.
Answer 8: Box A is kept just above box B
Answer 9: Box F is gifted by Beenu.
Answer 10: Ruhi gifts Box E.

FLOORS

Question 11 8 persons A, B, C, D, E, F,G and H lives in an 8-storey building in such a way that each one lives on a different floor. Floors are numbered from 1 to 8 from bottom to top. There is a gap of one floor between both G and D and F and D. D lives above F but below G. G lives on even numbered floor, immediately below A. C lives on even numbered floor. B lives above E but below H. How many persons live above H?

Solution:

There is a gap of one floor between both G and D and F and D. D lives above F but below G. G lives on even numbered floor, immediately below A.

Floor Number	Person
8	
7	A
6	G
5	
4	D
3	
2	F
1	

C lives on even numbered floor. B lives above E but below H.

Floor Number	Person
8	C
7	A
6	G
5	H
4	D
3	B
2	F
1	E

Directions [12 to 16]: Jagdish, Karan, Kriti, Manvir, Naveen, Sheela, Tara and Trisha lives in six floored apartments (from first floor to sixth floor). On each floor minimum one and maximum two persons live.

i) Manvir lives below the floor in which Tara lives and above the floor in which Trisha lives.

ii) Tara lives exactly between the floor in which Naveen and Kriti lives.

iii) Sheela lives exactly between the floor in which Tara and Kriti lives.

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iv) Karan lives below the floor in which Kriti lives.
Tara lives on fourth floor.
v) Naveen lives just above the floor in which Jagdish lives.
vi) No other person lives on the floor in which Karan lives.
vii) Naveen and Manvir does not live on same floor

Question 12 Who live/lives just above the floor in which Karan lives?
I: Kriti II: Sheela
III: Trisha IV: Naveen
Question 13 ___ lives on 5th floor?
Question 14 Who lives exactly between the floor in which Naveen and Tara live?
Question 15 On which floor does Sheela lives?
Question 16 Who lives just below the floor in which Trisha lives?
Solution:
There are eight persons where minimum one and maximum two persons live in each floor, that means there are exactly two floors where two persons live.
Tara lives on fourth floor. Naveen lives just above the floor in which Jagdish lives. Tara lives exactly between the floor in which Naveen and Kriti lives. So, the following cases are possible:
Case 1:

Floor No.	Person
6	
5	Naveen
4	Tara, Jagdish
3	Kriti
2	
1	

Sheela lives exactly between the floor in which Tara and Kriti lives. So, case 1 will be rejected.
Case 2:

Floor No.	Person
6	Naveen
5	Jagdish
4	Tara
3	
2	Kriti
1	

Case 3:

Floor No.	Person
6	
5	Kriti
4	Tara
3	Naveen
2	Jagdish
1	

Sheela lives exactly between the floor in which Tara and Kriti lives. So, case 3 will be rejected.
Case 4:

Floor No.	Person
6	Kriti
5	
4	Tara
3	
2	Naveen
1	Jagdish

Since Sheela lives exactly between the floor in which Tara and Kriti lives so above cases can be modified as follows:
Case 2:

Floor No.	Person
6	Naveen
5	Jagdish
4	Tara
3	Sheela
2	Kriti
1	

Case 4:

Floor No.	Person
6	Kriti
5	Sheela
4	Tara
3	
2	Naveen
1	Jagdish

Manvir lives below the floor in which Tara lives and above the floor in which Trisha lives. Karan lives below the floor in which Kriti lives. No other person

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lives on the floor in which Karan lives. So above cases can be modified as follows:

Case 2:

Floor No.	Person
6	Naveen
5	Jagdish
4	Tara
3	Sheela, Manvir
2	Kriti, Trisha
1	Karan

Case 4:

Floor No.	Person
6	Kriti
5	Sheela
4	Tara
3	Karan
2	Naveen, Manvir
1	Jagdish, Trisha

Naveen and Manvir does not live on same floor. So, case 4 will be rejected.

So, the final arrangement will be:

Floor No.	Person
6	Naveen
5	Jagdish
4	Tara
3	Sheela, Manvir
2	Kriti, Trisha
1	Karan

Answer 12: Kriti and Trisha live just above the floor in which Karan lives.

Answer 13: Jagdish lives on 5th floor

Answer 14: Jagdish lives exactly between the floor in which Naveen and Tara live

Answer 15: Sheela lives on third floor

Answer 16: Karan lives below the floor in which Trisha lives

Directions [17 to 21]: Six persons - P, Q, R, S, T and U live in a six-floored building (floors are marked as first to sixth from bottom to top), each on different floor. Five of them have a business, each of different thing and some persons are male while some are female. One person has no business.

- S has leather business and is male.
- T lives on the bottommost floor.
- There is one floor in-between P, who is a female, and the one having plastic business, P is above the one with plastic business, who is neither T nor R.
- The persons living immediately above and below S, are female.
- Person having cotton business lives on topmost floor, who is not R.
- U lives immediately below R, and both of them are male.
- The person with iron business, who is not female, lives below the one with clothes business. There are 2 floors in between them.

Question 17 Who has no business?

Question 18 Who lives immediately above the person having clothes business?

Question 19 Who has plastic business?

Question 20 Which business does the one living on the bottommost have?

Question 21 On which floor does P lives?

Solution:

- T lives on the bottommost floor.
- Person having cotton business lives on topmost floor, who is not R.

We get,

6th		Cotton	
5th			
4th			
3rd			
2nd			
1st	T		

Now,

- There is one floor in-between P, who is a female, and the one having plastic business, P is above the one with plastic business, who is neither T nor R.

And,

- U lives immediately below R, and both of them are male.
- R doesn't have cotton business or plastic business.

We get following cases:

Case I:

6th		Cotton	
5th			
4th	P		Female
3rd	R		Male
2nd	U	Plastic	Male
1st	T		

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Case II:

6th		Cotton	
5th	P		Female
4th	R		Male
3rd	U	Plastic	Male
2nd			
1st	T		

Case III:

6th	P	Cotton	Female
5th	R		Male
4th	U	Plastic	Male
3rd			
2nd			
1st	T		

Case IV:

6th	P	Cotton	Female
5th			
4th		Plastic	
3rd	R		Male
2nd	U		Male
1st	T		

Now,

- S has leather business and is male.
- The persons living immediately above and below S, are female.

Thus, case II of above becomes invalid.

We get three possible cases:

Case I:

6th	Q	Cotton	Female
5th	S	Leather	Male
4th	P		Female
3rd	R		Male
2nd	U	Plastic	Male
1st	T		

Case II:

6th	P	Cotton	Female
5th	R		Male
4th	U	Plastic	Male
3rd	Q		Female
2nd	S	Leather	
1st	T		Female

Case III:

6th	P	Cotton	Female
5th	S	Leather	
4th	Q	Plastic	Female
3rd	R		Male
2nd	U		Male
1st	T		

It is given that,

- The person with iron business, who is not female, lives below the one with clothes business. There are 2 floors in between them.

Thus, case II and III become invalid, as these businesses cannot be placed.

And, also, we get that R has no business.

Final arrangement is as follows:

6th	Q	Cotton	Female
5th	S	Leather	Male
4th	P	Clothes	Female
3rd	R	No business	Male
2nd	U	Plastic	Male
1st	T	Iron	Male

Answer 17: R has no business.

Answer 18: S lives immediately above the person having clothes business.

Answer 19: U has plastic business.

Answer 20: T lives on bottommost floor and has iron business.

Answer 21: P lives on fourth floor.

Practice Yourself

Question 1 There are some boxes of mobile phones among which two are of Samsung, two of Oppo, two of Vivo, two of Redmi and one of Nokia. They are stacked one above the other from bottom to top. Number of boxes above Nokia are equal to number of boxes below it. No box of Redmi or Oppo is kept at the top. Both boxes of Oppo are kept together and the box of oppo is kept just above the box of Vivo. There are two boxes between the two Samsung boxes. One box of Vivo is kept just below to that of Redmi and another box is at the bottom of stack. How many boxes are kept between the two boxes of Redmi.

a) one b) none c) two
d) four e) three

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Question 2 Eight people A,B,C,D,E,F,G,H lived in an eight floored floor apartment numbered from (1-8), 8 being the topmost. Each of them lived in a different floor. A lived on the topmost floor. G who lived on 4th floor lived just below F. D lived on an even numbered floor above B. The difference in the floor number of C and E is 4, where C lived above E. H was not living below E. What is the difference in the floor number of D and H?

a) 3 b) 2 c) 5
d) 4 e) None of the above

Directions [3 to 7]: There were 7 racks which were built in a stack one over another. The racks were differently coloured black, brown, blue, golden, pink, green and yellow not necessarily in the same order. One of the racks was empty and others had different items from mobile, board game, tiffin box, water bottle, piggy bank and books not necessarily in the same order.

- The brown rack was empty and was above the rack with mobile with 3 racks in between them
- There are 2 racks in between yellow rack and the one that had the board game
- Yellow and brown racks were at consecutive order
- Black rack was just above the rack with books
- Black rack was above the pink rack with one rack in between them.
- Water bottle was above the rack with piggy bank and there are 2 racks in between them.
- Blue rack was just above the green rack

Question 3 Which of the following items was kept in the golden rack?

a) Board game b) Mobile
c) Piggy bank d) Books
e) Water bottle

Question 4 What was the colour of the rack that had the tiffin box?

a) Blue b) Yellow c) Green
d) Pink e) Black

Question 5 Which of the following items was kept in the topmost rack?

a) It was empty b) Water bottle
c) Board game d) Tiffin box
e) Cannot be determined

Question 6 Which of the following item was kept in the rack that was just above the black rack?

a) Water bottle b) Board game
c) Piggy bank d) Mobile
e) Tiffin box

Question 7 How many racks were there below the golden rack?

a) None b) One c) Two
d) Three e) More than three

Directions [8 to 12]: Ayush went to his friend's house who was very rich. There he saw that he had eight laptops of different brands among VAIO, HP, Compaq, Dell, Asus, Apple, Lenovo, Acer placed in a rack in the form of a stack not necessarily in the same order. The rack had slots numbered from 1-8 such that the 1st is the lowermost slot and 8th the uppermost slot. It is known that the dell laptop was kept at an odd numbered rack just above the Acer laptop. Apple laptop was kept at 2nd slot. There were four laptops between HP and VAIO where HP laptop was above the VAIO laptop. The Compaq and Asus laptop were adjacent to each other. The Asus laptop was not adjacent to Acer or VAIO laptops. Lenovo laptop is not adjacent to Acer laptop.

Question 8 At what position was the Lenovo laptop?

a) 5th
b) 3rd
c) 1st
d) 7th
e) Cannot Be Determined

Question 9 What is the position of VAIO laptop?

a) 3rd
b) 4th
c) 5th
d) 6th
e) Cannot Be Determined

Question 10 How many laptops are there between Asus and Lenovo laptops?

a) 3 b) 5 c) 4
d) 2 e) Cannot Be Determined.

Question 11 Which laptop among the following is kept just above Compaq laptop?

a) HP b) Dell c) acer
d) Vaio e) Cannot Be Determined

Question 12 Which among the following may be adjacent to the DELL laptop?

I. Compaq II. HP III. VAIO
a) I only b) II only c) I and II
d) II and III e) none

Directions [13 to 17]: 6 books of subjects Chemistry, Physics, Biology, History, Reasoning & Maths are placed one above other not necessarily in the same order. Each book has some weight. Weights are in whole numbers. Weights of books are consecutive nos. and increases from bottom to top.

- Physics book is kept above math book.
- History book is above biology book but below Physics book.
- Neither Biology nor chemistry book is kept at bottom place.
- Maths book is kept above reasoning book.
- Combined weight of Chemistry & Biology book is more than combined weight of Math & Physics book.
- Chemistry book is heavier than history book.
- Maths book is neither immediately above nor immediately below history book.
- History book weighs 11 kg.

Question 13 What is the weight of Physics Book?

a) 12 b) 13 c) 14

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d) Either 12 or 13 e) None of these

Question 14 Which of the following book is kept 3rd from the bottom?

a) History b) Physics c) Biology
d) Maths e) None of these

Question 15 Which book weighs 10 kg?

a) History b) Biology c) Physics
d) Reasoning e) Maths

Question 16 How many books are there between Maths & Physics book?

a) 3 b) 4 c) 2 d) Either 3 or 2 e) 1

Question 17 Four of the following are like in some way. Find the odd one?

a) Chemistry & Physics books
b) Chemistry & Biology books
c) Reasoning & Maths books
d) Reasoning & History books
e) Biology & Physics books

Directions [18 to 22]: Eight persons Gaurav, Garvit, Gargi, Garima, Gopal, Ganesh, Gayatri and Gautam lived in a building with eight floors where the floors were numbered 1-8 from bottom to top. Four of them were born in the metropolitan cities Bangalore, Kolkata, Mumbai and Hyderabad and lived on even valued floor and four of them were born in tier II cities Jaipur, Lucknow, Faridabad and Raipur and lived on odd valued floor. Only one person lived on each floor and no floor was vacant.

- There are 3 floors in between Gautam who was born in Kolkata and the one born in Hyderabad
- Gopal lived below the one born in Hyderabad, there are 2 floors in between them.
- Ganesh lived on floor 3 and was not born in Jaipur or Faridabad
- The one born in Bangalore lived on floor 2
- Gaurav lived just above Gayatri who was born either in Raipur or Faridabad
- The one born in Lucknow lived just above Garima who was not born in Bangalore
- There is 1 floor in between Garima and Garvit.

Question 18 Who among the following was born in Lucknow?

a) Gargi b) Garima c) Ganesh
d) Gaurav e) Gopal

Question 19 _____ was born in _____ and lived just below _____

a) Gopal, Jaipur, Garima
b) Garima, Hyderabad, Gargi
c) Gayatri, Raipur, Gaurav
d) Ganesh, Raipur, Gopal
e) Garvit, Bangalore, Gargi

Question 20 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?

a) Gargi b) Gaurav c) Gayatri
d) Gopal e) Ganesh

Question 21 Who among the following was born in Mumbai?

a) Gargi b) Garima c) Gayatri
d) Garvit e) Gopal

Question 22 Who among the following lived on even valued floor?

I. Gargi II. Gaurav III. Gopal
a) Only I b) Only II c) Only III
d) Both I and II e) Both II and III

Directions [23 to 27]: Eleven persons A, B, C, D, E, F, G, H, I, J and K were living in a building with 11 floors. The floors were numbered 1-11 from bottom to top. None of the floors was vacant and only one person lived on each floor.

The floor number of H was thrice as that of the floor number of J. G lived just below J. There are 2 floors between A and B. A lived on one of the floors above B. Sum of the floor numbers of F and G was equal to the floor number of A. K lived just above E. I lived on one of the prime numbered floors. Only 2 persons lived between D and I. I lived on one of the floors above D. At least 4 persons lived below E. A lives one of the floor above floor 6.

Question 23 Who lived on the lowest floor?

a) G b) F c) E d) D e) C

Question 24 How many persons lived above A?

a) None b) One c) Two
d) Three e) More than three

Question 25 Who among the following lived on floor 7?

a) K b) E c) C
d) I e) Cannot be determined

Question 26 What was the floor number of B?

a) Floor 1 b) Floor 2 c) Floor 5
d) Floor 6 e) Floor 8

Question 27 What was the difference between the floor numbers of A and F?

a) 1 b) 2 c) 3 d) 4 e) 5

Directions [28 to 30]: Eight boxes are kept one above another. The colour of the boxes are red, green, blue, maroon, yellow, pink, violet and grey, not necessarily in the same order as the boxes are kept. Each box has one item. The items are key ring, ball, pen, rubber, sharpener, book, notepad and mobile. The colour of the items is red, green, blue, maroon, yellow, pink, violet and grey, not necessarily in the same order. None of the boxes has item of same colour as that of the colour of the box.

i) The key ring is kept just above the box that has book. Mobile is kept exactly between the box containing notepad and ball.
ii) Violet box has a blue item. Neither the yellow box nor the green box is kept at the top or bottom.
iii) Red box is kept just below the grey box. Grey rubber is kept just below the box containing violet item. Green item is kept above the red item.
iv) The mobile is kept just above the box that has maroon item and just below the pink box.
v) There is one box between the Box of Yellow Sharpener and the green box. Yellow sharpener is

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kept above the green box. Colour of the ball is not violet.
vi) Pink box is kept exactly between green box and yellow box. Yellow box is kept above the green box.
vii) Blue box is kept immediately below the box containing the book. Pink item is kept below the red item.
viii) The position of the violet box with respect to blue box is same as that of position of violet item with respect to blue item.

Question 28 What is the colour of notepad?
a) Yellow b) Maroon c) Pink
d) Violet e) Green

Question 29 Which item is placed just above mobile?
a) Book b) Ball c) Sharpener
d) Mobile e) Pen

Question 30 Which item is placed second from top?
a) Red book in yellow box
b) Green book in red box
c) Yellow book in yellow box
d) Blue book in green box
e) Red book in grey box

Directions [31 to 35]: There are eight persons A, B, C, D, E, F, G, H living on eight floors in an apartment not necessarily in the same order. The floors are numbered from 1-8 where floor 1 is bottommost and floor 8 is topmost. It is known that there are different no. of rooms on different floors from 1-8 in random order. Some of them own cars among the brands Lancer, Audi, BMW, Ferrari, Skoda. The floor number and the number of rooms in that floor are not same and only one floor is there such that the floor number and the number of rooms are consecutive numbers. Persons having the same car brand are not adjacent to each other. There are two persons who don't own a car but none of them is A. H was not at the odd numbered floor. E who lives on the 3rd floor owns a Ferrari. There are 3 persons between A and G where G was above A. D was on a floor with 4 rooms but was not on floor 7. There are two Audi owners and one of them is C and the other Audi owner lives on a floor with 3 rooms. F owns a car but not BMW. BMW owner was on a floor with 5 rooms but was below E. The person living on the floor having seven rooms does not own any car and is not on 1st or 5thfloor. The difference between the number of rooms in 6th and 5th floor is 2 and one of the residents in these floors is C. The owner of Lancer lives on 8th floor. G owns a car but neither Audi nor Lancer.

Question 31 On which floor does B lives?
a) 8th b) 2nd c) 7th d) 1st e) 4th

Question 32 Who owns a BMW?
a) A b) F c) B d) H e) D

Question 33 What is the sum of the number of rooms of the floor on which the Lancer and BMW owner live?
a) 12 b) 9 c) 10 d) 8 e) 11

Question 34 Who among the following owns an Audi?
a) A b) G c) F d) D e) B

Question 35 Which among the following is the number of rooms on the floor in which the person not owning any car lives?
a) 3 b) 5 c) 2 d) 4 e) 1

Directions [36 to 38]: 6 friends A, B, C, D, E & F lives in different floors of same building. Ground floor is numbered 1 & top floor is numbered 6. Each person is travelling to different city. There are 2 doctors, 2 Engineers & 2 teachers. People with same profession don't live in consecutive floors.
- C who is a doctor, lives in 5th floor & is going to Kolkata
- Person going to Delhi who is not A, lives on floor 3 & is not an Engineer.
- Teacher lives on second floor.
- Floor number of A who is not an engineer, is more than person going to Pune.
- Floor numbers of D & B is more than F but less than person going to Lucknow.
- Floor numbers of person going to Lucknow is more than floor number of teachers.
- Person going to Bangalore is not a teacher.
- Person going to Mumbai lives above person going to Pune.

Question 36 How many people live between person going to Bangalore & person going to Mumbai?
a) 1 b) 2 c) 3 d) 4 e) No one

Question 37 How many persons floor number is greater than D's floor number?
a) 3 b) 4 c) 2
d) Either (a) or (b) e) Either (a) or (c)

Question 38 Who among the following is an engineer?
a) B
b) Person from Delhi
c) Person from Mumbai
d) Person from Bangalore
e) Both (a) & (c)

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ANSWER KEY

1. e	2. d	3. d	4. b	5. c	6. e	7. b	8. c	9. a
10. e	11. e	12. a	13. a	14. c	15. b	16. c	17. a	18. a
19. a	20. b	21. b	22. b	23. a	24. d	25. d	26. c	27. b
28. d	29. c	30. a	31. c	32. a	33. b	34. c	35. c	36. b
37. d	38. d							

DETAILED SOLUTIONS

Question 1

Number of boxes above Nokia are equal to number of boxes below it.
So, Nokia is kept in between
No box of Redmi or Oppo is kept at the top, so either Samsung or Vivo is at the top
One box of Vivo is at the bottom of stack

9	Samsung/Vivo
8	
7	
6	
5	Nokia
4	
3	
2	
1	Vivo

One box of Vivo is just below the box of Redmi, so Vivo cannot be at the top.
Samsung is at the top
There are two boxes between the two Samsung boxes

9	Samsung
8	
7	
6	Samsung
5	Nokia
4	
3	
2	
1	Vivo

Now,
One box of Vivo is kept just below to that of Redmi
So, two cases are possible
Case I:

9	Samsung
8	Redmi
7	Vivo
6	Samsung
5	Nokia
4	
3	
2	
1	Vivo

Case II:

9	Samsung
8	
7	
6	Samsung
5	Nokia
4	
3	
2	Redmi
1	Vivo

Both boxes of Oppo are kept together and the box of oppo is kept just above the box of Vivo
So, case II becomes invalid as oppo boxes cannot be placed
Correct arrangement of stack is,

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9	Samsung
8	Redmi
7	Vivo
6	Samsung
5	Nokia
4	Redmi
3	Oppo
2	Oppo
1	Vivo

So, three boxes are kept between the two Redmi boxes.

QUESTION 2

A lived on the topmost floor. G who lived on 4th floor lived just below F.

8	A
7	
6	
5	F
4	G
3	
2	
1	

D lived on an even floor above B. So there are two cases for this:

Case 1:

8	A
7	
6	D
5	F
4	G
3	
2	
1	

Case 2:

8	A
7	
6	
5	F
4	G
3	
2	D
1	B

The difference in the floor number of C and E is 4, where C lived above E.

Case 1:

8	A
7	C
6	D
5	F
4	G
3	E
2	H/B
1	B/H

Case 2:

8	A
7	C
6	H
5	F
4	G
3	E
2	D
1	B

But we are given that H was not living below E. Hence case 1 is invalid. So finally we have:

8	A
7	C
6	H
5	F
4	G
3	E
2	D
1	B

So difference= 6-2=4.

QUESTION 3 TO 7

- The brown rack was empty and was above the rack with mobile with 3 racks in between them.
- There are 2 racks in between yellow rack and the one that had the board game
- Yellow and brown racks were consecutive

Case 1:

	Board Game
Brown	--------
Yellow	
	Mobile

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Case 2:

Yellow	
Brown	--------
	Board Game
	Mobile

In this case we get 6 racks, the 7th one can be the top most or the bottom most rack

- Black rack was just above the rack with books
- Black rack was above the pink rack with one rack in between them.
- Water bottle was above the rack with piggy bank and there are 2 racks in between them.

Case 1:

	Board Game
	Water Bottle
Brown	--------
Yellow	
Black	Piggy Bank
	Books
Pink	Mobile

Case 2:

	Water Bottle
Yellow	
Brown	--------
	Piggy Bank
Black	Board Game
	Books
Pink	Mobile

- Blue rack was just above the green rack, thus, arrangement 2 becomes invalid.

The final arrangement is as follows:

Blue	Board Game
Green	Water Bottle
Brown	--------
Yellow	Tiffin Box
Black	Piggy Bank
Golden	Books
Pink	Mobile

QUESTION 8 TO 12

Apple laptop was kept at 2nd slot.

POSITION	LAPTOP
8	
7	
6	
5	
4	
3	
2	APPLE
1	

the dell laptop was kept at an odd numbered rack just above the Acer laptop. So, the possibilities for this are 7th position or 5th position.

Case 1: If the dell laptop is at 7th position:

POSITION	LAPTOP
8	
7	DELL
6	ACER
5	
4	
3	
2	APPLE
1	

There were four laptops between HP and VAIO where HP laptop was above the VAIO laptop

POSITION	LAPTOP
8	HP
7	DELL
6	ACER
5	
4	
3	VAIO
2	APPLE
1	

The Compaq and Asus laptop were adjacent to each other. This is possible if they are at 4/5 position in any order.

But we know that the Asus laptop was not adjacent to Acer or Vaio laptops. So, this case is invalid.

Case 2:

If the dell laptop is at 5th position:

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POSITION	LAPTOP
8	
7	
6	
5	DELL
4	ACER
3	
2	APPLE
1	

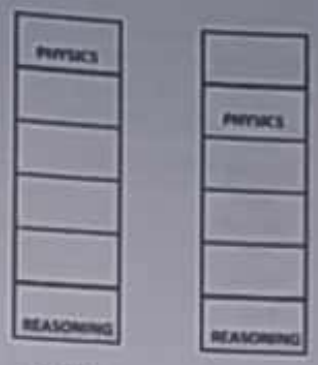
There were four laptops between HP and VAIO where HP laptop was above the VAIO laptop.
The Compaq and Asus laptop were adjacent to each other.
Lenovo laptop is not adjacent to Acer laptop.
So according to these conditions, the positioning would be as:

POSITION	LAPTOP
8	HP
7	COMPAQ/ASUS
6	ASUS/COMPAQ
5	DELL
4	ACER
3	VAIO
2	APPLE
1	LENOVO

Answer 10 - As the ASUS laptop is at either 6th or 7th position, so it cannot be determined that how many laptops are there between Asus and Lenovo laptops.

QUESTION 13 TO 17

- Physics book is kept above maths book.
- History book above biology book but below Physics book.
- Neither Biology nor chemistry book is kept at bottom place.
- Maths book is kept above reasoning book.

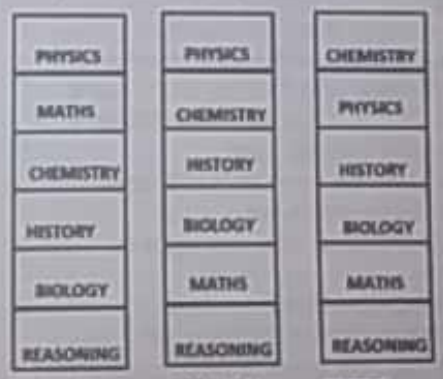


CASE 1 CASE 2

- History book is above biology book but below Physics book.
- Chemistry book is heavier than history book
- Weight increases from bottom to top

CASE 1-a CASE 1-b CASE 2

- Maths book is neither immediately above nor immediately below history book.
- Physics book is kept above math book.



CASE 1-a CASE 1-b CASE 2

- History book weighs 11 kg.
- Weights of books are consecutive nos. and increases from bottom to top.

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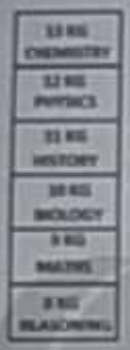
CASE 1-a CASE 1-b CASE 2

• Combined weight of Chemistry & Biology book is more than combined weight of math & Physics book



other cases are eliminated because they don't follow given condition.

CASE 2

Answer 17 - Both Biology & Physics books weight are even no. while in other options one book weight is an even no. & other book weight is an odd no.

QUESTION 18 TO 22

Four of them were born in the metropolitan cities Bangalore, Kolkata, Mumbai and Hyderabad and lived on even valued floor and four of them were born in tier II cities Jaipur, Lucknow, Faridabad and Raipur and lived on odd valued floor

• Gopal lived below the one born in Hyderabad, there are 2 floors in between them.

• Ganesh lived on floor 3 and was not born in Jaipur or Faridabad

• The one born in Bangalore lived on floor 2

• There are 3 floors in between Gautam who was born in Kolkata and the one born in Hyderabad

Case 1:

8		Hyderabad
7		
6		
5	Gopal	
4	Gautam	Kolkata
3	Ganesh	
2		Bangalore
1		

Case 2:

8	Gautam	Kolkata
7		
6		
5		
4		Hyderabad
3	Ganesh	
2		Bangalore
1	Gopal	

• The one born in Lucknow lived just above Garima who was not born in Bangalore

• There is 1 floor in between Garima and Garvit.

Case 1:

8	Garvit	Hyderabad
7		Lucknow
6	Garima	
5	Gopal	
4	Gautam	Kolkata
3	Ganesh	
2		Bangalore
1		

Case 2:

8	Gautam	Kolkata
7		Lucknow
6	Garima	
5		
4	Garvit	Hyderabad
3	Ganesh	
2		Bangalore
1	Gopal	

Case 2a:

8	Gautam	Kolkata
7		
6		
5		Lucknow
4	Garima	Hyderabad
3	Ganesh	
2		Bangalore
1	Gopal	

• Gaurav lived just above Gayatri who was born in Raipur or Faridabad

Case 1:

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8	Garvit	Hyderabad
7		Lucknow
6	Garima	
5	Gopal	
4	Gautam	Kolkata
3	Ganesh	Raipur
2	Gaurav	Bangalore
1	Gayatri	Faridabad

Case 2:

8	Gautam	Kolkata
7		Lucknow
6	Garima	
5		
4	Garvit	Hyderabad
3	Ganesh	
2		Bangalore
1	Gopal	

Invalid as Gaurav cannot be placed in this arrangement

Case 2a:

8	Gautam	Kolkata
7		
6		
5		Lucknow
4	Garima	Hyderabad
3	Ganesh	
2		Bangalore
1	Gopal	

Invalid as Gaurav cannot be placed in this arrangement

Thus, the final arrangement is as follows:

8	Garvit	Hyderabad
7	Gargi	Lucknow
6	Garima	Mumbai
5	Gopal	Jaipur
4	Gautam	Kolkata
3	Ganesh	Raipur
2	Gaurav	Bangalore
1	Gayatri	Faridabad

Answer 20 – Apart from Gaurav others were born in the tier II cities and lived on odd valued floor.

QUESTION 23 TO 27

- The floor number of H was thrice as that of the floor number of J. Thus, possible combinations can be (9, 3) (6, 2) (3, 1)
- G lived just below J. Thus, J cannot be on floor 1

	Case 1	Case 2
11		
10		
9	H	
8		
7		
6		H
5		
4		
3	J	
2	G	J
1		G

- I lived on one of the prime numbered floors
- Only 2 persons lived between D and I. I lived on one of the floors above D

	Case 1	Case 1a	Case 2	Case 2a
11	I		I	
10				
9	H	H		
8	D		D	
7		I		I
6			H	H
5				
4		D		D
3	J	J		
2	G	G	J	J
1			G	G

- A and B lived at a gap of 2 floors. A lived on one of the floors above B
- Sum of the floor numbers of F and G was equal to the floor number of A<table< p=""></table<>
- A lives one of the floor above floor 6.

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	Case 1	Case 1a	Case 2	Case 2a
11	I		I	A
10			A	F
9	H	H	F	
8	D	A	D	B
7	A	I	B	I
6		F	H	H
5	F	B		
4	B	D		D
3	J	J		
2	G	G	J	J
1			G	G

• K lived just above E, thus, case 1 and 2a become invalid.
• At least 4 persons lived below E, thus case 2 becomes invalid.
Thus, the final arrangement is as follows:

11	K
10	E
9	H
8	A
7	I
6	F
5	B
4	D
3	J
2	G
1	C

QUESTION 28 TO 30

There is one box between the box with Yellow sharpener and green box. Yellow Sharpener is kept above the green box. Neither the yellow box nor the green box is kept at the top or bottom. So the possible cases are as follows:

Case 1:

	Colour of the box	Item	Colour of the item
Top8			
7			
6			
5			
4		Sharpener	Yellow
3			
2	Green		
Bottom 1			

Case 2:

	Colour of the box	Item	Colour of the item
Top8			
7			
6			
5		Sharpener	Yellow
4			
3	Green		
2			
Bottom 1			

Case 3:

	Colour of the box	Item	Colour of the item
Top8			
7			
6		Sharpener	Yellow
5			
4	Green		
3			
2			
Bottom 1			

Case 4:

	Colour of the box	Item	Colour of the item
Top8			
7		Sharpener	Yellow
6			
5	Green		
4			
3			
2			
Bottom 1			

Case 5:

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	Colour of the box	Item	Colour of the item
Top8		Sharpener	Yellow
7			
6	Green		
5			
4			
3			
2			
Bottom 1			

Pink box is kept exactly between green box and yellow box. Yellow box is kept above the green box and both of them will not be at the top/bottom. So, we cannot place pink box in case 3 and case 4. In case 5, since colour of item and box cannot be same so, this case will also be invalid.

The above cases can be modified as follows:

Case 1:

	Colour of the box	Item	Colour of the item
Top8			
7			
6	Yellow		
5			
4	Pink	Sharpener	Yellow
3			
2	Green		
Bottom 1			

Case 2:

	Colour of the box	Item	Colour of the item
Top8			
7	Yellow		
6			
5	Pink	Sharpener	Yellow
4			
3	Green		
2			
Bottom 1			

The mobile is kept just above the box that has maroon item and just below the pink box. Above cases can be modified as follows:

Case 1:

	Colour of the box	Item	Colour of the item
Top8			
7			
6	Yellow		
5			
4	Pink	Sharpener	Yellow
3		Mobile	
2	Green		Maroon
Bottom 1			

Case 2:

	Colour of the box	Item	Colour of the item
Top8			
7	Yellow		
6			
5	Pink	Sharpener	Yellow
4		Mobile	
3	Green		Maroon
2			
Bottom 1			

The key ring is kept just above the box that has book. Blue box is kept immediately below the box containing the book. Above cases can be modified as follows:

Case 1:

	Colour of the box	Item	Colour of the item
Top8			
7		Key ring	
6	Yellow	Book	
5	Blue		
4	Pink	Sharpener	Yellow
3		Mobile	
2	Green		Maroon
Bottom 1			

Case 2a:

	Colour of the box	Item	Colour of the item
Top8		Key ring	
7	Yellow	Book	
6	Blue		
5	Pink	Sharpener	Yellow
4		Mobile	
3	Green		Maroon
2			
Bottom 1			

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Case 2b:

	Colour of the box	Item	Colour of the item
Top8			
7	Yellow		
6			
5	Pink	Sharpener	Yellow
4		Mobile	
3	Green	Key ring	Maroon
2		Book	
Bottom 1	Blue		

Red box is kept just below the grey box. Above cases can be modified as follows:

Case 1:

	Colour of the box	Item	Colour of the item
Top8	Grey		
7	Red	Key ring	
6	Yellow	Book	
5	Blue		
4	Pink	Sharpener	Yellow
3		Mobile	
2	Green		Maroon
Bottom 1			

Case 2a:

	Colour of the box	Item	Colour of the item
Top8		Key ring	
7	Yellow	Book	
6	Blue		
5	Pink	Sharpener	Yellow
4		Mobile	
3	Green		Maroon
2	Grey		
Bottom 1	Red		

Case 2b:

	Colour of the box	Item	Colour of the item
Top8			
7	Yellow		
6			
5	Pink	Sharpener	Yellow
4		Mobile	
3	Green	Key ring	Maroon
2		Book	
Bottom 1	Blue		

As the above condition cannot be applied in this case so case 2b will be rejected

Violet box has a blue item. The position of the violet box with respect to blue box is same as that of position of violet item with respect to blue item. Grey rubber is kept just below the box containing violet item.

So the above cases can be modified as follows:

Case 1:

	Colour of the box	Item	Colour of the item
Top8	Grey		
7	Red	Key ring	
6	Yellow	Book	
5	Blue		
4	Pink	Sharpener	Yellow
3	Violet	Mobile	Blue
2	Green		Maroon
Bottom 1			Violet

Grey rubber is kept just below the box containing violet item. So case 1 will be rejected.

	Colour of the box	Item	Colour of the item
Top8		Key ring	
7	Yellow	Book	
6	Blue		
5	Pink	Sharpener	Yellow
4	Violet	Mobile	Blue
3	Green		Maroon
2	Grey		Violet
Bottom 1	Red	Rubber	Grey

The position of the violet box with respect to blue box is same as that of position of violet item with respect to blue item.

Mobile is kept exactly between the box containing notepad and ball.

	Colour of the box	Item	Colour of the item
Top8	Maroon	Key ring	
7	Yellow	Book	
6	Blue	Notepad/Ball	
5	Pink	Sharpener	Yellow
4	Violet	Mobile	Blue
3	Green		Maroon
2	Grey	Ball/Notepad	Violet
Bottom 1	Red	Rubber	Grey

None of the boxes has item of same colour as that of the colour of the box.

Colour of the ball is not violet. Green item is kept above the red item. Pink item is kept below the red item.

So above case can be modified as follows:

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	Colour of the box	Item	Colour of the item
Top8	Maroon	Key ring	Green
7	Yellow	Book	Red
6	Blue	Ball	Pink
5	Pink	Sharpener	Yellow
4	Violet	Mobile	Blue
3	Green	Pen	Maroon
2	Grey	Notepad	Violet
Bottom 1	Red	Rubber	Grey

QUESTION 31 TO 35

E who lives on the 3rd floor owns a Ferrari.
The owner of Lancer lives on 8th floor.
There are 3 people between A and G where G was above A.

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6			
5			
4			
3	E	FERRARI	
2			
1			

Now G cannot live on 7th floor.
G does not own an Audi or a lancer.
So, G can't live on 8th floor.
So, G can live either on 6th or 5th floor and A on 2nd or 1st floor respectively.
Also, the difference between the number of rooms in 6th and 5th floor is 2 and one of the residents in these floors is C.
There are two Audi owners and one of them is C.
Case 1: When G is on 6th floor

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	G		
5	C	AUDI	
4			
3	E	FERRARI	
2	A		
1			

Case 2:
When G is on 5th floor:

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	C	AUDI	
5	G		
4			
3	E	FERRARI	
2			
1	A		

Now we know that the difference between the number of rooms in 6th and 5th floor is 2.
These can be:
8/6 or 6/8
7/5 or 5/7
6/4 or 4/6
5/3 or 3/5
4/2 or 2/4
3/1 or 1/3
There are two Audi owners and one of them is C and the other Audi owner lives on a floor with 3 rooms.
So, it cannot be 3/1 or 1/3 or 5/3 or 3/5.
D was on a floor with 4 rooms.
So, it cannot be 2/4 or 4/2 and also 6/4 or 4/6.
The person living on the floor having seven rooms does not own any car and is not on 1st or 5th floor.
So, it cannot be 5/7 or 7/5.
So, it can be 6/8 or 8/6.
Case 1(a):

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	G		6
5	C	AUDI	8
4			
3	E	FERRARI	
2	A		
1			

Case 1(b):

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	G		8
5	C	AUDI	6
4			
3	E	FERRARI	
2	A		
1			

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Case 2(a):

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	C	AUDI	6
5	G		8
4			
3	E	FERRARI	
2			
1	A		

Case 2(b):

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	C	AUDI	8
5	G		6
4			
3	E	FERRARI	
2			
1	A		

But we are given that the floor number and the number of rooms in that floor are not same.
So, case 1(a) and 2(a) are invalid.
Now since G does not own Audi, lancer, Ferrari or BMW; so, G owns Skoda.
D was on a floor with 4 rooms but was not on floor 7. It can't be on floor 4 because he stays in a floor with 4 rooms.
So, D is either on 8th or 1st or 2nd floor.
Case 1(b(i)):
When D is on 8th floor.

FLOOR	PERSON	CAR	ROOMS
8	D	LANCER	4
7			
6	G	SKODA	8
5	C	AUDI	6
4			
3	E	FERRARI	
2	A		
1			

Case 1(b(ii)):

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	G	SKODA	8
5	C	AUDI	6
4			
3	E	FERRARI	
2	A		
1	D		4

Now if we consider the other Audi owner who lives on a flat with three rooms, we can conclude that it cannot come on 1st floor and also on 4th floor as it will be adjacent to another Audi owner. Since A has to be the BMW owner with 5 rooms (BMW owner was on a floor with 5 rooms but was below E), so the Audi owner can be on 7th floor. But if the Audi owner comes on the seventh floor, the two persons who don't own a car will not be adjusted as none of those two can come on the 1st floor. Hence this case is invalid.
Case 2(b(i)):

FLOOR	PERSON	CAR	ROOMS
8	D	LANCER	4
7			
6	C	AUDI	8
5	G	SKODA	6
4			
3	E	FERRARI	
2			
1	A		

Case 2(b(ii)):

FLOOR	PERSON	CAR	ROOMS
8		LANCER	
7			
6	C	AUDI	8
5	G	SKODA	6
4			
3	E	FERRARI	
2	D		4
1	A		

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In this case, the Audi owner living on a flat with three rooms cannot sit on 7th floor as it will be adjacent to the other Audi owner. Also, it cannot come on 4th floor because it will violate the condition that, only one floor is there such that the floor number and the number of rooms are consecutive numbers.

Now we have to adjust the BMW owner who lives with a condition that, BMW owner was on a floor with 5 rooms but was below E. So, it has to be on 1st floor. So, there is no place for the other Audi owner. Hence this case is also not possible.

Moving ahead with case 1(b(i)) and case 2(b(i)):

Case 1(b(i)):

If the Audi owner comes at 7th floor, then the persons who don't own car shall come at 4th and 2nd floor. But it is given that A is not the one who doesn't own a car.

Audi owner cannot come at 4th or 2nd floor because the floor number and the number of rooms in that floor are not same and only one floor is there such that the floor number and the number of rooms are consecutive numbers.

So, it will be on 1st floor and A will be the BMW owner, and the persons on seventh and fourth floor will not own any car and on the 4th floor there will be 7 rooms.

Since on 3rd floor there cannot be 2 rooms, so it will have 1 room.

FLOOR	PERSON	CAR	ROOMS
8	D	LANCER	4
7		----	2
6	G	SKODA	8
5	C	AUDI	6
4		----	7
3	E	FERRARI	1
2	A	BMW	5
1		AUDI	3

Now considering Case 2(b(i)):

Audi owner cannot come at 7th floor. If the Audi owner comes at 7th floor, then the persons who don't own car shall come at 4th and 2nd floor. But it is given that A is not the one who doesn't own a car.

Audi owner cannot come at 4th or 2nd floor because the floor number and the number of rooms in that floor are not same and only one floor is there such that the floor number and the number of rooms are consecutive numbers.

So, the Audi owner will come at 1st floor and BMW owner at second floor.

The persons on seventh and fourth floor will not own any car and on the 4th floor there will be 7 rooms.

Since on 3rd floor there cannot be 2 rooms, so it will have 1 room.

FLOOR	PERSON	CAR	ROOMS
8	D	LANCER	4
7		-----	2
6	C	AUDI	8
5	G	SKODA	6
4		-----	7
3	E	FERRARI	1
2		BMW	5
1	A	AUDI	3

Now we know that

F owns a car but not BMW. So, this condition contradicts with this case. Hence this case is also not possible.

Moving ahead with case 1(b(i)):

F owns a car, so F owns Audi. H was not at the odd numbered floor, so H is at floor 4 and B at floor 7.

So finally, we have:

FLOOR	PERSON	CAR	ROOMS
8	D	LANCER	4
7	B	----	2
6	G	SKODA	8
5	C	AUDI	6
4	H	----	7
3	E	FERRARI	1
2	A	BMW	5
1	F	AUDI	3

QUESTION 36 TO 38

- C who is a doctor, lives in 5th floor & is going to Kolkata
- Person going to Delhi lives on floor 3 & is not an Engineer.
- Teacher lives on second floor.
- People with same profession don't live in consecutive floors.

Floor No.	Person	Destination	Profession
6			
5	C	Kolkata	Doctor
4			
3		Delhi	Doctor
2			Teacher
1			Engineer

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Since person going to Delhi is not an engineer & he cannot be a teacher, so he is a doctor. Person in 1st floor cannot be teacher & we already have 2 doctors, so he is an engineer.

- Floor numbers of D & B is more than F but less than person going to Lucknow.

Floor No.	Person	Destination	Profession	Floor No.	Person	Destination	Profession
6		Lucknow		6		Lucknow	
5	C	Kolkata	Doctor	5	C	Kolkata	Doctor
4	D/B			4			
3		Delhi	Doctor	3	D/B	Delhi	Doctor
2	B/D		Teacher	2	B/D		Teacher
1	F		Engineer	1	F		Engineer
Case 1				Case 2			

Floor No.	Person	Destination	Profession	Floor No.	Person	Destination	Profession
6		Lucknow		6		Lucknow	
5	C	Kolkata	Doctor	5	C	Kolkata	Doctor
4	B/D			4	B/D		
3	D/B	Delhi	Doctor	3	D/B	Delhi	Doctor
2			Teacher	2	F		Teacher
1	F		Engineer	1			Engineer
Case 3	Case 4						

Floor No.	Person	Destination	Profession
6			
5	C	Kolkata	Doctor
4		Lucknow	
3	D/B	Delhi	Doctor
2	B/D		Teacher
1	F		Engineer
Case 5			

- Floor numbers of person going to Lucknow is more than floor number of teachers.

Floor No.	Person	Destination	Profession	Floor No.	Person	Destination	Profession
6		Lucknow	Engineer	6		Lucknow	Engineer
5	C	Kolkata	Doctor	5	C	Kolkata	Doctor
4	D/B		Teacher	4			Teacher
3		Delhi	Doctor	3	D/B	Delhi	Doctor
2	B/D		Teacher	2	B/D		Teacher
1	F		Engineer	1	F		Engineer
Case 1				Case 2			

Floor No.	Person	Destination	Profession	Floor No.	Person	Destination	Profession
6		Lucknow	Engineer	6		Lucknow	Engineer
5	C	Kolkata	Doctor	5	C	Kolkata	Doctor
4	B/D		Teacher	4	B/D		Teacher
3	D/B	Delhi	Doctor	3	D/B	Delhi	Doctor
2			Teacher	2	F		Teacher
1	F		Engineer	1			Engineer
Case 3	Case 4						

Case 5 is eliminated because no such place was available for 2nd teacher.

- Floor number of A who is not an engineer, is more than person going to Pune.
- Person going to Delhi who is not A, lives on floor 3 & is not an Engineer.

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Floor No.	Person	Destination	Profession	Floor No.	Person	Destination	Profession
6	E	Lucknow	Engineer	6	E	Lucknow	Engineer
5	C	Kolkata	Doctor	5	C	Kolkata	Doctor
4	A		Teacher	4	A		Teacher
3	D/B	Delhi	Doctor	3	D/B	Delhi	Doctor
2	B/D	Pune	Teacher	2	B/D		Teacher
1	F		Engineer	1	F	Pune	Engineer
Case 2-a	Case 2-b						

Floor No.	Person	Destination	Profession
6	E	Lucknow	Engineer
5	C	Kolkata	Doctor
4	B/D		Teacher
3	D/B	Delhi	Doctor
2	A		Teacher
1	F	Pune	Engineer
Case 3			

Case 1 & 4 is eliminated because in those cases no such place available for A.

- Person going to Bangalore is not a teacher
- Person going to Mumbai lives above person going to Pune.

Floor No.	Person	Destination	Profession
6	E	Lucknow	Engineer
5	C	Kolkata	Doctor
4	A	Mumbai	Teacher
3	D/B	Delhi	Doctor
2	B/D	Pune	Teacher
1	F	Bangalore	Engineer

Case 2-a

Other cases are eliminated because no such place Available for person going to Bangalore.

Final Sol:

Floor No.	Person	Destination	Profession
6	E	Lucknow	Engineer
5	C	Kolkata	Doctor
4	A	Mumbai	Teacher
3	D/B	Delhi	Doctor
2	B/D	Pune	Teacher
1	F	Bangalore	Engineer
Case 2-a			

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CHAPTER 4 - DATES BASED

What are dates-based puzzles?

It is a kind of arrangement where you need to find the sequence of events happening. In this topic, the question mentions some events happening in some months of the same year but on different dates. They can have 2 or more than 2 dates and multiple months based on the difficulty level of the question.

Let's learn the approach...

We can understand this by the help of following example:
We have, eight blood donation camps A, B, C, D, E, F, G and H were organised in the months January, March, April and June on either 5th or 25th of these months not necessarily in the same order.
This can be represented as follows –

January 5	Camp 1
January 25	Camp 2
March 5	Camp 3
March 25	Camp 4
April 5	Camp 5
April 25	Camp 6
June 5	Camp 7
June 25	Camp 8

There can be 2 types of dates-based puzzles that can be asked:

I. One event on every date – In this case, on each mentioned date, one event occurs. The above example is a case of the same.

II. No event occurs on a certain date(s) – In this case, on certain date or dates, no event occurs.
For example: Seven blood donation camps A, B, C, D, E, F and G were organised in the months January, March, April and June on either 5th or 25th of these months not necessarily in the same order. Thus, on one of the dates, there will be no such camp.
As, there are seven events and 8 dates. So, one date will not have any event.

III. More than one event on a certain date(s) – In this case, some dates may have occurrence of more than one event.

KEY POINTERS

⇒ Start with the fixed data.
For example, camp A was organised on 25th March. Thus, fix this event and then find the event for which maximum information has been given.
⇒ The question might test your knowledge about the number of days in the months.
January, March, May, July, August, October and December have 31 days.
April, June, September and November have 30 days.
February has 28 or 29 days based on the year (If it's a leap year then, February will have 29 days).
⇒ If the phrase giving number of events 'in between' is mentioned, the former event can be before or after the mentioned latter event.
For example: There were two events between A and B. Then, event A can be before or after the camp C.
⇒ Be cautious about the terms 'consecutive months' and 'consecutive events.'
March and April are said to be consecutive months. The events can be on any of the given dates in these 2 months.
And, if the question mentions consecutive events/turns, then the events occur consecutively without a gap of any date (not having any event in between) not necessarily in the same month.
⇒ Use the negative data to eliminate the cases. For example: A and B were not organised in same month. Thus, there will be no such case where the mentioned events A and B are organised in the same month.

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Solved Examples

Directions [1 to 5]: Eight persons P, Q, R, S, T, U, V and W joined a company MNO Pvt Ltd in the months of January, February, March and April on either 10th or 15th of the month. Only one person joined the company on each of these dates. They joined the company in the same year.
The number of persons who joined after S was twice as that of the number of persons who joined before V. S was not the last to join the company. R joined just after P. Only 2 persons joined between S and R. W joined the company on 10th. T joined the company just after Q.

Question 1 Who was the last to join the company?
Question 2 How many persons joined the company between V and T?
Question 3 When did T join the company?
Question 4 Who joined the company just before U?
Question 5 Who joined the company in february?
Solution:
- The number of persons who joined after S was twice as that of the number of persons who joined before V
- Only 2 persons joined between S and R
- R joined just after P

January 10	
January 15	V
February 10	R
February 15	
March 10	
March 15	S
April 10	
April 15	

Invalid as R joined just after P
Or

January 10	
January 15	
February 10	V
February 15	S
March 10	
March 15	P
April 10	R
April 15	

Or

January 10	
January 15	S
February 10	
February 15	V
March 10	R
March 15	
April 10	
April 15	

Invalid as R joined just after P
- W joined the company on 10th
- T joined the company just after Q

The final arrangement is as follows:

January 10	Q
January 15	T
February 10	V
February 15	S
March 10	W
March 15	P
April 10	R
April 15	U

Answer 1: U was the last to join the company
Answer 2: Nobody joined the company between v and T
Answer 3: T joined the company on 15th January
Answer 4: R joined the company just before U
Answer 5: S and V joined the company in February

Directions [6 to 9]: Eight bookies A, B, C, D, E, F, G and H bought some lucky draw tickets in the months of March, April, May and June on either 10th or 23rd of the month. They bought tickets such that a person who bought tickets in a month with odd number of days bought odd number of tickets and a person who bought tickets in a month with even number of days bought even number of tickets.
C bought 8 tickets less than F who bought tickets in June. There are three persons who bought the tickets between the days on which F and C bought. E bought his tickets on 23rd March. 19 tickets were bought on 10th May. Number of tickets bought by A was equal to the numerical value of the date on which he bought the tickets. D bought his tickets just after G. The one who bought 11 tickets bought tickets just after B. The one who bought tickets on 23rd April had twice the number of tickets as that with A. H bought 12 tickets. D bought 2 tickets less than G. Total 26 tickets were bought in March. More than 38 tickets were bought in June.
Question 6 Who bought the least number of tickets?
Question 7 How many tickets (total) were bought in May?
Question 8 Who among the following bought more number of tickets than that bought by G?
I. C II. E III. B
Question 9 How many persons bought tickets after D?
Solution:
- E bought his tickets on 23rd March
- 19 tickets were bought on 10th May

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• The one who bought tickets on 23rd April had twice the number of tickets as that with A. As number of tickets bought by A was equal to the date on which he bought the tickets, so A could have bought 10 or 23 tickets. Thus, the one who bought tickets on 23rd April must have bought 20 or 46 tickets

March 10		
March 23	E	
April 10		
April 23		20/46
May 10		19
May 23		
June 10		
June 23		

• C bought 8 tickets less than F who bought tickets in June, thus, both had even number of tickets.
• There are three persons who bought the tickets between the days on which F and C bought

March 10		
March 23	E	
April 10		
April 23	C	20/46
May 10		19
May 23		
June 10		
June 23	F	

Or

March 10		
March 23	E	
April 10	C	
April 23		20/46
May 10		19
May 23		
June 10	F	
June 23		

• D bought his tickets just after G
• D bought 2 tickets less than G

March 10		
March 23	E	
April 10		
April 23	C	20/46
May 10	G	19
May 23	D	
June 10		
June 23	F	

Or

March 10		
March 23	E	
April 10	C	
April 23		20/46
May 10	G	19
May 23	D	
June 10	F	
June 23		

• Number of tickets bought by A was equal to the date on which he bought the tickets
• The one who bought tickets on 23rd April had twice the number of tickets as that with A
• Total 26 tickets were bought in March.
• H bought 12 tickets

Case 1:

March 10		
March 23	E	
April 10	H	12
April 23	C	20
May 10	G	19
May 23	D	17
June 10	A	10
June 23	F	

Or

March 10		
March 23	E	
April 10	A	10
April 23	C	20
May 10	G	19
May 23	D	17
June 10	H	12
June 23	F	

Case 2:

March 10		
March 23	E	
April 10	C	
April 23		20/46
May 10	G	19
May 23	D	
June 10	F	
June 23		

Case is invalid as we cannot place A here.
• C bought 8 tickets less than F who bought tickets in June
• The one who bought 11 tickets bought tickets just after B
• Total 26 tickets were bought in March.

March 10	B	15
March 23	E	11
April 10	H	12
April 23	C	20
May 10	G	19
May 23	D	17
June 10	A	10
June 23	F	28

Case is invalid as More than 38 tickets were bought in June
Thus, the final arrangement is as follows:

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March 10	B	15
March 23	E	11
April 10	A	10
April 23	C	20
May 10	G	19
May 23	D	17
June 10	H	12
June 23	F	28

Answer 6: A bought the least number of tickets
Answer 7: A total of 36 tickets were bought in May
Answer 8: Among the given persons only C bought more tickets than that bought by G
Answer 9: Two persons bought tickets after D

Directions [10 to 13]: Eight friends A, B, C, D, E, F, G & H have meeting on 12th, 13th & 14th of January, February & March. Each person has meeting on only one day. No two friends have meeting on same day. They have meetings on different places Pune, Patna, Auli, Ooty, Delhi, Mumbai, Kolkata & Punjab (not necessarily in the same order)
A has meeting on an odd date of a month which has 31 days. 2 people have meeting between A & C who doesn't have meeting on an odd date. 2 people have meeting between E & the person who has meeting in Kolkata. G doesn't have meeting in Auli & Mumbai. D doesn't have meeting in Punjab. The person who has meeting in Kolkata has meeting on an even date. Atleast 4 people have meeting between G & F who has meeting in Patna. The person who has meeting in Pune has meeting before F. Only 2 persons has meeting between the person who has meeting in Mumbai & the person who has meeting in Auli. B has meeting before H. Atleast 1 person has meeting between A & the person who has meeting in Kolkata. No one has meeting between D & E whose meeting is in Ooty. 3 people have meeting between the person who has meeting in Kolkata & G who has meeting after February.

Question 10 How many people have meeting between B & the person who has meeting in Patna?
Question 11 The person who has meeting in Auli has meeting on _____
Question 12 Which of the following is definitely true?
I. A has meeting in Auli.
II. No one has meeting between H & the person who has meeting in Auli.
III. D has meeting before F.
a) I b) I & II
c) All of these d) Either I or II
e) None of these
Question 13 D & the person who has meeting in Patna has meeting on _____ & _____ respectively.
Solution:
• A has meeting on an odd date of a month which has 31 days.
• 2 people have meeting between A & C who doesn't have meeting on an odd date.

Dates	Person	Place	Person	Place
12 Jan				
13 Jan			A	
14 Jan				
12 Feb	C			
13 Feb				
14 Feb			C	
12 March				
13 March	A			
14 March			G	
	Case 1	Case 2		

• 3 people have meeting between the person who has meeting in Kolkata & G who has meeting after February.
• Atleast 1 person has meeting between A & the person who has meeting in Kolkata.

Dates	Person	Place	Person	Place	Person	Place
12 Jan						
13 Jan				Kolkata	A	
14 Jan						
12 Feb	C	Kolkata	C			/Kolkata
13 Feb						/Kolkata
14 Feb					C	
12 March			G			
13 March	A		A			
14 March	G				G	
	Case 1-a	Case 1-b	Case 2			

• No one has meeting between D & E who meeting in Ooty.
• 2 people have meeting between E & the person who has meeting in Kolkata.
• 2 people have meeting between A & C.
• The person who has meeting in Kolkata has meeting on an even date.

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Dates	Person	Place	Person	Place
12 Jan	E	Ooty		
13 Jan	D		A	
14 Jan				
12 Feb	C	Kolkata		Kolkata
13 Feb			------	--------
14 Feb			C	
12 March			D/E	
13 March	A		E/D	
14 March	G		G	
	Case 1-a	Case 2		

- Atleast 4 people have meeting between G & F who has meeting in Patna.
- The person who has meeting in Pune has meeting before F
- 2 people have meeting between A & C.
- 3 people have meeting between the person who has meeting in Kolkata & G

Dates	Person	Place	Person	Place
12 Jan	E	Ooty		
13 Jan	D	Pune	A	
14 Jan	F	Patna	F	Patna
12 Feb	C	Kolkata		Kolkata
13 Feb			------	--------
14 Feb			C	
12 March			D	
13 March	A		E	Ooty
14 March	G		G	
	Case 1-a	Case 2		

- Only 2 person has meeting between the person who has meeting in Mumbai & the person who has meeting in Auli.
- G doesn't have meeting in Auli & Mumbai.
- E doesn't have meeting in Punjab.

Dates	Person	Place
12 Jan		Pune
13 Jan	A	Auli/Mumbai
14 Jan	F	Patna
12 Feb		Kolkata
13 Feb	------	--------
14 Feb	C	Mumbai/Auli
12 March	D	Delhi
13 March	E	Ooty
14 March	G	Punjab
	Case 2	

- B has meeting before H.

Dates	Person	Place
12 Jan	B	Pune
13 Jan	A	Auli/Mumbai
14 Jan	F	Patna
12 Feb	H	Kolkata
13 Feb	------	--------
14 Feb	C	Mumbai/Auli
12 March	D	Delhi
13 March	E	Ooty
14 March	G	Punjab
	Case 2	

Answer 10: One person has meeting between B & the person who has meeting in Patna
Answer 11: Either 14 Feb or 13 Jan
Answer 12: Option (d) is correct.
Answer 13: D & the person who has meeting in Patna has meeting on 12th March & 14th jan respectively.

Practice Yourself

Question 1 Eight persons A, B, C, D, E, F, G and H joined a start-up company in the months of January, February, March and April on the dates 5th or 12th of these months. Only one person joined on any date. Two persons has joined between the joining date of F and C and C joined after F. E joined the organisation just after C. One person joined between G and E, but not in April or March. One person joined between A and H. Number of persons who joined after G was twice as that of the number of persons who joined before H. D joined just after B. Who was the one who joined the company just after F?

a) A b) H c) G d) B e) E

Question 2 Eight persons A, B, C, D, E, F, G and H won lotteries in the months of January, February, March and April on either 7th or 27th of the month. Nobody won the lottery twice and at least one person won on each day. H won the lottery in March and 3 persons won the lottery between H and E. E and A won lotteries in the same month. 4 persons won lotteries between G and D. D won after G. B won the lottery immediately after F. C won the lottery on 27th. Who won the lottery immediately before C?

a) A b) D c) G
d) H e) Cannot be determined

Directions [3 to 7]: A block was divided into 10 villages A, B, C, D, E, F, G, H, I and J. These villages were electrified one by one not necessarily in the same order. The electrification took place in the months of January, February, March, April and May on either 11th or 23rd of these months. No 2 villages were electrified on the same day. The electrification took place in the same year.

- Number of villages electrified after village B was thrice as that the number of villages that were electrified after village A. B was not electrified the last
- 2 villages were electrified between A and F

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• Number of villages electrified after village I was twice as that of the number of villages electrified before D
• B and D were electrified consecutively
• G was electrified just before E but neither of them was the last or the first to be electrified
• J was electrified on 23rd
• C was electrified in March

Question 3 Which of the following village was electrified the 2nd last?
a) F b) A c) G d) H e) E

Question 4 How many villages were electrified before village G?
a) One b) Two c) Three
d) Four e) More than four

Question 5 How many villages were electrified between village F and H?
a) None b) One c) Two
d) Three e) Four

Question 6 Which of the following village was electrified on 11th March?
a) J b) G c) F
d) C e) Cannot be determined

Question 7 When was village E electrified?
a) 11th February b) 23rd March
c) 23rd February d) 11th April
e) 23rd April

Directions [8 to 11]: 6 persons namely A, B, C, D, E and F are going to a trip. They booked the ticket on different dates. They booked either on 24th or on 29th of the month. They booked the ticket in the month of either May or September or November, of the same year. Each one booked ticket from one of the websites among MMT, Clear Trip, Travel Guru and Expedia, not necessarily in the same order. At-least 1 person booked ticked from each website.
Only 2 persons booked ticket from MMT and A is one of them. Only 3 persons booked ticket after A. B and C booked ticket on the same date, in the months with even number of days. Only D booked ticket from the website Travel Guru. D booked ticket in the same month as that of F. B and E booked ticket from the same website but not from Expedia. Any 2 persons who booked from the same website, booked it in different month as well as on different date. No other person booked the ticket from the same website as that of C.

Question 8 F booked ticked by __.
a) Expedia b) Clear Trip
c) Travel Guru d) MMT
e) Cannot be determined

Question 9 E booked ticket by __.
a) Expedia b) Clear Trip
c) MMT d) Travel Guru
e) Cannot be determined

Question 10 __ booked the ticket on 24 September.
a) F b) A c) D d) B e) G

Question 11 __ booked ticket first among all.
a) B b) F c) D d) A e) G

Directions [12 to 16]: There are eight companies - P, Q, R, S, T, U, V and W, each of whose share prices raised up or dropped down on different days in year 2016. Their share raised or dropped on either 8th, 17th or 26th of the months - February, June and September. In September, only on two days the share prices rise/drop, while in rest of the given months, on all three days. Each day, shares of only one company rise/drop.
• Share of W and Q, raised/dropped in the same month, given Q's on odd numbered date.
• On 26th February, shares of S dropped.
• P's shares dropped on 8th of the month with even numbered days.
• In September, only on even numbered dates, the share raised/dropped.
• In February, only one company's shares dropped and In June only one company's shares raised.
• The shares of U and T, dropped, but not in June.
• On odd numbered day of a month with even numbered days, the shares raised, which is not of R.
• Shares of three companies raise/dropped between Q and R, with Q's share prices change before R.

Question 12 When did Q's share Raised/dropped?
a) 17th June b) 17th September
c) 26th February d) 17th February
e) 26th June

Question 13 Which of the following company's shares dropped?
I: S II: R III: V
a) Only III b) I and III c) I and II
d) I, II and III e) None of the given

Question 14 Which company's shares out of the following raised/dropped in the same month as V?
a) P b) U c) T d) Both U and T e) W

Question 15 How many company's share dropped after Q's share dropped/raised?
a) Five b) Four c) Three
d) More than five e) None

Question 16 Which company's share prices changed before any of the other company among the given companies?
a) Q b) P c) U d) T e) W

Directions [17 to 20]: A talent hunt competition is being organised by a TV channel. Auditions for this talent hunt competition are supposed to take place in 12 different cities of India in months of January, April, May and June. Auditions take place either on 6th, 15th or 28th of each of the given months. Different number of people give auditions on these dates. It is known that number of people giving audition are in multiples of 25.
Audition in Jaipur are held on an odd date and in a month having odd number of days, but number of people giving auditions in Jaipur are even.

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Auditions in Indore take place immediately after auditions in Patna but not in the month of January. 250 people attend Bengaluru auditions in June. 100 less people from bengaluru attend Mumbai audition on the same date of a different month. Lucknow and Ahmedabad audition take place in the same month having even number of days, there is a difference of 50 in people attending audition in these cities. One audition takes place between audition in Delhi and Hyderabad, neither of them has 300 people attending auditions por they are held in May. Odd number of people attend auditions taking place on odd dates of April and May. 75 people attend audition in Chennai. Lucknow audition is attended by 125 people and auditions immediately preceding and following it have more number of people attending them than at Lucknow. Pune audition is the last to take place. 300 people attend audition which is immediately preceded by Pune auditions. Audition attended by 150 people does not take place in a month having odd number of days. Three auditions take place between audition in Chandigarh and audition attended by the least number of people. Highest number of people attending an audition is 350 and the number of people attending all other auditions decrease successively by a common multiple. 100 people attend audition in Delhi, audition following it immediately is attended by 200 people. Patna audition is attended by 225 people, 100 more people attend audition immediately following it. Pune audition is attended by more number of people than Hyderabad.
Answer the following questions based on the above information:

Question 17 How many auditions take place between Mumbai audition and Chandigarh auditions?
a) 4 b) 6 c) 8 d) 3 e) None of these
Question 18 Ahmedabad audition is on which date?
a) 28th April b) 15th April c) 6th May
d) 28th May e) None of these
Question 19 Where do 6th May auditions take place?
a) Lucknow b) Patna c) Chandigarh
d) Chennai e) None of these
Question 20 How many people attend auditions in Mumbai, Patna and Pune together?
a) 700 b) 800 c) 900
d) 450 e) None of these

Directions [21 to 25]: Eight persons A, B, C, D, E, F, G and H were born in the months of January, march, April and May on either 3rd or 23rd of these months. They were born in the same year. No two persons were born on the same day. Each of them had a different weight. The persons born in the months with even number of days had a body weight of even value and the persons born in the months with odd number of days had a body weight of odd value. All the weights were in the range of 50kg to 90kg (both exclusive).
- H's body weight was a perfect square
- There are 2 persons born between H and F
- C was weighed 1kg less tnan H
- There was one person who weighed 65kg
- Number of persons born before A was 3 more than the number of persons born after E. At least one person has born after E
- E and G were born in the same month
- There are 2 persons born between G and the one who weighed 72 kgs
- B's body weight was a perfect square and he was 4kg heavier than D who was born in March
- The one born on January 3rd weighed 63kg
- The one born on May 23 was 6kg heavier than the one who was born on May 3 but weighed 6 kg less than F
- G weighed less than H

Question 21 What was the weight of the youngest person?
a) 63kg b) 65kg c) 57kg
d) 59kg e) 69kg
Question 22 How many persons weighed more than D?
a) None b) One c) Two
d) Three e) More than three
Question 23 When was the lightest person born?
a) April 23 b) January 3 c) May 3
d) March 3 e) Cannot be determined
Question 24 What was the difference between the weights of A and D?
a) 1kg b) 2kg c) 3kg
d) 4kg e) 5kg
Question 25 How many persons were born between B and C?
a) None b) One c) Two
d) Three e) Cannot be determined

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ANSWER KEY

1- b	2- c	3- d	4- b	5- a	6- d	7- c	8- d	9- b
10- b	11- c	12- d	13- c	14- a	15- a	16- e	17- b	18- a
19- d	20- e	21- d	22- b	23- c	24- e	25- a		

DETAILED SOLUTIONS

QUESTION 1

• One person joined between G and E, but not in April or March

• Number of persons who joined after G was twice as that of the number of persons who joined before H

	Case 1	Case 2
January 5		
January 12		G
February 5	H	
February 12	G	H
March 5		
March 12		
April 5		
April 12		

One person joined between E and G, thus, case 2 becomes invalid.

• E joined the organisation just after C.

	Case 1	Case 1a
January 5	C	
January 12	E	
February 5	H	H
February 12	G	G
March 5		C
March 12		E
April 5		
April 12		

• Two persons has joined between the joining date of F and C and C joined after F. Thus, 1st arrangement becomes invalid.

	Case 1a	Case 1ab
January 5		
January 12	F	
February 5	H	H
February 12	G	G
March 5	C	C
March 12	E	E
April 5		
April 12		F

• One person joined between A and H.

	Case 1a	Case 1ab
January 5	A	A
January 12	F	
February 5	H	H
February 12	G	G
March 5	C	C
March 12	E	E
April 5		
April 12		F

D joined just after B. Thus, 2nd arrangement is invalid.

The final arrangement is as follows:

January 5	A
January 12	F
February 5	H
February 12	G
March 5	C
March 12	E
April 5	B
April 12	D

Thus, H joined just after F

QUESTION 2

• H won the lottery in March and 3 persons won the lottery between H and E.

• E and A won lotteries in the same month.

	Case 1	Case 2
January 7	E	A
January 27	A	E
February 7		
February 27		
March 7	H	
March 27		H
April 7		
April 27		

• 4 persons won lotteries between G and D. D won after G.

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		Case 2
January 7	E	A
January 27	A	E
February 7	G	G
February 27		
March 7	H	
March 27		H
April 7		
April 27	D	D

- B won the lottery immediately after F.
- C won the lottery on 27th.

	Case 1	Case 2
January 7	E	A
January 27	A	E
February 7	G	G
February 27	C	F
March 7	H	B
March 27	F	H
April 7	B	C
April 27	D	D

C won the lottery on 27th, hence case 2 is invalid.
The final arrangement is as follows:

January 7	E
January 27	A
February 7	G
February 27	C
March 7	H
March 27	F
April 7	B
April 27	D

Thus, G won the lottery just before C

QUESTION 3 TO 7

- Number of villages electrified after village B was thrice as that the number of villages that were electrified after village A
- 2 villages were electrified between A and F
- B and D were electrified consecutively

January 11	
January 23	
February 11	
February 23	
March 11	
March 23	F
April 11	B
April 23	D
May 11	A
May 23	

Or

January 11	
January 23	
February 11	D
February 23	B
March 11	F
March 23	
April 11	
April 23	A
May 11	
May 23	

Or

January 11	B
January 23	D
February 11	
February 23	
March 11	
March 23	
April 11	A
April 23	
May 11	
May 23	F

Or

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January 11	B
January 23	D
February 11	
February 23	F
March 11	
March 23	
April 11	A
April 23	
May 11	
May 23	

• Number of villages electrified after village I was twice as that of the number of villages electrified before D, thus, 1st arrangement becomes invalid

Case 1:

January 11	
January 23	
February 11	D
February 23	B
March 11	F
March 23	I
April 11	
April 23	A
May 11	
May 23	

Case 2:

January 11	B
January 23	D
February 11	
February 23	
March 11	
March 23	
April 11	A
April 23	I
May 11	
May 23	F

Case 3:

January 11	B
January 23	D
February 11	
February 23	F
March 11	
March 23	
April 11	A
April 23	I
May 11	
May 23	

• C was electrified in March, thus, case 1 becomes invalid.

• J was electrified on 23rd

• G was electrified just before E but neither of them was the last or the first to be electrified

Case 2:

January 11	B
January 23	D
February 11	
February 23	J
March 11	G
March 23	E
April 11	A
April 23	I
May 11	
May 23	F

Invalid as C cannot be placed in this case

Case 2a:

January 11	B
January 23	D
February 11	G
February 23	E
March 11	C
March 23	J
April 11	A
April 23	I
May 11	
May 23	F

Case 3:

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January 11	B
January 23	D
February 11	
February 23	F
March 11	G
March 23	E
April 11	A
April 23	I
May 11	
May 23	

Invalid as C cannot be placed in this case
Thus, the final case is as follows:

January 11	B
January 23	D
February 11	G
February 23	E
March 11	C
March 23	J
April 11	A
April 23	I
May 11	H
May 23	F

QUESTION 8 TO 11

Only 2 persons booked ticket from MMT and A is one of them.

[Note: - MMT = 2 persons]

Only 3 persons booked ticket after A.

Month	24	29
May		
September	A (MMT)	
November		

B and C booked ticket on the same date, in the months with even number of days.

Only D booked ticket from the website Travel Guru. D booked ticket in the same month as that of F.

Case 1: -

Month	24	29
May	D (Travel Guru)	F
September	A (MMT)	B/C
November	E	C/B

Case 2: -

Month	24	29
May	F	D (Travel Guru)
September	A (MMT)	B/C
November	E	C/B

B and E booked ticket from the same website but not Expedia.

Any 2 persons who booked from the same website, booked it in different month as well as on different date.

Case 1: -

Month	24	29
May	D (Travel Guru)	F (MMT/Expedia)
September	A (MMT)	B (Clear Trip)
November	E (Clear Trip)	C (MMT/Expedia)

Case 2: -

Month	24	29
May	F (MMT/Expedia)	D (Travel Guru)
September	A (MMT)	B (Clear Trip)
November	E (Clear Trip)	C (MMT/Expedia)

No other person booked the ticket from the same website as that of C.

Case 1: -

Month	24	29
May	D (Travel Guru)	F (MMT)
September	A (MMT)	B (Clear Trip)
November	E (Clear Trip)	C (Expedia)

Case 2: -

Month	24	29
May	F (MMT)	D (Travel Guru)
September	A (MMT)	B (Clear Trip)
November	E (Clear Trip)	C (Expedia)

Any 2 persons who booked from the same website, booked it in different month as well as on different date. So, case 2 is invalid.

Final Solution:

Month	24	29
May	D (Travel Guru)	F (MMT)
September	A (MMT)	B (Clear Trip)
November	E (Clear Trip)	C (Expedia)

QUESTION 12 TO 16

It's a leap year, so February = 29 days

- In September, only on even numbered dates, the share raised/dropped.

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So, only on 8th and 26th of September share prices showed a change.
• On 26th February, shares of S dropped.
Also,
• P's shares dropped on 8th of the month with even numbered days.
So, P's share might have dropped on 8th June or 8th September.
We get,

Case I:

February 8th		
February 17th		
February 26th	S	Drop
June 8th	P	Drop
June 17th		
June 26th		
September 8th		
September 26th		

Case II:

February 8th		
February 17th		
February 26th	S	Drop
June 8th		
June 17th		
June 26th		
September 8th	P	Drop
September 26th		

• On odd numbered day of a month with even numbered days, the shares raised, which is not of R.
Odd numbered day means on 17th. Month with even numbered days are June and September, but on 17th September, no share prices change.
Thus, on 17th June, there is a rise in share prices.
Also,
• In June only one company's shares raised, so on 8th and 26th June, shares dropped.
• In February, only one company's shares dropped, so on 8th and 17th February, shares raised.
We get,

Case I:

February 8th		Rise
February 17th		Rise
February 26th	S	Drop
June 8th	P	Drop
June 17th		Rise
June 26th		Drop
September 8th		
September 26th		

Case II:

February 8th		Rise
February 17th		Rise
February 26th	S	Drop
June 8th		Drop
June 17th		Rise
June 26th		Drop
September 8th	P	Drop
September 26th		

Since,
• The shares of U and T, dropped, but not in June.
So, it is only possible that, shares of U and T might have dropped in September.
Thus, case II becomes invalid and we get only case I as a possibility.
We get,

February 8th		Rise
February 17th		Rise
February 26th	S	Drop
June 8th	P	Drop
June 17th		Rise
June 26th		Drop
September 8th	U/T	Drop
September 26th	T/U	Drop

Now,
• Share of W and Q, raised/dropped in the same month, given Q's on odd numbered date.
So, following are the possible cases:

Case I:

February 8th	W	Rise
February 17th	Q	Rise
February 26th	S	Drop
June 8th	P	Drop
June 17th		Rise
June 26th		Drop
September 8th	U/T	Drop
September 26th	T/U	Drop

Case II:

February 8th		Rise
February 17th		Rise
February 26th	S	Drop
June 8th	P	Drop
June 17th	Q	Rise
June 26th	W	Drop
September 8th	U/T	Drop
September 26th	T/U	Drop

Now,
• Shares of three companies raise/dropped between Q and R.

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But,
- Q's share prices change before R.

Thus, case II becomes invalid and, also, we get that V's share raised on 17th June.
The final arrangement as follows:

February 8th	W	Rise
February 17th	Q	Rise
February 26th	S	Drop
June 8th	P	Drop
June 17th	V	Rise
June 26th	R	Drop
September 8th	U/T	Drop
September 26th	T/U	Drop

Question 17 to 20

Audition in Jaipur are held on an odd date and in a month having odd number of days, but number of people giving auditions in Jaipur are even.
Odd number of people attend auditions taking place on odd dates of April and May.
From the above lines, we can easily say that audition in Jaipur take place on 15th January.

Month	6th	15th	28th
January		Jaipur	
April			
May			
June			

Pune audition are the last to take place.
300 people attend audition which is immediately preceded by Pune auditions.
250 people attend Bengaluru auditions in June.
From above lines, we can say that Bengaluru auditions take place on 6th June.
100 less people attend Mumbai audition on the same date of a different month.
This means Mumbai auditions are attended by 150 people
Audition attended by 150 people does not take place in a month having odd number of days.
Thus, it is clear that, Mumbai auditions take place on 6th April.

Month	6th	15th	28th
January		Jaipur	
April	Mumbai (150)		
May			
June	Bengaluru (250)	(300)	Pune

One audition take place between audition in Delhi and Hyderabad, neither of them has 300 people attending auditions nor they are held in May.

Thus only month left for Delhi and Hyderabad is January.

Month	6th	15th	28th
January	Delhi/Hyderabad	Jaipur	Delhi/Hyderabad
April	Mumbai (150)		
May			
June	Bengaluru (250)	(300)	Pune

Lucknow and Ahmedabad audition take place in the same month having even number of days, and there is a difference of 50 in people attending audition in these cities.
Now only such possibility is the month of April.
Lucknow audition is attended by 125 people and auditions immediately preceding and following it have more number of people attending them than at Lucknow.
There is difference of 50 people in Lucknow and Ahmedabad. So, either Ahmedabad will have 75 people or 175 people giving audition but we know that Chennai has 75 people giving audition so we can say that Ahmedabad will has 175 people giving audition.

Month	6th	15th	28th
January	Delhi/Hyderabad	Jaipur	Delhi/Hyderabad
April	Mumbai (150)	Lucknow (125)/Ahmedabad (175)	Lucknow (125)/Ahmedabad (175)
May			
June	Bengaluru (250)	(300)	Pune

Auditions in Indore take place immediately after auditions in Patna but not in month of January.
We can say that both these auditions take place in same month of May.
75 people attend audition in Chennai.
Three auditions take place between audition in Chandigarh and audition attended by the least number of people.
Now only auditions left are at Chennai and Chandigarh. Since we know highest number of people attending an audition is 350 and number of people attending all other auditions decrease successively by common multiple, we can say that the lowest number of people are 75 and they attend Chennai audition. Thus, we have the following arrangement:

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Month	6th	15th	28th
January	Delhi/ Hyderabad	Jaipur	Delhi/ Hyderabad
April	Mumbai (150)	Lucknow (125)/ Ahmedabad (175)	Lucknow (125)/ Ahmedabad (175)
May	Chennai (75)	Patna ()	Indore ()
June	Bengaluru (250)	Chandigarh (300)	Pune

We can now say Lucknow auditions are held before Ahmedabad auditions as auditions immediately preceding and following Lucknow have more number of people attending them than at Lucknow.

100 people attend audition in Delhi, audition following it immediately is attended by 200 people. Thus, we can say that Delhi auditions are first to take place.

Patna audition is attended by 225 people, 100 more people attend audition immediately following it.

Month	6th	15th	28th
January	Delhi (100)	Jaipur (200)	Hyderabad
April	Mumbai (150)	Lucknow (125)	Ahmedabad (175)
May	Chennai (75)	Patna (225)	Indore (325)
June	Bengaluru (250)	Chandigarh (300)	Pune

Pune audition is attended by more number of people than Hyderabad. Only option left are 350 and 275 which are held at Pune and Hyderabad audition respectively.

Month	6th	15th	28th
January	Delhi (100)	Jaipur (200)	Hyderabad (275)
April	Mumbai (150)	Lucknow (125)	Ahmedabad (175)
May	Chennai (75)	Patna (225)	Indore (325)
June	Bengaluru (250)	Chandigarh (300)	Pune (350)

Question 21 to 25

- E and G were born in the same month
- There are 2 persons born between G and the one who weighed 72 kgs. The one who weighed 72kg would have been born in April.
- Number of persons born before A was 3 more than the number of persons born after E.

At least one person has born after E.

- The one born on January 3rd weighed 63kg

January 3		63kg
January 23		
March 3		
March 23		
April 3	A	72kg
April 23		
May 3	E	
May 23	G	

Or

January 3	E	63kg
January 23	G	
March 3		
March 23		
April 3		72kg
April 23		
May 3		
May 23		

Invalid as A cannot be placed in the arrangement

Or

January 3		63kg
January 23		
March 3	E	
March 23	G	
April 3		
April 23		72kg
May 3		
May 23		

Invalid as A cannot be placed in the arrangement

- H's body weight was a perfect square. Possible weights are 64kg and 81kg. If H was weighed 64kg then he would be born in April
- There are 2 persons born between H and F
- C was weighed 1kg less than H

Case1:

If H was 64kg, C would be 63kg

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January 3	C	63kg
January 23		
March 3	F	
March 23		
April 3	A	72kg
April 23	H	64kg
May 3	E	
May 23	G	

Case 2:
If H was 81kg, C would be 80kg, hence he would be born in April.

January 3		63kg
January 23		
March 3	H	81kg
March 23		
April 3	A	72kg
April 23	F	
May 3	E	
May 23	G	

Invalid as C cannot be placed in the arrangement
Case 3:

January 3	F	63kg
January 23		
March 3		
March 23	H	81kg
April 3	A	72kg
April 23	C	80kg
May 3	E	
May 23	G	

- B's body weight was a perfect square and he was 4kg heavier than D who was born in March. He can be weighed 64kg or 81kg.
- The one born on January 3rd weighed 63kg

Case 1:

January 3	C	63kg
January 23	B	81kg
March 3	F	
March 23	D	77kg
April 3	A	72kg
April 23	H	64kg
May 3	E	
May 23	G	

Case 3:

January 3	F	63kg
January 23	B	81kg
March 3	D	
March 23	H	81kg
April 3	A	72kg
April 23	C	80kg
May 3	E	
May 23	G	

B and H cannot have the same body weight; thus, case is invalid.
- There was one person who weighed 65kg
- The one born on May 23 was 6kg heavier than the one who was born on May 3 but weighed 6 kg less than F

January 3	C	63kg
January 23	B	81kg
March 3	F	X+12
March 23	D	77kg
April 3	A	72kg
April 23	H	64kg
May 3	E	X
May 23	G	X+6

If X+12=65 then X= 53kg, X+6=59kg
If X=65kg, X+12=77kg, as D is already 77kg, case is invalid
If X+6=65kg, X+12= 71kg and X=59kg

January 3	C	63kg
January 23	B	81kg
March 3	F	65kg
March 23	D	77kg
April 3	A	72kg
April 23	H	64kg
May 3	E	53kg
May 23	G	59kg

Or

January 3	C	63kg
January 23	B	81kg
March 3	F	71kg
March 23	D	77kg
April 3	A	72kg
April 23	H	64kg
May 3	E	59kg
May 23	G	65kg

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G weighed less than H, thus, case becomes invalid.
Thus, the final arrangement is as follows:

January 3	C	63kg
January 23	B	81kg
March 3	F	65kg
March 23	D	77kg
April 3	A	72kg
April 23	H	64kg
May 3	E	53kg
May 23	G	59kg

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CHAPTER 5 - YEARS BASED (BIRTHDAY TYPE)

What are years-based puzzles?

In this type of arrangement, the events are to be arranged across different years. This topic is based on the calculation of age of persons or any given entity. The birthday or the inception is on the same date, but in different years (unlike in previous chapter, where we had different dates but, in same year. Here, we have different years but, same date).

Let's learn the approach...

Let's understand this with the help of the following example:

Eight persons A, B, C, D, E, F, G and H were born on the same date i.e. on 5th March but in different years viz. 1965, 1967, 1973, 1977, 1983, 1985, 1988 and 1993 not necessarily in the same order. Make all the age calculations as on 5th March 2019.
Always start solving by calculating the age of every person as on the mentioned date.
Thus, in this example, their age will be as follows:

1965	54
1967	52
1973	46
1977	42
1983	36
1985	34
1988	31
1993	26

KEY POINTERS

⇒ The question might use the term 'perfect square' or 'perfect cubes'. For example, in the above table, 36 is a perfect square.
⇒ The question might use the concept of leap years.
For example: A was born in a leap year, thus, A would be born in 1988. If in any question, more than one years are given as leap, then, consider all the possibilities.
⇒ If the hint mentions A is elder to B, then A would have been born before B and vice versa.
⇒ Any hint which says A was born before does not necessarily mean that A was born immediately before B.
⇒ The hints can be in such that some relation might be given between ages or years. This needs to be taken care.
For example: If birth years of 4 persons are given as – 2000, 1998, 1994 and 1996, and, it is given that "Difference between A's and B's ages is 4 years", then, two possible cases are there – A and B are either born in 2000 and 1996 or, 1998 and 1994, as we get a difference of 4 years, in both cases.

Solved Examples

Directions [1 to 5]: Nine persons A, B, C, D, E, F, G, H and I were born on the same date i.e. on 12thApril but in different years 1955, 1959, 1961, 1966, 1970, 1977, 1981, 1985 and 1990 not necessarily in the same order. Make all the calculations as on 12th April 2018.

F's age was a prime number. Only two persons were born between C and F. C was elder to F. B was 4 years elder to H. Number of persons born before H was equal to the number of persons born after A. H was elder to A. D was born just after I. G was elder to D.

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Question 1 How many persons were born between D and E?
Question 2 What was the difference between the age of H and G?
Question 3 How many persons were elder to G?
Question 4 How many persons were born between C and I?
Question 5 In which of the following years was E born?
Solution:
Their age as on 12th April 2018 will be:

1955	63
1959	59
1961	57
1966	52
1970	48
1977	41
1981	37
1985	33
1990	28

• F's age was a prime number. Possible values can be 59, 41 or 37
• Only two persons were born between C and F. C was elder to F

		Case 1	Case 2
1955	63		
1959	59		
1961	57	C	
1966	52		C
1970	48		
1977	41	F	
1981	37		F
1985	33		
1990	28		

• B was 4 years elder to H. The possible values can be (63, 59) (52, 48) (41, 37) (37, 33)
• Number of persons born before H was equal to the number of persons born after A. H was elder to A.

		Case 1	Case 2
1955	63	B	B
1959	59	H	H
1961	57	C	
1966	52		C
1970	48		
1977	41	F	
1981	37		F
1985	33	A	A
1990	28		

• D was born just after I

		Case 1	Case 2
1955	63	B	B
1959	59	H	H
1961	57	C	
1966	52	I	C
1970	48	D	I
1977	41	F	D
1981	37		F
1985	33	A	A
1990	28		

• G was elder to D. Thus, case 1 is invalid.

1955	63	B
1959	59	H
1961	57	G
1966	52	C
1970	48	I
1977	41	D
1981	37	F
1985	33	A
1990	28	E

Answer 1: Two persons were born between D and E
Answer 2: H was 59 years old and G was 57 years old
Required difference = 59 - 57 = 2 years
Answer 3: Two persons were elder to G
Answer 4: Nobody was born between C and I
Answer 5: E was born in 1990.

Directions [6 to 9]: Six people A,B,C,D,E,F were born in six different years among 1952,1957,1962,1966,1971,1974. They were from different countries among India, Peru, Bhutan, Nepal, Brazil and Spain(not necessarily in the same order) .Further it is known that The person from India was born just before C. D was born after A and immediately before the person from Peru. The person from Spain was born in an even year. B was not from Brazil. The person from Bhutan was the youngest. F who was born in 1966, was born after the person from Nepal. The difference in the birth year of C and E is more than 10 years where C was elder to E.

Question 6 Who was born immediately after the person from Peru?
Question 7 What was the difference of the birth year of D and the person from Brazil?

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Question 8 How many people were born before B?
Question 9 Who among the following was born in an odd year?
a) A b) D c) F d) B e) C
Solution:
F who was born in 1966, was born after the person from Nepal.
The person from Bhutan was the youngest.

YEAR	PERSON	COUNTRY
1952		
1957		
1962		
1966	F	
1971		
1974		BHUTAN

The difference in the birth year of C and E is more than 10 years.
The person from India was born just before C.
Case 1:

YEAR	PERSON	COUNTRY
1952		
1957		INDIA
1962	C	
1966	F	
1971		
1974	E	BHUTAN

Case 2:

YEAR	PERSON	COUNTRY
1952		INDIA
1957	C	
1962		
1966	F	
1971		
1974	E	BHUTAN

Case 3:

YEAR	PERSON	COUNTRY
1952		INDIA
1957	C	
1962		
1966	F	
1971	E	
1974		BHUTAN

D was born after A and immediately before the person from Peru.
Case 1:

YEAR	PERSON	COUNTRY
1952	A	
1957	D	INDIA
1962	C	PERU
1966	F	
1971	B	
1974	E	BHUTAN

Case 2:

YEAR	PERSON	COUNTRY
1952	A	INDIA
1957	C	
1962	D	
1966	F	PERU
1971	B	
1974	E	BHUTAN

Case 3:

YEAR	PERSON	COUNTRY
1952	A	INDIA
1957	C	
1962	D	
1966	F	PERU
1971	E	
1974	B	BHUTAN

F who was born in 1966, was born after the person from Nepal.
The person from spain was born in an even year.
B was not from Brazil.
Case 1:

YEAR	PERSON	COUNTRY
1952	A	NEPAL
1957	D	INDIA
1962	C	PERU
1966	F	SPAIN
1971	B	BRAZIL
1974	E	BHUTAN

But we are given that B was not from Brazil. Hence this case is invalid.

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Case 2:

YEAR	PERSON	COUNTRY
1952	A	INDIA
1957	C	NEPAL
1962	D	SPAIN
1966	F	PERU
1971	B	BRAZIL
1974	E	BHUTAN

But we are given that B was not from Brazil. Hence this case is invalid.

Case 3:

YEAR	PERSON	COUNTRY
1952	A	INDIA
1957	C	NEPAL
1962	D	SPAIN
1966	F	PERU
1971	E	BRAZIL
1974	B	BHUTAN

Answer 6: E was born immediately after the person from Peru.
Answer 7: The birth year of D= 1962.
Birth year of the person from Brazil= 1971.
Difference= 1971-1962= 9.
Answer 8: 5 people were born before B.
Answer 9: C was born in an odd year.

Directions [10 to 14]: 7 friends A, B, C, D, E, F & G born on same month & same date but different years 1973, 1975, 1978, 1982, 1987, 1993 & 2000 (not necessarily in same order). they are taking part in different competition in school Dance, Painting, Badminton, Singing, Chess, Swimming & Cricket (not necessarily in same order). Their ages are calculated on same month & same date in the year 2018.
B who likes Singing was born before F. E was born before D. C whose age is a perfect square is participating in cricket competition. 2 persons were born between the person who is participating in Dance competition & the person who is participating in Painting competition. Number of people born between B & C is equal to number of people born between the person who is participating in Dance competition & the person who is participating in Swimming competition. Difference in G & E's age is equal to difference in A & D's age. A is elder than C but younger than G. The person who is participating in Badminton competition was born after the person who is participating in Chess competition. Neither F nor A is participating in Badminton Competition. G is not participating in Chess competition.

Question 10 The one who is participating in Chess competition is _____ years old?
Question 11 How many people were born between the person who is participating in Dance competition & the person who is participating in Singing competition?
Question 12 Who is 36 years old?
Question 13 Which of the following statements is/are correct?

I. F was born after G
II. D is participating in Badminton competition
III. A is participating in Painting competition
Question 14 Who among the following was born between G & E?
a) A b) D c) C d) F e) B
Solution:
• Difference in G & E's age is equal to difference in A & D's age.
• A is elder than C but smaller than G.
• C whose age is a perfect square is participating in cricket competition.

Birth year	Age	Person	Activity
2000	18		
1993	25	C	Cricket
1987	31	A/D	
1982	36	D/A	
1978	40	E/G	
1975	43		
1973	45	G/E	

• B who likes Singing was born before F.

Birth year	Age	Person	Activity
2000	18	F	
1993	25	C	Cricket
1987	31	A/D	
1982	36	D/A	
1978	40	E/G	
1975	43	B	Singing
1973	45	G/E	

• Number of people born between B & C is equal to number of people born between the person who is participating in Dance competition & the person who is participating in Swimming competition.

Birth year	Age	Person	Activity	Person	Activity
2000	18	F	Dance/Swimming	F	
1993	25	C	Cricket	C	Cricket
1987	31	A/D		A/D	Dance/Swimming
1982	36	D/A		D/A	
1978	40	E/G	Swimming/ Dance	E/G	
1975	43	B	Singing	B	Singing
1973	45	G/E		G/E	Swimming/ Dance
		Case 1	Case 2		

• 2 persons were born between the person who is participating in Dance competition & the person who is participating in Painting competition.

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• The person who is participating in Badminton competition was born after the person who is participating in Chess competition.

Birth year	Age	Person	Activity	Person	Activity
2000	18	F	Dance	F	Badminton
1993	25	C	Cricket	C	Cricket
1987	31	A/D	Badminton	A/D	Swimming
1982	36	D/A	Painting	D/A	Painting
1978	40	E/G	Swimming	E/G	Chess
1975	43	B	Singing	B	Singing
1973	45	G/E	Chess	G/E	Dance
		Case 1		Case 2	

• Neither F nor A is participating in Badminton Competition.
So, case 2is eliminated.
• G is not participating in Chess competition.

Birth year	Age	Person	Activity
2000	18	F	Dance
1993	25	C	Cricket
1987	31	D	Badminton
1982	36	A	Painting
1978	40	G	Swimming
1975	43	B	Singing
1973	45	E	Chess
		Case 1	

Answer 10: The one who is participating in Chess is 45 years old.
Answer 11: 4 people were born between the person who is participating in Dance competition & the person who is participating in Singing competition
Answer 12: A is 36 years old
Answer 13: All these statements are correct.
Answer 14: B was born between G & E

Practice Yourself

Directions [1 to 5]: Eight persons A, B, C, D, E, F, G and H went to a bank to open a savings account. They filled the form and it was noted that each of them was born on the same date i.e. on 23rd January but in different years. The years were 1955, 1962, 1963, 1968, 1972, 1979, 1988 and 1995 not necessarily in the same order. Make the calculations as on 23rd January 2018.
G was 16 years elder to E. Number of persons born after E was twice as that of the number of persons born before A. E was not the youngest. H was born after 1965 but before 1990. 2 persons were born between H and F. H was elder to F. Number of persons born before B was 2 more than the number of persons born after C. At least one person was born between B and G.

Question 1 How many persons were younger to B?
a) None b) One c) Two
d) Three e) More than three
Question 2 Who among the following was/were born before C?
I. G II. A III. H
a) Only I b) Only II c) Both I and II
d) Only III e) Both I and III
Question 3 In which of the following year was B born?
a) 1968 b) 1972 c) 1988
d) 1963 e) Cannot be determined
Question 4 How many persons were born between F and C?
a) None b) One c) Two
d) Three e) More than three
Question 5 What was the difference between the age of C and H?
a) 1 year b) 7 years c) 9 years
d) 4 years e) 6 years

Directions [6 to 9] : Eight persons A, B, C, D, E, F, G and H were born on the same date i.e. on 28th March but in different years viz. 1965, 1969, 1977, 1979, 1983, 1988, 1995 and 1996 not necessarily in the same order. Make all the age calculations as on 28th March 2018.
• B was 12 years elder to D
• C was born in one of the leap years
• Only 3 persons were born between C and H.
• Only 2 persons were born between A and E.
• A was elder than E but younger than F
• F and G were not born consecutively i.e. at least one person was born between them.

Question 6 In which of the following years was G born?
a) 1988 b) 1996 c) 1979
d) 1995 e) 1983
Question 7 How many persons were elder to H?
a) None b) One c) Two
d) Three e) Cannot be determined
Question 8 Who among the following was born just after A?
a) E b) G c) C d) B e) D

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Question 9 What was the difference between the ages of F and C?
a) 5 years b) 8 years c) 1 year
d) 9 years e) 7 years

Directions [10 to 13]: Six superheroes - Spiderman, Superman, Ironman, Batman, Thor and Hulk, were born in different years and each one of them has a different colour of costume.
- Batman is the youngest of all, born in 1998.
- Superman is born in 1960 and, has green costume.
- Hulk is born seven years after Spiderman, one of them been born in 1929.
- Thor is elder than only two persons, one of whom has red costume.
- No one is born between the ones with green and brown costumes, given that one with brown is younger.
- One who has yellow costume, is eldest.
- Ironman is 19 years younger than Thor, who is 43 years younger than hulk.
- Hulk is elder than Superman.
- One with black costume is not born before 1995.
- One with blue costume is elder than that with black as well as that with green.

Question 10 When is Ironman born?
a) 1998 b) 1991 c) 1992
d) 1980 e) 1972

Question 11 Who has the black coloured costume?
a) Batman b) Spiderman c) Ironman
d) Either (a) or (c) e) Thor

Question 12 Find the odd pair.
a) Spiderman, blue b) Superman, brown
c) Thor, red d) Batman, red
e) Hulk, green

Question 13 Thor is born in _____.
a) 1960 b) 1972 c) 1979
d) 1978 e) 1951

Directions [14 to 18]: Seven start-ups - A, B, C, D, E, F and G, started in different years and in different months each.
- G was the first among all to start, in 1990.
- No start-up was started between E and A, with A been started after E and in September.
- B started in March month of 1998 and the last start-up started in 2017.
- C started four years after F, in June and D started 10 years before E, in a month with even number of days.
- Number of start-ups which started after B are equal to that started before B.
- E started either in 2013 or in 2000, in a month with odd numbered days.
- One start-up was started between those which were started in January and March. No start-up started in November.
- There is a difference of 2 years between the one which started in April and the one which started in January.
- C started before D, in a month with even numbered days.

Question 14 When was C started?
a) 2006 b) 1998 c) 1996
d) 1997 e) 2007

Question 15 In which of the following month possibly E must have been started?
I. May II. January
III. December IV. February
a) Only I b) Only II
c) Either of the given d) Either I or III
e) Either I, II or III

Question 16 Which start-up started in April?
a) E b) G c) D d) A e) C

Question 17 At a difference of how many years did D and C start?
a) Seven b) Six c) Eight
d) Eleven e) Two

Question 18 In which year and month respectively, F started?
a) 1992, December b) 1992, January
c) 1993, January d) 1994, June
e) 1996, April

Directions [19 to 22]: 8 persons of the same family A, B, C, D, E, F, G and H are born in the year 1994, 1996, 1997, 1999, 2002, 2006, 2008 and 2010 not necessarily in the same order. Each of them is born on either 12 January or 12 May or 12 September not necessarily in the same order. State government did the survey on 12 March 2020 and Central government did it on 12 July 2020 and in both the surveys they noted the age of each family member.
H is born on 12 May 2008. In the state government survey, the age of H is noted as 11 years because the survey was conducted on 12 March 2020 and he has yet to complete 12 years. But, in the survey conducted by central government, age of H is noted as 12 years because central government survey is conducted on 12 July 2020 and he has completed 12 years by then. Age of the other members of the family was noted in the similar fashion.
H is born on 12 May 2008. C is elder than D by 5 years in one survey and by 6 years in another survey. D is born in 2002 but not on 12 January. G is the eldest and is born on a Month other than that of C and D. 4 persons are born in the month of May while 2 persons each are born in the month of January and September. Age of the A is different in both surveys and same is true for B as well. Age of A as per central government survey is 3 years more than age of B as per state government survey. E is 5 years elder than F in both the surveys.

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Question 19 What is the sum of age of C (as per state government survey) and the age of G (as per central government survey)?
a) 50 b) 49 c) 48 d) 38 e) 40

Question 20 Who among the following is either 23 or 26 years old as per the either one survey (i.e. at-least one of the surveys)?
I. A II. C III. G IV. F
a) Only I and III b) Only I and IV
c) Only I, II and III d) All four of the above
e) Only one of the above

Question 21 Who among the following is 21 years old as per at-least one survey?
a) B b) D c) F
d) G e) More than one of the above

Question 22 What is the birthdate of G? What is the birthyear of B?
a) G = 12 January and B = 1996
b) G = 12 May and B = 1999
c) G = 12 September and B = 1997
d) G = 12 January and B = 1999
e) None of these

Directions [23 to 26]: 8 friends A, B, C, D, E, F, G and H are born in the month of February on different dates among 22, 23, 24, 25, 26, 27, 28 and 29 not necessarily in the same order. They are born in different years among 1970, 1973, 1976, 1981, 1986, 1990, 1995 and 1997 not necessarily in the same order. They celebrated the birthday of everyone in the year 2018 and they burn number of candles equal to the age of that as of 2016. (e.g. the one who born on 1997 will be 19 years old as of 2016 and 19 candles will be burned on his birthday)

- Birthday of G is celebrated immediately before A and the sum of number of candles burned on their birthdays together is 61. A is elder than G.
- The one who is born on 25th February is younger than A and, on his birthday, friend burned number candles which are the multiple of 3.
- C is younger than the one who is born on 25th but is not the youngest.
- The sum of number of candles burned on the birthdays of D and the one who is born 27th of the month is 56.
- Birthday of the eldest person is celebrated 4 days after the youngest person(there is gap of 3 days in between them).
- The one whose birthday celebrated immediately after youngest person is elder than H, who is not youngest.
- B is elder than E but not eldest.
- The sum of ages of E and G is the even number.

Question 23 What is the difference between the age of E and H?
a) 21 b) 16 c) 27 d) 4 e) 7

Question 24 How many persons, who celebrated their birthday before A, are elder than A?
a) 2 b) 3 c) 5 d) 1 e) 4

Question 25 Who was born on 24th of the month?
a) A b) H c) G d) F e) None of these

Question 26 How many persons are elder to the one who is born on 25th of the month?
a) 3 b) 2 c) 1 d) 6 e) 4

ANSWER KEY

1- b	2- c	3- c	4- d	5- d	6- d	7- b	8- c	9- d
10- b	11- a	12- d	13- b	14- c	15- d	16- b	17- a	18- b
19- b	20- c	21- a	22- d	23- b	24- a	25- b	26- e	

DETAILED SOLUTIONS

Question 1 to 5

Their age as on 23rd January will be:

1955	63
1962	56
1963	55
1968	50
1972	46
1979	39
1988	30
1995	23

- G was 16 years elder to E. The possible cases are (55, 39) (46, 30) (39, 23). As E was not the youngest (39, 23) will be invalid.

		Case 1	Case 2
1955	63		
1962	56		
1963	55	G	
1968	50		
1972	46		G
1979	39	E	
1988	30		E
1995	23		

- Number of persons born after E was twice as that of the number of persons born before A. Thus, case 2 becomes invalid.

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1955	63	
1962	56	A
1963	55	G
1968	50	
1972	46	
1979	39	E
1988	30	
1995	23	

- H was born after 1965 but before 1990
- 2 persons were born between H and F. H was elder to F

		Case 1	Case 2
1955	63		
1962	56	A	A
1963	55	G	G
1968	50	H	
1972	46		H
1979	39	E	E
1988	30	F	
1995	23		F

- Number of persons born before B was 2 more than the number of persons born after C. Thus, case 1 becomes invalid.

		Case 2	Case 2a
1955	63	D	D
1962	56	A	A
1963	55	G	G
1968	50	B	C
1972	46	H	H
1979	39	E	E
1988	30	C	B
1995	23	F	F

- At least one person was born between B and G. Thus, case 2 becomes invalid.

The final table will be as follows:

1955	63	D
1962	56	A
1963	55	G
1968	50	C
1972	46	H
1979	39	E
1988	30	B
1995	23	F

QUESTION 6 TO 9

The age of the persons as on 28th March 2018 will be:

1965	53
1969	49
1977	41
1979	39
1983	35
1988	30
1995	23
1996	22

- C was born in one of the leap years. Thus, in 1988 or 1996
- Only 3 persons were born between C and H

		Case 1	Case 2
1965	53		
1969	49	H	
1977	41		
1979	39		H
1983	35		
1988	30	C	
1995	23		
1996	22		C

- B was 12 years elder to D. Possibilities are (53, 41)or (35, 23).

		Case 1	Case 1a	Case 2	Case 2a
1965	53	B		B	
1969	49	H	H		
1977	41	D		D	
1979	39			H	H
1983	35		B		B
1988	30	C	C		
1995	23		D		D
1996	22			C	C

- Only 2 persons were born between A and E.
- A was elder than E but younger than F

		Case 1	Case 1a	Case 2	Case 2a
1965	53	B	A	B	
1969	49	H	H	A	
1977	41	D		D	A
1979	39	F	E	H	H
1983	35	A	B	E	B
1988	30	C	C		E
1995	23		D		D
1996	22	E		C	C

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Thus, case 1a and case 2 become invalid as we cannot place F

• F and G were not born consecutively i.e. at least one person was born between them. Thus, case 2a becomes invalid.

1965	53	B
1969	49	H
1977	41	D
1979	39	F
1983	35	A
1988	30	C
1995	23	G
1996	22	E

QUESTION 10 TO 13

• Batman is the youngest of all, born in 1998.

• One who has yellow costume, is eldest.

Also,

• Thor is elder than only two persons, one of whom has red costume.

We get,

Case I:

		Yellow
	Thor	
		Red
1998	Batman	

Case II:

		Yellow
	Thor	
1998	Batman	Red

Now,

We are given that,

• No one is born between the ones with green and brown costumes, given that one with brown is younger.

Also,

• Superman is born in 1960 and, has green costume.

We get,

Case I:

		Yellow
1960	Superman	Green
		Brown
	Thor	
		Red
1998	Batman	

Case II:

		Yellow
1960	Superman	Green
	Thor	Brown
		Red
1998	Batman	

Case III:

		Yellow
1960	Superman	Green
		Brown
	Thor	
1998	Batman	Red

Case IV:

		Yellow
1960	Superman	Green
	Thor	Brown
1998	Batman	Red

Now,

We have,

Ironman is younger than Thor and Thor is younger than Hulk.

So,

→ Hulk > Thor > Ironman

Also,

Hulk is born after Spiderman, so Spiderman is elder than Hulk.

We get,

→ Spiderman > Hulk > Thor > Ironman

Also,

→ Hulk is elder than Superman.

We get,

Case I and III: becomes invalid as, Spiderman cannot be placed.

Thus, we are left with two cases out of above, II and IV:

Case II:

	Spiderman	Yellow
	Hulk	
1960	Superman	Green
	Thor	Brown
	Ironman	Red
1998	Batman	

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Case IV:

	Spiderman	Yellow
	Hulk	
1960	Superman	Green
	Thor	Brown
	Ironman	
1998	Batman	Red

Now,
• One with blue costume is elder than that with black as well as that with green.
We get,

	Spiderman	Yellow
	Hulk	Blue
1960	Superman	Green
	Thor	Brown
	Ironman	Red/Black
1998	Batman	Black/Red

It is given that,
• Hulk is born seven years after Spiderman, one of them been born in 1929.
Two possibilities are there:
→ if, hulk = 1929; then, Spiderman = 1929 - 7 = 1922
→ if, Spiderman = 1929; then, Hulk = 1929 + 7 = 1936
Also,
• Ironman is 19 years younger than Thor, who is 43 years younger than hulk.
So, we get two possible cases:
Case I: hulk = 1929; Spiderman =1922; Thor=1929+43=1972; Ironman=1972+19=1991
Case II: hulk = 1936; Spiderman =1929; Thor=1936+43=1979; Ironman=1979+19=1998
But,
Case II becomes invalid, as Batman is born in 1998, so Ironman must have been born in some other year.
Case I fits here.
Also,
• One with black costume is not born before 1995.
Thus, we get the final arrangement as follows:

1922	**Spiderman**	**Yellow**
1929	**Hulk**	**Blue**
1960	**Superman**	**Green**
1972	**Thor**	**Brown**
1991	**Ironman**	**Red**
1998	**Batman**	**Black**

Answer 12 – The colour given with superhero is the colour of costume of the superhero born just after the given hero. It follows in all except in option (d).

Question 14 to 18

• G was the first among all to start, in 1990.
• Number of start-ups which started after B are equal to that started before B.
• B started in March month of 1998
• The last start-up started in 2017.
We get,

G	1990	
B	1998	March
	2017	

Now,
• One start-up was started between those which were started in January and March.
We get,
Case I:

G	1990	
		January
B	1998	March
	2017	

Case II:

G	1990	
B	1998	March
		January
	2017	

It is given that,
• No start-up was started between E and A, with A been started in September after E.
• C started after F.
• D started before E.
• Also, C started before D.
We get the sequence as follows:
Case I:

G	1990	
F		January
C		
B	1998	March
D		
E		
A	2017	September

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Case II:

G	1990	
F		
C		
B	1998	March
D		
E		January
A	2017	September

Now,
- No start-up started in November.
- E started either in 2013 or in 2000, in a month with odd numbered days i.e. 31 days or 29 days.
- D started 10 years before E, in a month with even number of days i.e. 28 or 30 days.

If E started in 2013, then, D must have started in 2003
If E started in 2000, then, D must have started in 1990, which becomes invalid case as G was started in 1990.
So,
We get, E = 2013 and D = 2003
Possible months of starts are:
E - May/July/August/October/December (only for case I as, in case II; E - January which is valid as it has odd numbered days)
D - February (as it is 2003-not a leap year)/April/June

Case I:

G	1990	
F		January
C		
B	1998	March
D	2003	February/April/June
E	2013	May/July/August/October/December
A	2017	September

Case II:

G	1990	
F		
C		
B	1998	March
D	2003	February/April/June
E	2013	January
A	2017	September

Now,
- There is a difference of 2 years between the one which started in April and the one which started in January.
- C started four years after F.
- C started in a month with even numbered days.

So,
→ if F - 1991; C - 1995
→ if F - 1992; C - 1996
→ if F - 1993; C - 1997
All these cases if put in case I, then,
→ if F - 1991; C - 1995
January - 1991 so, April - 1993 or 1988 and both are not possible. Hence, case invalid.
→ if F - 1992; C - 1996
January - 1992 so, April - 1995 or 1990 and this is a valid possibility as follows:
Also, C started in June as, 1996 is a leap year and only June is there for even numbered days. (None is started in November). Thus, D started in February.

Case I:

G	1990	April
F	1992	January
C	1996	June
B	1998	March
D	2003	February
E	2013	May/July/August/October/December
A	2017	September

→ if F - 1993; C - 1997
January - 1993 so, April - 1995 or 1991, and both are not possible, hence, case invalid.
Now,
→ In case II: the condition (April is at a gap of 1 year from the one which started in January) becomes invalid as January - 2013 so, April should be either 2011 or 2015, which are not possible. Hence, case II becomes invalid.
The final arrangement is as follows: (month of E's start is not clear)

G	**1990**	**April**
F	**1992**	**January**
C	**1996**	**June**
B	**1998**	**March**
D	**2003**	**February**
E	**2013**	**May/July/August/October/December**
A	**2017**	**September**

QUESTION 19 TO 22
H is born on 12 May 2008.

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Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994			
1996			
1997			
1999			
2002			
2006			
2008	H (12 May)	11	12
2010			

C is elder than D by 5 years in one survey and by 6 years in another survey. D is born in 2002 but not on 12 January.

Case 1: -

Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994			
1996	C (12 September)	23	23
1997			
1999			
2002	D (12 May)	17	18
2006			
2008	H (12 May)	11	12
2010			

Case 2: -

Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994			
1996			
1997	C (12 January)	23	23
1999			
2002	D (12 May)	17	18
2006			
2008	H (12 May)	11	12
2010			

G is the eldest and is born on a month other than that of C and D.

4 persons are born in the month of May while 2 persons each are born in the month of January and September.

Age of the A is different in both surveys and same is true for B as well.

So, A and B are born in the month of May.

Age of A as per central government survey is 3 years more than age of B as per state government survey.

Case 1: -

Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994	G (12 January)	26	26
1996	C (12 September)	23	23
1997	A (12 May)	22	23
1999	B (12 May)	20	21
2002	D (12 May)	17	18
2006			
2008	H (12 May)	11	12
2010			

Case 2: -

Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994	G (12 September)	25	25
1996			
1997	C (12 January)	23	23
1999			
2002	D (12 May)	17	18
2006			
2008	H (12 May)	11	12
2010			

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Age of A as per central government survey is 3 years more than age of B as per state government survey.
This is not possible in this case. So, case 2 is invalid.
E is 5 years elder than F in both the surveys.
Now, E and F are born in January and September in no particular order.
Since, E is 5 years elder than F and they are born in 2006 and 2010, so E must be born in January and F must be born in September.

Case 1: -

Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994	G (12 January)	26	26
1996	C (12 September)	23	23
1997	A (12 May)	22	23
1999	B (12 May)	20	21
2002	D (12 May)	17	18
2006	E (12 January)	14	14
2008	H (12 May)	11	12
2010	F (12 September)	9	9

Final Solution:

Birthyear	Person and his birthdate	Age in state govt. survey (12 March 2020)	Age in central govt. survey (12 July 2020)
1994	G (12 January)	26	26
1996	C (12 September)	23	23
1997	A (12 May)	22	23
1999	B (12 May)	20	21
2002	D (12 May)	17	18
2006	E (12 January)	14	14
2008	H (12 May)	11	12
2010	F (12 September)	9	9

Question 23 to 26

Birthday of G is celebrated immediately before A and the sum of number of candles burned on their birthdays together is 61.
A is elder than G.
Now, let us calculate the number of candles burned (i.e. age) if each one born in the given years.

We get:

1970	46
1973	43
1976	40
1981	35
1986	30
1990	26
1995	21
1997	19

Sum of 61 is possible in 2 ways;
21 + 40 = 26 + 35 = 61
Also, 1976 is the only leap year. So, the one born on 29th February must be born in 1976.

Case 1: -

Year	Age	Person	Birthdate
1970	46		
1973	43		
1976	40	A	29
1981	35		
1986	30		
1990	26		
1995	21	G	28
1997	19		

Case 2: -

Year	Age	Person	Birthdate
1970	46		
1973	43		
1976	40		29
1981	35	A	
1986	30		
1990	26	G	
1995	21		
1997	19		

The one who is born on 25th February is younger than A and, on his birthday, friend burned number candles which are the multiple of 3.
C is younger than the one who is born on 25th but is not the youngest.

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Case 1: -

Year	Age	Person	Birthdate
1970	46		
1973	43		
1976	40	A	29
1981	35		
1986	30		25
1990	26	C	
1995	21	G	28
1997	19		

Case 2: -

Year	Age	Person	Birthdate
1970	46		
1973	43		
1976	40		29
1981	35	A	
1986	30		25
1990	26	G	
1995	21	C	
1997	19		

The sum of number of candles burned on the birthdays of D and the one who is born 27nd of the month is 56.
So, D must be born in 1986 and the one whose birthday is on 27th must be born in 1990.
Birthday of G is celebrated immediately before A.
Birthday of the eldest person is celebrated 4 days after the youngest person (there is gap of 3 days in between them).

Case 1: -

Year	Age	Person	Birthdate
1970	46		26
1973	43		
1976	40	A	29
1981	35		
1986	30	D	25
1990	26	C	27
1995	21	G	28
1997	19		22

Case 2: -

Year	Age	Person	Birthdate
1970	46		26
1973	43		
1976	40		29
1981	35	A	28
1986	30	D	25
1990	26	G	27
1995	21	C	
1997	19		22

The one whose birthday celebrated immediately after youngest person is elder than H, who is not youngest.
So, the one who is born in 1973 must have birthday on 23rd of the month.

Case 1: -

Year	Age	Person	Birthdate
1970	46		26
1973	43		23
1976	40	A	29
1981	35	H	24
1986	30	D	25
1990	26	C	27
1995	21	G	28
1997	19		22

Case 2: -

Year	Age	Person	Birthdate
1970	46		26
1973	43		23
1976	40	H	29
1981	35	A	28
1986	30	D	25
1990	26	G	27
1995	21	C	24
1997	19		22

B is elder than E but not eldest.

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Case 1: -

Year	Age	Person	Birthdate
1970	46	F	26
1973	43	B	23
1976	40	A	29
1981	35	H	24
1986	30	D	25
1990	26	C	27
1995	21	G	28
1997	19	E	22

Case 2: -

Year	Age	Person	Birthdate
1970	46	F	26
1973	43	B	23
1976	40	H	29
1981	35	A	28
1986	30	D	25
1990	26	G	27
1995	21	C	24
1997	19	E	22

The sum of ages of E and G is the even number, So, case 2 is invalid.

Final Solution:

Year	Age	Person	Birthdate
1970	46	F	26
1973	43	B	23
1976	40	A	29
1981	35	H	24
1986	30	D	25
1990	26	C	27
1995	21	G	28
1997	19	E	22

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CHAPTER 6 - GRID BASED

What is Grid-based puzzle?

This is the most common type of puzzle asked in any government examination. It involves the mix and match of variables. It can involve multiple variables of different types.
For example: Eight persons like eight different colours and were born in eight different places.
We are calling it Grid-based puzzles, because these are solved in tabular form.

Let's learn the approach...

We must always start these types of questions, with the hints that give us the fixed information about the variables and make a table and fill that information in the table. So, we don't skip or miss anything. Then after, go forward with other hints.
These puzzles can be asked in following types:

I. Different variables with no relationship between the variables: Here, variables will be given which do not possess any relationship amongst themselves.
For example: 5 persons wore different coloured shirts and liked different beverages. So, here, colour and beverages is not related to each other.
We can draw a grid/table as follows to solve the question,

	Colour	Beverage
A	Red	Milk
B	Pink	Tea
C	Purple	Coke
D	Yellow	Coffee
E	Blue	Juice

II. Different variables where the variables are related or are in a sequence: Here, variables can be given in some order or might be related in some way.
For example: 5 persons born in 5 consecutive months liked different colours. So, if it is given in hints that A is born before B, then we relate to the months and do the arrangement accordingly.

	Name	Colour
January	A	Red
February	E	Pink
March	B	Purple
April	D	Yellow
may	C	Blue

Thus, there is a sequence and hence a relationship can be established between the persons born in these months. Similarly, there can be lectures on different days of a week or there can be consecutive numbers picked by some persons.

Key Pointers

⇨ The solution will be in a tabular form. Place the fixed data against the variables.
⇨ Fix a single variable (name, day, month etc) against which you match the other variables. The fixed variable comes in the leftmost column.
⇨ Use the negative hints to eliminate cases. In grid-based questions, there may be multiple negative hints. For example, A liked neither green nor yellow. Thus, A liked one of the 3 remaining colours (if 5 colours are given).

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Solved Examples

Directions [1 to 5]: Seven persons - P, Q, R, S, T, U and V, went to shopping and each went to different store - Lifestyle, Pantaloons, Trends, Vero Moda, Big Bazaar, Globus and Westside, in no definite order and, each one of them buys a different stuff - Jeans, Kurta, belt, suit, shirt, blazer and shoes.
One who goes to Globus doesn't buy either of Kurta, Suit and belt. V went to Big bazaar and didn't buy Jeans. R bought a shirt. U didn't go to Trends and didn't buy either of belt and jeans. The one who went Pantaloons bought shoes and the one who went Westside bought blazer. Q went Lifestyle. Blazer is bought by none of P, Q and U. Jeans is not bought by the person who went to Globus and Trends. T bought Kurta. P went to none of Globus, Vero Moda and Trends.

Question 1 Who went to Vero Moda?
Question 2 Which is the correct combination of Person and thing bought among the following?
a) Q – shoes b) P – belt c) U - Suit
d) V – blazer e) All are incorrect
Question 3 The one who bought belt went to _____
Question 4 Who went to Trends?
Question 5 If all the persons go shopping in alphabetical order such that (P goes before Q, Q before R and, so on) then, how many persons went shopping before the one who bought Blazer?

Solution:
- R bought a shirt.
- Q went Lifestyle.
- V went to Big bazaar.
- T bought Kurta.

We get,

P		
Q		Lifestyle
R	Shirt	
S		
T	Kurta	
U		
V		Big Bazaar

Now,
- P went to neither Globus nor Vero Moda nor Trends.

Thus, P went either to Westside or Pantaloons.
- The one who went Pantaloons bought shoes.

We get,

Case I:

P	Shoes	Pantaloons
Q		Lifestyle
R	Shirt	
S		
T	Kurta	
U		
V		Big Bazaar

Case II:

P	Blazer	Westside
Q		Lifestyle
R	Shirt	
S		
T	Kurta	
U		
V		Big Bazaar

Since,
- The one who went Westside bought blazer.

And,
- Blazer is bought by neither P nor Q nor U.

So, case II becomes invalid and we get,
Thus, we get S went westside and bought Blazer.

Case I:

P	Shoes	Pantaloons
Q		Lifestyle
R	Shirt	
S	Blazer	Westside
T	Kurta	
U		
V		Big Bazaar

- V didn't buy Jeans.

So, V bought Suit or belt.

P	Shoes	Pantaloons
Q		Lifestyle
R	Shirt	
S	Blazer	Westside
T	Kurta	
U		
V	Suit/belt	Big Bazaar

- U didn't go to Trends and didn't buy either of belt and jeans.

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Thus, U bought Suit and hence, V bought belt and Q bought jeans.
We get,

P	Shoes	Pantaloons
Q	Jeans	Lifestyle
R	Shirt	
S	Blazer	Westside
T	Kurta	
U	Suit	
V	Belt	Big Bazaar

Now,
• One who goes to Globus doesn't buy either of Kurta, Suit and belt.
• Jeans is not bought by the person who went to Globus and Trends.
Thus, we get that R went to Globus.
Since, U didn't go to Trends, U goes to Vero Moda.
Final arrangement is as follows:

P	**Shoes**	**Pantaloons**
Q	**Jeans**	**Lifestyle**
R	**Shirt**	**Globus**
S	**Blazer**	**Westside**
T	**Kurta**	**Trends**
U	**Suit**	**Vero Moda**
V	**Belt**	**Big Bazaar**

Answer 1: U went Vero Moda.
Answer 2: U buys suit. Rest all are incorrect.
Answer 3: One who bought belt went to Big bazaar.
Answer 4: T went to trends.
Answer 5: S bought blazer and P, Q, R went before S. thus, three persons.

Directions [6 to 10]: 10 persons A, B, C, D, E, F, G, H, I and J joined a company on different days of a week starting from Monday. On three days 2 persons joined while on rest of the days only one person joined.
A and B joined the company at a gap of 2 days. Neither of them joined on Tuesday or Saturday. C joined just after A. The number of days before the day E joined is same as the number of days after the day C joined. I joined just after G. H joined on a day when no one else joined. J and F joined the company on the same day. The gap between the joining of J and G is one more than the gap between the joining of A and F. D joined after I and there are two days in between the days they joined. Nobody else joined on the day D joined the company.

Question 6 On which of the following days did two people join the company?
a) Monday, Tuesday, Thursday
b) Wednesday, Thursday, Saturday
c) Friday, Saturday, Sunday
d) Tuesday, Wednesday, Thursday
e) Thursday, Saturday, Sunday
Question 7 Who was/were the first to join the company?
Question 8 On which of the following days did H join the company?
Question 9 How many persons joined the company between H and C?
Question 10 Who among the following joined the company on Saturday?
Solution:
• A and B joined the company at a gap of 2 days. Neither of them joined on Tuesday or Saturday. Hence, they must have joined on (Monday, Thursday) or (Thursday, Sunday)
• C joined just after A
• The number of persons who joined before E is same as the number of persons who joined after C
Taking the possible cases:
Case 1:

Monday	A
Tuesday	C
Wednesday	
Thursday	B
Friday	
Saturday	E
Sunday	

Case 2:

Monday	B
Tuesday	
Wednesday	E
Thursday	A
Friday	C
Saturday	
Sunday	

Case 3:

Monday	
Tuesday	
Wednesday	E
Thursday	A
Friday	C
Saturday	
Sunday	B

• I joined just after G
• J and F joined the company on the same day

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• The gap between the joining of J and G is one more than the gap between the joining of A and F
• D joined 3 days after I joined and nobody else joined on the day D joined the company.

Case 1:

	Case 1(X)	Case 1(Y)
Monday	A	A, G
Tuesday	C	C, I
Wednesday	G	
Thursday	B, I	B
Friday	J, F	D
Saturday	E	E
Sunday	D	

In case 1(X), the gap between G and J is 1 day while the gap between A and F is 3 days, hence, the case is invalid. In case 1(Y), A and G join on the same day, thus the case is invalid.

Case 2:

	Case 2(X)	Case 2(Y)
Monday	B	B
Tuesday	G	H
Wednesday	E, I	E, G
Thursday	A	A, I
Friday	C	C
Saturday	D	J, F
Sunday	J, F	D

In case 2(X), we cannot place H hence, the case becomes invalid.

Case 3:

Monday	J, F
Tuesday	G
Wednesday	E, I
Thursday	A
Friday	C
Saturday	D
Sunday	B

In case 3, the gap between G and J is 0 days while the gap between A and F is 2 days, hence, the case is invalid.

Thus, the final arrangement is Case 2(Y)

Monday	B
Tuesday	H
Wednesday	E, G
Thursday	A, I
Friday	C
Saturday	J, F
Sunday	D

Answer 6: 2 people joined the company on Wednesday, Thursday and Saturday
Answer 7: B was the first to join the company
Answer 8: H joined the company on Tuesday.
Answer 9: 4 persons joined the company between H and C.
Answer 10: J and F joined the company on Saturday.

Directions [11 to 13]: Aman, Chandan, Esha, Gagan, Isha and Kriti went to market to buy some items. Each of them bought different items. They bought rubber, pencil, sharpener, notebook, crayon, compass, not necessarily in the same order. The number of items bought by them is 1, 2, 3, 4, 5 and 6, not necessarily in the same order. The cost of each of the item is Rs 2, Rs 3, Rs 7, Rs 9, Rs 10 and Rs 12, not necessarily in the same order. None of the two spent same amount of money in the market.

i) The person who bought sharpener spent Rs 45.
ii) Esha spent Rs 12. Kriti bought 3 crayons. Aman bought the item whose cost is Rs 9 per item.
iii) Cost of notebook is Rs 3 per piece. Sum of the number of items bought by Gagan and Isha is equal to the number of items bought by Esha.
iv) The item bought by Isha is Rs 12 per piece.
v) Among all the friends , Chandan is the only person for whom the total amount spent is not a multiple of 3.
vi) Cost of rubber is Rs 7 per piece.

Question 11 Who bought pencil?
Question 12 What is the total expenditure incurred for buying rubber?
Question 13 Which item is priced at Rs 3 per item?

Solution:

The person who bought sharpener spent Rs 45. That means number of sharpeners bought is 5 and cost of 1 sharpener is Rs 9. Aman bought the item whose cost is Rs 9 per item. That means Aman bought sharpener.

Kriti bought 3 crayons. The item bought by Isha is Rs 12 per piece. Esha spent Rs 12

This information can be arranged as follows:

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	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener					Crayon
No. of items bought	5					3
Per item cost	Rs 9				Rs 12	
Total cost	Rs 45		R 12			

Esha spent Rs 12. So two cases are possible:

Case 1:

	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener					Crayon
No. of items bought	5		4			3
Per item cost	Rs 9		Rs 3		Rs 12	
Total cost	Rs 45		R 12			

Case 2:

	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener					Crayon
No. of items bought	5		6			3
Per item cost	Rs 9		Rs 2		Rs 12	
Total cost	Rs 45		R 12			

Sum of the number of items bought by Gagan and Isha is equal to the number of items bought by Esha. So above cases can be modified as follows:

Case 1:

	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener					Crayon
No. of items bought	5		4			3
Per item cost	Rs 9		Rs 3		Rs 12	
Total cost	Rs 45		R 12			

Since Esha bought 4 items, Gagan and Isha can buy 1 and 3 items respectively or vice versa. But Kriti bought 3 items, so case 1 will be rejected.

Case 2:

	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener					Crayon
No. of items bought	5		6	2/4	4/2	3
Per item cost	Rs 9		Rs 2		Rs 12	
Total cost	Rs 45		R 12			

Among all the friends, Chandan is the only person for whom the total amount spent is not a multiple of 3. There are three items whose cost are Rs 3, Rs 7 and Rs 10. Total cost of item bought by Gagan is multiple of 3. So cost of per item purchased by Gagan is Rs 3.

	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener					Crayon
No. of items bought	5	1	6	2/4	4/2	3
Per item cost	Rs 9	Rs 7/Rs 10	Rs 2	Rs 3	Rs 12	Rs 10/Rs 7
Total cost	Rs 45		R 12			

Cost per item for Kriti cannot be Rs 7 as the cost of 1 rubber is Rs 7. So above case can be modified as follows:

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	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener	Rubber	Pencil/compass	Notebook	Compass/pencil	Crayon
No. of items bought	5	1	6	2/4	4/2	3
Per item cost	Rs 9	Rs 7	Rs 2	Rs 3	Rs 12	Rs 10
Total cost	Rs 45	Rs 7	R 12	Rs 6/Rs 12	Rs 48/Rs 24	Rs 30

None of the two sent same amount of money in the market. So above case can be modified as follows:

	Aman	Chandan	Esha	Gagan	Isha	Kriti
Item purchased	Sharpener	Rubber	Pencil/compass	Notebook	Compass/pencil	Crayon
No. of items bought	5	1	6	2	4	3
Per item cost	Rs 9	Rs 7	Rs 2	Rs 3	Rs 12	Rs 10
Total cost	Rs 45	Rs 7	R 12	Rs 6	Rs 48	Rs 30

Notebook is priced at Rs 3 per item.

Answer 11: Either Esha or Isha bought pencil

Answer 12: Total expenditure incurred for buying rubber is Rs 7

Answer 13: Crayon → Rs 3 per item

Practice Yourself

Question 1 Six children A, B, C, D, E and F went to attend N's birthday. Each of them gave a different chocolate to N in a different coloured wrapping paper. The chocolates were Bar One, KitKat, Bourneville, Perk, Silk and Temptation. The colours were Orange, Green, red, yellow, purple and pink not necessarily in the same order. Perk was gifted by A. KitKat was wrapped in pink wrapper. F gave the chocolate in green wrapper. E gifted Bar One. D gave either silk or Bourneville. B did not give the KitKat. Temptation was wrapped in yellow cover. Silk was wrapped in either red or purple wrapper. E did not wrap the chocolate in orange. Which of the following chocolates was wrapped in Orange wrapper?

a) Perk b) Silk c) Bar One
d) Bourneville e) Cannot be determined

Directions [2 to 6]: Eight persons A, B, C, D, E, F, G and H were born in the year 2001 in the months of January, February, March, April, May, June, July and August not necessarily in the same order. The persons born in the months with odd number of days were born on dates which were perfect squares. The persons born in the months with even number of days were born on dates which were prime numbers. No two persons were born in the same month.

G was born on 11th. 2 persons had birthdays between G and H such that G's birthday was before H's birthday. The one born on 16 celebrated his birthday just before C. C and H celebrated birthdays in consecutive months. H was not born on 16th. E celebrated his birthday just after the one born on 25th but just before D. 1 person celebrated his birthday between the one born on 4th and A. F was not born in January. E's birthday was before 20th of the month. The one who celebrated his birthday on 1st had his birthday just after the one who celebrated his birthday on 23rd. One of them was born on 19th. A was not born on 25th. Assume that the data is given for the same year.

Question 2 When did A celebrate his birthday?

a) 19th February b) 11th June c) 16th May
d) 25th March e) 1st August

Question 3 In which of the following months was B born?

a) August b) March c) April
d) February e) January

Question 4 How many persons celebrated their birthday between B and E?

a) None b) One c) Two
d) Three e) More than three

Question 5 Who among the following was born on 23rd?

a) F b) A c) C d) H e) B

Question 6 Who among the following celebrated birthday before March?

I. D II. B III. H

a) Only I b) Only II c) Only III
d) Both I and II e) Both II and III

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Directions [7 to 11]: Study the following information carefully and answer the questions given below:
Eight friends A, B, C, D, E, F, G and H works in different companies viz. Google, Samsung, Apple, Nokia, TCS, Reliance, Flipkart and Infosys but not necessarily in the same order. They belong to different cities from Bangalore, Chennai, Goa, Delhi, Kolkata, Pune, Indore and Mumbai not necessarily in the same order. They also earn different salaries from 18000, 22000, 25000, 37000, 40000, 42000, 60000 and 62000 also not necessarily in the same order. C works in Nokia and belongs to Kolkata. F belongs to Chennai and earns 37000. The one who works in Infosys is belongs to Goa and earns 25000. D's salary is the sum of the E's and H's salary. E earns more than H. D is not earning 62000. B works in Google and earns 42000. A belongs to Mumbai. The one who belongs to Indore earns 22000. The one who works in Apple earns 40000. The one who works in Samsung earns 60000. The one who works in Reliance earns more than the one who works in Flipkart but less than the one who works in TCS. H doesn't belong to Pune. The one who belongs to Bangalore earns more than the one who belongs to Pune.

Question 7 Who among the following earns the highest?
a) A b) C c) B d) G e) E
Question 8 Which of the following combination is correct?
a) B-Kolkata b) D-60000 c) None is correct
d) F-Flipkart e) G-25000
Question 9 D belongs to which of the following city?
a) Bangalore b) Pune c) Delhi
d) Goa e) Indore
Question 10 How many persons earn more than the one who belongs to Bangalore?
a) None b) 1 c) 2 d) 3 e) 4
Question 11 A works in which of the following company?
a) Samsung b) Apple c) TCS
d) Reliance e) Flipkart

Directions [12 to 16]: The birthdays of seven children A, B, C, D, E, F and G were celebrated consecutively in a week starting Sunday onwards. No two children celebrated birthday on the same day. Each child had a different flavoured cake on his birthday chocolate, vanilla, butterscotch, strawberry, black currant, blueberry and pineapple not necessarily in the same order.
The person who cut the chocolate cake celebrated his birthday just after D. Two persons celebrated birthdays between C and D. D celebrated his birthday before C. The pineapple flavour cake was cut just before the black currant cake. The blueberry cake was cut on Monday. Number of persons who celebrated birthdays after A was twice as that of the number of persons who celebrated birthdays before G. G celebrated his birthday before A. The strawberry cake was cut just before G's birthday. The vanilla cake was cut just after F's birthday. There was only one person who celebrated his birthday between A and E. E did not cut the pineapple cake.

Question 12 Who among the following cut the butterscotch cake?
a) A b) D c) C d) B e) G
Question 13 On which of the following days did B celebrate his birthday?
a) Monday b) Tuesday c) Thursday
d) Sunday e) Friday
Question 14 Which of the following flavoured cake was cut by F?
a) Blueberry b) Chocolate c) Vanilla
d) Strawberry e) Butterscotch
Question 15 On which day was the pineapple flavoured cake cut?
a) Wednesday b) Tuesday c) Thursday
d) Sunday e) Friday
Question 16 How many persons celebrated birthday between B and D?
a) None b) One c) Two
d) Three e) More than three

Directions [17 to 20]: Seven persons - O, P, Q, R, S, T and U are travelling from one city to other. Each one is travelling from a different city and each one is travelling to a different city, and these cities are among the following given cities - Delhi, Mumbai, Goa, Bangalore, Kanpur, Lucknow and Patna.
All are standing at their respective city stations from where they are travelling and, the trains of each person come at different time. No two trains come at same time and minimum time difference between arrival of two trains is at least 15 minutes. The train to arrive last arrives before 6:30 pm.
- The one who is travelling to Kanpur, who is not P, is travelling from Patna, where the train came 40 minutes after the one who is travelling from Bangalore.
- O's train came at the last and O is travelling to Patna.
- Q's train came after the trains of four persons, at 3:00 pm and Q is not travelling from Goa.
- The train which came first and the one which came last had a difference of 7 hours.
- The person who travels to/from Bangalore doesn't travel from/to Lucknow.
- U's train to Bangalore came immediately after the train travelling to Goa.
- Between the starting times of trains of R and S, trains of two persons started. S is travelling from Kanpur and R started before S
- The train travelling to Lucknow, which is not of P, came either at 2:30 pm or at 12:25 pm, and, train travelling from Lucknow doesn't come after 3:00 pm.

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Directions [7 to 11]: Study the following information carefully and answer the questions given below:
Eight friends A, B, C, D, E, F, G and H works in different companies viz. Google, Samsung, Apple, Nokia, TCS, Reliance, Flipkart and Infosys but not necessarily in the same order. They belong to different cities from Bangalore, Chennai, Goa, Delhi, Kolkata, Pune, Indore and Mumbai not necessarily in the same order. They also earn different salaries from 18000, 22000, 25000, 37000, 40000, 42000, 60000 and 62000 also not necessarily in the same order. C works in Nokia and belongs to Kolkata. F belongs to Chennai and earns 37000. The one who works in Infosys is belongs to Goa and earns 25000. D's salary is the sum of the E's and H's salary. E earns more than H. D is not earning 62000. B works in Google and earns 42000. A belongs to Mumbai. The one who belongs to Indore earns 22000. The one who works in Apple earns 40000. The one who works in Samsung earns 60000. The one who works in Reliance earns more than the one who works in Flipkart but less than the one who works in TCS. H doesn't belong to Pune. The one who belongs to Bangalore earns more than the one who belongs to Pune.

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a) B-Kolkata b) D-60000 c) None is correct
d) F-Flipkart e) G-25000
Question 9 D belongs to which of the following city?
a) Bangalore b) Pune c) Delhi
d) Goa e) Indore
Question 10 How many persons earn more than the one who belongs to Bangalore?
a) None b) 1 c) 2 d) 3 e) 4
Question 11 A works in which of the following company?
a) Samsung b) Apple c) TCS
d) Reliance e) Flipkart

Directions [12 to 16]: The birthdays of seven children A, B, C, D, E, F and G were celebrated consecutively in a week starting Sunday onwards. No two children celebrated birthday on the same day. Each child had a different flavoured cake on his birthday chocolate, vanilla, butterscotch, strawberry, black currant, blueberry and pineapple not necessarily in the same order.
The person who cut the chocolate cake celebrated his birthday just after D. Two persons celebrated birthdays between C and D. D celebrated his birthday before C. The pineapple flavour cake was cut just before the black currant cake. The blueberry cake was cut on Monday. Number of persons who celebrated birthdays after A was twice as that of the number of persons who celebrated birthdays before G. G celebrated his birthday before A. The strawberry cake was cut just before G's birthday. The vanilla cake was cut just after F's birthday. There was only one person who celebrated his birthday between A and E. E did not cut the pineapple cake.

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a) A b) D c) C d) B e) G
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a) Monday b) Tuesday c) Thursday
d) Sunday e) Friday
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a) Blueberry b) Chocolate c) Vanilla
d) Strawberry e) Butterscotch
Question 15 On which day was the pineapple flavoured cake cut?
a) Wednesday b) Tuesday c) Thursday
d) Sunday e) Friday
Question 16 How many persons celebrated birthday between B and D?
a) None b) One c) Two
d) Three e) More than three

Directions [17 to 20]: Seven persons - O, P, Q, R, S, T and U are travelling from one city to other. Each one is travelling from a different city and each one is travelling to a different city, and these cities are among the following given cities - Delhi, Mumbai, Goa, Bangalore, Kanpur, Lucknow and Patna.
All are standing at their respective city stations from where they are travelling and, the trains of each person come at different time. No two trains come at same time and minimum time difference between arrival of two trains is at least 15 minutes. The train to arrive last arrives before 6:30 pm.
- The one who is travelling to Kanpur, who is not P, is travelling from Patna, where the train came 40 minutes after the one who is travelling from Bangalore.
- O's train came at the last and O is travelling to Patna.
- Q's train came after the trains of four persons, at 3:00 pm and Q is not travelling from Goa.
- The train which came first and the one which came last had a difference of 7 hours.
- The person who travels to/from Bangalore doesn't travel from/to Lucknow.
- U's train to Bangalore came immediately after the train travelling to Goa.
- Between the starting times of trains of R and S, trains of two persons started. S is travelling from Kanpur and R started before S
- The train travelling to Lucknow, which is not of P, came either at 2:30 pm or at 12:25 pm, and, train travelling from Lucknow doesn't come after 3:00 pm.

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• The train of person travelling from Goa came 15 minutes after the train of person travelling from Patna.
• Neither of U and S, travel to/from Delhi.
• T's train came immediately before train of P, who is travelling either to Mumbai or Lucknow.
• One train came at 12:15 pm and one train came at 6:00 pm, which is not the last to come.

Question 17 Who among the following is travelling from Delhi?
a) U b) O c) P d) T e) R
Question 18 At what time T's train come?
a) 11:00 am b) 12:10 pm c) 11:10 am
d) 12:00 pm e) 2:20 pm
Question 19 Who among the following travelled to/from Goa?
I: R II: P III: Q IV: U
a) Both I and II b) Only II
c) Both II and III d) Both II and IV
e) Only IV
Question 20 At what time does the last train come?
a) 6:15 pm b) 6:30 pm c) 6:25 pm
d) 6:20 pm e) Cannot be determined

Directions [21 to 23]: Eight friends A, B, C, D, E, F, G & H lives on an 8-storey building. Ground floor of the building is numbered 1 & top floor is numbered 8. They all belong to different city Goa, Patna, Pune Kolkata, Delhi, Kanpur, Bangalore & Punjab (not necessarily in same order). They all have different company mobiles Samsung, Nokia, apple, Sony, Redmi, Oppo, Lava & Motorola (not necessarily in same order). They all were born on same date & same month but different years. No two consecutive English alphabet lives in adjacent floors (e.g A doesn't live immediately above or below B). All of their ages were calculated on same date & same month in the year 2018 & we have following information:
Person from Goa lives immediately below person from Kolkata who lives below 4th floor. F's floor number is 4 times the person whose age is 22. More than 3 people live between person from Kolkata & person who owns Motorola phone. B who was born in 1982 lives on an even numbered floor. H is from Goa. E has Nokia. Person who has Nokia lives immediately above person who has Sony. Person born in 1974 has Samsung. Person who has Lava live immediately above person who has apple. Person from Kolkata is 1 year younger than person living in 8th floor. 2 person lives between person who has Oppo & person who belongs to Delhi. F doesn't belong to Kanpur. Three people live between person from Punjab & person from Kanpur who has Redmi. G is not from Patna. 4 person lives between A & C who lives in an odd numbered floor. C who is from Pune is 39 years old & lives below 7th floor. Two people live between person wo has Nokia & person who was born in 1981. Person whose age is 24 lives immediately above person whose age is 41.

Question 21 Who was born in the year 1982?
a) Person who has redmi mobile
b) Person who has lava mobile
c) Person who belongs to Patna
d) Person who has Apple mobile
e) None of these
Question 22 How many persons were born between person who has Apple mobile & person who belongs to Kanpur?
a) None b) 1 c) 2
d) 3 e) More than 3
Question 23 Which of the following is/are correct?
i. Person who has Nokia phone lives immediately below the person who has oppo Phone.
ii. Person whose age is 41 years lives on an odd numbered floor.
iii. Person born in 1977 has apple phone
iv. Three people were born between person who has nokia phone & person who belongs to Bangalore.
a) (i) & (iii) b) (i), (ii) & (iii)
c) (i) & (ii) d) (ii), (iii) & (iv)
e) None of these

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ANSWER KEY

1- a	2- c	3- e	4- a	5- c	6- b	7- b	8- e	9- b
10- c	11- a	12- b	13- d	14- b	15- e	16- b	17- b	18- d
19- c	20- d	21- b	22- b	23- c				

DETAILED SOLUTIONS

Question 1

- A gifted perk
- F gave the chocolate in green wrapper
- E gifted Bar One
- D gave either silk or Bourneville

A	Perk	
B		
C		
D	Silk/Bourneville	
E	Bar One	
F		Green

- KitKat was wrapped in pink wrapper
- B did not give the KitKat, Thus, C gave the KitKat

A	Perk	
B		
C	KitKat	Pink
D	Silk/Bourneville	
E	Bar One	
F		Green

- Temptation was wrapped in yellow cover

A	Perk	
B	Temptation	Yellow
C	KitKat	Pink
D	Silk/Bourneville	
E	Bar One	
F	Silk/Bourneville	Green

- Silk was wrapped in either red or purple wrapper

A	Perk	
B	Temptation	Yellow
C	KitKat	Pink
D	Silk	Red/Purple
E	Bar One	
F	Bourneville	Green

- E did not wrap the chocolate in orange

A	Perk	Orange
B	Temptation	Yellow
C	KitKat	Pink
D	Silk	Red/Purple
E	Bar One	Red/Purple
F	Bourneville	Green

Thus, perk was wrapped in the orange wrapper

Question 2 to 6

- G was born on 11th. 2 persons had birthdays between G and H such that G's birthday was before H's birthday.
- The one born on 16 celebrated his birthday just before C
- C and H celebrated birthdays in consecutive months. H was not born on 16th

Case 1:

January		
February	G	11
March		16
April	C	
May	H	
June		
July		
August		

Case 2:

January		
February		
March		
April	G	11
May		16
June	C	
July	H	
August		

- E celebrated his birthday just after the one born on 25th but just before D

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• 1 person celebrated his birthday between the one born on 4th and A

Case 1:

January		4
February	G	11
March	A	16
April	C	
May	H	25
June	E	
July	D	
August		

Case 2:

January	A	25
February	E	
March	D	4
April	G	11
May		16
June	C	
July	H	
August		

Invalid as A was not born on 25th.

Case 2a:

January		25
February	E	
March	D	
April	G	11
May	A	16
June	C	
July	H	4
August		

Case 2b:

January		25
February	E	
March	D	4
April	G	11
May	A	16
June	C	
July	H	
August		

• F was not born in January

• The one who celebrated his birthday on 1st had his birthday just after the one who celebrated his birthday on 23rd.

• One of them was born on 19th.

Case 1:

January	B	4
February	G	11
March	A	16
April	C	
May	H	25
June	E	23
July	D	1
August	F	

Invalid as E's birthday was before 20th of the month.

Case 2a:

January	B	25
February	E	23
March	D	1
April	G	11
May	A	16
June	C	
July	H	4
August	F	

Invalid as E was born before 20th.

Case 2b:

The perfect squares in a month are: 1, 4, 9, 16 and 25. Thus, F will be born on 9

January	B	25
February	E	19
March	D	4
April	G	11
May	A	16
June	C	23
July	H	1
August	F	9

Question 7 to 11

• C works in Nokia and belongs to Kolkata.

• F belongs to Chennai and earns 37000.

• A belongs to Mumbai.

• B works in Google and earns 42000.

• D's salary is the sum of the E's and H's salary.

We got these combinations, 18+42=60, 22+40=62, 25+37=62, 18+22=40, D is not earning 62000 so only 2 combinations left. We also know that B earns 42000 so only one combination left which is 18+22=40. We know that E earns

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more than H so ,E must earn 22k, H earns 18k and B earns 40k.

Person	Company	City	Salary
A		Mumbai	
B	Google		42000
C	Nokia	Kolkata	
D			40000
E			22000
F		Chennai	37000
G			
H			18000

- The one who works in Infosys belongs to Goa and earns 25000 so this person must be G.
- The one who works in Samsung earns 60000 so A must work in Samsung and the last person C must earn 62000.
- The one who belongs to Indore earns 22000. E will belong to Indore.
- The one who works in Apple earns 40000. D will work in Apple.

Person	Company	City	Salary
A	Samsung	Mumbai	60000
B	Google		42000
C	Nokia	Kolkata	62000
D	Apple		40000
E		Indore	22000
F		Chennai	37000
G	Infosys	Goa	25000
H			18000

- The one who works in Reliance earns more than the one who works in Flipkart but less than the one who works in TCS so E must work in Reliance, H must work in Flipkart and F must work in TCS.
- H doesn't belong to Pune. The one who belongs to Bangalore earns more than the one who belongs to Pune. B earns more than D so B must belong to Bangalore, D must belong to Pune and H must belong to Delhi.

Here is the final table:

Person	Company	City	Salary
A	Samsung	Mumbai	60000
B	Google	Bangalore	42000
C	Nokia	Kolkata	62000
D	Apple	Pune	40000
E	Reliance	Indore	22000
F	TCS	Chennai	37000
G	Infosys	Goa	25000
H	Flipkart	Delhi	18000

QUESTION 12 TO 16

- The blueberry cake was cut on Monday
- Number of persons who celebrated birthdays after A was twice as that of the number of persons who celebrated birthdays before G. G celebrated his birthday before A
- The strawberry cake was cut just before G's birthday.

Sunday		Strawberry
Monday	G	Blueberry
Tuesday		
Wednesday		
Thursday	A	
Friday		
Saturday		

- The person who cut the chocolate cake celebrated his birthday just after D.
- Two persons celebrated birthdays between C and D. D celebrated his birthday before C

Case 1:

Sunday		Strawberry
Monday	G	Blueberry
Tuesday	D	
Wednesday		Chocolate
Thursday	A	
Friday	C	
Saturday		

Case 2:

Sunday		Strawberry
Monday	G	Blueberry
Tuesday		
Wednesday	D	
Thursday	A	Chocolate
Friday		
Saturday	C	

- The vanilla cake was cut just after F's birthday.
- The pineapple flavour cake was cut just before the black currant cake
- There was only one person who celebrated his birthday between A and E.

Case 1:

Sunday	B	Strawberry
Monday	G	Blueberry
Tuesday	D	Butterscotch
Wednesday	F	Chocolate
Thursday	A	Vanilla
Friday	C	Pineapple
Saturday	E	Black Currant

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Case 2:

Sunday	B	Strawberry
Monday	G	Blueberry
Tuesday	E	Pineapple
Wednesday	D	Black Currant
Thursday	A	Chocolate
Friday	F	Butterscotch
Saturday	C	Vanilla

Case 2a:

Sunday		Strawberry
Monday	G	Blueberry
Tuesday	F	Butterscotch
Wednesday	D	Vanilla
Thursday	A	Chocolate
Friday		Pineapple
Saturday	C	Black Currant

Invalid as E cannot be placed in it

• E did not cut the pineapple cake. Thus, case 2 is invalid.

Final arrangement,

Sunday	B	Strawberry
Monday	G	Blueberry
Tuesday	D	Butterscotch
Wednesday	F	Chocolate
Thursday	A	Vanilla
Friday	C	Pineapple
Saturday	E	Black Currant

QUESTION 17 TO 20

• O's train came at the last and O is travelling to Patna.

• Q's train came after the trains of four persons, at 3:00 pm and Q is not travelling from Goa.

Person	Travelling from	Travelling To	Time of train
Q			3:00 pm
O		Patna	

• Two persons train came after that of R and, before that of S, who is travelling from Kanpur.

• T's train came immediately before train of P, who is travelling either to Mumbai or Lucknow.

Also,

• U's train to Bangalore came immediately after the train travelling to Goa.

Case I:

Person	Travelling from	Travelling To	Time of train
R			
T			
P		Mumbai/Lucknow	
S	Kanpur		
Q		Goa	3:00 pm
U		Bangalore	
O		Patna	

Case II:

Person	Travelling from	Travelling To	Time of train
T			
P		Mumbai/Lucknow	
R		Goa	
U		Bangalore	
Q			3:00 pm
S	Kanpur		
O		Patna	

• The one who is travelling to Kanpur, who is not P, is travelling from Patna, where the train came 40 minutes immediately after the one who is travelling from Bangalore.

So, a person travels from Patna to Kanpur, who is not P. Also, this person cannot be the first one as it is after the one travelling from Bangalore.

We get,

Case I:

Person	Travelling from	Travelling To	Time of train
R	Bangalore		
T	Patna	Kanpur	
P		Mumbai/Lucknow	
S	Kanpur		
Q		Goa	3:00 pm
U		Bangalore	
O		Patna	

Case II:

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Person	Travelling from	Travelling To	Time of train
T			
P		Mumbai/Lucknow	
R		Goa	
U		Bangalore	
Q	Patna	Kanpur	3:00 pm
S	Kanpur		
O		Patna	

From the above the case II becomes invalid as a person cannot go from Bangalore to Bangalore.

Now,

- The train of person travelling from Goa came 15 minutes after the train of person travelling from Patna.

Since, minimum time difference between arrival of two trains is at least 15 minutes.

So, the train from Goa must be just after the train from Patna.

We get,

Person	Travelling from	Travelling To	Time of train
R	Bangalore		Z (let)
T	Patna	Kanpur	Z + 40 mins
P	Goa	Mumbai/Lucknow	Z + 40 mins + 15 mins
S	Kanpur		
Q		Goa	3:00 pm
U		Bangalore	
O		Patna	

Now,

- The person who travels to/from Bangalore doesn't travel from/to Lucknow.
- Neither of U and S, travel to/from Delhi.
- P is not travelling to Lucknow.

We get,

Person	Travelling from	Travelling To	Time of train
R	Bangalore	Delhi	Z (let)
T	Patna	Kanpur	Z + 40 mins
P	Goa	Mumbai	Z + 40 mins + 15 mins
S	Kanpur	Lucknow	
Q	Mumbai/Lucknow/ Delhi		
U	Goa	3:00 pm	
O	Mumbai/Lucknow	Bangalore	
Delhi	Mumbai/Lucknow/ Patna		

Also,

- train travelling from Lucknow doesn't come after 3:00 pm.

So, we get,

Person	Travelling from	Travelling To	Time of train
R	Bangalore	Delhi	Z (let)
T	Patna	Kanpur	Z + 40 mins
P	Goa	Mumbai	Z + 40 mins + 15 mins
S	Kanpur	Lucknow	
Q	Lucknow	Goa	3:00 pm
U	Mumbai	Bangalore	
O	Delhi	Patna	

Now,

- The train travelling to Lucknow, which is not of P, came either at 2:30 pm or at 12:25 pm.
- One train came at 6:00 pm, which is not the last to come.

So, U's train came at 6:00 pm.

We get,

Case I:

Person	Travelling from	Travelling To	Time of train
R	Bangalore	Delhi	Z (let)
T	Patna	Kanpur	Z + 40 mins
P	Goa	Mumbai	Z + 40 mins + 15 mins
S	Kanpur	Lucknow	2:30 pm
Q	Lucknow	Goa	3:00 pm
U	Mumbai	Bangalore	6:00 pm
O	Delhi	Patna	

Case II:

Person	Travelling from	Travelling To	Time of train
R	Bangalore	Delhi	Z (let)
T	Patna	Kanpur	Z + 40 mins
P	Goa	Mumbai	Z + 40 mins + 15 mins
S	Kanpur	Lucknow	12:25 pm
Q	Lucknow	Goa	3:00 pm
U	Mumbai	Bangalore	6:00 pm
O	Delhi	Patna	

Now,

- The train which came first and the one which came last had a difference of 7 hours.

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• One train came at 12:15 pm.
In case II: if P's train comes at 12:15, then difference between P's and S's train is less than 15 minutes which makes it invalid.
Then, if T's train comes at 12:15, then P's train must come at 12:30 pm, which becomes invalid as it is more than 12:25 time.
Thus, the case becomes invalid.
Final valid case is the case I, and the only possible case is that, P's train must come at 12:15 as, the train to arrive last arrives before 6:30 pm. (if R's train comes at 12:15 then last train would come at 7:15 and if T's train comes at 12:15, then last train would come at 6:35, which is invalid).
We get the final arrangement as follows:

Person	Travelling from	Travelling To	Time of train
R	Bangalore	Delhi	11:20 am
T	Patna	Kanpur	12:00 pm
P	Goa	Mumbai	12:15 pm
S	Kanpur	Lucknow	2:30 pm
Q	Lucknow	Goa	3:00 pm
U	Mumbai	Bangalore	6:00 pm
O	Delhi	Patna	6:20 pm

QUESTION 21 TO 23

• 4 person lives between A & C who lives in an odd numbered floor.
• C who is from Pune is 39 years old & lives below 7th floor.
• Person from Goa lives immediately below person from Kolkata who lives below 4th floor.

Case 1:

Floor No.	Person	Age	Birth Year	City	Mobile
8	A				
7					
6					
5					
4					
3	C	39	1979	Pune	
2				Kolkata	
1				Goa	

Case 2:

Floor No.	Person	Age	Birth Year	City	Mobile
8					
7					
6	A				
5					
4					
3				Kolkata	
2				Goa	
1	C	39	1979	Pune	

• F's floor number is 4 times the person whose age is 22.
• H is from Goa.
• F doesn't belong to Kanpur.
• Three people live between person from Punjab & person from Kanpur who has Redmi.
• More than 3 people live between person from Kolkata & person who owns Motorola phone.

Case 1:

Floor No.	Person	Age	Birth Year	City	Mobile
8	A			Kanpur	Redmi
7					Motorola
6					
5					
4	F			Punjab	
3	C	39	1979	Pune	
2				Kolkata	
1	H	22	1996	Goa	

Case 2:

Floor No.	Person	Age	Birth Year	City	Mobile
8	F			Punjab	Motorola
7					
6	A				
5					
4				Kanpur	Redmi
3				Kolkata	
2	H	22	1996	Goa	
1	C	39	1979	Pune	

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- No two consecutive English alphabet lives in adjacent floors.
- B who was born in 1982 lives on an even numbered floor.
- E has Nokia.
- Person who has Nokia lives immediately above person who has Sony.
- Two person live between person wo has Nokia & person who was born in 1981.

Case 1:

Floor No.	Person	Age	Birth Year	City	Mobile
8	A			Kanpur	Redmi
7	G				Motorola
6	B	36	1982		
5	D	37	1981		
4	F			Punjab	
3	C	39	1979	Pune	
2	E			Kolkata	Nokia
1	H	22	1996	Goa	Sony

Case 2:

Floor No.	Person	Age	Birth Year	City	Mobile
8	F			Punjab	Motorola
7	D				
6	A	37	1981		
5	G				
4	B	36	1982	Kanpur	Redmi
3	E			Kolkata	Nokia
2	H	22	1996	Goa	Sony
1	C	39	1979	Pune	

- Person whose age is 24 lives immediately above person whose age is 41.
- Person born in 1974 has Samsung.
- Person who has Lava live immediately above person who has apple.

Case 1:

Floor No.	Person	Age	Birth Year	City	Mobile
8	A	24	1994	Kanpur	Redmi
7	G	41	1977		Motorola
6	B	36	1982		Lava
5	D	37	1981		Apple
4	F	44	1974	Punjab	Samsung
3	C	39	1979	Pune	
2	E			Kolkata	Nokia
1	H	22	1996	Goa	Sony

Case 2:

Floor No.	Person	Age	Birth Year	City	Mobile
8	F	24	1994	Punjab	Motorola
7	D	41	1977		Lava
6	A	37	1981		Apple
5	G	44	1974		Samsung
4	B	36	1982	Kanpur	Redmi
3	E			Kolkata	Nokia
2	H	22	1996	Goa	Sony
1	C	39	1979	Pune	

- Person from Kolkata is 1 year younger than person living in 8th floor.
- 2 person lives between person who has Oppo & person who belongs to Delhi.
- G is not from Patna.

Case 1:

Floor No.	Person	Age	Birth Year	City	Mobile
8	A	24	1994	Kanpur	Redmi
7	G	41	1977	Bangalore	Motorola
6	B	36	1982	Delhi	Lava
5	D	37	1981	Patna	Apple
4	F	44	1974	Punjab	Samsung
3	C	39	1979	Pune	Oppo
2	E	23	1995	Kolkata	Nokia
1	H	22	1996	Goa	Sony

Case 2:

Floor No.	Person	Age	Birth Year	City	Mobile
8	F	24	1994	Punjab	Motorola
7	D	41	1977		Lava
6	A	37	1981		Apple
5	G	44	1974		Samsung
4	B	36	1982	Kanpur	Redmi
3	E	23	1995	Kolkata	Nokia
2	H	22	1996	Goa	Sony
1	C	39	1979	Pune	Oppo

Case 2 will be eliminated because it is not possible to have 2 people between Oppo & person from Delhi.

Finally:

Case 1:

Floor No.	Person	Age	Birth Year	City	Mobile
8	A	24	1994	Kanpur	Redmi
7	G	41	1977	Bangalore	Motorola
6	B	36	1982	Delhi	Lava
5	D	37	1981	Patna	Apple
4	F	44	1974	Punjab	Samsung
3	C	39	1979	Pune	Oppo
2	E	23	1995	Kolkata	Nokia
1	H	22	1996	Goa	Sony

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Section II: Advanced Level
(Based on new pattern)

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CHAPTER 7 - CERTAIN NUMBER OF ENTITITES

These type of puzzles are been asked in almost all banking exams now-a-days.

In previous chapters, we learnt about concepts of different kinds of arrangements, but there we knew the exact number of persons or number of variables.
Here, the exact number of persons or things or any entity will not be given. Exact number has to be derived from the given hints.

Let's learn the approach...

Start with the fixed and known variables given in the question and proceeding with the hints, we will get many possible cases having different number of variables in the arrangement. Accordingly on elimination , we reach the final arrangement.

The concept of unknown numbers can be clubbed with any kind of arrangement, for ex. Linear single row, linear two rows, circular, floors or any other.

These can be asked as following types –

I. Unknown number of persons/items in a Linear single row – this is the most asked type
II. Unknown number of persons/items around a circular arrangement
III. Unknown number of Floors in a given building
IV. Unknown number of boxes/items in a given stack
V. Unknown number of floors in more than one buildings – This is a high-level question type. In this type, we know the number of buildings which are in a linear manner, but we are not given the number of floors in each building, which are different and, also, the total number of persons living in each building is different.
VI. Unknown number of persons/items around a circle, circumference of which is given in the question.

KEY POINTERS

- Connect the hints, considering all the possibilities, to get the exact number of items in the arrangement.
- Sometimes, it is mentioned in the question that the number of items/persons in the given arrangement is even (or odd), or some other hint related to exact number, which helps in ruling out the invalid possibilities. So, read the directions carefully.

Solved Examples

UNKNOWN NUMBER OF PERSONS IN A LINEAR ROW

Directions [1 to 3]: Certain number of persons are standing in the row facing south.
A is standing 4th the left of C and 2nd to the right of B. D is the neighbour of C and there are 4 persons standing between D and E. F is standing exactly in the middle of E and C. G is the neighbour of A but not the neighbour of B. G is standing 7th from one of the end of the row. Number of persons standing between F and D is same as that of between A and B.

Question 1 If D is standing exactly in the middle of the row, then find the number of persons standing in the row.
Question 2 What is the position of E with respect to F?
Question 3 What is the position of G with respect to C?

Solution:
A is standing 4th the left of C and 2nd to the right of B.

C _ _ _ A _ B

D is the neighbour of C and there are 4 persons in between D and E.
F is standing exactly in the middle of E and C.

Case 1: -
E _ F _ C D _ _ A _ B

Case 2: -
E _ F _ D C _ _ A _ B

G is the neighbour of A but not the neighbour of B.
G is standing 7th from one of the end of the row.
In both cases, more than 7 persons are standing to the right of G. So, G must be standing 7th from the left end of the row.

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Case 1: -

E _ F _ C D _ G A _ B _ _ _

Case 2: -

E _ _ F _ D C _ _ G A _ B _ _ _

Number of persons standing between F and D is same as that of between A and D.

So, case 2 becomes invalid.

So, final solution is;

E _ F _ C D _ G A _ B _ _ _

Answer 1: 8 persons are standing to the left of D (which is definite). So, 8 persons must be standing to the right of G. Clearly, 17 persons are standing in the row.

Answer 2: E is standing 2nd to the right of F. (Note: All are facing in the south direction.)

Answer 3: G is standing 3rd to the left of C.

UNKNOWN NUMBER OF PERSONS IN A CIRCULAR ARRANGEMENT

Directions [4 to 7]: Certain number of persons are sitting around the circular table, facing towards the centre. C is sitting 4th to the left of G and is sitting 5th to the right of B. B is sitting 7th to the right of F. Number persons sitting between F and C are not same when counted from the both sides of the F. Number of persons sitting between X and Y are same as the number of persons sitting between Y and Z which is same as the number of persons sitting between Z and P. P is sitting adjacent to G. A is either sitting to the immediate right of F or 2nd to the right of F. Number of persons sitting between F and A (when counted from the right of F) are same as the number of persons sitting between A and X (when counted from the right of A). Number of persons sitting between G and X are same when counted from the either side of X.

Question 4 How many persons are sitting between Z and C, when counted from the left of C?

Question 5 How many persons are sitting around the table?

Question 6 Who among the following is sitting closest to Z?

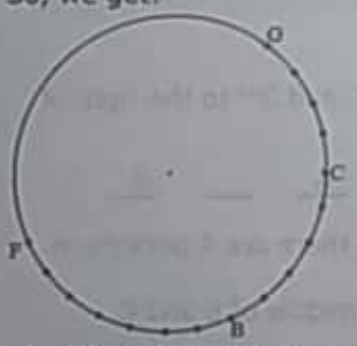
Question 7 What is the position of F with respect to P?

Solution:

C is sitting 4th to the left of G and is sitting 5th to the right of B.

B is sitting 7th to the right of F.

So, we get: -

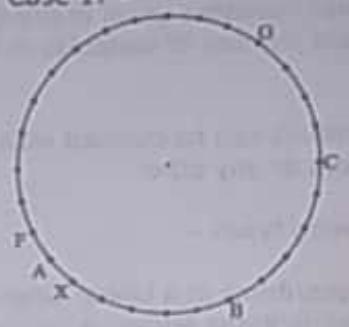


A is either sitting to the immediate right of F or 2nd to the right of F.

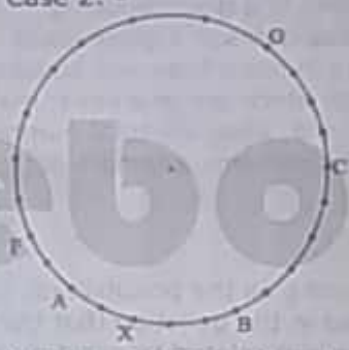
Number of persons sitting between F and A (when counted from the right of F) are same as the number of persons sitting between A and X (when counted from the right of A).

Number of persons sitting between G and X are same when counted from the either side of X.

Case 1: -



Case 2: -



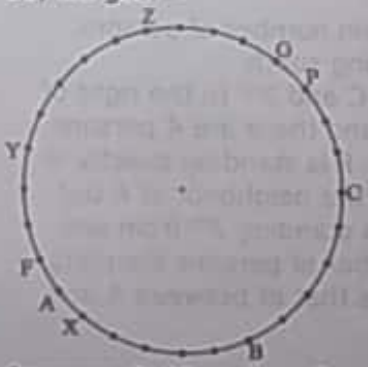
Number persons sitting between F and C are not same when counted from the both sides of the F.

So, case 2 is invalid.

Number of persons sitting between X and Y are same as the number of persons sitting between Y and Z which is same as the number of persons sitting between Z and P.

P is sitting adjacent to G.

So, we get: -



Answer 4: More than 9 persons are sitting between Z and C, when counted from the left of C.

Answer 5: 28 persons are sitting around the circular table.

Answer 6: G is sitting closest to Z.

Answer 7: F is 13th to the right as well as 15th to the left of P.

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UNKNOWN NUMBER OF FLOORS IN MORE THAN ONE BUILDING

Directions [8 to 10]: A, B, C are three adjacent buildings. A is to the west of B. B is to the west of C. Each building has different number of floors with the lowest floor numbered as 1, floor above it numbered as 2 and so on. The height of floors in each building is the same i.e. the same numbered floors are at equal height from the ground. Only few of the floors of these buildings are taken and rest are vacant.

- W lived on the floor which was exactly above V's floor but in a different building.
- V was to the west of T.
- The number of floors in building A was 3 more than P's floor number.
- P was to the west of Q who lived 2nd from the top of his building.
- R was in building B and the number of floors in his building was twice as that of his floor number.
- X lived on the floor which was immediately below U's floor but in a different building.
- S lived on floor 4 but was not in X's building.
- P's floor number was twice as that of R's floor number.
- Q and U were not in the same building.
- No building had more than 10 floors.
- R's floor number was thrice as that of X's floor number.
- Q and W lived in the neighbouring buildings.
- P lived on the floor which was exactly above W's floor but in a different building.
- T and X lived in neighbouring buildings.
- U and V lived in different buildings.

Note:
1. Only one person lives on each floor.
2. Exactly to the east or west does not mean immediate east or west, but on the same floor.

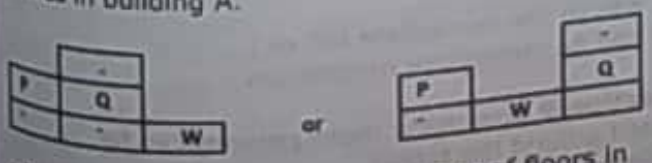
Question 8 How many floors were there in building A?

Question 9 Who among the following lived above R (same building)?
I. T II. Q III. P

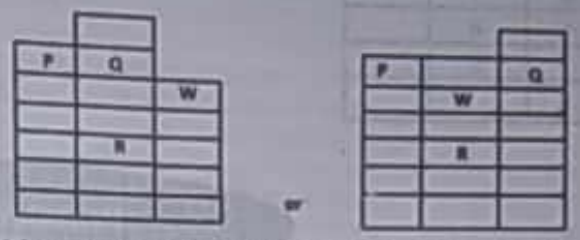
Question 10 How many vacant floors (in total) were there in the 3 buildings?

Solution:

- P was to the west of Q who lived 2nd from the top of his building. Q and W lived in the neighbouring buildings. P lived on the floor which was exactly above W's floor but in a different building. The possibilities are P-W-Q or P-Q-W. In either case P comes in building A.

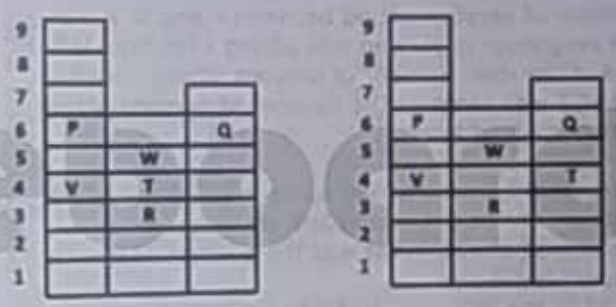


- R was in building B and the number of floors in his building was twice as that of his floor number. R can be on floor 1, 2, 3 or 4. Thus, the floors can be 2, 4, 6 or 8 in number.
- R's floor number was thrice as that of X's floor number. Thus, R was in floor 3, X on floor 1 and building B had 6 floors only.
- P's floor number was twice as that of R's floor number. P must be on floor 6. Thus, Q was also on floor 6.

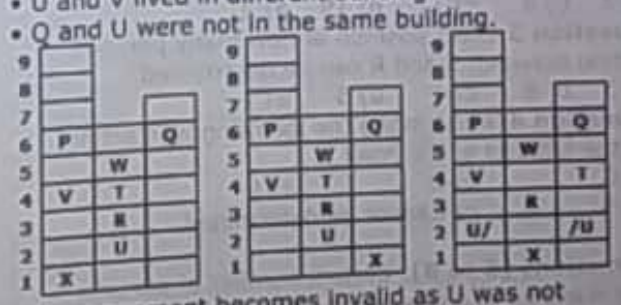


1st arrangement is invalid as R's building should have 6 floors.

- V was to the west of T
- W lived on the floor which was exactly above V's floor but in a different building
- The number of floors in building A was 3 more than P's floor number. Thus, there were 9 floors in the building A



- X lived on the floor which was immediately below U's floor but in a different building. X was in floor 1, thus, U must be on floor 2.
- T and X lived in neighbouring buildings.
- U and V lived in different buildings.
- Q and U were not in the same building.



3rd arrangement becomes invalid as U was not living in V's or Q's building.

- S lived on floor 4 but was not in X's building.

Thus, 2nd arrangement becomes invalid.

The final arrangement is as follows:

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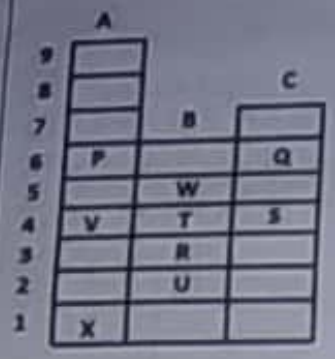

Answer 8: 9 floors are there in building A.
Answer 9: Among the given persons only T lived above R.
Answer 10: There were 13 vacant floors in total.

Practice Yourself

Directions [1 to 4]: A certain number of people were sitting in a row facing north.
P was sitting 4th to the left of Q. R was sitting 7th to the right of P. W was sitting 4th from the right end and was the neighbour of R. Number of persons sitting between P and Q was same as the number of persons sitting between P and S. R was the neighbour of N, who was sitting 12th from left end of the row. Number of persons sitting between S and T was same as the number of persons sitting between T and N.

Question 1 D was sitting somewhere to the left W and was not neighbouring any of the persons mentioned above. What was the position of D with respect to S?
a) 3rd to the left b) 6th to the left
c) 6th to the right d) 3rd to the right
e) 2nd to the right

Question 2 How many persons were sitting in the row?
a) 7 b) 8 c) 17 d) 19 e) 21

Question 3 Exact position of how many persons sitting between S and R can be determined?
a) 3 b) 6 c) 4 d) 5 e) 7

Question 4 Who among the following was sitting at the left end of the row?
a) C b) D c) B
d) S e) Cannot be determined

Directions [5 to 8]: Certain number of persons are standing in a row facing north.
3 persons are standing between A and B. B is standing to the left of A. there are 5 persons in between B and D.. Only 1 person is standing between C and D. C is standing to the right of D. Number of persons standing between A and D are same as the number of persons standing between A and E. E and D are standing at the end of the row. P is standing adjacent to C. 4 persons are standing between P and Q similarly 4 persons are standing between Q and R. 2 persons are standing between R and S. 2 persons are standing between X and Y as well as between Y and Z. X is standing to the left of Z. W is standing 2nd to the left of E. Neither X nor Z is standing adjacent to Q.

Question 5 How many persons are standing in a row?
a) 21 b) 22 c) 26 d) 25 e) 29

Question 6 How many persons are standing between C and Z?
a) 12 b) 14 c) 16 d) 18 e) 6

Question 7 How many persons are standing between D and P?
a) 5 b) 8 c) 2 d) 9 e) 13

Question 8 Who among the following is standing to the right of S?
a) D b) C c) X d) Q e) E

Directions [9 to 11]: Ten persons A, B, C, D, E, F, G, H, I and J were seated around a circular table facing the centre. The table had 'n' number of chairs out of which 10 were taken by these persons and the others were vacant.
- E was 3rd to the left of G and 3rd to the right of A
- 1 chair was in between A and H.
- E was not seated neighbouring H
- J was neighbouring A
- 8 chairs were there between J and I when counted from the left of J
- there was 2 chairs between I and G
- F was seated 3rd to the right of C
- Number of chairs between D and I when counted from the right of I was equal to the number of chairs between B and J when counted from the left of J
- C was to the immediate left of I
- D had no immediate neighbours

Question 9 How many more persons can be seated around the table?
a) Seven b) Nine c) Ten
d) Six e) Eleven

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Question 10 How many persons can be seated between D and B when counted from the right of B?
a) Five b) Three c) Two
d) One e) Four

Question 11 What was the position of H with respect to B?
a) Immediate right b) Third to the right
c) Fifth to the right d) Second to the left
e) Third to the left

Directions [12 to 14]: Some items were stacked in a big almirah which had some shelves, each shelf had only one item. The shelves were numbered 1 onwards such that the lowest shelf was numbered 1 and so on. The exact position of only 5 of the items was known.
- Number of shelves below cap was twice as that the number of shelves below fruits
- Bottle was 5 shelves above the cap
- Number of shelves below book was twice as that the number of shelves above bottle
- There was one self in between Book and fruits.
- Not more than 18 shelves were there in the almirah
- The shelf number of cap was thrice as that the shelf number of book
- Clothes were kept just above the fruits
- Book and clothes were not kept consecutively.

Question 12 How many shelves are there in the almirah?
a) 11 b) 12 c) 13 d) 14 e) 15

Question 13 How many shelves are there above the bottle?
a) 1 b) 2 c) 3
d) 4 e) Cannot be determined

Question 14 How many shelves were there between cap and clothes?
a) 1 b) 2 c) 3 d) 4 e) 5

Directions [15 to 18]: Certain number of stacks of boxes are there from west to east. Each stack has different number of boxes. No two stacks have same number of boxes. All boxes in one stack contain one type of things out of Pen, Pencil, Notebook & erasers. Each stack contains one of these things - Pen, Pencil, Notebook & erasers. Two or more stack can have same thing. No 2 stacks containing same thing are adjacent. Only Stack having 14 number of boxes could have adjacent positioning with another stack with the number of boxes which is a consecutive number. No other stacks with numbers of boxes which are consecutive numbers are adjacent(Take direction as per your left & right)
Stack of 12 boxes is adjacent to the stack which contains Pencil. Stack of 13 boxes is 3rd to the right of stack of 15 boxes. Stack of 16 boxes contain Pen. The stack of 25 boxes which is 5th stack from one of the end, is adjacent to the stack that contain Pencil. The only stack of boxes that contain Erasers is 5thto left of the stack of 17 boxes. Both the stacks that are adjacent to the stack that contains Erasers contains same thing. The stack of 16 boxes & the stack of 17 boxes are somewhere in-between the stack of 12 boxes & the stack of 13 boxes. There are 2 stacks of boxes between the stack of 16 boxes & the stack of 14 boxes that contains Notebooks. There are 4 stacks of boxes between the stack of 13 boxes & the stack which contains pencil. There are 5 stacks of boxes between the stack of 14 boxes & the stack of 25 boxes. Number of stacks towards the left of the stack of 25 boxes is equal to the number of stacks of boxes towards the right of stack of 16 boxes. There are 3 stacks of boxes between the stack of 12 boxes & the stack of 15 boxes. There are less than 8 stacks of boxes in-between the stack that contains Eraser & the stack of 16 boxes.

Question 15 How many stacks of boxes are there?
a) 14 b) 16 c) 18 d) 20 e) 22

Question 16 Which of the following statement/statements can be true?
I. The stack of boxes which is 3rd to right of the stack that contain Erasers, contain Notebooks.
II. There are 2 stacks of boxes in-between the stack of 16 boxes & the stack of 11 boxes.
III. The stack of 24 boxes contain Erasers.
a) Only I b) Only II
c) Either I or II d) Only III
e) All of these

Question 17 Stack of boxes which is 2nd to right of the stack of 12 boxes, contain _____
a) Pen b) Eraser c) Pencil
d) Notebook e) Cannot determine

Question 18 Which of the following condition is/are redundant to find how many stacks of boxes are there in-between stack of 15 boxes & stack of 24 boxes?
I. The stack of 24 boxes & the stack of 13 boxes have 5 stacks in-between them.
II. The stack of 24 boxes is adjacent to the stack that contain Pens.
III. The stack of 24 boxes is not adjacent to the stack that contain Pencils.
a) II b) III c) Both II & III
d) Either II or III e) None of these

Directions [19 to 22]: A, B, C are three adjacent buildings. A is to the west of B. B is to the west of C. Each building has different number of floors with the lowest floor numbered as 1, floor above it numbered 2 and so on. The height of floors in each building is the same. Only few of the floors of these buildings are taken and rest are vacant.
- R was exactly to the west of S
- Total number of floors in building A was thrice as that of X's floor number. X lived in building A
- W was exactly to the east of Q who lived on floor number 4.
- Number of floors in building B was equal to the floor number of S who lived in building C

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• V lived immediately above P who lived 4th from the top of his building.
• V's floor number was twice as that of T's floor number. T lived 3rd from the top of his building.
• T and Q lived on consecutive floors of the same building
• V lived on the topmost floor of his building.
• The difference between the floor numbers of U and V was 7. They were not in the neighbouring buildings. V's floor number was more than U's floor number.
• W and R were not living in the neighbouring buildings.
• W and U lived in different buildings.

Note:
1. Only one person lives on each floor
2. Exactly to the east or west does not mean immediate east or west
3. Immediately above or below implies that the person is not in the same building.

Question 19 How many floors did building A have?
a) 9 b) 6 c) 12 d) 15 e) 18

Question 20 What was the difference between the number of floors in B and C?
a) 2 b) 4 c) 3 d) 1 e) 5

Question 21 What was the difference between the floor numbers of X and S?
a) 4 b) 6 c) 2 d) 1 e) 3

Question 22 How many floors in building B were vacant?
a) 5 b) 4 c) 6 d) 2 e) 3

Directions [23 to 26]: Certain number of persons were seated in an auditorium which had certain number of rows. Each row had different number of seats and were numbered such that the row nearest to the stage was numbered 1, the row 2nd nearest from stage was numbered 2 and so on. The persons were seated facing the North (towards the stage). The information about only few persons was known. None of the seats was vacant. Not more than 7 rows were there in the auditorium. Number of seats in row 1 was 1 more than the total number of rows in the auditorium
• Only 3 persons were seated to the left of L. L was in row 3.
• L and M were seated in consecutive rows. M's row number was more than L's row number
• M was seated to the immediate left of C
• Number of persons seated to the left of C was equal to his row number
• F's row number was thrice as that of J's row number. J was not in row 1.
• J was 2nd from the left end.
• There were 20 persons in total in the first 3 rows (from the front)
• Number of persons seated to the right of H was equal to the number of persons seated to the left of K. K was somewhere to the left of H
• Not more than 4 persons were seated in the last 2 rows (from the back)
• Number of persons seated between H and K was equal to the row number of N
• Number of persons seated in row 2 was equal to M's row number
• Total number of persons in rows 2, 3 and 4 was 18
• K and L were seated in the same row
• N was seated 2nd to the left of G but was not neighbouring H

Question 23 How many rows were there in the auditorium?
a) 4 b) 5 c) 6
d) 7 e) Cannot be determined

Question 24 How many persons were seated in the auditorium?
a) 23 b) 25 c) 27 d) 28 e) 29

Question 25 How many persons were seated in J's row?
a) 3 b) 4 c) 5 d) 6 e) 7

Question 26 If P was seated 5th to the left of S, then how many possibilities would be there for their seating arrangement?
a) 1 b) 2 c) 3 d) 4 e) More than 4

Directions [27 to 30]: Certain number of persons are sitting in a circular manner all facing towards the centre. Distance between them increases in consecutive multiples of 4 in clockwise direction, such that the distance between the first person sitting and the last person sitting going towards anti-clockwise direction, is maximum. The circumference of the circle around which they are sitting is 260 m. It is known that 5 persons among them like different fruits among - Guava, Apple, Mango, Kiwi and Litchi. Maximum distance between any two persons is not more than 48 m.
• Number of persons between the one who likes Litchi and C, taken from left of C, is two more than number of persons between them when taken from right of C.
• Person who likes mango is sitting second to right of the one who likes Guava.
• Only one person sits between E and A (taken from left of A) and distance between A and E is 52m.
• C likes apple.
• Distance of A from its immediate neighbours is more than 30 m.
• Distance between D and the one who likes kiwi is 28 m.
• One who likes litchi sits next to neither one who likes guava nor one who likes kiwi.
• C is not immediate neighbour of the one liking mango.
• Distance between the one who likes mango and one who likes Kiwi is a multiple of 16.
• Number of persons sitting between D and E is equal to number of persons sitting between E and the one who likes guava, who is not D.

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Question 27 How many persons are sitting in the given arrangement?
a) 11 b) 13 c) 10
d) Either option e or b. e) 12

Question 28 Which fruit does A like?
a) Guava b) Litchi c) Mango
d) Kiwi e) It is not known

Question 29 What is the position of D with respect to C?
a) Third to the right b) Sixth to the left
c) Seventh to the left d) Either option (a) or (c)
e) Third to the left

Question 30 What is difference between the minimum distance between A and the one who likes mango and, minimum distance between A and the one who likes apple? (distances to be taken along the circumference)
a) 20 m b) 12 m c) 32 m
d) 28 m e) None of these

ANSWER KEY

1- e	2- c	3- c	4- e	5- a	6- b	7- c	8- e	9- b
10- c	11- c	12- e	13- a	14- b	15- c	16- d	17- a	18- a
19- c	20- c	21- e	22- a	23- c	24- e	25- b	26- c	27- c
28- a	29- e	30- c						

DETAILED SOLUTIONS

QUESTION 1 TO 4

P was sitting 4th to the left of Q. R was sitting 7th to the right of P. W was sitting 4th from the right end and was the neighbour of R. So, R can be either to the immediate right or to the immediate left of W.

Case 1: -
P _ _ _ Q _ _ R W _ _ _

Case 2: -
P _ _ _ Q _ W R _ _

Number of persons sitting between P and Q was same as the number of persons sitting between P and S. So, S must be sitting 4th to the left of P.
R was the neighbour of N, who was sitting 12th from left end of the row.

Case 1: -
_ S _ _ _ P _ _ _ Q _ N R W _ _ _

Case 2: -
S _ _ _ P _ _ _ Q _ W R N _

In case 2, N cannot be 12th from the left end of the row.
So, case 2 is invalid.

Case 1: -
Number of persons sitting between S and T were same as number of persons sitting between T and N.
So, finally we get: -
_ S _ _ _ P T _ _ Q _ N R W _ _ _

Answer 1: There is only one place available for D.
_ S _ D _ P T _ _ Q _ N R W _ _ _

Clearly, D was sitting 2nd to the right of S.
Answer 2: 17 persons were sitting in the row.
Answer 3: Exact position of only P, T, Q and N can be determined.
Answer 4: Information about the person is not given in question.

QUESTION 5 TO 8

3 persons are standing between A and B. B is standing to the left of A.
5 persons are in-between D and B.
Only 1 person is standing between C and D. C is standing to the right of D.
Either D or A is standing at the end of the row.

Case 1: -
D _ C _ _ _ B _ _ _ A

Case 2: -
B _ _ _ A _ D _ C

Number of persons standing between A and D are same as the number of persons standing between A and E.
E and D are standing at the end of the row.

Case 1: -
D _ C _ _ _ B _ _ _ A _ _ _ _ _ _ _ _ _ E

Case 2: -
B _ E _ A _ D _ C

So, case-2 is invalid.
Continuing with case 1;
P is standing adjacent to C.
4 persons are standing between P and Q similarly 4 persons are standing between Q and R.
2 persons are standing between R and S.
D _ C P _ _ B _ Q _ A _ _ R _ _ S _ _ _ E

2 persons are standing between X and Y as well as between Y and Z.
X is standing to the left of Z.
W is standing 2nd to the left of E.

Case 1: -
D X C P Y _ B Z Q _ A _ _ R _ _ S _ W _ E

Case 2: -
D _ C P _ _ B _ Q X A _ Y R _ Z S _ W _ E

Case 3: -
D _ C P _ _ B _ Q _ A X _ R Y _ S Z W _ E

Neither X nor Z is standing adjacent to Q.
So, case 1 and case 2 are invalid.
Final Solution:

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oliveboard

D _ C P _ _ B _ Q _ A X _ R Y _ S Z W _ E

Answer 5: 21 persons are sitting in row.

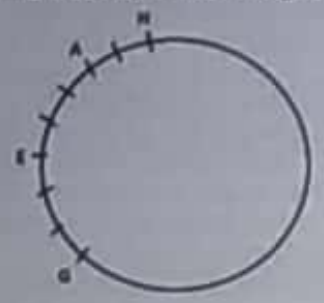
Answer 6: 14 persons are standing between C and Z.

Answer 7: 2 persons are standing between D and P.

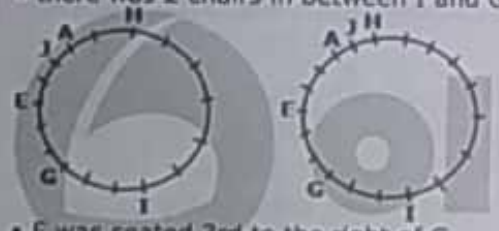
Answer 8: E is standing to the right of X.

Question 9 to 11

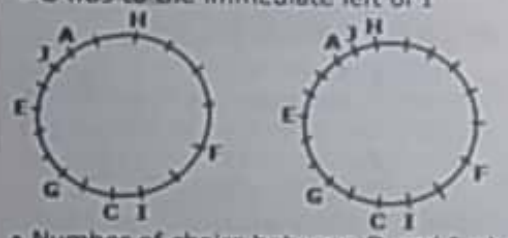
- E was 3rd to the left of G and 3rd to the right of A
- 1 chair was in between A and H.
- E was not seated neighbouring H



- J was neighbouring A
- 8 chairs were there between J and I when counted from the left of J
- there was 2 chairs in between I and G.

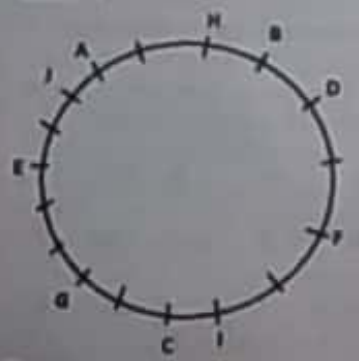


- F was seated 3rd to the right of C
- C was to the immediate left of I



- Number of chairs between D and I when counted from the right of I was equal to the number of chairs between B and J when counted from the left of J
- D had no immediate neighbours

Case 1:

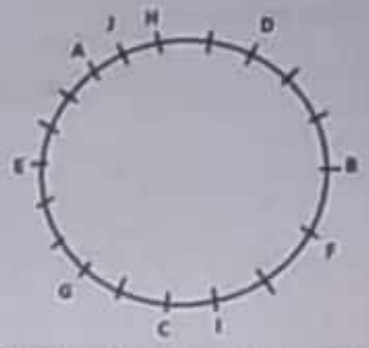


The case becomes invalid as D did not have any neighbours

Case 2:

Out of these only 3rd arrangement is valid as in 1st 2 D has neighbours.

Thus, the final arrangement is as follows:



Answer 9: Nine more persons can be seated around the table as there are 19 chairs.

Answer 10: Two persons are there between B and D.

Answer 11: H is fifth to the right of B.

Question 12 to 14

- There was 1 shelf in between Book and fruits.
- Not more than 18 shelves were there in the almirah
- The shelf number of caps was thrice as that the shelf number of book

The shelf number of these items can be as follows:

Cap	Book	Fruits
6	2	4
9	3	1, 5
12	4	2, 6
15	5	3, 7
18	6	5, 8

- Bottle was 5 shelves above the cap
- Number of shelves below book was twice as that the number of shelves above bottle, hence even shelf number of book is not possible

Cap	Book	Fruits	Bottle
9	3	1, 5	14
15	5	3, 7	20

The shelf number of cap cannot 15 else the shelf number of bottle will become 20.

Cap	Book	Fruits	Bottle
9	3	1, 5	14

- Number of shelves below book was twice as that the number of shelves above bottle. Thus, there will be 15 shelves

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	Case 1	Case 2
15		
14	Bottle	Bottle
13		
12		
11		
10		
9	Cap	Cap
8		
7		
6		
5	Fruits	
4		
3	Book	Book
2		
1		Fruits

- Clothes were kept just above the fruits
- Book and clothes were not kept consecutively.

	Case 1	Case 2
15		
14	Bottle	Bottle
13		
12		
11		
10		
9	Cap	Cap
8		
7		
6	Clothes	
5	Fruits	
4		
3	Book	Book
2		Clothes
1		Fruits

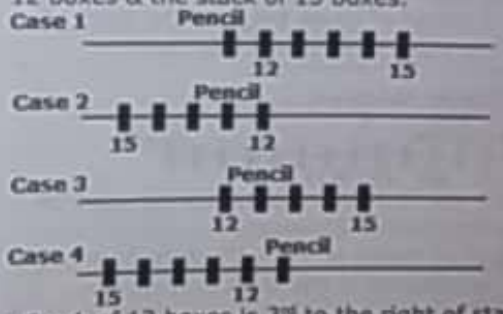
Book and clothes were not kept consecutively.
Thus, 2nd case becomes invalid.
The final arrangement is as follows:

15	
14	Bottle
13	
12	
11	
10	
9	Cap
8	
7	
6	Clothes
5	Fruits
4	
3	Book
2	
1	

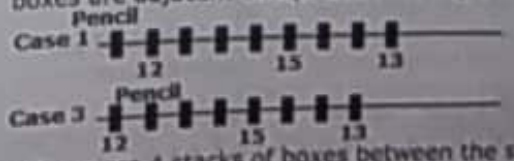
Answer 12: 15 shelves are there in almirah.
Answer 13: 1 shelve is there above bottle.
Answer 14: 2 shelve are there between cap and clothes.

QUESTION 15 TO 18

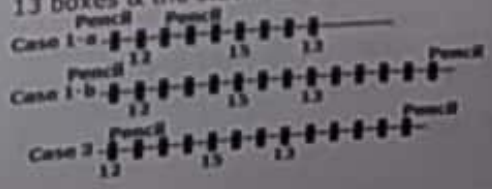
- Stack of 12 boxes is adjacent to the stack which contains Pencil.
- There are 3 stacks of boxes between the stack of 12 boxes & the stack of 15 boxes.



- Stack of 13 boxes is 3rd to the right of stack of 15 boxes.
- No two stacks having consecutive number of boxes are adjacent except stack having 14 boxes.



- There are 4 stacks of boxes between the stack of 13 boxes & the stack which contains pencil.



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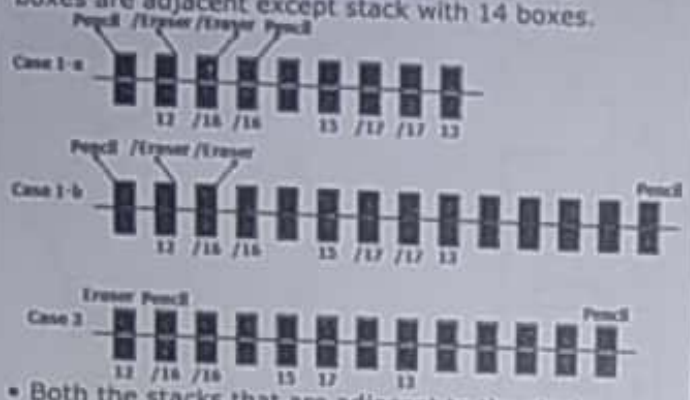
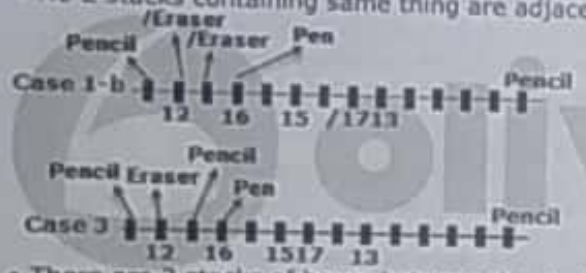
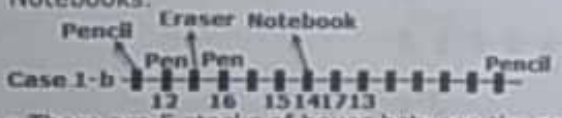
• The only stack of boxes that contain Erasers is 5th to left of the stack of 17 boxes.
• The stack of 16 boxes & the stack of 17 boxes are somewhere in-between the stack of 12 boxes & the stack of 13 boxes.
• There are less than 8 stacks of boxes in-between the stack that contains Eraser & the stack of 16 boxes.
• No two stacks having consecutive number of boxes are adjacent except stack with 14 boxes.



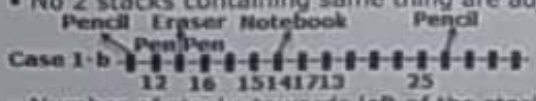
• Both the stacks that are adjacent to the stack that contains Erasers contains same thing.
• Stack of 16 boxes contain Pen.
• No 2 stacks containing same thing are adjacent.



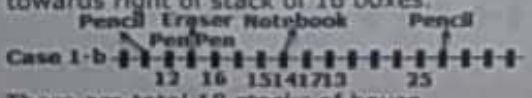
• There are 2 stacks of boxes between the stack of 16 boxes & the stack of 14 boxes that contains Notebooks.



• There are 5 stacks of boxes between the stack of 14 boxes & the stack of 25 boxes.
• The stack of 25 boxes which is 5th stack from one of the end, is adjacent to the stack that contain Pencil.
• No 2 stacks containing same thing are adjacent.



• Number of stacks towards left of the stack of 25 boxes is equal to the number of stacks of boxes towards right of stack of 16 boxes.



There are total 18 stacks of boxes.
Answer 15: 18 stacks of boxes are there.
Answer 16: Only statement III could be true.
Answer 17: stack of pen is 2nd to the right of stack of 12.
Answer 18: statement II is redundant.

QUESTION 19 TO 22

• W was exactly to the east of Q who lived on floor number 4. Thus, W and Q were in floor 4.
• W and R were not living in the neighbouring buildings. Thus, W cannot be in building B, thus, W would be in building C and R would be in building A

	A	B	C
4	Q/	/Q	W
3			
2			
1			

• T and Q lived on consecutive floors of the same building. Thus, T was either on 3rd or 5th floor.
• V's floor number was twice as that of T's floor number. T lived 3rd from the top of his building. V can be on floor 6 or 10.
• The difference between the floor numbers of U and V was 7. They were not in the neighbouring buildings. Thus, V cannot be on floor 6. Thus, V was on floor 10, U on floor 3 and T on floor 5.
• V lived on the topmost floor of his building. Thus, V's building had 10 floors. T's building had 7 floors.
• W and U lived in different buildings.

Case 1:

	A	B	C
10			V
9			
8			
7			
6			
5	T		
4	Q		W
3	U		
2			
1			

Case 2:

	A	B	C
10			V
9			
8			
7			
6			
5		T	
4		Q	W
3	U		
2			
1			

• Total number of floors in building A was thrice as that of X's floor number. X lived in building A.

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Thus, case 1 becomes invalid as building A has 7 floors in that.

• Number of floors in building B was equal to the floor number of S who lived in building C. Thus, S was on floor 7 of building C

• R was exactly to the west of S. Thus, R was on floor 7 of building A or B

• W and R were not living in the neighbouring buildings. Thus, R was in building A.

	A	B	C
10			V
9			
8			
7	R		S
6			
5		T	
4		Q	W
3	U		
2			
1			

• V lived immediately above P who lived 4th from the top of his building. Thus, P was on floor 9 and his building has 12 floors. Building B has 7 floors, thus, building A must be the one with 12 floors. Thus, X must be on floor 4 of building A

	A	B	C
12			
11			
10			V
9	P		
8			
7	R		S
6			
5		T	
4	X	Q	W
3	U		
2			
1			

Answer 19: 12 floors are there in building A.

Answer 20: Difference between floors of B and C is 3.

Answer 21: Difference is 3 between the floor of X and S.

Answer 22: 5 floors in building B was vacant.

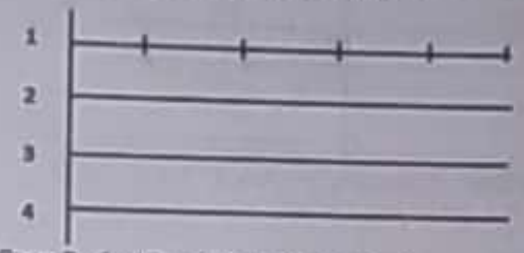
Question 23 to 26

• There were 20 persons in total in the first 3 rows (from the front)

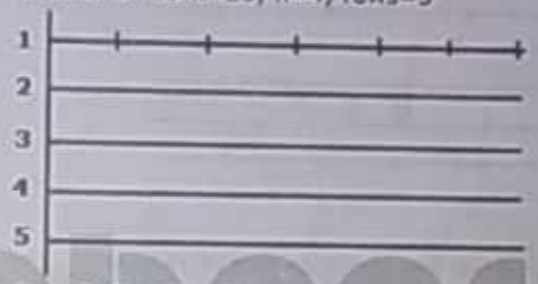
• Total number of persons in rows 2, 3 and 4 was 18. If row 4 has 'n' number of persons, then rows 2 and 3 will have (18-n) persons.

• Number of seats in row 1 was 1 more than the total number of rows in the auditorium. Thus, there were at least 5 persons in row 1.

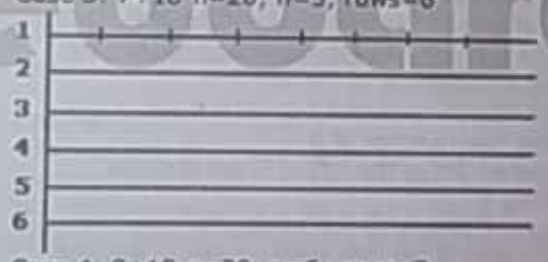
Case 1: 5+18-n=20; n=3; rows=4



Case 2: 6+18-n=20; n=4; rows=5



Case 3: 7+18-n=20; n=5; rows=6



Case 4: 8+18-n=20; n=6; rows=7

• Only 3 persons were seated to the left of L. L was in row 3.

• L and M were seated in consecutive rows. M's row number was more than L's row number. Thus, M was in row 4.

• M was seated to the immediate left of C

• Number of persons seated to the left of C was equal to his row number

• Number of persons seated in row 2 was equal to M's row number. Thus, there were 4 persons in row 2.

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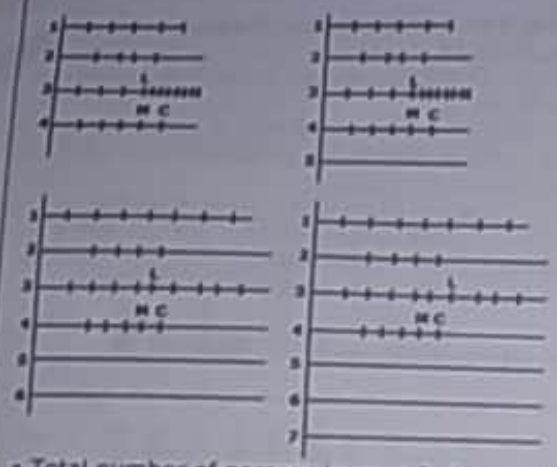
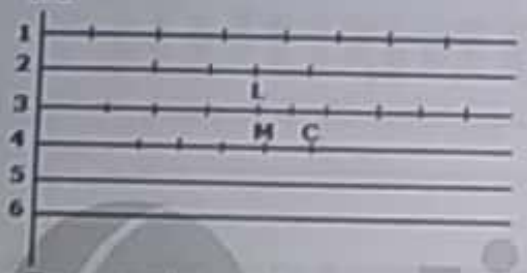
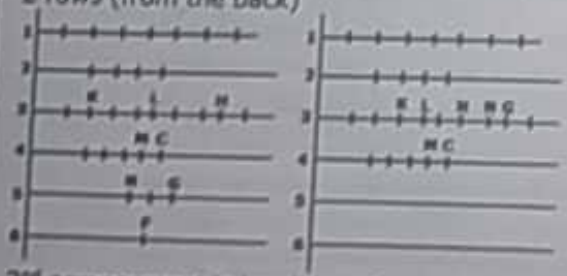


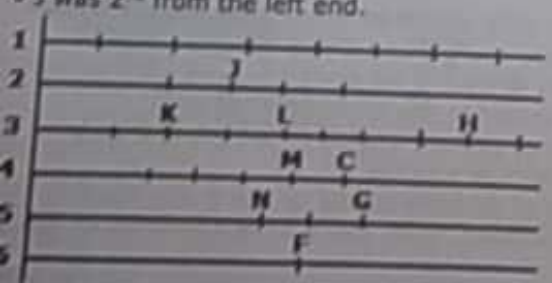
• Total number of persons in rows 2, 3 and 4 was 18. Thus, the arrangement with 6 rows is only valid.



• F's row number was thrice as that of J's row number. J was not in row 1.
• Number of persons seated to the right of H was equal to the number of persons seated to the left of K. K was somewhere to the left of H
• Number of persons seated between H and K was equal to the row number of N
• N was seated 2nd to the left of G but was not neighbouring H
• K and L were seated in the same row
• Not more than 4 persons were seated in the last 2 rows (from the back)



2nd arrangement is invalid as G cannot be neighbouring H
• J was 2nd from the left end.

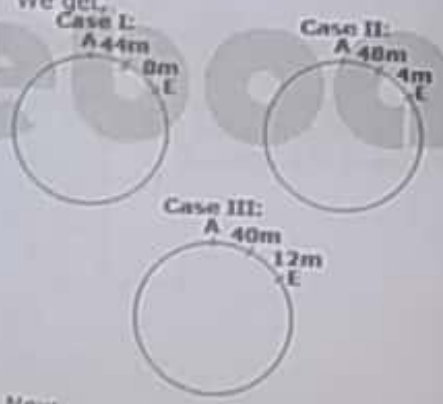


Answer 23: 6 rows were there in auditorium.

Answer 24: 29 persons were seated in the auditorium.
Answer 25: In j's row, 4 persons were seated.
Answer 26: Total three possibilities are there.

Question 27 to 30

It is given that, circumference of circle = 260 m
Maximum distance between any two persons is not more than 48 m.
Also,
the distance between the first person sitting and the last person sitting going towards anti-clockwise direction, is maximum.
Now,
• Only one person sits between E and A (taken from left of A) and distance between A and E is 52 m.
Since the distance is increasing in consecutive multiples of 4.
Possibility is: maximum + minimum distance.
Possible cases for E and A are:
Case I: 44+8= 52 m
Case II: 48+4= 52 m
Case III: 40+12=52m
• Distance of A from its immediate neighbours is more than 30 m. (thus, 24+28=52 is not possible)
E is second to left of A and the sitting arrangement starts from person between A and E.
And, the distances increase in clockwise direction.
We get,



Now,
Circumference = 260 m
Which means all distance are consecutive and must add to 260 m.
In case I: 8+12+16+20+24+28+32+36+40+44 = 260 m (this is valid case)
In case II:
4+8+12+16+20+24+28+32+36+40+44+48 = 312 m (thus, this case becomes invalid)
In case III: 12+16+20+24+28+32+36+40 = 172 m (thus, this case becomes invalid)
Thus, we get that there are 10 persons sitting in the circular arrangement.
Now,
• Distance between D and the one who likes kiwi is 28 m.
Possible cases:
Case 1: 28 m
Case 2: 12+16 = 28m
We get,

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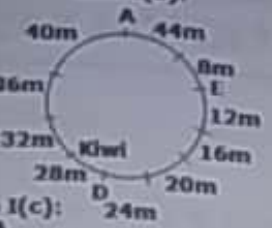
Case I(a):

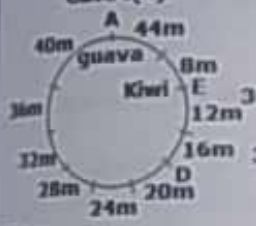
Case I(b):



Case I(c):

• Number of persons sitting between D and E is equal to number of persons sitting between E and the one who likes guava, who is not D.
Case I(c) becomes invalid, thus.
We get,

Case I(a):



Case I(b):

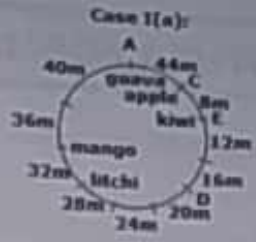
Now,
• Person who likes mango is sitting second to right of the one who likes Guava.

Case I(a):

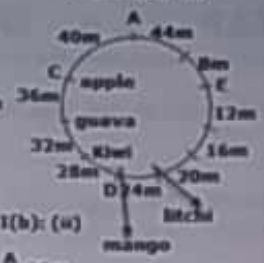
Case I(b):

• Number of persons between the one who likes Litchi and C, taken from left of C, is two more than number of persons between them when taken from right of C.
• C likes apple.
Thus, from one side if 'n' persons sit between the one who likes litchi and C, then from other side, 'n+2' will sit.
n+n+2 = 10 - 2
n = 3
thus,
from left of C → 5 person sit between them
from right of C → 3 persons sit between them
• One who likes litchi sits next to neither one who likes guava nor one who likes kiwi.
• C is not immediate neighbour of the one liking mango.
We get,

Case I(a):



Case I(b): (i)



Case I(b): (ii)

Since,
• Distance between the one who likes mango and one who likes Kiwi is a multiple of 16.
Thus, case I(b)(i) and case I(b)(ii) both are eliminated as, from both sides, distance between mango and kiwi is not a multiple of 16.
Thus, final arrangement is:

Answer 27: 10 persons are sitting in the given arrangement.
Answer 28: A like Guava.
Answer 29: D is third to the left of C.
Answer 30: Minimum distance between A and the one who likes mango = 36 + 40 = 76 m
Minimum distance between A and the one who likes apple = 44 m
Difference = 76 - 44 = 32 m

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CHAPTER 8 - OTHER FORMS OF COMPARISON BASED

In the very first chapter, we learnt about Comparison between different things, with respect to different parameters.

Now, in the exams, the knowledge of comparison is been tested, by giving it in some other form of puzzle, having the concept of comparison.

We have two types under this, which now-a-days, are frequently been asked in government exams.

I. Order based puzzle

In this type of puzzle, we are given with different persons having different designations, and, these designations are given in increasing or decreasing order of seniority. The hints are given with respect to the seniority level of designations having one or more other parameters.
For example – Four persons A, B, C and D, have different designations → manager, clerk, assistant and cashier, not necessarily in same order.
Then, it is given that, the designations are in decreasing order from left to right, such that manager is the senior-most person and cashier is the junior-most person.

II. Variables given in increasing/decreasing order having one or more parameters in a sentence

In this type, we are given with variables in ascending or descending order with respect to some parameter (such as height, weight, etc.). Along with each variable is given some other parameter too, which is related to the given type of variable.
This information is given to us in the directions itself.
For example – Five persons P, Q, R, S and T, are arranged in increasing order of their weights and along with each person is given their heights (in cm).
S (167) < Q (149) < P (151) < T (160) < R (152)
Now, here, the persons according to their weight are: S < Q < P < T < R
And, according to their heights are: Q < P < R < T < S

Thus, while solving this puzzle, you should be very careful in taking the order for each parameter, as, the hints given in the question might be confusing to test your knowledge of comparison.

Solved Examples

TYPE I: ORDER BASED

Directions [1 to 5]: Six people A, B, C, D, E, F passed out from a hotel management institute and got posted in different hotels among carlton, Radisson, Marriott, Sheraton, Westin and Hyatt. The post in which they were posted were different for each of them. The order of the posts in decreasing order is Front office Manager (FOM), Reservation Manager (RM), Lobby Manager (LM), Telephone Operator (TO), Cashier and Bell Boy. Further it is known that three people were ranked between the person posted in Carlton and C. The bell boy was posted in Radisson. A was ranked above the LM but was not posted in Carlton. The person posted in Marriott was ranked lower than the person posted in Westin. B was ranked just lower than the LM but was not posted in Sheraton. F was in hyatt. Exactly two people were ranked between D and the person posted in Sheraton where the former was ranked higher than the latter.

Question 1 Who was posted as the RM?
Question 2 Who was posted in Westin?
Question 3 What was the post of the person posted in Marriott?
Question 4 Which pair among the following is correct?
I. F,LM
II. E,SHERATON
III. FOM,MARRIOTT
Question 5 If the hotels in which the LM and cashier work get exchanged, then F is posted in which hotel?
Solution:
B was ranked just lower than the LM. Three people were ranked between the person posted in Carlton and C.

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The bell boy was posted in Radisson.

Case 1:

POST	PERSON	HOTEL
FOM		CARLTON
RM		
LM		
TO	B	
CASHIER	C	
BELL BOY		RADISSON

Case 2:

POST	PERSON	HOTEL
FOM		
RM		CARLTON
LM		
TO	B	
CASHIER		
BELL BOY	C	RADISSON

A was ranked above the LM but was not posted in Carlton.

Case 1:

POST	PERSON	HOTEL
FOM		CARLTON
RM	A	
LM		
TO	B	
CASHIER	C	
BELL BOY		RADISSON

Case 2:

POST	PERSON	HOTEL
FOM	A	
RM		CARLTON
LM		
TO	B	
CASHIER		
BELL BOY	C	RADISSON

Exactly two people were ranked between D and the person posted in Sheraton where the former was ranked higher than the latter.

Case 1:

POST	PERSON	HOTEL
FOM	D	CARLTON
RM	A	
LM		
TO	B	SHERATON
CASHIER	C	
BELL BOY		RADISSON

But we are given that B was not posted in Sheraton. Hence this case is invalid.

Case 2:

POST	PERSON	HOTEL
FOM	A	
RM	D	CARLTON
LM		
TO	B	
CASHIER		SHERATON
BELL BOY	C	RADISSON

F was in hyatt.

POST	PERSON	HOTEL
FOM	A	
RM	D	CARLTON
LM	F	HYATT
TO	B	
CASHIER	E	SHERATON
BELL BOY	C	RADISSON

The person posted in Marriott was ranked lower than the person posted in Westin. So finally,

POST	PERSON	HOTEL
FOM	A	WESTIN
RM	D	CARLTON
LM	F	HYATT
TO	B	MARRIOTT
CASHIER	E	SHERATON
BELL BOY	C	RADISSON

Answer 1: D was posted as the RM.
Answer 2: A was posted in Westin.
Answer 3: the post of the person posted in Marriott is TO (Telephone operator).
Answer 4: F,LM and E,SHERATON are correct.
Answer 5: If the hotels in which the LM and cashier work get exchanged, then F is posted in SHERATON.

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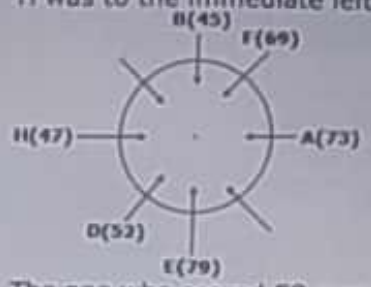
TYPE 2: VARIABLES GIVEN IN A SENTENCE

Directions [6 to 8]: Eight people A,B,C,D,E,F,G,H were seated around a circular table facing inwards. They were players who had different weight and scored different number of runs in the match. Following is the distribution of players in decreasing order of their weights:
B(45)>E(79)>D(52)>C(66)>G(58)>H(47)>A(73)>F(69)
(Note: B(45) means that B scored 45 runs).
Further it is known that the second heaviest person was seated opposite to the heaviest person. The person who scored the third highest runs was sitting to the immediate right of the person who was second lightest. The one who scored lowest was third to the left of the third heaviest person. A was opposite to the person who was the person who scored second lowest. The one who scored 58 runs was opposite to the one who scored fourth highest runs but not adjacent to E. H was to the immediate left of D.

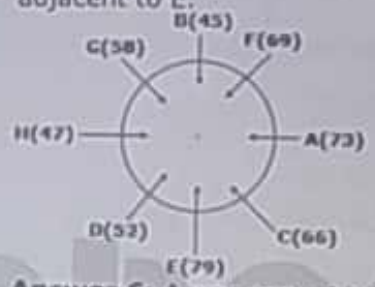
Question 6 Who was seated immediate left of the person seated opposite to D?
Question 7 What was the position of the person who scored fourth highest runs with respect to E?
Question 8 Which pair among the following is odd from the rest?
a) C, G b) D, F c) A, H
d) B, A e) E,B
Solution:
The second heaviest person was seated opposite to the heaviest person.
This means that E was seated opposite to B.

The one who scored lowest was third to the left of the third heaviest person.
This means that B was third to the left of D.

A was opposite to the person who was the person who scored second lowest.
The person who scored the third highest runs was sitting to the immediate right of the person who was second lightest. This means that F was to the immediate right of A.
Also A was opposite to the person who was the person who scored second lowest who was H.
H was to the immediate left of D.



The one who scored 58 runs was opposite to the one who scored fourth highest runs but not adjacent to E.



Answer 6: A was seated immediate left of the person seated opposite to D.
Answer 7: The person who scored fourth highest runs (C) was immediate right of E.
Answer 8: B, A is odd from the rest as all the other pairs were seated opposite to each other.

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Practice Yourself

Directions [1 to 3]: 5 players are playing basketball in each of the 2 teams viz Boston Celtics and Golden State Warriors (GSW). P, Q, R, S and T are playing in Boston Celtics while J, K, L, M and N are playing in Golden State Warriors. Each team has 5 different positions at which players are playing viz. PG, SG, SF, PF and C. In any team, PG is shorter than SG, who is shorter than SF, who is shorter than PF, who is in turn shorter than C. Each team has 1 captain.

- Captain of the team plays at the position of either SG or PF.
- N plays at the same position as that of Q.
- Q is not the shortest player of the team.
- P plays at the same position as that of either J or K.
- L is shorter than K and taller than J.
- R plays at the position SF and is shorter than T.
- M and T plays at the different positions. M plays at position C.
- Captain of GSW is taller than captain of BC.

Question 1 Who is the captain of Golden State Warriors?
a) J b) K c) L d) M e) N

Question 2 P plays at the position of __.
a) SG b) PG c) SF d) PF e) C

Question 3 Who among the following plays at the position of SG?
a) N b) P c) Q
d) Both option (1) and option (2)
e) Both option (a) and option (c)

Directions [4 to 7]: Xavier college had six people P,Q,R,S,T,U in different positions. The order of the positions in decreasing order is Chairman, Chancellor, Dean, HOD, Teacher, Student. Each of them had a good knowledge in one Subject among Electrical, Mechanical, Civil, Computer Science (CS) and electronics. One of them was not good in any subject. Further it is known that the person good in Computer Science was ranked the least. S was ranked lower than the chairman. Q was the Chancellor and ranked just below the person good in mechanical. R had a good knowledge in civil and ranked just below U. Two people were ranked between S and P where S was ranked higher than P. The person good in electrical was ranked just below the person who was not good in any subject. The person good in electronics was ranked just lower than T who was not the HOD.

Question 4 How many people were ranked between the person good in electronics and R?
a) 1 b) 2 c) 3 d) 4 e) 0

Question 5 What was the position of the person good in civil?
a) DEAN b) CHAIRMAN c) HOD
d) TEACHER e) STUDENT

Question 6 Who was ranked immediately lower than U?
a) The HOD b) R c) The DEAN
d) T e) P

Question 7 Which of the following pair is incorrect?
I. U, HOD II. S, ELECTRONICS III. Q, DEAN
a) I ONLY b) II only c) III only
d) I and III e) II and III

Directions [8 to 10]: A, B, C, D, E, F, G & H work in Army at different levels. They belongs to different places Dehradun, Pune, Shimla, Nainital, Kashmir, Punjab, Ooty & Lonavala(not necessarily in same order). Their ranks are Lieutenant, Captain, Major, Lt. Colonel, Colonel, Brigadier, Major General & General (not necessarily in same order).
(Note: Rank increase on moving from left to right à Lieutenant, Captain, Major, Lt. Colonel, Colonel, Brigadier, Major General, General)
So, Captain rank is higher than Lieutenant, Similarly, Major Rank is higher than both Lieutenant & Captain, Similarly, Lt. Colonel rank is higher than Captain, Major & Lieutenant ranks, & so on...)
3 people rank's lie in-between the ranks of the person who belongs to Punjab & F whose rank is higher than the person who belongs to Punjab. E's rank is higher than the person who belongs to Dehradun. Neither the person who belongs to Nainital nor the person who belongs to Lonavala has the highest rank. H's rank is higher than D's Rank but less than E's rank. C & A belongs to Kashmir & Shimla respectively. No person's rank in-lie between G & C's rank. Neither F nor B belongs to Lonavala & Ooty. Neither H nor D belongs to Dehradun. 3 people ranks lie between A & the person who belongs to Lonavala. B is a captain. Atleast 2 person's rank lie between F & E's rank. No person's rank lies between the person who belongs to Nainital & the person who belongs to Pune. Atleast 1 person's rank lie between E & the person who belongs to Ooty. G's rank is higher than A's rank.

Question 8 Who belongs to Nainital?
a) F b) G c) E
d) H e) None of these

Question 9 Who among the following has rank higher than the person who belongs to Ooty?
I. C II. H III. G
a) Only I b) I & II c) II & III
d) All of these e) None of these

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Question 10 How many people's rank lie in-between the rank of A & The person who belongs to Pune?
a) 1 b) 2 c) None
d) 3 e) More than 3

Directions [11 to 13]: Six buildings A, B, C, D, E and F were situated across a straight street. The buildings faced north, and each building had a different height and the sequence of heights is as shown below:
D(54) > B(31) > F(20) > E(65) > A(42) > C(12)
The numbers shown in the bracket shows the number of persons staying in each building. Each building was of a different colour white, red, pink, green, yellow and blue not necessarily in the same order.
- The tallest building was 3rd to the right of the blue building
- Building B was 3rd to the left of the white building
- Number of buildings to the left of B was equal to the number of buildings to the right of the red building
- B was to the immediate left of F
- Building D was green in colour
- The building with the maximum number of persons was at one of the extremes
- The yellow building was to the immediate left of the building with the least number of persons.
- Building B was not neighbouring the building with the least number of persons

Question 11 What was the difference between the number of persons in the pink and yellow building?
a) 11 b) 22 c) 19 d) 12 e) 30
Question 12 How many buildings were there between the white building and C?
a) One b) Two c) Three
d) Four e) C was white in colour
Question 13 How many buildings were taller than the yellow building?
a) One b) Two c) Three
d) Four e) Cannot be determined

Directions [14 to 18]: There are six books which have different prices, and each of these books is used as course book in different number of schools. The books are given in increasing order of its price and along with each book is given the number of schools in which it is used as course book.
U (16) < Q (10) < P (67) < R (75) < T (23) < S (12)
These six books are arranged in a linear row from west to east.
Neither costliest nor cheapest book is kept at the extreme ends. Books kept at both the extreme ends are used in that number of schools which is less than the number of schools in which the third cheapest book is used. The costliest book is kept immediate right to the book which is used in [illegible] number of schools. The book kept immediate left to U, is used in even number of schools. The book kept next to T, is used in number of schools which is prime. Sum of the number of schools in which the books immediate next to S, are used is between 80 to 95. Books kept towards east of R are used in less than 20 schools. (take left/right as per your left/right)

Question 14 Which book is kept immediate next to the book kept at extreme left end?
a) None of these b) U c) R
d) Q e) S
Question 15 What is the sum of number of schools in which the books kept at extreme ends are used?
a) 28 b) 23 c) 22
d) 33 e) Either 28 or 22
Question 16 Which among the following books is towards the left of the book which is used in 67 schools?
I. R II. T III. S
a) Only III b) All the given
c) Both I and III d) Both II and III
e) Only II
Question 17 How many books which are kept towards right of P are costlier than P?
a) None b) One c) Two
d) Three e) Either two or three
Question 18 Which book is kept to immediate left of the third costliest book?
a) P b) None of these c) Q
d) U e) T

Directions [19 to 21]: Eight students A , B, C, D, E, F, G & H who scored different marks in examination are sitting around a circular table. Some of them are facing towards the centre of the table while others are facing away from the centre of the table. Not more than 2 persons facing same direction are sitting together.
[persons facing in same direction means that either both are facing towards the centre or both are facing away from the centre]
They belongs to different cities Pune, Patna, Ooty, Auli, Almora, Ranikhet, Nainital & Mussoorie (not necessarily in same order). Their IQ level is different
The students with increasing order of their IQ along with marks scored by them are mentioned below:
A(529) < B(634) < F(576) < C(637) < H(629) < E(539) < G(554) < D(612)
{NOTE: U(29) means U scored 29 marks}
The person who scored maximum marks is sitting 3rd to left of the person whose IQ is 2nd highest. E neither belongs to Patna nor sits adjacent to the person who belongs to Patna. D who faces outside the centre sits opposite to the person who scored the least marks. The person who belongs to Patna is sitting opposite to the person who belongs to Pune. The person who scored the 2nd highest marks is 3rd to left of the person who belongs to Auli & is [illegible]

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Question 10 How many people's rank lie in-between the rank of A & The person who belongs to Pune?
a) 1 b) 2 c) None
d) 3 e) More than 3

Directions [11 to 13]: Six buildings A, B, C, D, E and F were situated across a straight street. The buildings faced north, and each building had a different height and the sequence of heights is as shown below:
D(54) > B(31) > F(20) > E(65) > A(42) > C(12)
The numbers shown in the bracket shows the number of persons staying in each building. Each building was of a different colour white, red, pink, green, yellow and blue not necessarily in the same order.
- The tallest building was 3rd to the right of the blue building
- Building B was 3rd to the left of the white building
- Number of buildings to the left of B was equal to the number of buildings to the right of the red building
- B was to the immediate left of F
- Building D was green in colour
- The building with the maximum number of persons was at one of the extremes
- The yellow building was to the immediate left of the building with the least number of persons.
- Building B was not neighbouring the building with the least number of persons

Question 11 What was the difference between the number of persons in the pink and yellow building?
a) 11 b) 22 c) 19 d) 12 e) 30
Question 12 How many buildings were there between the white building and C?
a) One b) Two c) Three
d) Four e) C was white in colour
Question 13 How many buildings were taller than the yellow building?
a) One b) Two c) Three
d) Four e) Cannot be determined

Directions [14 to 18]: There are six books which have different prices, and each of these books is used as course book in different number of schools. The books are given in increasing order of its price and along with each book is given the number of schools in which it is used as course book.
U (16) < Q (10) < P (67) < R (75) < T (23) < S (12)
These six books are arranged in a linear row from west to east.
Neither costliest nor cheapest book is kept at the extreme ends. Books kept at both the extreme ends are used in that number of schools which is less than the number of schools in which the third cheapest book is used. The costliest book is kept immediate right to the book which is used in maximum number of schools. The book kept immediate left to U, is used in even number of schools. The book kept next to T, is used in number of schools which is prime. Sum of the number of schools in which the books immediate next to S, are used is between 80 to 95. Books kept towards east of R are used in less than 20 schools. (take left/right as per your left/right)

Question 14 Which book is kept immediate next to the book kept at extreme left end?
a) None of these b) U c) R
d) Q e) S
Question 15 What is the sum of number of schools in which the books kept at extreme ends are used?
a) 28 b) 23 c) 22
d) 33 e) Either 28 or 22
Question 16 Which among the following books is towards the left of the book which is used in 67 schools?
I. R II. T III. S
a) Only III b) All the given
c) Both I and III d) Both II and III
e) Only II
Question 17 How many books which are kept towards right of P are costlier than P?
a) None b) One c) Two
d) Three e) Either two or three
Question 18 Which book is kept to immediate left of the third costliest book?
a) P b) None of these c) Q
d) U e) T

Directions [19 to 21]: Eight students A , B, C, D, E, F, G & H who scored different marks in examination are sitting around a circular table. Some of them are facing towards the centre of the table while others are facing away from the centre of the table. Not more than 2 persons facing same direction are sitting together.
[persons facing in same direction means that either both are facing towards the centre or both are facing away from the centre]
They belongs to different cities Pune, Patna, Ooty, Auli, Almora, Ranikhet, Nainital & Mussoorie (not necessarily in same order). Their IQ level is different
The students with increasing order of their IQ along with marks scored by them are mentioned below:
A(529) < B(634) < F(576) < C(637) < H(629) < E(539) < G(554) < D(612)
{NOTE: U(29) means U scored 29 marks}
The person who scored maximum marks is sitting 3rd to left of the person whose IQ is 2nd highest. E neither belongs to Patna nor sits adjacent to the person who belongs to Patna. D who faces outside the centre sits opposite to the person who scored the least marks. The person who belongs to Patna is sitting opposite to the person who belongs to Pune. The person who scored the 2nd highest marks is 3rd to left of the person who belongs to Auli & is immediate left of the person who scored the

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2nd lowest marks. Immediate neighbours of the person whose IQ is the 2nd lowest face opposite directions. The person who belongs to Nainital sits immediate right of the person whose IQ is less than only 3 people. F & B face same direction. The person who belongs to Pune is 2nd to right of the person whose IQ is less than only 4 people. C & The person who belongs to Auli face opposite directions and adjacent to each other. The person who belongs to Mussoorie who is facing away from the centre of the table is immediate right of the person from Almora. The person who belongs to Ooty & the person who belongs to Ranikhet are facing opposite direction.

Question 19 Who among the following person is definitely having a more IQ than the person who belongs to Ooty?

a) H b) G c) C
d) Both (a) & (b) e) None of these

Question 20 How many people are sitting between person who belongs to Almora & the person who scored maximum marks when counted towards the right of the person who scored maximum marks ?

a) None b) 1 c) 2
d) 3 e) More than 3

Question 21 Which of the following statement is/are definitely true?

I. Both the immediate neighbours of the person who belongs to Ranikhet scored more marks than him
II. Both the immediate neighbours of the person who belongs to Ooty scored more marks than him
III. D belongs to Patna

a) I & II b) II & III
c) Either I or II d) All of these
e) None of these

ANSWER KEY

1- b	2- b	3- e	4- b	5- d	6- b	7- e	8- b	9- d
10- e	11- a	12- e	13- d	14- a	15- d	16- e	17- c	18- a
19- b	20- e	21- c						

DETAILED SOLUTIONS

QUESTION 1 TO 3

It is given that: -
In any team, PG is shorter than SG, who is shorter than SF, who is shorter than PF, who is in turn shorter than C.

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)					
Celtics (P/Q/R/S/T)					

Now: -
R plays at position SF and is shorter than T.
So, T must be playing at the position of either PF or C.
M and T plays at the different positions. M plays at position C.
Since, M plays at the position of C, So, T must be playing at the position PF.

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)					M
Celtics (P/Q/R/S/T)			R	T	

N plays at the same position as that of Q. Q is not the shortest player of the team.

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)		N			M
Celtics (P/Q/R/S/T)		Q	R	T	

P plays at the same position as that of either J or K.

Case 1: -

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)	J	N			M
Celtics (P/Q/R/S/T)	P	Q	R	T	S

Case 2: -

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)	K	N			M
Celtics (P/Q/R/S/T)	P	Q	R	T	S

L is shorter than K and taller than J.
So, case 2 becomes invalid.

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Case 1: -

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)	J	N	L	K	M
Celtics (P/Q/R/S/T)	P	Q	R	T	S

Captain of GSW is taller than captain of Boston Celtics.
Captain of the team have to play at the position of either SG or PF.
So, we finally get: -

Team	PG (Shortest)	SG	SF	PF	C (Tallest)
GSW (J/K/L/M/N)	J	N	L	K (Captain)	M
Celtics (P/Q/R/S/T)	P	Q (Captain)	R	T	S

ANSWER 1: K IS CAPTAIN OF GLOBAL STATE WARRIORS.
ANSWER 2: P PLAYS AT THE POSITION OF PG.
ANSWER 3: BOTH N AND Q PLAYS AT POSITION OF SG.
QUESTION 4 TO 7

Q was the Chancellor and ranked just below the person good in mechanical. So, this also implies that the person good in mechanical was the Chairman
The person good in Computer Science was ranked the least. So, the person good in CS was the student.

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	
DEAN		
HOD		
TEACHER		
STUDENT		CS

The person good in electrical was ranked just below the person who was not good in any subject.
Case 1:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	---
DEAN		ELECTRICAL
HOD		
TEACHER		
STUDENT		CS

Case 2:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	
DEAN		----
HOD		ELECTRICAL
TEACHER		
STUDENT		CS

Case 3:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	
DEAN		
HOD		----
TEACHER		ELECTRICAL
STUDENT		CS

S was ranked lower than the chairman. Two people were ranked between S and P where S was ranked higher than P.
Case 1:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	---
DEAN	S	ELECTRICAL
HOD		
TEACHER		
STUDENT	P	CS

Case 2:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	
DEAN	S	----
HOD		ELECTRICAL
TEACHER		
STUDENT	P	CS

Case 3:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	
DEAN	S	
HOD		----
TEACHER		ELECTRICAL
STUDENT	P	CS

R had a good knowledge in civil. So, case 3 is invalid.
Case 1:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	---
DEAN	S	ELECTRICAL
HOD		
TEACHER		
STUDENT	P	CS

Case 2:

POST	PERSON	SUBJECT
CHAIRMAN		MECHANICAL
CHANCELLOR	Q	
DEAN	S	----
HOD		ELECTRICAL
TEACHER	R	CIVIL
STUDENT	P	CS

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The person good in electronics was ranked just lower than T who was not the HOD. So, this is not possible in case 1. Hence finally we have:

POST	PERSON	SUBJECT
CHAIRMAN	T	MECHANICAL
CHANCELLOR	Q	ELECTRONICS
DEAN	S	----
HOD	U	ELECTRICAL
TEACHER	R	CIVIL
STUDENT	P	CS

ANSWER 4: 2 PERSONS ARE RANKED BETWEEN ELECTRONICS AND R.

ANSWER 5: THE ONE GOOD IN CIVIL IS A TEACHER.

ANSWER 6: R WAS RANKED IMMEDIATELY LOWER THAN U.

ANSWER 7: II AND III ARE INCORRECT.

QUESTION 8 TO 10

- 3 people rank's lie in-between the ranks of the person who belongs to Punjab & F whose rank is higher than the person who belongs to Punjab.
- B is a captain.

Rank	Person	Place	Person	Place	Person	Place	Person	Place
General	F							
Major General			F					
Brigadier					F			
Colonel							F	
Lt. Colonel		Punjab						
Major				Punjab				
Captain	B		B		B	Punjab	B	
Lieutenant								Punjab
	Case 1	Case 2	Case 3	Case 4				

- Atleast 2 person's rank lie between F & E's rank.
- E's rank is higher than the person who belongs to Dehradun.
- H's rank is higher than D's Rank but less than E's rank.
- Neither H nor D belongs to Dehradun.

This means atleast 3-person rank is less than E i.e., H, D & the person who belongs to Dehradun so, case-3 becomes invalid.

Rank	Person	Place	Person	Place	Person	Place	Person	Place
General	F		F				E	
Major General					F			
Brigadier								
Colonel			E				F	
Lt. Colonel	E	Punjab		Punjab	E			
Major						Punjab		
Captain	B		B		B		B	
Lieutenant								Punjab
	Case 1-a	Case 1-b	Case 2	Case 4				

- C & A belongs to Kashmir & Shimla respectively.
- G's rank is higher than A's rank.
- No person's rank in-lie between G & C's rank.
- H's rank is higher than D's Rank but less than E's rank.

So, case-2 becomes invalid as this arrangement is not possible

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Rank	Person	Place	Person	Place	Person	Place
General	F		F		E	
Major General	C/G		C/G		C/G	
Brigadier	G/C		G/C		G/C	
Colonel	A	Shimla	E		F	
Lt. Colonel	E	Punjab		Punjab		
Major						
Captain	B		B		B	
Lieutenant						Punjab
	Case 1-a	Case 1-b	Case 4			

• No person's rank in-lie between the person who belongs to Nainital & the person who belongs to Pune.
• Neither F nor B belongs to Lonavala & Ooty.
• Neither the person who belongs to Nainital nor the person who belongs to Lonavala has the highest rank.
• H's rank is higher than D's Rank but less than E's rank.
• Neither H nor D belongs to Dehradun.
• C & A belongs to Kashmir & Shimla.

Rank	Person	Place	Person	Place	Person	Place
General	F	Pune	F	Pune	E	
Major General	G	Nainital	G	Nainital	C/G	
Brigadier	C	Kashmir	C	Kashmir	G/C	
Colonel	A	Shimla	E		F	
Lt. Colonel	E	Punjab	H	Punjab	H/A	
Major	H		/A		A/H	
Captain	B	Dehradun	B	Dehradun	B	
Lieutenant	D		/A		D	Punjab
	Case 1-a	Case 1-b	Case 4			

3 people ranks lie between A & the person who belongs to Lonavala.

• Neither the person who belongs to Nainital nor the person who belongs to Lonavala has the highest rank.
• No person's rank in-lie between the person who belongs to Nainital & the person who belongs to Pune.
• Neither F nor B belongs to Lonavala & Ooty.

Rank	Person	Place	Person	Place	Person	Place
General	F	Pune	F	Pune	E	Ooty
Major General	G	Nainital	G	Nainital	G	Lonavala
Brigadier	C	Kashmir	C	Kashmir	C	Kashmir
Colonel	A	Shimla	E	Lonavala	F	Nainital/Pune
Lt. Colonel	E	Punjab	H	Punjab	H	Pune/Nainital
Major	H	Ooty	D	Ooty	A	Shimla
Captain	B	Dehradun	B	Dehradun	B	Dehradun
Lieutenant	D	Lonavala	A	Shimla	D	Punjab
	Case 1-a		Case 1-b		Case 4	

• Atleast 1 person's rank lie between E & the person who belongs to Ooty.
So, Case 1-a & 4 is eliminated.

Rank	Person	Place
General	F	Pune
Major General	G	Nainital
Brigadier	C	Kashmir
Colonel	E	Lonavala
Lt. Colonel	H	Punjab
Major	D	Ooty
Captain	B	Dehradun
Lieutenant	A	Shimla
	Case 1-b	

ANSWER 8: G BELONGS TO NANITAL.
ANSWER 9: ALL C H AND G ARE OF HIGHER RANK THEN THE ONE FROM OOTY.
ANSWER 10: MORE THAN 3.
QUESTION 11 TO 13

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• The building with the maximum number of persons was at one of the extremes. Thus, E was at one of the extremes
• Building B was 3rd to the left of the white building
• Number of buildings to the left of B was equal to the number of buildings to the right of the red building
• B was to the immediate left of F

Case 1	E 65	—	B 31	F 20 Red	—	— White
Case 2	B 31	F 20	—	— White	—	F 65 Red
Case 3	—	—	B 31	F 20 Red	—	E 65 White

• The tallest building was 3rd to the right of the blue building
• Building D was green in colour
• The yellow building was to the immediate left of the building with the least number of persons.

Case 1	E 65 Yellow	C 12 Blue	B 31 Pink	F 20 Red	D 54 Green	A 42 White
Case 2	B 31 Pink	F 20 Blue	A 42 Yellow	C 12 White	D 54 Green	E 65 Red
Case 3	A 42 Yellow	C 12 Blue	B 31 Pink	F 20 Red	D 54 Green	E 65 White

• Building B was not neighbouring the building with the least number of persons. Thus, case 1 and 3 become invalid
The final arrangement is as follows:

B 31 Pink	F 20 Blue	A 42 Yellow	C 12 White	D 54 Green	E 65 Red

Answer 11: difference between persons in pink and yellow building is 11.
Answer 12: building C itself is white.
Answer 13: D, B, F, E are taller then yellow building.

QUESTION 14 TO 18

Books in increasing order of its price and along with each book is given the number of schools in which it is used as course book.
U (16) < Q (10) < P (67) < R (75) < T (23) < S (12)
From here, we can arrange them in increasing order of number of schools in which they are used:
Q (10) < S (12) < U (16) < T (23) < P (67) < R (75)
Here,
• Books kept at both the extreme ends are used in that number of schools which is less than the number of schools in which the third cheapest book is used.
Third cheapest book = P → used in 67 schools
Books at extreme ends thus can be → less than 67 schools → i.e. Q, S, U or T
It is given that,
• Neither costliest nor cheapest book is kept at the extreme ends.
Thus, neither U nor S is at any extreme end.
Thus, Q and T are at the extreme ends.
We get,

Case I:	Q(10)	___	___	___	___ T(23)
Case II:	T(23)	___	___	___	___ Q(10)

• The book kept immediate left to U, is used in even number of schools.
U→16
Book immediate left to U can be either S or Q.
And,
• The costliest book is kept immediate right to the book which is used in maximum number of schools.
Costliest book → S
R is used in maximum number of schools.
Thus,
S is immediate right to R.
We get,

Case I:	Q(10)	U(16)	R(75)	S(12)	___	T(23)
Case II:	T(23)	___	R(75)	S(12)	U(16)	Q(10)
Case III:	Q(10)	U(16)	___	R(75)	S(12)	T(23)
Case IV:	T(23)	R(75)	S(12)	U(16)	___	Q(10)
Case V:	Q(10)	___	R(75)	S(12)	U(16)	T(23)
Case VI:	Q(10)	R(75)	S(12)	U(16)	___	T(23)

Now,
• Sum of the number of schools in which the books immediate next to S, are used is between 80 to 95.
P→67
Case I and III become invalid.
Also,
• The book kept next to T, is used in number of schools which is prime.
Thus, case IV and V become invalid.
We get,

Case II:	T(23)	P(67)	R(75)	S(12)	U(16)	Q(10)
Case VI:	Q(10)	R(75)	S(12)	U(16)	P(67)	T(23)

Since,
• Books kept towards east of R are used in less than 20 schools.
Thus, case VI is eliminated and, final arrangement is as follows:
T(23) P(67) R(75) S(12) U(16) Q(10)
Answer 17: R, T, S are costlier than P.
R and S are kept towards right of P.
Answer 18: P is to the immediate left of R which is third costliest book.

QUESTION 19 TO 21

• The person who scored maximum marks is sitting 3rd to left of the person whose IQ is 2nd highest.
• The person who belongs to Patna is sitting opposite to the person who belongs to Pune.
• The person who belongs to Pune is 2nd to right of the person whose IQ is less than only 4 people.

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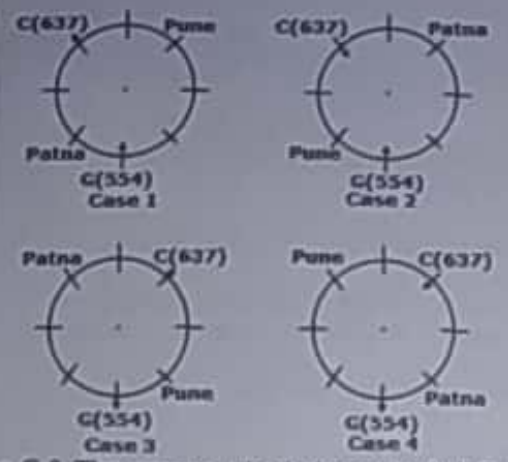
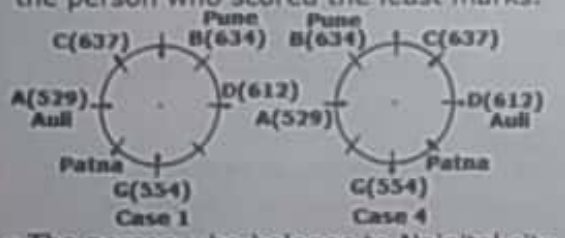
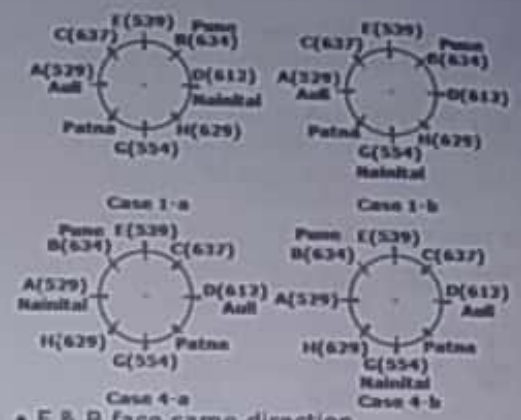


• C & The person who belongs to Auli face opposite directions and are adjacent to each other.
• The person who scored the 2nd highest marks is 3rd to left of the person who belongs to Auli & is immediate left of the person who scored the 2nd lowest marks.
• Immediate neighbours of the person whose IQ is the 2nd lowest face opposite directions.
• E neither belongs to Patna nor sits adjacent to the person who belongs to Patna.

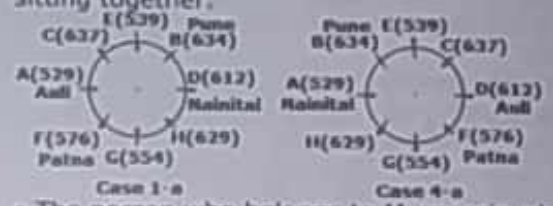
• Not more than 2 persons facing same direction are sitting together.
• D who faces outside the centre sits opposite to the person who scored the least marks.



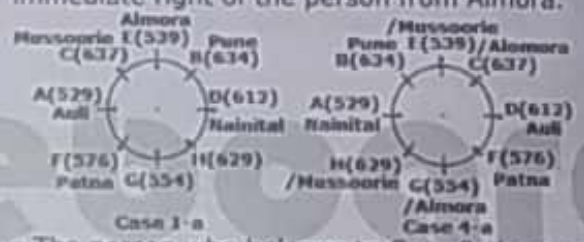
• The person who belongs to Nainital sits immediate right of the person whose IQ is less than only 3 people.
• The person who scored the 2nd highest marks is 3rd to left of the person who belongs to Auli & is immediate left of the person who scored the 2nd lowest marks.



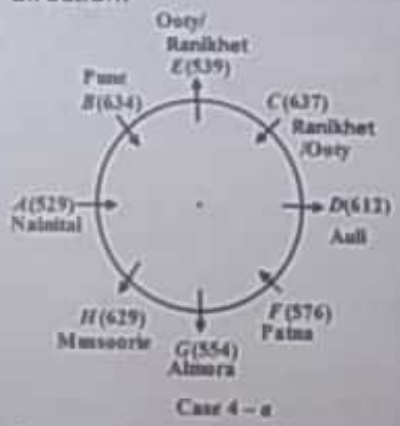
• F & B face same direction.
• Not more than 2 people facing same direction are sitting together.



• The person who belongs to Mussoorie who is facing away from the centre of the table is immediate right of the person from Almora.



• The person who belongs to Ooty & the person who belongs to Ranikhet are facing opposite direction.



Answer 19:G has definitely more IQ then the one with Ooty.
Answer 20: More than 3 persons are sitting between maximum marks holder and the one belongs to Almora.
Answer 21: Either statement I or II is definitely true.

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CHAPTER 9 - PUZZLES WITH DIRECTION SENSE AND BLOOD RELATION

So far, we studied many kind of arrangements and puzzles.
Now, we will practice some puzzles which are clubbed with other concepts such as direction sense and blood relations.
(In reasoning, concepts of direction sense and blood relations are been practiced separately and are also been asked as separate questions, but, those do not have any kind of arrangement mixed with that)

Let's learn the approach...

Coming to the concept of Direction Sense, following are the main cardinal directions which should be known:

The hints of these puzzles mixed with different other concepts are given such that, we will simultaneously get the directions and arrangements, or, blood relations and arrangement.
So, this should be kept in mind that both arrangement and the given other concepts are inter-related and dependent on each other to reach the final solution.

Mostly, the puzzles with direction sense are asked in form of linear arrangement along with the distances given.

KEY POINTERS

⇒ In puzzles having direction sense concept, sometimes the distances are given while sometimes not, so, in case the distances are not mentioned, then all possibilities must be considered with respect to the possible positions.
⇒ In direction sense based linear arrangement puzzles, the distances between the persons is generally given as consecutive multiples of any number from left to right end.
For Example: Four persons are sitting in a line all facing north. Distances between the neighbouring persons from left to right increases as consecutive multiples of 4.
In this type of arrangement, we need to find the distances from the given hints. If the final arrangement is as follows:

A ____12 m____ B ____16 m____ C ____20 m____ D

And, the hint given was – "distance between C and D is 20 m and D is towards right of C.", then the possible cases would be –

C ____8 m____ A/B ____12 m____ D

OR

C ____20 m____ D

Thus, we need to be cautious while solving the questions having distances as multiples.

⇒ In puzzles mixed with blood relation concepts, in some questions, blood relations and the arrangement can be solved simultaneously, while in some, both can be solved separately, depending upon the question.

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Solved Examples

PUZZLE WITH DIRECTION SENSE

Directions [1 to 5]: Seven cars A, B, C, D, E, F and G were standing in a row facing north. The distance between neighbouring cars was a successive integral multiple of 3. The distance between neighbouring cars were less than 45m. The cars were different colours of red, purple, green, pink, white, yellow and orange not necessarily in the same order.

- White car was 51m to the left of D. Not more than three cars were standing between them.
- There were 2 cars between D and C.
- Red car was an immediate neighbor of both C and the orange car.
- E was green in colour and was 45m to the left of G.
- Pink car was 30m away from A.
- Purple car was at either of the extreme ends.
- F was not neighbouring the yellow car.
- D moves for 45 m in West direction, takes a right turn, moves for 35 m, takes a left and moves for 15 m and stops at point Z.
- F moves for 40 m in North direction, takes a left turn, moves for 70 m, takes a left turn, moves for 5m and stops at point X.
- Car R is standing 23m west of point X.

Question 1 How far is car R from Point Z?

Question 2 How far was car A from the yellow car?

Question 3 Which of the following cars were at the extreme ends?

a) B, F b) B, C c) B, E
d) E, C e) G, C

Question 4 Which of the following cars was red in colour?

Question 5 How much should car B travel to reach car R?

a) 18m west, 35m north
b) 6m east, 35m north, 15m west
c) 21m east, 35m north
d) 10m east, 35m north, 11m west
e) None of the above

Solution:

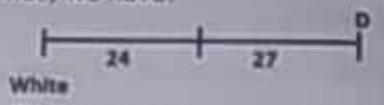
- White car was 51m to the left of D. Not more than three cars were standing between them. They cannot be neighbouring each other because the distance is more than 45m

Case 1: 1 car in between
$x+(x+3) = 51$
$x=24, (x+3) = 27$

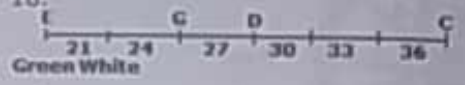
Case 2: 2 cars in between:
$x+(x+3) + (x+6) = 51$
$x=14$ (invalid as it is not a multiple of 3)

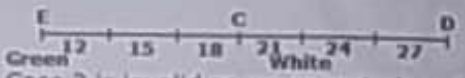
Case 3: 3 cars in between
$x+(x+3) + (x+6) + (x+9) = 51$
$4x=33$ (invalid as x will not be an integer)

Thus, we have:



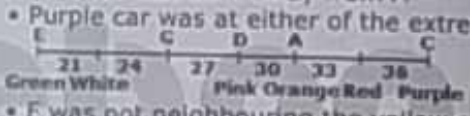
- There are 2 cars between D and C
- E was green in colour and was 45m left of G. 45m will be the sum of 21 and 24 or 12, 15 and 18.





Case 2 is invalid as we cannot place G in the arrangement

- Red car was exactly between C and the orange car
- Pink car was 30m away from A
- Purple car was at either of the extreme ends



- F was not neighbouring the yellow car.

- D moves for 45 m in West direction, takes a right turn, moves for 35 m, takes a left and moves for 15 m and stops at point Z.
- F moves for 40 m in North direction, takes a left turn, moves for 70 m, takes a left turn, moves for 5m and stops at point X.
- Car R is standing 23m west of point X.

Answer 1: R is 30m away from point Z.

Answer 2: Car A was 57m away from the yellow car.

Answer 3: Cars E and C were at the extreme ends.

Answer 4: F was red in colour.

Answer 5: Car B must travel 21m east, 35m north to reach car R.

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PUZZLE WITH BLOOD RELATION

Directions [6 to 7]: Eight persons A, B, C, D, E, F, G and H are seated around a square table such that 4 of them are seated at the sides facing the centre and four of them are seated at the corners facing outside the centre. Each of them is related to A in some manner son, daughter, wife, father, mother, sister and brother not necessarily in the same order.

- A's sister is 2nd to the right of A's father whose neighbour is seated opposite to C who faces the centre.
- C is 2nd to the right of F
- A's daughter is 2nd to the right of A who is seated beside his sister
- A's brother who is seated facing outside the centre is 2nd to the right of B's neighbour
- There are 2 persons between G and A's mother and neither of them(A's mother and G) is a neighbour of A's sister
- H is 2nd to the left of A's wife
- E is seated beside A
- Only D is seated between A's son and C
- There are 2 persons between B and A's wife

Question 6 How is B related to G?

Question 7 Who among the following is seated opposite to A's mother?

a) A's father b) A himself

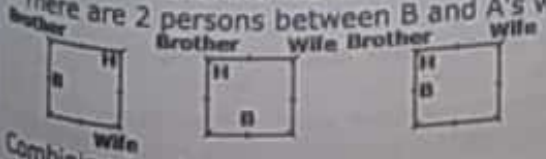
c) A's daughter d) A's wife e) A's sister

Solution:

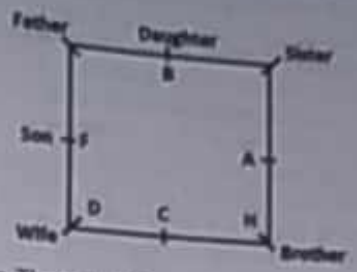
- A's sister is 2nd to the right of A's father whose neighbour is seated opposite to C who faces the centre.
- C is 2nd to the right of F
- A's daughter is 2nd to the right of A who is seated beside his sister
- Only D is seated between A's son and C

Case 4 is invalid as A cannot be placed in that arrangement:

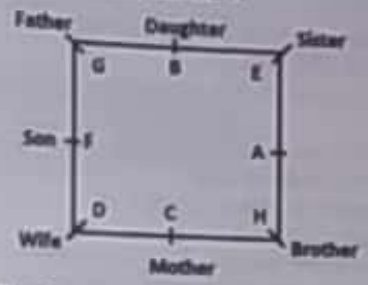
- A's brother who is seated facing outside the centre is 2nd to the right of B's neighbour
- H is 2nd to the left of A's wife
- There are 2 persons between B and A's wife



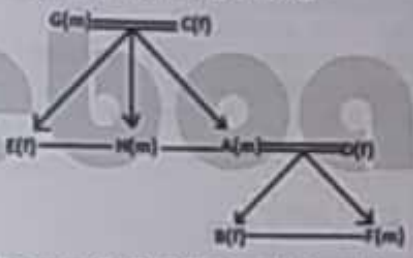
Combining the 2 scenarios:



- There are 2 persons between G and A's mother and neither of them(A's mother and G) is a neighbour of A's sister
- E is seated beside A



The family tree is as follows:



Answer 6: B is G's grand daughter

Answer 7: A's daughter is seated opposite to A's mother

Directions [8 to 12]: A family of nine members P, Q, R, S, T, U, V, W and X has each member attending their respective friend's wedding in the month of October, November and December. These weddings take place on 7th, 20th and 28th of mentioned month. only one family member visits one wedding and only one wedding takes place on any given date. Also, family members are wearing dresses of different colours for wedding ceremonies.

The one wearing red dress and first to visit wedding is eldest male member of the family. V visits wedding on an even numbered date but not in a month with even number of days. The person who visits last is the youngest female member of family. U and Q attend the wedding in the same month which is neither October nor the month in which V attends the wedding. Persons wearing black and blue dress visit wedding in same month. W is grandmother of X and the one wearing a violet dress for wedding. P, a male member, has an unmarried son who wears black for wedding and

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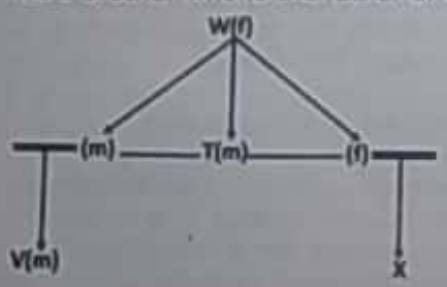
visits wedding immediately after P. R is wearing green colour dress and his wife is wearing a grey colour dress, both attend wedding on same dates of different months. Orange coloured dress is worn on an even date immediately before silver coloured dress worn in same month. V is a male member. T is the maternal uncle of X and paternal uncle of V. U is spouse of one of the children of P. S is the son-in-law of W and is not married to U. W is not wearing grey dress. One of the family member who wears golden dress and W visits the wedding on the same date as that of S, who has a daughter.

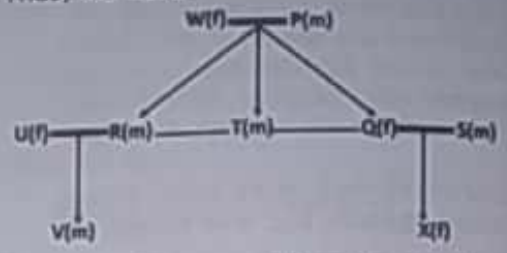
Question 8 Who is wearing blue coloured dress?
Question 9 How is P related to Q?
Question 10 Who is visiting wedding on 28th November?
Question 11 Person wearing Golden coloured dress visits wedding on which date?
Question 12 What is colour of W's dress?
Solution:
V visits wedding on an even numbered date but not in a month with even number of days
This means V visits wedding either on 20th or 28th of October or December, but we know
V is a male member and the person who visits last is the youngest female member of family thus V cannot visit on 28th December.
Now we have
U and Q visits wedding in the same month but not in October or in the same month as V
Thus, from the above line we can say that V visits wedding on 20th December. And U and Q visit in November. Thus, we have:

Months	7th	20th	28th
October			
November	U/Q	U/Q	U/Q
December		V	

W is grandmother of X and the one wearing a violet dress for wedding.
T is the maternal uncle of X and paternal uncle of V from above lines we can say that T is the son of W and has a sister, who is the mother of X and also has a brother who is the father of V. thus we have:



Only members left are P, U, S, Q and R
R is wearing green colour dress and his wife is wearing a grey colour dress, both attend wedding on same dates of different months.
W is not wearing grey dress.
This means R is not married to W
S is son-in-law of W and is not married to U
From above lines we can say that R is married to U and S is married to Q and P is married to W.
Also, S has a daughter X
Thus, we have:



Since X is the youngest female member she is last to visit wedding and since
W is grandmother of X and the one wearing a violet dress for wedding, we can say that V is wearing violet dress.

Months	7th	20th	28th
October			
November	U/Q	U/Q	U/Q
December		V-violet	X

The one wearing red dress and first to visit wedding is eldest male member of the family.
P, a male member, has an unmarried son who wears black for wedding and visits wedding immediately after P.
The persons wearing black and blue dress visit wedding in the same month
From the above lines we can say that P is wearing red dress and T is wearing black dress.

Months	7th	20th	28th
October	P-red	T-black	Blue
November	U/Q	U/Q	U/Q
December		V-violet	X

Now we know, R is wearing a green colour dress and his wife is wearing a grey colour dress, both attend wedding on same dates of different months.
only option left for above condition is R visits on 7th December and U visits on 7th November. Thus, we have:

Months	7th	20th	28th
October	P-red	T-black	Blue
November	U-grey	Q	
December	R-green	V-violet	X

Orange coloured dress is worn on an even date immediately before silver coloured dress worn in same month.
One of the family member wear golden dress
Only option for above condition to be fulfilled is Q wears orange dress and person visiting wedding immediately after her wears silver dress.

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Which means X wears golden dress.

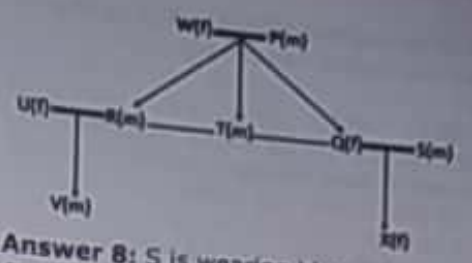
Months	7th	20th	28th
October	P-red	T-black	Blue
November	U-grey	Q-Orange	Silver
December	R-green	V-violet	X-Golden

W visits the wedding after the same date of that of S

This means S visits wedding on 28th October and W on 28th November.

Thus, we have final arrangement as:

Months	7th	20th	28th
October	P-Red	T-Black	S-Blue
November	U-Grey	Q-Orange	W-Silver
December	R-Green	V-violet	X-Golden



Answer 8: S is wearing blue coloured dress.
Answer 9: P is father of Q.
Answer 10: W is visiting wedding on 28th November.
Answer 11: Person wearing Golden coloured dress, that is X, visits wedding on 28th December.
Answer 12: W's dress is silver in colour.

Practice Yourself

Directions [1 to 5]: Seven dogs Tommy, Tiger, Julie, Scissor, Rambo, Winnie and Jacky were taken to a dog show. They were to walk the ramp and hence were made to sit in a straight row facing the north.

- Jacky was 3rd to the left of Rambo and neither of them was at the extreme end
- Tiger was neighbouring Rambo
- Winnie was to the immediate left of Tommy and 2nd to the right of Julie
- Scissor was at one of the extreme ends
- Scissor was not neighbouring Julie.
- Tiger started walking on the ramp. He went north for 35m and turned left and went 50m and stopped
- Scissor went south, walked for 45m and stopped.
- The final shortest distance between tiger and scissor was 100m

Question 1 What was the initial distance between tiger and scissor?
a) 5m b) 10m c) 15m
d) 20m e) 30m

Question 2 Who among the following was exactly in the middle of the row?
a) Jacky b) Tiger c) Tommy
d) Julie e) Winnie

Question 3 What was the position of Winnie with respect to Jacky?
a) Immediate right b) Second to the left
c) Third to the left d) Fourth to the right
e) Cannot be determined

Question 4 How many dogs were to the right of tiger initially?
a) None b) One c) Two
d) Three e) Four

Question 5 How many dogs were there between Julie and Tiger?
a) None b) One c) Two
d) Three e) More than three

Directions [6 to 9]: Seven persons A, B, C, D, E, F and G went to different food joints situated across a street. The food joints faced North. They were McDonalds, Dominos, KFC, Taco bells, Bikanerwala, Pizza hut and Haldiram not necessarily in the same order. The distance between neighbouring food joints was a successive integral multiple of 20m. The distance increase from left to right.

- Dominos was 360m away from Haldiram.
- C was eating at McDonalds and There were 3 joints between A's and C's eating joints.
- A was eating at a place that was 160m away from Pizza hut.
- Taco bells was 240m away from KFC.
- B was eating at bikanerwala and was 300m away from the place where F was eating.
- D did not eat in taco bells or Dominos.
- E was eating at one of the places which was situated at the extreme end.
- B was not eating at a place situated at the extreme end.
- The distance between the neighbouring places was more than 50m but less than 200m.

Now,

- G went 120m south, took a left turn and then walked 200m. He again took a left turn, walked for 80m and stopped at position X.
- The person eating at pizza hut walked 120m north, took a left turn and walked 320m. He then took a left turn and walked for 70m and stopped at point Y.

Question 6 What is the distance between points X and Y?
a) 70m b) 80m c) 90m
d) 100m e) 110m

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Question 7 Who among the following was eating in the food joint that was 2nd to the right of Dominos?
a) A b) B c) C d) E e) G

Question 8 What was the distance between the places where G and E were having food?
a) 60m b) 80m c) 100m
d) 120m e) 140m

Question 9 Which of the following places were situated at the extreme ends?
a) Taco bells, Haldiram
b) Haldiram, McDonalds
c) Pizza hut, Taco bells
d) Pizza hut, Haldiram
e) McDonalds, Pizza hut

Directions [10 to 14]: Seven cars - A, B, C, D, E, F and G, are standing in a linear row from left to right, facing towards the north direction. Distance between each car from left to right, is successive multiple of 12.
Each car is from different state.
- F is standing at a distance 60 m from car E.
- Car D is from Karnataka.
- There are 2 cars between B and C, which stands to immediate left of the car from Gujarat, which is neither E nor F.
- The distance between car from Delhi and Gujarat is 72 m.
- Car E stands third to right of D.
- Car from Orrisa is standing towards left of car from Kerala, but towards right of car from UP.
- A is neither from Gujarat nor standing at any extreme ends.
- Distance between car from UP and car from Bihar is 108 m.

Car from UP moves 12 m towards north and then takes a 45° clockwise turn to move certain distance and then moves 24 m southwards and stops at point M. Point M is north to the position of car B. Car A starts moving in the west direction and takes a right turn after moving 60 m, and then keeps moving in this direction till it stops at point N which is exactly towards east of point M.
Another car H, which initially stood at point M, starts moving towards point N and from N, it took a right turn to move 20 m and then takes either a left or right turn to reach point P, which is exactly towards the south of the car from Delhi.

Question 10 What is the minimum distance between point M and point N?
a) 12 m b) 48 m c) 36 m
d) 24 m e) 60 m

Question 11 What is the direction of point P with respect to car from Bihar?
a) South-east b) South
c) West d) North-west
e) South-west

Question 12 What is the position of car from UP with respect to car E?
a) Second to right b) Immediate left
c) Third to right d) Second to left
e) None of these

Question 13 After moving from point N, and taking the turn after N, how much distance Car H travelled to reach P, and in which direction?
a) West, 108 m b) North, 108 m
c) East, 108 m d) West, 120 m
e) East, 120 m

Question 14 G is a car from _____.
a) UP b) Gujarat c) Delhi
d) Orrisa e) Bihar

Directions [15 to 18]: In the family of 6 persons A, B, C, D, E and F, it is known that each person has different height and weight.
A is the father-in-law of F, who is the sister of D. B is the brother-in-law of F whereas C is the brother-in-law of D. Wives of B and C are siblings. E is the mother of 2 daughters in the family. E is taller than both of her daughters but not tallest. The daughter-in-law of A is taller than only 3 other persons and lighter than only 4 other persons. The tallest person is lightest whereas the shortest person is heaviest. Both, tallest and heaviest persons are male. A is taller than C but is not tallest. When 6 persons are ranked by their height and weight (from low to high) then no one got the same rank. E is heavier than D.

Question 15 Who is the 2nd heaviest person?
a) A b) B c) C d) D e) E

Question 16 Who is the wife of B?
a) A b) C
c) 2nd shortest person d) 2nd heaviest person
e) None of these

Question 17 Who among the following is lightest?
a) Husband of B b) Sister of B
c) Mother of B d) Father-in-law of B e) B

Question 18 How is F related to the 2nd tallest person?
a) Wife b) Sister c) Daughter
d) Daughter-in-law e) Sister-in-law

Directions [19 to 22]: Eight persons A, B, C, D, E, F, G and H belonged to a family and they celebrated their birthdays in the months of January, February, March and April on the dates 7th or 26th of these months. No two persons celebrated their birthdays on the same date. Each person was related to A in some manner viz. father, mother, daughter, son, brother, wife and sister not necessarily in the same order. The female members of the family had birthdays on 7th and the male members had the birthdays on 26th.
- H's sister celebrated her birthday just after G's brother
- C's husband was the last to celebrate his birthday
- Only 2 birthdays were celebrated between E's birthday and B's mother's birthday. E's birthday was celebrated before B's mother's birthday
- C's son celebrated his birthday on 26th January

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• Number of persons who celebrated birthday before C was equal to the number of persons who celebrated their birthdays after H. C's birthday was celebrated before H's birthday.
• D's daughter celebrated her birthday just after E
• F's son celebrated his birthday just before C
• B's birthday was celebrated just before the birthday of A's son.

Question 19 Four of the following bears a similar relationship and hence form a group, who among the following is not a part of that group?
a) G b) D c) B d) C e) E

Question 20 How was E related to the one who celebrated the birthday on 26th March?
a) Brother b) Nephew c) Uncle
d) Father e) Grandfather

Question 21 How was D related to B?
a) Mother b) Sister c) Sister-in-law
d) Wife e) Cannot be determined

Question 22 Who among the following celebrated his/her birthday on 7th March?
a) A b) A's brother c) A's father
d) A's wife e) A's daughter

Directions [23 to 24]: There is a six membered family is spanning across three generations, and each member is of different profession. Each member is of different height and, also, each one went for a conference on different dates of the month July of year 2018. The persons are given in increasing order of their heights and with their dates on which they went for a conference.
Teacher (21) < Engineer (16) < Doctor (31) < Manager (09) < Clerk (15) < Businessman (25)
• Clerk's daughter, who is unmarried, went to the conference on odd numbered date and is taller than Doctor.
• Doctor is married to the one who went to conference on a date which is a multiple of 5.
• The one who is taller than only one person is an unmarried male.
• The tallest person is the mother-in-law of Engineer's sister-in-law.
• The one who goes to conference on a date which is factor of 42, is female.
• The second tallest person has a brother.

Question 23 Who among the following belongs to first generation of the family?
I. Doctor II. Teacher
III. Clerk IV. Businessman
a) Only IV b) Both I and IV
c) Both I and II d) I, III and IV
e) Both II and III

Question 24 How is the tallest person of the family related to the second shortest person of the family?
a) Father b) Mother-in-law
c) Sister d) Mother e) None of these

Directions [25 to 27]: Eight members of a family A, B, C, D, E, F, G and H celebrated their birthdays in consecutive months of a year from January to August such that no two persons celebrated birthdays in the same month. There was a theme for every party. The themes were based on the person's favourite colour whose birthday was to be celebrated. Each of them was related to A in some manner: Father, mother, Brother, sister, wife, daughter and son not necessarily in the same order. Their favourite colours were golden, pink, black, red, silver, brown, yellow and purple not necessarily in the same order.
C's spouse liked Pink and not more than 2 birthdays were celebrated before C's spouse's birthday. D's father's birthday was celebrated in June. A's wife liked brown and there are three birthday celebration between her birthday and B's birthday. B's birthday was celebrated before A's wife's birthday. G's birthday was celebrated just before E's birthday. The party with the silver theme was celebrated just before F's birthday. G's brother celebrated his birthday just before D's birthday. Number of birthdays celebrated after A's birthday was twice as that of the number of birthdays celebrated before the birthday with the yellow theme. The party with yellow theme was before A's birthday and at least one birthday was there before Yellow themed Birthday Party. A was not the last to celebrate his birthday. A's birthday and E's sister's birthdays were celebrated in consecutive months. The birthday with purple theme was celebrated just before A's brother's birthday. One birthday was celebrated between the birthdays with the theme golden and black. The party with the golden theme was before the party with the black theme. B's spouse liked golden and B's birthday was not celebrated in March. A did not like red. A's daughter and A's mother did not celebrate their birthday in consecutive months.

Question 25 Who among the following was the last to celebrate his/her birthday?
a) A's daughter b) A c) A's wife
d) A's son e) A's brother

Question 26 How was the one who liked yellow related to the one whose birthday was celebrated in August?
a) Daughter b) Sister c) Mother
d) Brother e) Wife

Question 27 Which of the following colours was liked by the one who celebrated his/her birthday in April?
a) Red b) Black c) Golden
d) Purple e) Silver

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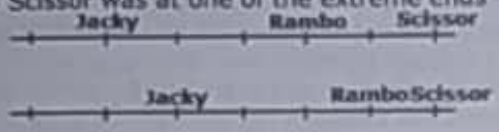
ANSWER KEY

1- b	2- c	3- a	4- b	5- e	6- c	7- b	8- e	9- c
10- d	11- a	12- d	13- e	14- b	15- a	16- c	17- e	18- c
19- e	20- c	21- a	22- e	23- b	24- d	25- e	26- b	27- e

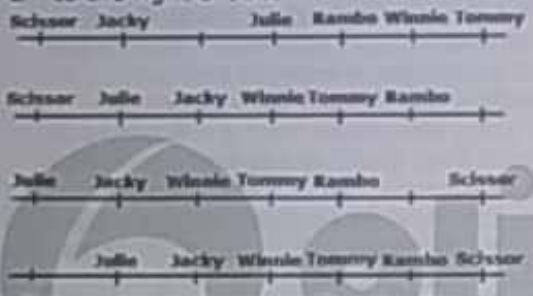
DETAILED SOLUTIONS

QUESTION 1 TO 5

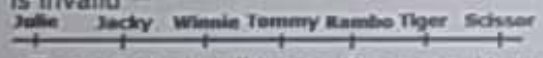
- Jacky was 3rd to the left of Rambo and neither of them was at the extreme end
- Scissor was at one of the extreme ends



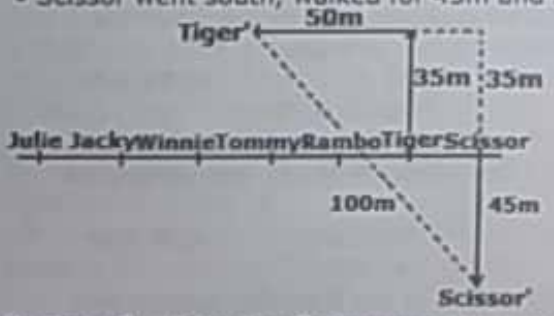
- Winnie was to the immediate left of Tommy and 2nd to the right of Julie



- Tiger was neighbouring Rambo, thus, cases 1 and 4 are invalid.
- Scissor was not neighbouring Julie. Thus, case 2 is invalid



- Tiger started walking on the ramp. He went north for 35m and turned left and went 50m and stopped
- Scissor went south, walked for 45m and stopped.

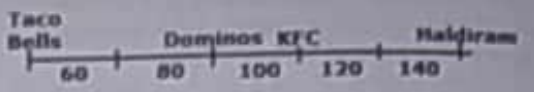


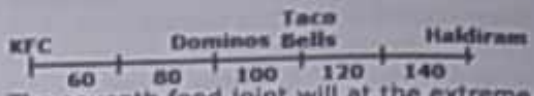
Answer 1 - Using the Pythagoras theorem
$100^2 = (45+35)^2 + (50+x)^2$
Solving: x=10
Hence the initial distance was 10m

QUESTION 6 TO 9

- Dominos was 360m away from Haldiram. Possible combinations can be (100+120+140) or (60+80+100+120)
- Taco bells was 240m away from KFC. Only possibility is (60+80+100)

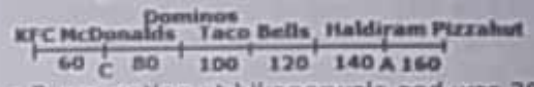
Making the possible cases:





The seventh food joint will at the extreme right because the distance between neighbouring places cannot be less than 60m.

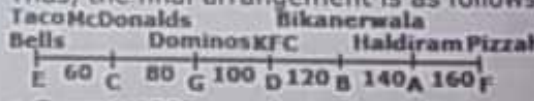
- C was eating at McDonalds and There were 3 joints between C' and A's joint.
- A was eating at a place that was 160m away from Pizza hut



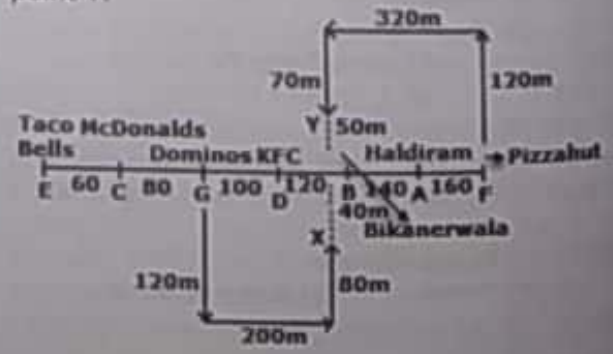
- B was eating at bikanerwala and was 300m away from the place where F was eating
- E was eating at one of the places which was situated at the extreme end.
- B was not eating at a place situated at the extreme end.

- D did not eat in taco bells or Dominos, thus, case 2 becomes invalid.

Thus, the final arrangement is as follows:



- G went 120m south, took a left turn and then walked 200m. He again took a left turn, walked for 80m and stopped at position X.
- The person eating at pizza hut walked 120m north, took a left turn and walked 320m. He then took a left turn and walked for 70m and stopped at point Y.



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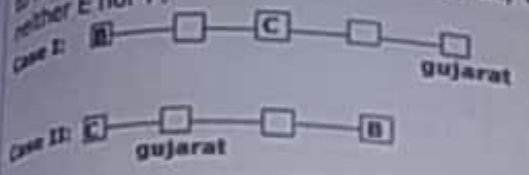
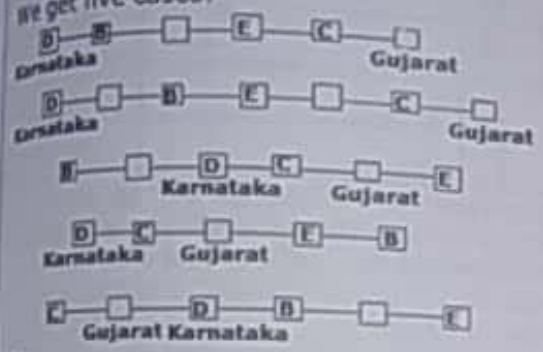
QUESTION 10 TO 14

• There are 2 cars between B and C, which stands to immediate left of the car from Gujarat, which is neither E nor F.

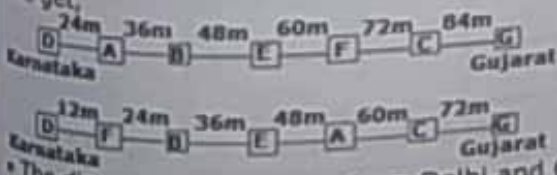


Now,
• Car D is from Karnataka.
• Car E stands third to right of D.
• E is not from Gujarat.
We get five cases:



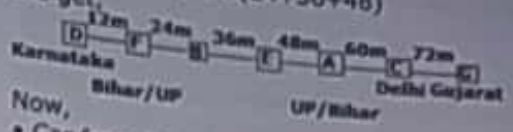
Now,
• F is standing at a distance 60 m from car E.
All distances are successive multiples of 12. Thus, we get,
60 m is either 60 m immediately next.
Or
60 m = 24m + 36m
– neither E nor F is from Gujarat.
We get following four possibilities:

Since,
• A is neither from Gujarat nor standing at any extreme ends.
Thus,
From the above cases, case II and case IV, gets eliminated.
We get,

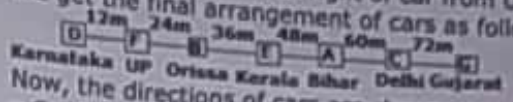


• The distance between car from Delhi and Gujarat is 72 m.
This means, immediate next at distance 72 m OR,
72m = 12+24+36
Thus, first case becomes invalid.
Also,
• Distance between car from UP and car from Bihar is 108 m.

108 = (60+48) OR (24+36+48)
We get,



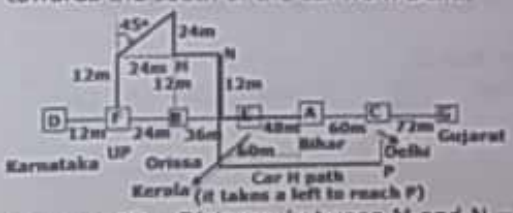
Now,
• Car from Orrisa is standing towards left of car from Kerala, but towards right of car from UP.
We get the final arrangement of cars as follows:



Now, the directions of cars are shown as:
• Car from UP moves 12 m towards north and then takes a 45° clockwise turn to move certain distance and then moves 24 m southwards and stops at point M which is north of car B.

• Car A starts moving in the west direction and takes a right turn after moving 60 m, and then keeps moving in this direction till it stops at point N which is exactly towards east of point M.

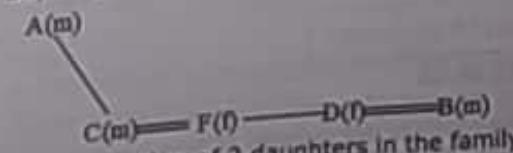
• Another car H, which initially stood at point M, starts moving towards point N and from N, it took a right turn to move 20 m and then takes either a left or right turn to reach point P, which is exactly towards the south of the car from Delhi.



Answer 10 – Distance between M and N = 36 - (60 - 48) = 36-12= 24 m
Answer 13 – Car H moved from N in south direction and then took a left turn to reach P.
Direction it moved in is **East.**
And, distance travelled in east = 60+60 = 120 m

QUESTION 15 TO 18

A is the father-in-law of F, who is the sister of D.
B is the brother-in-law of F whereas C is the brother-in-law of D.
Wives of B and C are siblings.
So, we get: -



E is the mother of 2 daughters in the family.

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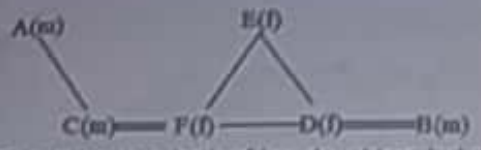


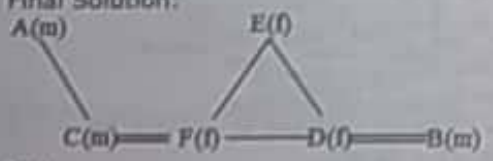
E is taller than both of her daughters but not tallest.
The daughter-in-law of A is taller than only 3 other persons and lighter than only 4 other persons.
So, we get: -

Height	Weight
(Tallest)	(Heaviest)
E	
F	
	F
(Shortest)	(Lightest)

The tallest person is lightest whereas the shortest person is heaviest.
Both, tallest and heaviest persons are male.
A is taller than C but is not tallest.
So, we get: -

Height	Weight
B (Tallest)	C (Heaviest)
E	
F	
A/D	
D/A	F
C (Shortest)	B (Lightest)

When 6 persons are ranked by their height and weight (from low to high) then no one got the same rank.
E is heavier than D.
Final Solution:



And,

Height	Weight
B (Tallest)	C (Heaviest)
E	A
F	E
A	D
D	F
C (Shortest)	B (Lightest)

QUESTION 19 TO 22

• Number of persons who celebrated birthday before C was equal to the number of persons who celebrated their birthdays after H. C's birthday was celebrated before H's birthday.
• F's son celebrated his birthday just before C. F's son's birthday will be on one of the 26th. F can be A's mother, father or wife.

January 7		
January 26		A, A's son, A's brother
February 7	C	
February 26		
March 7		
March 26	H	
April 7		
April 26		

• C's son celebrated his birthday on 26th January. Thus, C's son is F's son. Thus, C and F are a couple
• H's sister celebrated her birthday just after G's brother. H can be A's brother or son. G can be A's brother, sister or daughter.
• C's husband was the last to celebrate his birthday. Thus, C will be A's mother and F will be A's father.

Case 1:

January 7		
January 26		A, A's brother
February 7	C	Mother
February 26		A/A's brother/son
March 7		A's sister/daughter
March 26	H	
April 7		
April 26	F	Father

Case 2:

January 7		
January 26		A, A's brother
February 7	C	Mother
February 26		
March 7		
March 26	H	A's brother/son
April 7		A's sister/daughter
April 26	F	Father

• Only 2 birthdays were celebrated between E's birthday and B's mother's birthday. E's birthday was celebrated before B's mother's birthday. B's mother can be A's wife or mother.

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Case 1:

January 7		
January 26		A, A's brother
February 7	C	Mother
February 26	E	A's brother/son
March 7		A's sister/daughter
March 26	H	
April 7		Wife
April 26	F	Father

Thus, in this case, B will be A's son or daughter

Case 2:

January 7		
January 26	E	Brother
February 7	C	Mother
February 26		
March 7		Wife
March 26	H	Son
April 7		A's sister/daughter
April 26	F	Father

Thus, in this case, B will be A's daughter

• D's daughter celebrated her birthday just after E.

Thus, case 2 becomes invalid. In case 1 D will become A's wife.

• B's birthday was celebrated just before the birthday of A's son.

January 7		
January 26	A	
February 7	C	Mother
February 26	E	Brother
March 7	B	Daughter
March 26	H	Son
April 7	D	Wife
April 26	F	Father

The only person left if G and the relation left is sister.

January 7	G	Sister
January 26	A	
February 7	C	Mother
February 26	E	Brother
March 7	B	Daughter
March 26	H	Son
April 7	D	Wife
April 26	F	Father

Answer 19 – Apart from E others were the female members of the family.

QUESTION 23 TO 24

The persons according to professions are given in increasing order of their heights.

Teacher (21) < Engineer (16) < Doctor (31) < Manager (09) < Clerk (15) < Businessman (25)

Then,

• The one who is taller than only one person is an unmarried male.

Thus, Engineer is an unmarried male.

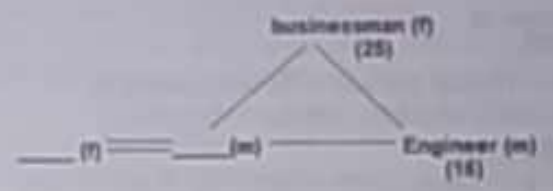
Also, it is given that,

• The tallest person is the mother-in-law of Engineer's sister-in-law.

Since, Engineer is an unmarried male, so his sister-in-law is only possibly his brother's wife.

And, the tallest person i.e. businessman is the mother-in-law of Engineer's brother's wife.

Thus, we get,



Now,

• Doctor is married to the one who went to conference on a date which is a multiple of 5.

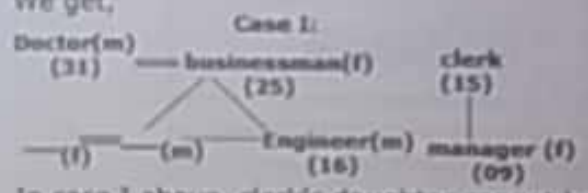
Thus, doctor can be married to either Clerk (15) or businessman (25).

Also,

• Clerk's daughter, who is unmarried, went to the conference on odd numbered date and is taller than Doctor.

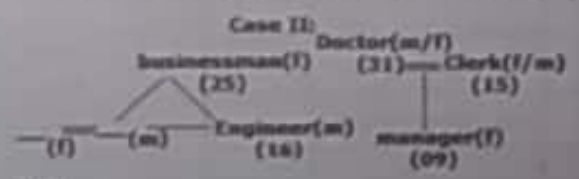
So, clerk's daughter can be either Manager (09) or businessman (25)

We get,



In case I above, clerk's daughter cannot be businessman otherwise members in family become more than 6.

We have one more possibility as follows: when doctor is married to clerk, but then clerk may only have manager as daughter as again, if businessman comes to be daughter of clerk, number of family members become more than 6.



Now,

• The second tallest person has a brother.

Thus, clerk has a brother.

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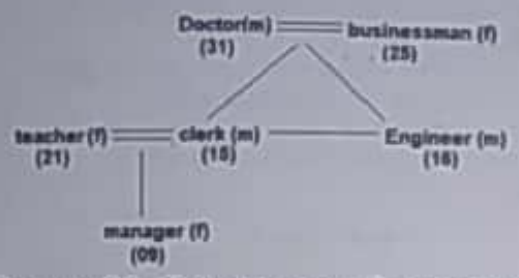
So, in case I: clerk must be the brother of Engineer and husband of teacher and Manager's father. No other possibility is there.
In case II: the possibility is clerk's brother can be teacher and clerk can be the wife of doctor, who is engineer's brother.
But, it is given,
• The one who goes to conference on a date which is factor of 42, is female.
Factor of 42 among the given dates is 21.
Thus, Teacher is a female.
And, this makes the case II invalid.
We get the final arrangement thus, as follows:



Answer 24 - Tallest person - Businessman is mother of second shortest person - Engineer.

QUESTION 25 TO 27

• Number of birthdays celebrated after A's birthday was twice as that of the number of birthdays celebrated before the birthday with the yellow theme. The party with yellow theme was before A's birthday and at least one birthday was there before Yellow themed Birthday Party.
• A's and E's sister's birthdays were celebrated in consecutive months. E's sister can be A's daughter or sister and E can be A's son or brother

Case 1:

January			
February			Yellow
March			
April			
May		Daughter/Sister	
June	A		
July			
August			

Case 2:

January			
February			Yellow
March			
April			
May			
June	A		
July		Daughter/Sister	
August			

Case 3:

January			
February			
March		Daughter/Sister	Yellow
April	A		
May			
June			
July			
August			

Case 4:

January			
February			
March			Yellow
April	A		
May		Daughter/Sister	
June			
July			
August			

• C's spouse liked Pink and not more than 2 birthdays were celebrated before C's spouse's birthday. C can be A's father, mother or wife. Thus, C's spouse can be A's father, mother or A himself. We can see that in both the cases more than 2 birthdays were celebrated before A's birthday. Thus, C can be A's father or mother.
• B is not A's wife, and B has a spouse. Thus, B and C are a couple. Thus, B and C will be A's mother/Father.
• D's father's birthday was celebrated in June. D can be A's son, daughter, sister or brother
• A's wife liked brown and there are three birthday celebration between her birthday and B's birthday. B's birthday was celebrated before A's wife's birthday
• B's spouse liked golden. Thus, B can be A's mother or father.

Case 1:

January			
February			Yellow
March			
April	B	Mother/Father	Pink
May		Daughter/Sister	
June	A		
July			
August		Wife	Brown

Invalid as 3 birthdays are before B's birthday.

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case 2:

January	B	Mother/Father	Pink
February			Yellow
March			
April			
May		Wife	Brown
June	A		
July		Daughter/Sister	
August			

Case 2a:

January			
February			Yellow
March			
April	B	Mother/Father	Pink
May			
June	A		
July		Daughter/Sister	
August		Wife	Brown

Invalid as 3 birthdays are before B's birthday.

Case 3:

January	B	Father/Mother	Pink
February			
March		Daughter/Sister	Yellow
April	A		
May		Wife	Brown
June			
July			
August			

Case 3a:

January			
February	B	Father/Mother	Pink
March		Daughter/Sister	Yellow
April	A		
May			
June		Wife	Brown
July			
August			

Invalid as D's father had birthday in June

Case 4:

January			
February	B	Father/Mother	Pink
March			Yellow
April	A		
May		Daughter/Sister	
June		Wife	Brown
July			
August			

Invalid as D's father had birthday in June

- The party with the silver theme was celebrated just before F's birthday
- The birthday with purple theme was celebrated just before A's brother's birthday
- One birthday was celebrated between the birthdays with the theme golden and black. The party with the golden theme was before the party with the black theme.
- B's spouse liked golden. Thus, C liked golden
- G's birthday was celebrated just before E's birthday.
- A's and E's sister's birthdays were celebrated in consecutive months.

Case 2:

January	B	Mother/Father	Pink
February			Yellow
March			
April	C	Mother/Father	Golden
May		Wife	Brown
June	A		Black
July		Daughter/Sister	Silver
August	F		

Invalid as the party with purple theme cannot be placed.

Case 3:

D's father will be A's father.

January	B	Father/Mother	Pink
February	C	Father/Mother	Golden
March		Daughter/Sister	Yellow
April	A		Black
May		Wife	Brown
June			
July			
August			

Invalid as D's father does not have his birthday in June.

Case 3a:

D will be A's sister or brother. E can be Son or A's brother

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January	B	Father/Mother	Pink
February			Silver
March	F	Daughter/Sister	Yellow
April	A		Red
May		Wife	Brown
June	C	Father/Mother	Golden
July	G		Purple
August	E	Brother	Black

Invalid as A did not like red

Case 3a1:

D will be A's sister or brother. E can be Son or A's brother

January	B	Father/Mother	Pink
February			Red
March		Daughter/Sister	Yellow
April	A		Silver
May	F	Wife	Brown
June	C	Father/Mother	Golden
July	G		Purple
August	E	Brother	Black

• G's brother celebrated his birthday just before D's birthday. G's brother cannot be A or A's brother.

Thus, G's brother will be A's son. Hence G will be A's daughter.

• A's daughter and A's mother did not celebrate their birthday in consecutive months.

Thus, the final table is as follows:

January	B	Mother	Pink
February	H	Son	Red
March	D	Sister	Yellow
April	A		Silver
May	F	Wife	Brown
June	C	Father	Golden
July	G	Daughter	Purple
August	E	Brother	Black

Answer 26 – D liked yellow and she was E's sister who celebrated his birthday in August

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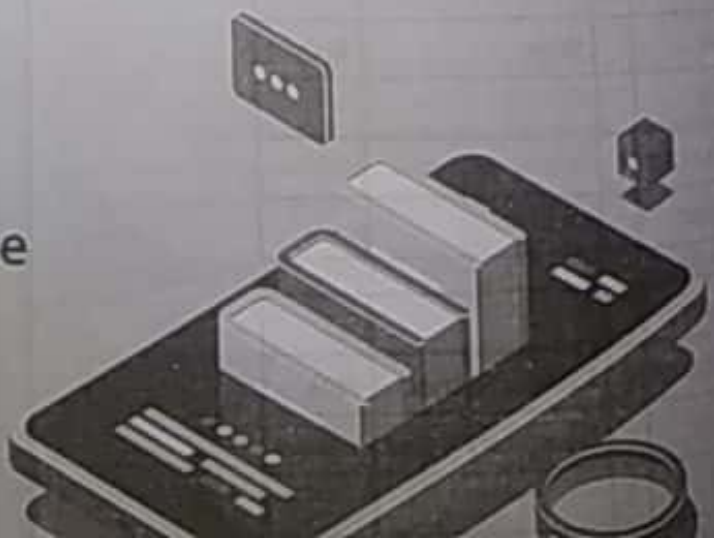

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CHAPTER 10 - FLOORS WITH FLATS

In this chapter, we will practice the questions based on arrangements which have floors with certain given number of flats on each floor.

In Chapter 3, this type was explained in theory. These type of questions judge the knowledge of arrangements done in both horizontal and vertical directions simultaneously.

Let's learn the approach...

Here, we will be given with a building having some floors and, on each floor, there will be some number of flats. Each floor may or may not have same number of flats, depending upon the question.
For example – A five floored building has two flats on each floor. On each floor the flats are numbered A and B from west to east. There are 10 persons and each lives in different flat. (as per given directions in question)
This can be solved by following representation –

	Flat A	Flat B
Floor 5	Person 1	Person 2
Floor 4	Person 3	Person 4
Floor 3	Person 5	Person 6
Floor 2	Person 7	Person 8
Floor 1	Person 9	Person 10

Similarly, these can also be asked in the form of stacks having different number of stacks arranged side by side having some number of boxes in each row.
For example – There are two stacks of boxes, placed one beside the other from west to east. Each stack has five boxes.
This can be solved by following representation –

Stack 1	Stack 2
Box 1	Box 2
Box 3	Box 4
Box 5	Box 6
Box 7	Box 8
Box 9	Box 10

KEY POINTERS

⇒ Read the directions carefully. The numbering of flats may or may not be given in question. Mostly, it is given as flats from west to east direction. (For Example: Flat A is to the west of Flat B and Flat B is to the west of Flat C)
⇒ The hints may be given with respect to floors as well as flats. Do not mix both. For example: A lives on same floor as B. And, A and D have different flat numbers.
Then, floor number of A and B will be same. But, if A lives in flat 1 of any floor then, D must be in flat 2 of same or any other floor.

Solved Examples

Directions [1 to 5]: 7 people A, B, C, D, E, F and G live in a 3-storey building(From floor 1 to floor 3 where 1 is the bottommost floor). Each storey has 3 flats such that flat number 1 is to the left of flat number 2 and flat number 2 is to the left flat number 3. two flats are vacant. (consider directions as per your left and right)
• B lives in a flat, immediately left to the vacant flat.
• D lives on a second floor and in a flat 2nd to the right of flat in which B lives.
• For both the vacant flats, flat number is same as that of its floor number.
• G lives in the flat immediate left of vacant flat.
• Flat number of G is same as that of A.
• Flat numbers of C and E are different.
• Floor number of C and F are same.

Question 1 Flat number of A is ___.
Question 2 Vacant flat is ___
a) On 1st flat b) On 2nd flat of 3rd floor
c) On 1st floor d) On 2nd and 3rd floor both

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e) On 1st and 3rd floor both

Vacant flats are on the floor number 2 and floor number 3.

Question 3 Flat number of C is __ and flat number of F is __.

Question 4 Sum of flat number and floor number is maximum for __and __ both.

Question 5 E lives on floor number __ and in flat number __.

Solution:

B lives in a flat, immediately left to the vacant flat. D lives on a second floor and in a flat 2nd to the right of flat in which B lives.

	Flat-1	Flat-2	Flat-3
Floor-3			
Floor-2	B	Vacant	D
Floor-1			

For both the vacant flats, flat number is same as that of its floor number.

G lives in a flat which is to the immediate left of vacant flat. Flat number of G is same as that of A.

	Flat-1	Flat-2	Flat-3
Floor-3		G	Vacant
Floor-2	B	Vacant	D
Floor-1		A	

Floor numbers of C and F are same. So, C and F should live on floor number 1.

Case 1: -

	Flat-1	Flat-2	Flat-3
Floor-3	E	G	Vacant
Floor-2	B	Vacant	D
Floor-1	F	A	C

Case 2: -

	Flat-1	Flat-2	Flat-3
Floor-3	E	G	Vacant
Floor-2	B	Vacant	D
Floor-1	C	A	F

Flat numbers of C and E are different.

So, case 2 becomes invalid.

Final arrangement will be: -

	Flat-1	Flat-2	Flat-3
Floor-3	E	G	Vacant
Floor-2	B	Vacant	D
Floor-1	F	A	C

Answer 1: A lives in flat number 2.

Answer 2: Vacant flats are on the floor number 2 and floor number 3.

Answer 3: Flat number of C is 3 and that of F is 1.

Answer 4: Sum for D = 5

Sum for G = 5

Maximum possible sum = 3 + 3 = 6

But, 3rd flat on 3rd floor is vacant.

So, it is maximum for G and D.

Answer 5:

E lives on floor number 3 and in flat number 1.

Directions [6 to 9]: Shoe rack has 3 berths and each berth have 4 compartments each. So, we can place 12 different shoes in the rack. Red shoe is placed exactly above Black and exactly below Pink shoe. Pink shoe is placed 3rd to the left of Green shoe. Only one shoe is placed to the right of White shoe. Only one shoe is placed between white and blue shoe. White shoe is below blue shoe. Orange shoe is placed immediately above Silver shoe, which is placed to the immediate left of Purple shoe. Yellow shoe is placed immediately above Grey shoe. Violet shoe is one of the shoe placed on the rack.

Question 6 Find the odd one out.

a) Pink b) Black c) Green

d) Grey e) Silver

Question 7 What is the colour of shoe placed to the immediate right of Black shoe?

Question 8 Which of the following shoe is placed in the lower berth?

a) Silver b) Purple c) Violet

d) Yellow e) More than one of the above

Question 9 Which of the following shoe is placed immediately above White shoe?

a) Purple b) Silver c) Yellow

d) Grey e) Violet

Solution:

Red shoe is placed above Black and below Pink shoe. Pink shoe is placed 3rd to the left of Green shoe.

Pink			Green
Red			
Black			

Only one shoe is placed to the right of White shoe, which is placed at the gap of 1 shoe below blue shoe.

Pink		**Blue**	**Green**
Red			
Black		**White**	

Orange shoe is placed immediately above Silver shoe, which is placed to the immediate left of Purple shoe.

Pink	**Orange**	**Blue**	**Green**
Red	**Silver**	**Purple**	
Black		**White**	

Yellow shoe is placed immediately above Grey shoe. Violet shoe is one of the shoes placed in the rack.

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Final Solution:

Pink	Orange	Blue	Green
Red	Silver	Purple	Yellow
Black	Violet	White	Grey

Answer 6: Except Silver, all other shoes are placed at the end of the rack.
Answer 7: Violet shoe is placed to the immediate right of Black shoe.
Answer 8: Violet shoe is placed in the lower berth of the rack.
Answer 9: Purple shoe is placed immediately above White shoe.

Practice Yourself

Directions [1 to 3]: In a three-floored building there are three flats on each floor numbered 01 to 03. Each flat of one floor is one above the other of other floor's flat such that flat 01 of first floor is just below flat 01 of second floor and so on. Flat 01 is the left most flat and flat 03 is the rightmost floor. The bottommost floor is the first and the topmost is third floor. In each flat different person lives and overall two flats are vacant. (take as per your left and right)
F and A live on same floor. Both the vacant flats are on consecutive floors and are one above the other. B lives on the floor immediately above the floor on which G lives. E lives in a flat immediate right of B's flat. C lives on an odd numbered floor and in an odd numbered flat. D and C live on same floor but not in adjacent flats. D lives in flat immediately below the B's flat. A's flat is adjacent to a vacant flat.

Question 1 Who among the given ones live in flats numbered 02?
I: B II: D III: A
a) Both I and II b) Only III c) Only II
d) None of the given e) All the given

Question 2 E lives in the flat _____.
a) Immediately next to vacant flat
b) Immediately above C's flat
c) Immediately above vacant flat
d) None of these
e) Immediately below D's flat.

Question 3 Which of the following statement(s) is/are true?
I: F lives on topmost floor.
II: C lives in flat numbered 01
III: Vacant flats are numbered 03
a) All the given b) None of the given
c) Both I and II d) Both II and III
e) Both III and I

Directions [4 to 8]: 12 persons A, B, C, D, E, F, G, H, I, J, K and L lived in a building with 3 floors which were numbered 1-3 from bottom to top. Each floor had four flats which faced North and were numbered 1-4 from left to right. Only one person lived in each flat.
- G was 2nd to the right of L who lived above E and there is 1 floor between L and E
- Difference between E's and L's flat number was 1
- There is one flat between E's and I's flat. They lived on the same floor
- A lived 2nd to the right of F who lived immediately below B
- H lived 2nd to the left of D who lived immediately above K
- J lived in flat number 3.
- C was neighbouring J

Question 4 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) F b) G c) I d) A e) E

Question 5 Who among the following lived in flat 3 of floor 1?
a) I b) E c) A d) J e) K

Question 6 Who among the following lived 2nd to the right of C?
a) G b) F c) I
d) K e) Cannot be determined

Question 7 Who among the following person/ persons had the same flat and floor number?
I. G II. C III. A
a) Only I b) Only II c) Only III
d) Both I and III e) Both I and II

Question 8 Who lived exactly above B (same flat number)?
a) H b) G c) L
d) C e) Cannot be determined

Directions [9 to 12]: A shopping complex has nine shops P, Q, R, S, T, U, V, W and X. There are three types of products sold in the complex - cosmetics, sports, clothes. Each shop sells only one type of product. The complex has three floors, and on each floor, there are three shops from left to right. The floors are numbered as 1st from the bottom. Each floor has shops of at least two products. The shops across floors are one above the other.
- The topmost floor has two cosmetics shops among which one is Q. Q is towards left of a sports shop.
- S is second to left of W, which is a clothes shop.
- There is one shop in between U and V, where U is above V. V is not a sports shop.
- Both 1st and 2nd floor have no shop of cosmetics.

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• X is to immediate right of V, which is not on the same floor as T.
• P is a sports shop on second floor.
• T is not a cosmetics shop. R is not a sports shop and is at extreme left.

Question 9 Which product has maximum number of shops?
a) Clothes b) Sports c) Either (a) or (b)
d) All are equal in number e) Cosmetics

Question 10 V is the shop of _____.
a) Sports b) Clothes
c) Cosmetics d) Sports or cosmetics
e) cosmetics or clothes

Question 11 Which shop is located immediately above W?
a) T b) Clothes shop c) X
d) Q e) P

Question 12 How many clothes shops are there on 1st floor?
a) one b) none c) two
d) three e) cannot be determined

Directions [13 to 16]: Six different couples stayed in a building which had 3 floors numbered 1-3 from bottom to top. Each floor had 2 flats which were numbered 1 or 2. The flats to the left were numbered 1 and the flats to the right were numbered 2. Assume that the flats were built facing the North. The couples were from among the following 12 persons: A, B, C, D, E, F, G, H, I, J, K and L. Any husband wife stayed in the same flat. No flat was vacant.
• E, who was not married to B lived just above C's floor.
• C's flat number was equal to G's floor number. They lived on different floors
• G was married to L
• B was staying to the right of K
• Only 4 persons stayed below H
• H was neighbouring A's flat. H was not married to E or C
• A was staying just below I's floor but not necessarily in the same flat
• There was one floor between K and J, where K stayed above J
• I and J had the same flat number
• D was married to L's neighbour

Question 13 Who among the following lived on floor 1?
I. C II. L III. F
a) Only I b) Only II c) Only III
d) Both I and II e) Both II and III

Question 14 Who among the following was a couple?
a) D, I b) E, H c) D, J
d) J, F e) A, K

Question 15 Who among the following lived in flat numbered 2?
I. B II. F III. J
a) Only I b) Only II c) Both I and II
d) Both II and III e) All I, II and III

Question 16 Who among the following was not a couple, but stayed on the same floor?
a) G, F b) K, B c) I, L
d) D, A e) C, L

Directions [17 to 19]: Answer the questions based on the following information:
A four storey building where, lowest floor is numbered 1 and highest is numbered 4, has three sections on each floor named A, B and C from left to right. Each section has two flats. Left flat is numbered 1 and right is numbered 2. Twelve people live in the building namely L, M, Q, R, S, T, U, V, W, X, Y and Z and everyone is having one car. There is a parking place for the flat owners which is divided in four parts: 1P, 2P 3P and 4P, each part is respectively for the use for the persons living on floor 1, 2, 3 and 4. Capacity of each part is 6 cars maximum. Due to construction work 2P is closed currently and persons living on floor 2 share parking place with persons living on floor 4. There are few unoccupied flats in the building but all floors have minimum one resident.
Following is the additional information:
• L's car is parked in 1P.
• Floor 2 and 4 have equal number of people living. All of them live in 1-numbered flats.
• 1P has minimum cars parked which are only three in number.
• Only two people live in section C, both on odd-numbered floor and the flat.
• V and M's car is parked in the same part but they do not live in the same section
• W lives in section B of the third floor. Q is living in a 1-numbered flat.
• The floor with the maximum number of people residing has two more residents than the floor with second maximum residents.
• Y and one more person live in the 2-numbered flat in floor 3.
• S lives immediately above W in the 1- numbered flat.
• U and T live respectively in section B and C but not on floor 3.
• Z lives on a floor with maximum people in an even-numbered flat. He does not live in section A.
• X shares the same floor with S and having the same flat number
• R and V live in section A. R does not live on an even numbered floor.
• M and R live in same numbered flat

Question 17 Which of the following group of people have their car parked in 4P?
a) V, R, S b) V, M, X c) T, U, S
d) X, S, Q e) None of these

Question 18 Who among the following people lives in section C?
a) Q b) X c) T
d) Both (a) and (c) e) None of these

Question 19 Where does M live?

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a) floor-2, section- B, flat 1
b) floor-3, section- B, flat 2
c) floor-1, section- A, flat 1
d) floor-2, section- C, flat 2
e) None of these

Directions [20 to 22]: 16 lockers of a gym were arranged in 4 rows and 4 columns. Each locker had a unique code which was of the form of an alphabet followed by a number. The numbers were 1-16 and the alphabets were A- P. For example, if the locker is numbered 3 and the alphabet is F then the code for the locker will be F (3).

- Locker with alphabet I is 2nd to the right of locker with alphabet F and there are 2 lockers between F and 16-numbered locker.
- Only Locker numbered 16 is between locker that is numbered 10 and the locker with the alphabet E
- Locker having alphabet E is 2nd to the right of locker numbered 12 that is below the locker that has the alphabet P and there is 1 locker between 12-numbered locker and P.
- There is 1 locker between Lockers with alphabet P and K
- Only Locker with alphabet K is between Locker with alphabet O and locker that is numbered 2.
- Lockers with alphabets O and E are not beside each other horizontally.
- Sum of the numbers on lockers with alphabets A and I is equal to the number on locker with alphabet P.
- The number on locker with alphabet P is twice of the number on the locker with the alphabet E.
- There are 2 lockers between the lockers with numbers 2 and 11.
- Locker that is numbered 3 is to the immediate left of the locker that is numbered 14.
- Locker coded M4 is below locker with alphabet G and there is one locker between these two lockers and G is 2nd to the right of the locker with alphabet L.
- Locker numbered 5 is just above the locker with alphabet D. Locker J is 2nd to the left of locker with number 2. Lockers with number 15 and 2 are besides each other.
- The number on locker with alphabet D is thrice of the number on the locker with the alphabet L.
- Locker with alphabet C is to the immediate left of the locker that is numbered 6.
- Sum of the numbers on lockers with alphabets N and I is equal to the number on locker with alphabet B.

Question 20 Which of the following is a correct locker code?
a) F (3) b) P (16) c) G (6)
d) H (12) e) L (2)

Question 21 Four of the following bear a similar relationship and hence form a group, which of the following is not a part of that group?
a) L b) C c) N d) B e) J

Question 22 Which of the following alphabets is mentioned on the locker that has the number 15?
a) A b) C c) F d) B e) G

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ANSWER KEY

1- b	2- a	3- e	4- b	5- c	6- d	7- e	8- c	9- c
10- b	11- a	12- c	13- b	14- c	15- e	16- b	17- b	18- d
19- a	20- d	21- a	22- d					

DETAILED SOLUTIONS

Question 1 to 3

The arrangement is as follows:

	01	02	03
Third Floor			
Second Floor			
First Floor			

Now,

- E lives in a flat immediate right of B's flat.

Thus, B lives either in 01 or in 02

Also,

- B lives on the floor immediately above the floor on which G lives.

Thus, B lives either of second or on third floor.

- D lives in flat immediately below the B's flat.

We get,

Case I:

	01	02	03
Third Floor	B	E	
Second Floor	D		
First Floor			

Case II:

	01	02	03
Third Floor		B	E
Second Floor		D	
First Floor			

Case III:

	01	02	03
Third Floor			
Second Floor	B	E	
First Floor	D		

Case IV:

	01	02	03
Third Floor			
Second Floor		B	E
First Floor		D	

Since,

- D and C live on same floor but not in adjacent flats.

And,

- C lives on an odd numbered floor and in an odd numbered flat.

So, case I and II gets eliminated as C cannot be on 2nd floor.

Case IV gets eliminated as C and D are not in adjacent flats.

Also,

G lives on immediate below floor of B.

We get,

	01	02	03
Third Floor			
Second Floor	B	E	
First Floor	D	G	C

Now,

- Both the vacant flats are on consecutive floors and are one above the other.

Thus, flat no. 03, both of 3rd and 2nd floor are vacant.

- F and A live on same floor.
- A's flat is adjacent to a vacant flat.

Thus, final arrangement is:

	01	02	03
Third Floor	F	A	vacant
Second Floor	B	E	vacant
First Floor	D	G	C

Question 4 to 8

- G was 2nd to the right of L who lived above E and there is one floor between L and E. Thus, E must be on floor 1 and G was on floor 3.
- Difference between E's and L's flat number was 1
- There is one flat between E's and I's flat. They lived on the same floor

Case 1:

	1	2	3	4
3		L		G
2				
1	E		I	

Case 2:

	1	2	3	4
3		L		G
2				
1	I		E	

Case 3:

	1	2	3	4
3	L		G	
2				
1		E		I

- A was 2nd to the right of F who lived immediately below B
- H was 2nd to the left of D who was immediately above K

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Case 1:

	1	2	3	4
3	B	L		G
2	F	H	A	D
1	E		I	K

Case 1a:

	1	2	3	4
3	H	L	D	G
2		B	K	
1	E	F	I	A

Case 2:

	1	2	3	4
3	H	L	D	G
2		B	K	
1	I	F	E	A

Case 2a:

	1	2	3	4
3	B	L		G
2	F	H	A	D
1	I		E	K

Case 3:

	1	2	3	4
3	L	B	G	
2	H	F	D	A
1		E	K	I

Case 3a:

	1	2	3	4
3	L	H	G	D
2	B			K
1	F	E	A	I

• J lived in flat number 3 and C was neighbouring J. Thus, only case 3a is valid.

	1	2	3	4
3	L	H	G	D
2	B	C	J	K
1	F	E	A	I

Answer 4 – Apart from G others lived on floor 1

QUESTION 9 TO 12

• There is one shop in between U and V, where U is above V. V is not a sports shop.
This is only possible when V is on 1st floor.

Also,
• X is to immediate right of V
• And, both first and second floor have no shop of cosmetics.
Since, V is not a sports shop, neither is a cosmetics shop, so, V is a clothes shop.

CASE I:

3rd floor	U		
2nd floor			
1st floor	V (clothes)	X	

CASE II:

3rd floor		U	
2nd floor			
1st floor		V (clothes)	X

Now,
• The topmost floor has two cosmetics shops among which one is Q.
So, the top floor consists of Q and U. Q is a cosmetics shop.
Also,
• S is second to left of W, which is a clothes shop.
So, these two shops are on second floor as there is no other possibilty.
It is given that,
• P is a sports shop on second floor.
So, the possible cases become:

CASE I:

3rd floor	U		
2nd floor	S	P (sports)	W (clothes)
1st floor	V (clothes)	X	

CASE II:

3rd floor		U	
2nd floor	S	P (sports)	W (clothes)
1st floor		V (clothes)	X

Now,
• V is not on the same floor as T.
So, T is on top floor.
Thus, R is on 1st floor. And since, R is at extreme left end, so case I becomes invalid.
Since, R is not a sports shop, and there is no cosmetics on 1st floor, so R is clothes shop.
Also, each floor has shops of at least two products, so X is of sports.

3rd floor	Q/T	U	T/Q
2nd floor	S (sports/clothes)	P (sports)	W (clothes)
1st floor	R (clothes)	V (clothes)	X (sports)

Now,
• Q is a cosmetics shop and is Q is towards left of a sports shop.

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• T is not a cosmetics shop.
And, there are two cosmetics shops on top floor, so U must be the other cosmetic shop.
And, thus, T is a sports shop.
Final arrangement is:

3rd floor	Q (cosmetics)	U (cosmetics)	T (sports)
2nd floor	S (sports/clothes)	P (sports)	W (clothes)
1st floor	R (clothes)	V (clothes)	X (sports)

Answer 9 - If S is a sports shop then, there are maximum number of sports shop, else there will be maximum clothes shop.

Question 13 to 16

• B was staying to the right of K
• There was one floor between K and J, where K stayed above J

	1	2
3	K	B
2		
1	J	

Or

	1	2
3	K	B
2		
1		J

• E, who was not married to B lived just above C's floor.
• C's flat number was equal to G's floor number. They lived on different floors
• G was married to L

Case 1:

	1	2
3	K, E	B
2	C	
1	J	G, L

Case 1a:

	1	2
3	K	B
2	E	G, L
1	J	C

Case 1b:

	1	2
3	K	B
2		E
1	J, C	G, L

Case 2:

	1	2
3	K, E	B
2	C	
1	G, L	J

Case 2a:

	1	2
3	K	B
2	E	G, L
1		J, C

Case 2b:

	1	2
3	K	B
2	G, L	E
1		J, C

• Only 4 persons stayed below H. Hence, H was on floor 2.
• H was neighbouring A's flat. Hence, A was on floor 2
• H was not married to E or C
• A was staying just below I's floor. Hence, I was on floor 3
• I and J had the same flat number

Case 1:

	1	2
3	K, E	B
2	C	
1	J	G, L

Thus, the case is invalid as I cannot be in flat 1 of floor 3

Case 1a:

	1	2
3	K, I	B
2	E, A	G, L
1	J	C

Case is invalid as H cannot be placed on floor 2

Case 1b:

	1	2
3	K, I	B
2	H,	E, A
1	J, C	G, L

D was married to L's neighbour, Thus, D cannot be placed in this arrangement

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Case 2:

	1	2
3	K, E	B, I
2	C, A	H, F
1	G, L	J, D

Case 2a:

	1	2
3	K	B, I
2	E, D	G, L
1		J, C

As A cannot be placed in the arrangement, the case becomes invalid.

Case 2b:

	1	2
3	K	B, I
2	G, L	E, D
1		J, C

As A cannot be placed in the arrangement, the case becomes invalid.

Thus, the final arrangement is as follows:

	1	2
3	K, E	B, I
2	C, A	H, F
1	G, L	J, D

QUESTION 17 TO 19

Let us first understand the question by drawing the building design. Also, we build a table for the parking place.

• Each floor has three sections named A, B and C from left to right. Each section has two flats. Left flat is numbered 1 and right is numbered 2. So, the table is as shown below.

Floor	A		B		C	
4	1	2	1	2	1	2
3	1	2	1	2	1	2
2	1	2	1	2	1	2
1	1	2	1	2	1	2

2P is currently unavailable.

Parking place	Car owners
4P	
3P	
2P	Closed
1P	

• Floor 2 and 4 have equal number of people living and also floor 2 people share the same part as of floor 4

• 1P has minimum cars are parked which are only three in number. This means floor 1 has 3 people residing

• Section C has only two people residing in the odd numbered floors and the flat. Hence they are positioned at floor 3-flat 1 and floor 1 - flat 1 respectively.

• Also as we know that C section is vacant on the floor 2 and floor 4 and no of people living on both the 2nd and 4th floor are equal and all of them live in 1 numbered flat. Hence, we can deduce that floor 2 and floor 4 has 2 persons each.

• Hence floor 3 will have 5 persons.

Above is the only possible situation with given set of conditions.

So, we have 3 people on floor 1, 5 on floor 3 and 2 each on floor 2 and 4

• Now for parking place as 2P is closed there are 3 cars in 1P, 4(2+2) in 4P, and 5 in 3P

• Now the given conditions can be easily applied

• L's car is parked in 1P. This means L lives on floor 1

• U and T live respectively in section B and C but not on floor 3. Now as per the question, only two people live in section C, both on odd numbered floor and flat this means U and T live on floor 1 in section B and C respectively.

• Y lives in a 2-numbered flat along with only one other person in floor 3. This mean there are only two people living in 2-numbered flat including Y. As Z lives in an even numbered flat, the second person must be Z.

• So, we have:

Floor	A	B	C			
4	1	2	1	2	1	2
3	1	2	1	2	1	2
		Z/Y		Y/Z		
2	1	2	1	2	1	2
1	1	2	1	2	1	2
	L		U		T	

• W lives in section B of the third floor.

• S lives immediately above W in a 1- numbered flat

• X shares the same floor with S

Floor	A	B	C			
4	1	2	1	2	1	2
	X		S			
3	1	2	1	2	1	2
		Z/Y	W	Y/Z		
2	1	2	1	2	1	2
1	1	2	1	2	1	2
	L		U		T	

• V and M's car is parked in the same part. This means they live on the same floor.

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• R and V live in section A. R does not live on an even numbered floor.
• Z does not live in section A.
• M and R live in same numbered flat
• Only place left for Q is section C of floor 3 in a 1-numbered flat.
Hence the final arrangement is as follows

Floor	A		B		C	
4	1	2	1	2	1	2
	X		S			
3	1	2	1	2	1	2
	R	Y	W	Z	Q	
2	1	2	1	2	1	2
	V		M			
1	1	2	1	2	1	2
	L		U		T	

Parking place	Car owners
4P	X, S, V, M
3P	R, Y, W, Z, Q
2P	———
1P	L, U, T

Question 20 to 22

• Locker with alphabet I is 2nd to the right of locker with alphabet F and there are two lockers between F and 16-numbereed locker.
• Only Locker numbered 16 is between locker that is numbered 10 and the locker with the alphabet E
• Locker having alphabet E is 2nd to the right of locker numbered 12 that is below the locker that has the alphabet P and there is 1 locker between 12-numbered locker and P.
Considering the above statements, we get the arrangement:

	1	2	3	4
4		P		(10)
3	F		I	(16)
2		(12)		E
1				

Or

	1	2	3	4
4				
3		P		(10)
2	F		I	(16)
1		(12)		E

• There is 1 locker between Lockers with alphabet P and K
• Only Locker with alphabet K is between Locker with alphabet O and locker that is numbered 2
• There are 2 lockers between the lockers with numbers 2 and 11
• Lockers with alphabets O and E are not beside each other.
Case 1:

	1	2	3	4
4		P (11)		(10)
3	F	O	I	(16)
2		K (12)		E
1		(2)		

We know that the number on locker with alphabet P should twice of the number on the locker with the alphabet E. Thus, locker having P cannot have 11.
Case 2:

	1	2	3	4
4	(11)			(2)
3		P		K (10)
2	F		I	O (16)
1		(12)		E

Case 3:

		1	2	3	4
4				(11)	
3			P		(10)
2		F		I	(16)
1		O	K (12)	(2)	E

• The number on locker with alphabet P is twice of the number on the locker with the alphabet E. P can be 14, 8,6, 4 or 2. E can be 7, 4, 3, 2 or 1. Thus case 1 is invalid.
• Sum of the numbers on lockers with alphabets A and I is equal to the number on locker with alphabet P. Thus, P cannot be 2
• Locker coded M4 is below locker with alphabet G and there is one locker between these two lockers and G is 2nd to the right of the locker with alphabet L. As locker with M has number 4 thus, P cannot be 8 or 4.
Possible values for P=14 or 6 and E= 7 or 3.
• Locker that is numbered 3 is to the immediate left of the locker that is numbered 14. Thus, locker with E cannot have 3. Thus, P=14 and E=7.
• The number on locker with alphabet D is thrice of the number on the locker with the alphabet L. possible values can be (3, 1) (6, 2) (3, 9) (15, 5)
Case 3:

	1	2	3	4
4		G	(11)	
3		P (14)		(10)
2	F	M (4)	I	(16)
1	O	K (12)	(2)	E (7)

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Locker with alphabet G should have been 2nd to the right of the locker with alphabet L. Thus, the case 3 is invalid.

Only possible case is:

	1	2	3	4
4	(11)			(2)
3	L (3)	P (14)	G	K (10)
2	F		I	O (16)
1		(12)	M (4)	E (7)

D=3L

Thus D=9.Locker with alphabet J is 2nd to the left of locker with number 2 and locker with number 5 is above locker with alphabet D.

	1	2	3	4
4	(11)	J		(2)
3	L (3)	P (14)	G (8)	K (10)
2	F (5)		I	O (16)
1	D (9)	(12)	M (4)	E (7)

As G has 8, A and I 1, 13.

N+I=B

Numbers left 1, 2, 12, 13 and 15

If I=1 then

1+12=13 (not possible as if I=1 then A =13)

If I=13

13+2=15

Thus, I=13, A=1, B=15, N=2.

Locker with alphabet C is to the immediate left of locker with number 6.

	1	2	3	4
4	C (11)	J (6)		N (2)
3	L (3)	P (14)	G (8)	K (10)
2	F (5)		I (13)	O (16)
1	D (9)	H (12)	M (4)	E (7)

Locker numbered 15 and 2 are besides each other. Hence, the final arrangement is as follows:

	1	2	3	4
4	C (11)	J (6)	B (15)	N (2)
3	L (3)	P (14)	G (8)	K (10)
2	F (5)	A (1)	I (13)	O (16)
1	D (9)	H (12)	M (4)	E (7)

Answer 21: Apart from L, rest belongs to row-4.

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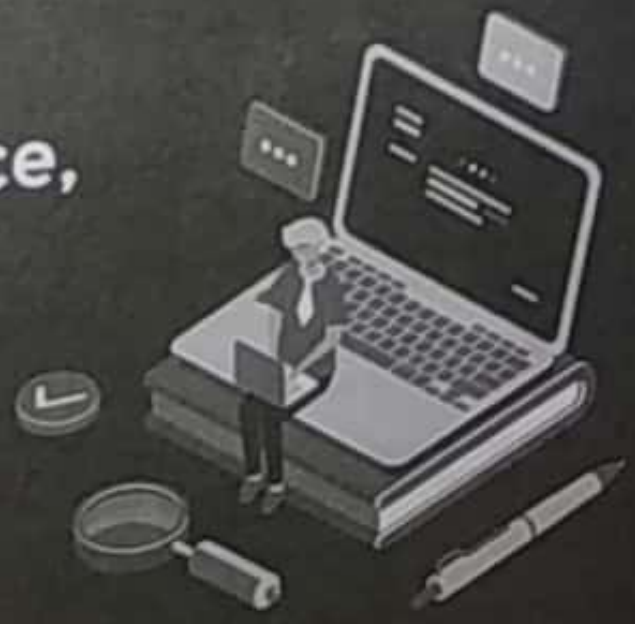

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CHAPTER 11 – ARRANGEMENTS WITH LENGTH PARAMETERS

This type of arrangement is a kind of linear arrangement, which is mostly asked in mains level examination.

Only variation in this is with respect to the variables. Here, along with the arrangement, we are given the capacities or lengths.

For example: There are 5 shelves from west to east and total length of all shelves taken together from west to east is 300 cm and, all the shelves are filled up to their full capacity. Also, it is given that each shelf has certain number of physics and maths book. Length of Physics and maths books is given to us.

Thus, from this, we will get the length of each shelf separately. The directions and hints are given in terms of lengths and number of items. Similarly, instead of length parameter we can have parameters such as weight, also, as we have done in the following solved examples.

Solved Examples

Directions [1 to 5]: An almirah had 5 drawers in a row which were numbered 1-5 and were differently coloured. The drawers were blue, green, silver, red and pink not necessarily in the same order. Each drawer had some pullovers and some blazers placed side by side, the number of which varied between 1-5. No two drawers had the same number of same type of garment. Every drawer had at least one garment of each type. The space occupied by 1 blazer was 9cm and that by 1 pullover was 7cm. The drawers were filled to their maximum capacity. Assume directions as per your left and right.

- The blue drawer was 3rd to the left of the silver drawer.
- There is one drawer in between Silver drawer and the drawer with 4 pullovers.
- Pink drawer was 23cm long and was neighbouring the drawer with 4 blazers
- The drawer with 1 blazer was 2nd to the left of the drawer with 5 pullovers
- Pullovers in the red drawer was equal to the blazers in the silver drawer
- Number of blazers in the blue drawer was equal to the number of pullovers in the green drawer
- The green drawer was not neighbouring the blue drawer.
- Number of blazers in the red drawer was equal to the number of pullovers in the blue drawer

Question 1 Which drawer was the longest?
Question 2 Which of the drawers had the least number of pullovers?
Question 3 How many blazers did the red drawer contain?
Question 4 What was the position of the green drawer with respect to the drawer with 4 blazers?
Question 5 Which drawer was 2nd to the left of the drawer with 1 pullover?
Solution:

Let us represent blazers with B and pullovers with P

- The blue drawer was 3rd to the left of the silver drawer.
- There is one drawer in between Silver drawer and the drawer with 4 pullovers.

Case 1	___	(4P+ ___	___	___	___
	1	2	3	4	5
	Blue			Silver	
Case 2	___	___	___	___	___
	1	2	3	4	5
		Blue			Silver

- The drawer with 1 blazer was 2nd to the left of the drawer with 5 pullovers

Case 1	___	(4P+ ___	+1B) ___	___	(5P+ ___
	1	2	3	4	5
	Blue			Silver	
Case 1a	___	(4P+1B) ___	___	(5P+ ___	___
	1	2	3	4	5
	Blue			Silver	
Case 1b	+1B) ___	(4P+ ___	(5P+ ___	___	___
	1	2	3	4	5
	Blue			Silver	
Case 2	___	___	(4P+1B) ___	___	(5P+ ___
	1	2	3	4	5
		Blue			Silver
Case 2a	___	+1B) ___	(4P+ ___	(5P+ ___	___
	1	2	3	4	5
		Blue			Silver

- Pink drawer was 23cm long and was neighbouring the drawer with 4 blazers. 23 will be a combination of (1B+2P). Thus, case 1a, 1b, 2 and 2a become invalid.

___	(4P+ ___	(2P+1B) ___	___	(5P+ ___
1	2	3	4	5
Blue		Pink	Silver	

- Pullovers in the red drawer was equal to the blazers in the silver drawer
- Number of blazers in the blue drawer was equal to the number of pullovers in the green drawer
- The green drawer was not neighbouring the blue drawer

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+5B)	(4P+	(2P+1B)	+4B)	(5P+
1	2	3	4	5
Blue	Red	Pink	Silver	Green

Number of blazers to be placed: 2, 3
Number of pullovers to be placed: 1, 3
• Number of blazers in the red drawer was equal to the number of pullovers in the blue drawer. Thus, red had 3 blazers and blue had 3 pullovers
Thus, the final arrangement will be as follows:

(3P+5B)	(4P+3B)	(2P+1B)	(1P+4B)	(5P+2B)
1	2	3	4	5
Blue 66cm	Red 55cm	Pink 23cm	Silver 43cm	Green 53cm

Answer 1: Blue drawer was the longest
Answer 2: The silver drawer had the least number of pullovers
Answer 3: The red drawer had 3 blazers
Answer 4: The green drawer was to the immediate right of the drawer with 4 blazers
Answer 5: The red drawer was 2nd to the left of the drawer with 1 pullover

Directions [6 to 10]: In a library, there are ten shelves numbered 1, 2, 3, 4.....,10, arranged in two linear rows one above the other such that in each row there are 5 shelves. The shelves are arranged in increasing order of the shelve number such that, in first row shelves 1 to 5 are arranged from left to right and in second row above it, shelves 6 to 10 are arranged from left to right. Each shelf contains certain number of Physics books and maths book. There is at least 1 book each of physics and math in each shelf. Length of 1 physics book is 12 cm and that of 1 maths book is 16 cm. The shelves are filled with the books length wise up to their maximum capacity. Each shelf belongs to a different student.
U's shelf is 88 cm long and has less number of physics books than R's shelf. Shelf 2 contains same number of maths books as the number of physics book in shelf 9. Y's shelf is second to left of the shelf that is just above X's shelf and both these X's and Y's shelves contain equal number of both physics and maths books. T's shelf, which contain more than 1 math book, is just below the one which contains 3 books. X's shelf, which is not adjacent to T's shelf, is to immediate left of S's shelf. P's and V's shelves are in same row at maximum possible distance and, contain same number of physics books. V's and S's shelves are not in the same row. Length of X's shelf is 84 cm which is 4 cm less than the shelf just above it, which is not U's shelf. The length of shelf to immediate left of R's shelf is same as that of R's and, only these two shelves have the same length in case of adjacent shelves. One of the shelves at extreme right ends, have 8 physics books and, shelves at these ends contain more than 2 maths books. P's and R's shelves contain same number of maths books. The shelves adjacent to P's and V's shelves contain at least 3 physics books. The length of shelf 6 is 20 cm less than of shelf 3. Total length of shelves in second row is 404 cm which is 84 cm less than of first row. Total number of physics book taken in all the shelves in first row is 18. W's shelf is towards left of Q's and both contain same number of physics books.

Question 6 To whom does the shelf 1 belongs?
Question 7 How many total maths books are there taken in all the shelves together?
Question 8 What is the total length of Q's, Y's and P's shelves?
Question 9 If the shelves are filled up to their maximum capacity and, 1 book of physics and 1 book of maths is taken out from V's shelf, then how much space will be occupied in that shelf after this?
Question 10 How many total books does S's shelf contain?
Solution:
Physics book - Ph and Maths book - M
• Y's shelf is second to left of the shelf that is just above X's shelf and both these X's and Y's shelves contain equal number of both physics and maths books.
• X's shelf, which is not adjacent to T's shelf, is to immediate left of S's shelf.
Also,
• Length of X's shelf is 84 cm which is 4 cm less than the shelf just above it.
84 cm is: 3 Ph + 3 M
Shelf just above it = 84+4 = 88 cm
88 cm is: Either (2 Ph+4 M) or (6 Ph + 1 M)
We get,

	1	2	3	4	5	6	7	8	9	10
Case 1: Row 2							Y	6Ph+1M or 2Ph+4M		
Case 1: Row 1			3Ph+3M	X	S					
Case 2: Row 2							Y		6Ph+1M or 2Ph+4M	
Case 2: Row 1			3Ph+3M	X	S					

• P's and V's shelves are in same row at maximum possible distance and, contain same number of physics books. V is not in the same row as S' shelf.
Thus,
P and V are in row 2 at extreme ends.
Thus, case I becomes invalid as there is no possible place for P and V.
Also,
• U's shelf is 88 cm long and U is not above X's.
We know,
• The length of shelf to immediate left of R's shelf is same as that of R's and, only these two shelves have the same length.
So, R's and U's shelf lengths are same. And, shelf just above X is 88 cm. So, this shelf is R and the shelf immediate left of it is U.
We get,

	1	2	3	4	5	6	7	8	9	10
Row 2						P/V	Y	6Ph+1M or 2Ph+4M U	6Ph+1M or 2Ph+4M R	V/P
Row 1			3Ph+3M	X	S					

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• The shelves adjacent to P's and V's shelves contain at least 3 physics books.
Thus, shelf 9 contains 6 Ph+1M.
• Shelf 2 contains same number of maths books as the number of physics book in shelf 9.
Thus, shelf 2 contains 6 M.
We get,

				6Ph+1M or 2Ph+4M						
Row 2		6 P/V	7	Y	8	U	9	R	10 V/P	
Row 1	1		2	_Ph+6M	3		4	3Ph+3M X	5	S

Now,
• P's and R's shelves contain same number of maths books.
Thus, P contains 1 M.
• Shelves at extreme right ends, contain more than 2 maths books.
Thus, P cannot be at extreme right end. V is thus, at extreme right and P is at extreme left.
We get,

				6Ph+1M or 2Ph+4M						
Row 2		6 P	7	Y	8	U	9	R	10 V	
Row 1	1		2	_Ph+6M	3		4	3Ph+3M X	5	S

• T's shelf, which contain more than 1 math book, is just below the one which contains 3 books.
Also,
• T's shelf is not adjacent X's shelf.
So, we get that T's shelf is at extreme left end of row 1.
Now, the shelf just above T's, contain 3 books, thus, P's shelf contains 2 Physics books.
Also,
• P's and V's shelves contain same number of physics books.
Thus, V also contains 2 Ph.
Since,
• One of the shelves at extreme right ends, have 8 physics books.
We get,

				6Ph+1M or 2Ph+4M						
Row 2		2Ph+1M 6 P	7	Y	8	U	9	6Ph+1M R	10 2Ph+_M V	
Row 1	1	T	2	_Ph+6M	3		4	3Ph+3M X	5	8Ph+_M S

• The length of shelf 6 is 20 cm less than of shelf 3.
Shelf 6 = 2*12+1*16 = 40 cm
Thus, shelf 3 = 40+20 = 60 cm
So possible case for 60 cm is: (1 Ph + 3 M)
And,
• W's shelf is towards left of Q's and both contain same number of physics books.
So, W → shelf 2 and Q → shelf 3
Number of physics book in shelf 3 i.e.in Q's shelf = 1 = no. of physics book in W's shelf 2
We get,

				88cm 6Ph+1m or 2Ph+4m						
Row 2		40cm 2Ph+1M 6 P	7	Y	8	U	9	88cm 6Ph+1m R	10 2Ph+_M V	
Row 1	1	T	2	108cm 1Ph+6m W	3	60cm 1Ph+3M Q	4	84cm 3Ph+3M X	5	8Ph+_M S

Now,
• Total number of physics book taken in all the shelves in first row is 18.
Thus, T's shelf contains = 18 - (1+1+3+8) = 5 Physics book
Total length of row 1 = 404+84 = 488 cm
So,
Length of missing maths book in row 1 = 488 - (5*12 + 108 + 60 + 84 + 8*12)
= 80 cm
Thus, 80 cm = 80/16 = 5 maths books, so possible maths book combination for shelf 1 and shelf 5 respectively can be: (1, 4); (4, 1); (2, 3); (3, 2)
Since,
• Shelves at extreme right ends, contain more than 2 maths books.
And,
• T's shelf contains more than 1 math book
Thus, shelf 1 = 2 M and shelf 5 = 3 M
Also,
• X's and Y's shelves contain equal number of both physics and maths books.
• U's shelf has less number of physics book than R's shelf so, U has 2Ph+4M
We get,

Row 2		40cm 2Ph+1M 6 P	7	84cm 3Ph+3M Y	8	88cm 2Ph+4M U	9	88cm 6Ph+1M R	10 2Ph+_M V	
Row 1	1	92cm 5Ph+2M T	2	108cm 1Ph+6M W	3	60cm 1Ph+3M Q	4	84cm 3Ph+3M X	5	144cm 8Ph+3M S

• Total length of shelves in second row is 404 cm.
Length of maths books in shelf 10 = 404 - (40 + 84+88+88+2*12) = 80
So no of maths book in shelf 10 = 80/16 = 5
Final arrangement is as follows:

Row 2		40cm 2Ph+1M 6 P	7	84cm 3Ph+3M Y	8	88cm 2Ph+4M U	9	88cm 6Ph+1M R	10 104cm 2Ph+5M V	
Row 1	1	92cm 5Ph+2M T	2	108cm 1Ph+6M W	3	60cm 1Ph+3M Q	4	84cm 3Ph+3M X	5	144cm 8Ph+3M S

Answer 6: Shelf 1 belongs to T.
Answer 7: Total math books = 2 + 6 + 3 + 3 + 3 + 1 + 3 + 4 + 1 + 5 = 31
Answer 8: Total length of given three's shelves = 60+84+40 = 184 cm
Answer 9: V's shelf = 2Ph+5M = 104 cm
If 1 Ph and 1 M is taken out, then 12+16 = 28 cm will become empty.
Occupied space = 104 - 28 = 76 cm
Answer 10: S's shelf = 8 Ph+3M = 11 books

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Practice Yourself

Directions [1 to 4]: Five SUV's of different model Mahindra, Lamborghini, Lexus, Toyota and Audi were parked in a row facing the north. The cars were numbered 1-5 from left to right. Each car carried few men and few women; number of who ranged between 1-5 such that no two cars carried the same number of same gender persons. Each car had at least one man and one woman. The weight of each man was 70kg and the weight of each woman was 50kg. Assume that the weights carried by the car was just because of its passengers.

- Toyota was 3rd to the right of the SUV carrying 2 females
- Number of females in the Toyota was equal to the number of males in the Lamborghini
- Car 3 had 2 males and the number of passengers it carried was equal to the number of passengers in the Lexus
- Audi had 4 passengers in total where number of males in it was more than number of females
- The car with 5 males was 2nd to the left of the car carrying a weight of 430kg
- Audi was 2nd to the left of the car with 5 females.

Question 1 What was the position of Audi with the car carrying 2 males?
a) Immediate left b) Immediate right
c) 2nd to the left d) 2nd to the right
e) 3rd to the left

Question 2 How many females were there in the Mahindra SUV?
a) 1 b) 2 c) 3 d) 4 e) 5

Question 3 How many passengers were there in the Toyota SUV?
a) 2 b) 3 c) 5 d) 7 e) 9

Question 4 What was the difference between the total weights of the passengers carried by Lamborghini and Mahindra?
a) 20kg b) 40kg c) 50kg
d) 70kg e) 90kg

Directions [5 to 7]: 7 baskets were arranged in a row facing north. Baskets were numbered 1-7 from left to right. Each basket had different number of chocolates and also different number of toffees. Their number varied between 1-7 not necessarily in the same order. Each basket had at least one item of each kind. The baskets were wrapped in different coloured wrapping papers red, green, yellow, white, blue, pink and purple not necessarily in the same order. calories present in each chocolate was 11 and each toffee contained 7 calories.

- The purple basket's serial number was thrice as that of the serial number of the basket which had 7 toffees
- Purple basket was to the immediate left of the blue basket
- Basket number 3 had 5 chocolates and was neighbouring the yellow basket
- There are 2 baskets in between Yellow basket and the basket with 1 chocolate.
- Only green basket had the same number of chocolates and toffees
- Number of chocolates in the red basket was equal to the number of toffees in the blue basket
- Pink basket had 105 calories in total
- Basket number 6 had 51 calories in total
- Green basket was at either of the extreme ends
- Blue basket had 6 chocolates
- White basket had twice the number of toffees as that in the green basket.

Question 5 Which of the following basket had 3 toffees?
a) Yellow b) Pink c) Red
d) Green e) White

Question 6 What is the position of the purple basket with respect to the red basket?
a) Immediate right b) Second to the right
c) Second to the left d) Third to the left
e) Third to the right

Question 7 What is the difference between the number of calories provided by the items in the green and yellow basket?
a) 14 calories b) 15 calories
c) 17 calories d) 20 calories
e) 23 calories

Directions [8 to 10]: Six private jets were standing in a straight row at the airport. They were on different runways and were facing towards North. They were destined towards different places Lucknow, Kolkata, Hyderabad, Mumbai, Delhi and Jaipur not necessarily in the same order. The jets were of different colours red, green, white, blue, yellow and black not necessarily in the same order. There were different number of male and female passengers in the jets which varied between 1-6. Each jet had at least one male and one female passenger. The weight of each male passenger was 60 kg and the weight of each female passenger was 40kg. Assume that the weight carried by the jets is just because of the passengers and that there were no crew members or pilots in the jet.

- White jet was 3rd to the left of the jet that was destined towards Jaipur
- White jet's neighbouring jet was carrying a weight of 280kg
- Jet to Delhi had 5 females and was 3rd to the left of the green jet
- Number of female passengers in the jet to Lucknow was twice as that of the number of males in the jet towards Kolkata

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- Red jet was neighbouring the jet with 2 females and the yellow jet
- Blue jet's neighbouring jet was destined towards Hyderabad which was carrying a weight of 340kg
- Yellow jet has more than 2 female passengers
- Number of females in the red jet was twice as that of the number of males in it
- Jet towards Hyderabad had as many females as the number of males in the green jet
- Jet to Jaipur had equal number of male and female passengers
- Jet towards Kolkata was 3rd to the right of the jet with 4 males
- No jet carried a weight more than 500kg
- Jet to Lucknow was not at either of the extreme ends.

Question 8 Which of the following coloured jets were at the extreme ends?
a) Blue, Black b) Black, Red
c) Yellow, Black d) Yellow, Blue
e) Yellow, Red

Question 9 Which of the following coloured jet was 2nd to the left of the jet that had 5 male passengers?
a) White b) Green c) Red
d) Yellow e) Blue

Question 10 What was the difference between the weights carried by the jets destined to Lucknow and Mumbai?
a) 100kg b) 120kg c) 160kg
d) 200kg e) 240kg

Directions [11 to 14]: In an almirah, there are eight shelves numbered 1, 2, 3, 4....,8, arranged in two linear rows one above the other such that in each row there are 4 shelves. The shelves are arranged in increasing order of the shelve number such that, in first row shelves 1 to 4 are arranged from left to right and in second row above it, shelves 5 to 8 are arranged from left to right. Each shelf contains board of at least one Ludo and one chess, where, length of 1 Ludo is 10 cm and length of 1 chess is 15 cm. The shelves are filled up to their maximum capacity and each shelve is of different colour. Pink colour shelf is to immediate left of white shelf, which is an odd numbered shelf. Length of shelf 5 is 70 cm. Blue shelf contains one Ludo less than shelf 6. Number of Ludo in black shelf are equal to number of Chess in white shelf. Number of chess in grey shelf are half the number of chess in red shelf, which is just below the shelf which is to immediate right of green shelf. Yellow shelf, that contains 1 Ludo, is towards immediate left of black shelf, whose length is 90 cm. The shelf which is to immediate left of pink shelf has length 65 cm. Green shelf contains one Ludo less than pink shelf and number of chess in it is double the number of Ludo in it. Grey shelf is not in the same row as of black shelf. Length of shelf 3 is in multiples of 10. The length of shelves at extreme right ends of both the rows is more than 100 cm. Pink shelf contains equal number of Ludo and chess, with length 30 cm more than that of yellow shelf. Total boards in shelf 8 are one more than total boards in shelf 4. Number of Ludo in shelf 3 is one more than that in shelf 6. Total length of all shelves in row 1 is 435 cm and that of all shelves in row 2 is 390 cm.

Question 11 What is the total length of blue and white shelves?
a) 290 cm b) 180 cm c) 160 cm
d) 220 cm e) 270 cm

Question 12 How many chess boards does the shelf immediate left to the pink shelf contains?
a) 3 b) 2 c) 1 d) 4 e) 6

Question 13 Which of the following coloured shelves, contain more than 3 Ludo?
I: Red II: Grey
III: Black IV: Blue
a) Both I and III b) Both III and IV
c) I, II and III d) All the given
e) None of the given

Question 14 Find the odd-one out.
a) Black, 2 b) Grey, 3 c) Red, 6
d) White, 7 e) Yellow, 4

Directions [15 to 18]: Ten persons A, B, C, D, E, F, G, H, I & J are sitting in 2 parallel rows. five of them are sitting in row 2 facing south direction while five of them are sitting in row 1 facing north direction in such a way that the distance between two adjacent neighbours is constant. In giving sitting arrangement each member of row faces a member of another row. They all bought different number of pants & shirts (some might have equal also). Cost of each shirt is Rs 1200 & cost of each pants is Rs 1800. Each person bought at least 1 pant & 1 shirt. All people spent money on buying pants & shirts only. No two persons spent equal amount. No one bought more than total 7 articles. A who spent Rs 7,200 sits 3rd to left of C who faces immediate neighbour of B who bought 2 pants. I doesn't sit opposite to person who bought 2 pants. One of B's immediate neighbour bought 5 pants. Person who spent Rs 9000 sits opposite to person who spent Rs 8,400. E faces south & bought 5 pants. J faces G. Neither G nor J sit immediate right of A. Person who sits 3rd to left of G spent Rs 5,400. Immediate neighbour of person who spent Rs 5400, spent Rs 9000. Person who spent Rs 6000 sits opposite to the person who bought 4 pants & 2 shirts. Total amount spent by both the immediate neighbours of H's is Rs 15,000. Person who spent Rs 9600 is not adjacent to person who spent Rs 9000. Only 1 person spent more than I who bought 1 shirt. Number of pants bought by J & F is equal. Difference in number of pants bought by H & F is 1. D bought 3 shirts. Number of pants bought by D is equal to number of pants bought by G. Amount spent by G is not the least. Number of pants bought by A & C is equal. Number of Pants

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bought by G is half of number of shirts bought by C.

Question 15 Four of the following are similar in some way. Find the odd one.
a) B b) I c) H d) F e) C

Question 16 How many shirts were bought by A?
a) 1 b) 2 c) 3 d) 4 e) None of these

Question 17 Who is facing the person who sits immediate right of person who spent Rs 9600?
a) F b) C c) D d) H e) I

Question 18 Which of the following statement is false?
a) H spent Rs 9600
b) G bought only 1 pants
c) F bought equal number of pants & shirts
d) Number of clothes bought by A is less than number of clothes bought by person who spent Rs 7800.
e) All are true

ANSWER KEY

1- c	2- e	3- c	4- b	5- d	6- e	7- c	8- d	9- a
10- c	11- e	12- a	13- b	14- d	15- e	16- c	17- a	18- e

DETAILED SOLUTIONS

QUESTION 1 TO 4

Let us represent males with M and females with F

• Toyota was 3rd to the right of the SUV carrying 2 females

• Car 3 had 2 males and the number of passengers it carried was equal to the number of passengers in the Lexus

Case 1 ___ (+2F) (2M+ ___ ___
1 2 3 4 5 Toyota

Case 2 (+2F) ___ (2M+ ___ ___
1 2 3 4 Toyota 5

• The car with 5 males was 2nd to the left of the car carrying a weight of 430kg. 430kg will be a combination of (4M+3F)

Case 1 ___ (5M+2F) (2M+ (4M+3F) ___
1 2 3 4 5 Toyota

Case 2 +2F) (5M+ (2M+ (4M+3F) ___
1 2 3 4 Toyota 5

• Audi had 4 passengers in total where number of males in it was more than number of females. Only possibility is (3M+1F).

• Audi was 2nd to the left of the car with 5 females. Thus, case 2 becomes invalid.

(2M+5F)
(3M+1F)(5M+2F) ___ (4M+3F) ___
1 2 3 4 5
Audi Toyota

• Number of females in the Toyota was equal to the number of males in the Lamborghini. The combination for Toyota will be (1M+4F). Thus, Lamborghini had 4 males.

• Car 3 had 2 males and the number of passengers it carried was equal to the number of passengers in the Lexus. Thus, car 2 is Lexus.

(2M+5F)
(3M+1F)(5M+2F) ___ (4M+3F)(1M+4F)
1 2 3 4 5
Audi Lexus Mahindra Lamborghini Toyota

(260kg)(450kg)(390kg)(430kg)(270kg)

QUESTION 5 TO 7

• The purple basket's serial number was thrice as that of the serial number of the basket which had 7 toffees.

• Purple basket was to the immediate left of the blue basket

• Blue basket had 6 chocolates

Case 1:

Colour			Purple	Blue			
S. No.	1	2	3	4	5	6	7
(C+T) = Chocolates + Toffies	+7T			6C+			
Calories							

Or

Case 2:

Colour						Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)		+7T					6C+
Calories							

• Basket number 3 had 5 chocolates and was neighbouring the yellow basket

• There are 2 baskets in between Yellow basket and the basket with 1 chocolate.

• Basket number 6 had 51 calories in total. 51 calories must be a combination of (4C+1T)

• Green basket was at either of the extreme ends

Case 1:

Colour	Green/	Yellow	Purple	Blue			Green/
S. No.	1	2	3	4	5	6	7
(C+T)	+7T		5C+	6C+	1C+	4C+1T	
Calories							

Or

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Case 2(a):

Colour	Green	Yellow				Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)		+7T	5C+		1C+	4C+1T	6C+
Calories							

Case 2(b):

Colour	Green			Yellow		Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)	1C+1T	+7T	5C+			4C+1T	6C+
Calories							

Case 2(b) is invalid as Green and Purple basket cannot have same number of Toffies.

- Pink basket had 105 calories in total. Thus, a combination of (7C+4T)
- Only green basket had the same number of chocolates and toffees

Case 1:

Colour	Green	Yellow	Purple	Blue			Pink
S. No.	1	2	3	4	5	6	7
(C+T)	7C+7T		5C+	6C+	1C+	4C+1T	7C+4T
Calories							

The case is invalid as the green basket and pink basket cannot have the same number of chocolates.

Case 2(a):

Colour	Green	Yellow		Pink		Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)		+7T	5C+	7C+4T	1C+	4C+1T	6C+
Calories							

- Number of chocolates in the red basket was equal to the number of toffees in the blue basket. Thus, basket 5 cannot be the red basket as the blue basket cannot have 1 toffee. Thus, basket 3 is the red basket and basket 5 is the white basket.

Colour	Green	Yellow	Red	Pink	White	Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)		+7T	5C+	7C+4T	1C+	4C+1T	6C+
Calories							

- White basket had twice the number of toffees as that in the green basket. Green basket has 3 toffees and 3 chocolates and white basket had 6 toffees.

Colour	Green	Yellow	Red	Pink	White	Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)	3C+3T	2C+7T	5C+	7C+4T	1C+6T	4C+1T	6C+5T
Calories							

Only green basket had the same number of chocolates and toffees thus, red basket has 2 toffees and blue basket has 5 toffees

Colour	Green	Yellow	Red	Pink	White	Purple	Blue
S. No.	1	2	3	4	5	6	7
(C+T)	3C+3T	2C+7T	5C+2T	7C+4T	1C+6T	4C+1T	6C+5T
Calories	54	71	69	105	53	51	101

Question 8 to 10

- Blue jet's neighbouring jet was destined towards Hyderabad which was carrying a weight of 340kg. 340kg can be a combination of 3M+4F or 5M+1F.
- Jet towards Hyderabad had as many females as the number of males in the green jet. Thus, green jet had 4 or 1 male passenger
- Jet to Delhi had 5 females and was 3rd to the left of the green jet
- Jet towards Kolkata was 3rd to the right of the jet with 4 males. Thus, the green jet will not have 4 male passengers else we will have 7 jets. Thus, the green jet had 1 male passenger and the jet to Hyderabad had 5M+1F.

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Delhi			
+5F			1M+
			Green

• White jet was 3rd to the left of the jet that was destined towards Jaipur
• White jet's neighbouring jet was carrying a weight of 280kg. 280kg can be a combination of 2M+4F or 4M+1F. It cannot have 1 female passenger as 1F had a combination with 5 males. Thus, white jet's neighbouring jet had 2M+4F passengers.
• Jet to Jaipur had equal numbe: of male and female passengers. Only possible combinations can be 3M+3F or 6M+6F. With the combination of 6M+6F the weight will be 600kg, hence the jet had 3M+3F passengers.
• Yellow jet has more than 2 female passengers
• Red jet was neighbouring the jet with 2 females and the yellow jet and the number of females in the red jet was twice as that of the number of males in it. Possible cases will be (2M+4F) or (3M+6F). The jet to Jaipur had 3M+3F thus, the combination in the red jet would be 2M+4F. Thus, red jet was neighbouring the white jet.

			Jaipur
+2F	2M+4F		3M+3F
White	Red	Yellow	

Or

					Jaipur
	2M+4F	+2F			3M+3F
Yellow	Red	White			

• Jet to Delhi had 5 females and was 3rd to the left of the green jet
• Jet to Hyderabad had 5M+1F.
• Jet towards Kolkata was 3rd to the right of the jet with 4 males.

		Delhi	Jaipur	Hyderabad	Kolkata
+2F	2M+4F	4M+5F	3M+3F	5M+1F	1M+
White	Red	Yellow			Green

Or

Delhi			Kolkata	Hyderabad	Jaipur
4M+5F	2M+4F	+2F	1M+	5M+1F	3M+3F
Yellow	Red	White	Green		

• Number of female passengers in the jet to Lucknow was twice as that of the number of males in the jet towards Kolkata, thus, the jet to Lucknow had 2 female passengers.

Lucknow		Delhi	Jaipur	Hyderabad	Kolkata
+2F	2M+4F	4M+5F	3M+3F	5M+1F	1M+
White	Red	Yellow			Green

Jet to Lucknow was not at either of the extreme ends, thus, the case becomes invalid.
Or

Delhi	Mumbai	Lucknow	Kolkata	Hyderabad	Jaipur
4M+5F	2M+4F	+2F	1M+	5M+1F	3M+3F
Yellow	Red	White	Green		

• Blue jet's neighbouring jet was destined towards Hyderabad
Thus, the final arrangement is as follows:

Delhi	Mumbai	Lucknow	Kolkata	Hyderabad	Jaipur
4M+5F	2M+4F	6M+2F	1M+6F	5M+1F	3M+3F
Yellow	Red	White	Green	Black	Blue
440kg	280kg	440kg	300kg	340kg	300kg

QUESTION 11 TO 14

1 Ludo (L)= 10 cm and 1 chess (C)= 15 cm
We have,
• Red shelf is just below the shelf which is to immediate right of green shelf.
• Length of shelf 5 is 70 cm.
So, possible cases for 70 cm can be: (1L+4C) or (4L+2C)
Also,
• Pink colour shelf is to immediate left of white shelf, which is an odd numbered shelf.
We get two cases:

Row 2:	1L+4C or 4L+2C 5-Green	6-Pink	7-White	8
Row 1:	1	2-Red	3	4

Row 2:	1L+4C or 4L+2C 5	6	7-Green	8
Row 1:	1	2-Pink	3-White	4-Red

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• Yellow shelf, that contains 1 Ludo, is towards immediate left of black shelf, whose length is 90 cm.
90 cm length means → (3L + 4C) or (6L + 2C)
• Grey shelf is not in the same row as of black shelf.
• One shelf is blue.
We get,

	1	2	3	4
Row 2:	1L+4C or 4L+2C			
	5-Green	6-Pink	7-White	8-Grey
Row 1:			1L+_C	3L+4C or 6L+2C
	1-Blue	2-Red	3-Yellow	4-Black

	1	2	3	4
Row 2:	1L+4C	3L+4C or 6L+2C		
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:				
	1-Grey	2-Pink	3-White	4-Red

Since,
• The length of shelves at extreme right ends of both the rows is more than 100 cm.
So, in case the length of black shelf that is at extreme right end is 90 cm which is less than 100 cm. Thus, case I becomes invalid.
Now,
• The shelf which is to immediate left of pink shelf has length 65 cm.
65 cm means → (5L + 1C) or (2L + 3C)
We get,

	1	2	3	4
Row 2:	1L+4C	3L+4C or 6L+2C		
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	5L+1C or 2L+3C			
	1-Grey	2-Pink	3-White	4-Red

• Pink shelf contains equal number of Ludo and chess, with length 30 cm more than that of yellow shelf.
Yellow shelf = shelf 5 = 70 cm
∴ Pink shelf = 70+30=100 cm
Let no. of ludo and chess =n
Then, n*10+n*15 = 100 → n = 4
So, in pink shelf there are (4L+4C)
Also,
• Number of chess in grey shelf are half the number of chess in red shelf.
We get,

	1	2	3	4
Row 2:	1L+4C	3L+4C or 6L+2C		
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	5L+1C	4L+4C		L+2C
	1-Grey	2-Pink	3-White	4-Red

	1	2	3	4
Row 2:	1L+4C	3L+4C or 6L+2C		
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	2L+3C	4L+4C		L+6C
	1-Grey	2-Pink	3-White	4-Red

• Number of Ludo in black shelf are equal to number of Chess in white shelf.
If, black shelf has 3L, then number of chess in white shelf = 3
If, black shelf has 6L, then number of chess in white shelf = 6
Since,
White shelf = shelf 3
And,
• Length of shelf 3 is in multiples of 10.
So, the number of chess cannot be a odd number, it should be an even number.
Thus, number of chess in white shelf = 6 and thus, number of Ludo in black shelf = 6
We get,

	1	2	3	4
Row 2:	1L+4C	6L+2C		
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	5L+1C	4L+4C	L+6C	L+2C
	1-Grey	2-Pink	3-White	4-Red

	1	2	3	4
Row 2:	1L+4C	6L+2C		
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	2L+3C	4L+4C	L+6C	L+6C
	1-Grey	2-Pink	3-White	4-Red

Now,
• Blue shelf contains one Ludo less than shelf 6.
Blue shelf = 6 - 1 = 5L
And,
• Green shelf contains one Ludo less than pink shelf and number of chess in it is double the number of Ludo in it.
So, Ludo in green shelf = 4 - 1 = 3L
Chess in green shelf = 3*2 = 6C
And,
• Number of Ludo in shelf 3 is one more than that in shelf 6.
Thus, number of Ludo in shelf 3 = 6+1=7
We get,

	1	2	3	4
Row 2:	1L+4C	6L+2C	3L+6C	5L+_C
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	5L+1C	4L+4C	7L+6C	L+2C
	1-Grey	2-Pink	3-White	4-Red

	1	2	3	4
Row 2:	1L+4C	6L+2C	3L+6C	5L+_C
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	2L+3C	4L+4C	7L+6C	L+6C
	1-Grey	2-Pink	3-White	4-Red

Now,

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• Total length of all shelves in row 1 is 435 cm and that of all shelves in row 2 is 390 cm.
Length of chess in blue shelf = 390 - ((1*10+4*15) + (6*10+2*15) + (3*10+6*15) + 5*10) = 60 cm
No of chess in blue shelf = 60/15 = 4C

Now,
• Total boards in shelf 8 are one more than total boards in shelf 4.
Total boards in shelf 8 = 5+4=9
Thus, total boards in shelf 4 = 9 - 1 = 8
In case I:
number of Ludo in shelf 4 = 8 - 2 = 6L
In case II:
Number of Ludo in shelf 4 = 8 - 6 = 2L
We get,

Row 2:	1L+4C	6L+2C	3L+6C	5L+4C
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	5L+1C	4L+4C	7L+6C	6L+2C
	1-Grey	2-Pink	3-White	4-Red
Row 2:	1L+4C	6L+2C	3L+6C	5L+4C
	5-Yellow	6-Black	7-Green	8-Blue
Row 1:	2L+3C	4L+4C	7L+6C	2L+6C
	1-Grey	2-Pink	3-White	4-Red

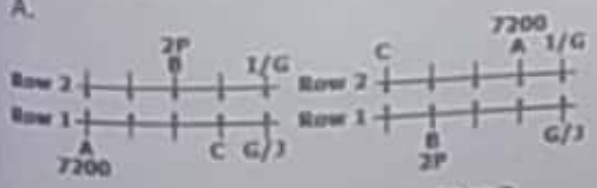
Since, length of shelves in row 1 = 435 cm
Thus,
Case 1 is eliminated as in this case length of all shelves in row 1 = 415 cm
Final arrangement is as follows:

	70cm	90cm	120cm	110cm
Row 2:	1L+4C	6L+2C	3L+6C	5L+4C
	5-Yellow	6-Black	7-Green	8-Blue
	65cm	100cm	160cm	110cm
Row 1:	2L+3C	4L+4C	7L+6C	2L+6C
	1-Grey	2-Pink	3-White	4-Red

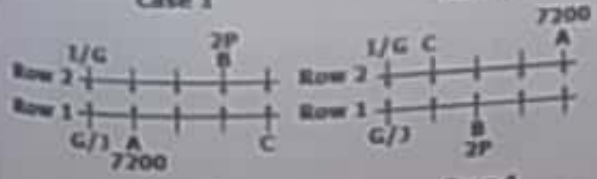
Answer 14 – All except option (d) are given with correct number of chess board they contain.

Question 15 to 18

• A who spent Rs 7,200 sits 3rd to left of C who faces immediate neighbour of B who bought 2 pants.
• One of B's immediate neighbour bought 5 pants.
• J faces G. Neither G nor J sit immediate right of A.

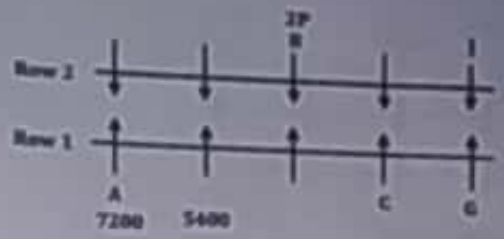


Case 1 Case 3

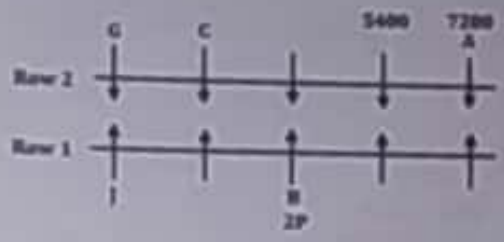


Case 2 Case 4

• Person who sits 3rd to left of G spent Rs 5,400.
• Each person bought atleast 1 pants & 1 shirts.
• All people spent money on buying pants & shirts only.
So case 2 & case 3 are eliminated.

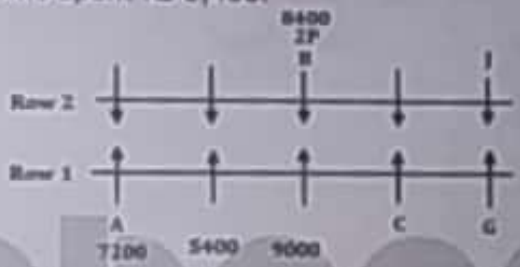


Case 1

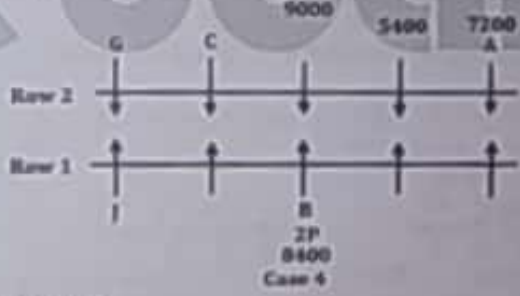


Case 4

• No two persons spent equal amount.
• Immediate neighbour of person who spent Rs 5400, spent Rs 9000.
• Person who spent Rs 9000 sits opposite to person who spent Rs 8,400.

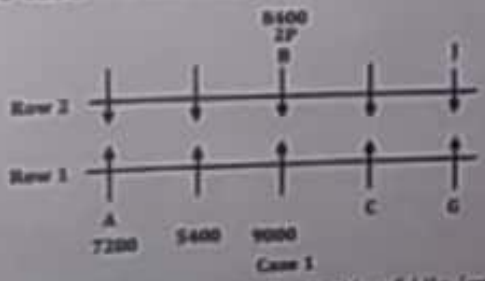


Case 1



Case 4

So for B,
2 * 1800 + S * 1200 = 8400
S= 4 (shirts bought by B).
• E faces south & bought 5 pants.
• One of B's immediate neighbour bought 5 pants.
• Each person bought at least 1 pant & 1 shirt.
So case 4 is eliminated.



Case 1

• Total amount spent by both of H's immediate neighbour is Rs 15,000.

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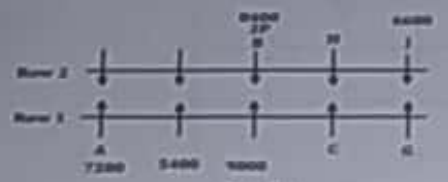
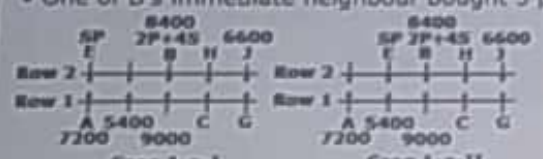


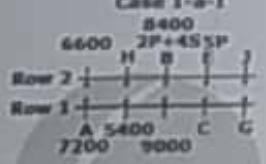
Case 1-a

Case 1-b

- E faces south & bought 5 pants.
- One of B's immediate neighbour bought 5 pants.



Case 1-a-I Case 1-a-II

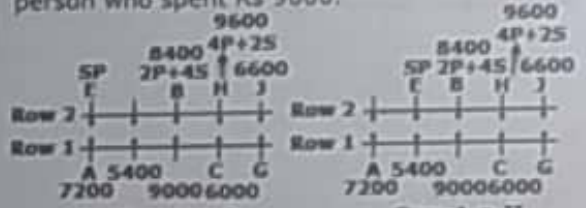


Case 1-b

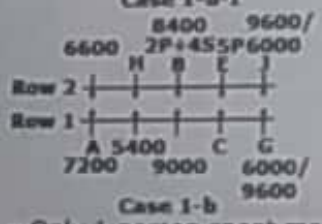
- Person who spent Rs 6000 sits opposite to the person who bought 4 pants & 2 shirts.

So person who bought 4 pants & 2 shirts spent Rs 9600.

- Person who spent Rs 9600 is not adjacent to person who spent Rs 9000.



Case 1-a-I Case 1-a-II



Case 1-b

- Only 1 person spent more than I who bought 1 shirt.
- No one bought more than total 7 articles.

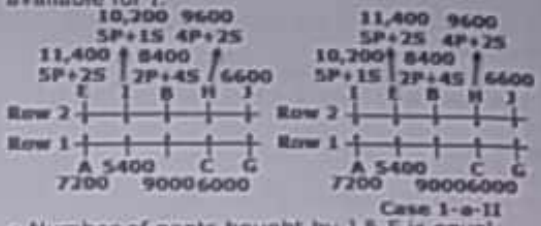
So, amount spent by I should be more than Rs 9,600 because E have spent more than Rs 9,600 as (he bought 5 pants that cost 9,000 & number of shirts bought by him is unknown but his total amount will exceed Rs10000 because at least 1 shirt is bought by each person) & amount spent by I cannot Rs 9,600.

Therefore I bought 5 pants , so I spent Rs 10,200.

(If I had bought 6 pants then amount spent by him will be Rs 12,000 & no one could have spent amount more than him as maximum number of articles bought by a person is 7)

So E bought 2 shirts.

So case 1-b is eliminated because no place is available for I.



Case 1-a-II

- Number of pants bought by J & F is equal.
- Difference in number of pants bought by H & F is 1.

So F bought 3 pants.

Number of pants bought by F is not 5 because then amount spent by F will be Rs 10,200 or Rs 11,400 which is not possible because no two-person spent equal amount.

So, J also bought 3 Pants.

Now for J,

3 * 1800 + S * 1200 = 6600

S = 1 (number of shirts bought by J)

As, F bought 3 pants, so he cannot amount spent by F should be more than Rs 5400. So F spent Rs 9,000.

Now for F,

3* 1800 + S * 1200 = 9000

S = 3 (number of shirts bought by F)

Case 1-a-I Case 1-a-II

- D bought 3 shirts. Number of pants bought by D is equal to number of pants bought by G.
- Amount spent by G is not the least.

So for D,

P * 1800 + 3 * 1200 = 5400

P = 1 (number of pants bought by D).

So number of pants bought by G is 1.

Now G's amount is not least so it should be more than D that means G should buy more than 3 shirts.

Now G cannot buy 4 shirts because then amount spent by him will be equal to amount spent by J.

Also G cannot buy 6 shirts because then amount spent by him will be equal to amount spent by F.

So only option left is 5, So G bought 5 shirts.

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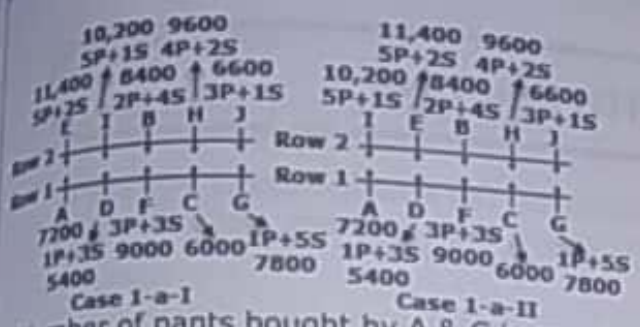
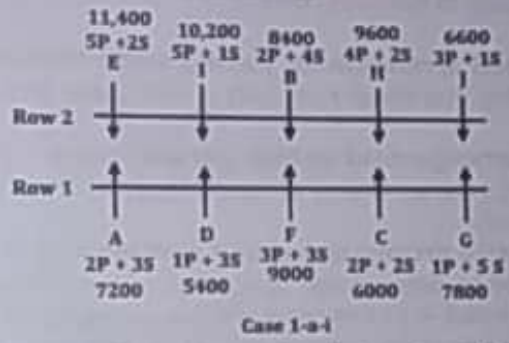


• Number of pants bought by A & C is equal.
• Number of Pants bought by G is half of number of shirts bought by C.
So, number of shirts bought by C = 2.
Now for C,
P * 1800 + 2* 1200 = 6000
P = 2 (number of pants bought by C.
So number of pants bought by A = 2.
Now for A,
2 * 1800 + S * 1200 = 7200
S = 3 (number of shirts bought by A)

• I doesn't sit opposite to person who bought 2 pants.
So case 1-a-ii is eliminated



Answer 15 – Except C, all other bought total 6 clothes.

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CHAPTER 12 - ARRANGEMENTS WITH SHIFTING

Shifting based arrangements are those in which after the final arrangement, the arrangement is modified or changed by shifting the persons or items or variables given or interchanging their positions, based on certain parameter.

These types are combination of two or more types of puzzle, testing the knowledge of more than one concept. These are for mains level examinations.

It can be asked in following ways:

I. Any normal arrangement having some shifting after the final arrangement – For example: Some persons sitting in a linear row, play a dice game and change their positions with respect to the numbers they got on dice.
II. Linear arrangement in four parallel rows – In this arrangement of persons is done in 4 rows which are parallel to each other and of different lengths. Then after, shifting of persons is done based on directions given in the question.
III. Concentric arrangement and shifting – In this, arrangement is done along one concentric shape and then is shifted to other shape concentric to the former one, as per the directions given in the questions.
IV. Stairs based – In this, persons are arranged vertically i.e. on stair case and shifting of persons to other stairs is done based on dice, or any other directions given as per the question.

Always solve the question for a final arrangement then, perform the shifting as per the question. Sometimes, for performing the shifting of positions, we are given different directions, so, we need to derive the conditions for shifting.

KEY POINTERS

⇒ While solving stair-case based puzzles, sometimes one person might already be present on the same stair on which some other person is shifted. Then, that stair will have two persons standing on it. This needs to be taken care.

Solved Examples

STAIRS BASED

Directions [1 to 2]: Six friends A, B, C, D, E and F were standing on six different stairs of a staircase containing 10 stairs which were numbered 1-10 from bottom to top. Each of them rolled a dice and moved along the staircase as per the number they rolled. Each person rolled a different number. They rolled the dice in the reverse alphabetical order i.e. F rolled first, moved as per the conditions then E rolled and moved and so on.

- C's stair number was thrice that of the number that was rolled by F.
- A rolled a number that was twice as that of the number rolled by F.
- E was standing just above A who was at a gap of 2 stairs from D.
- D rolled the same number as his stair number.
- D and F rolled consecutive numbers.
- B was standing 2 stairs above F.
- F's stair number was 2 more than the number rolled by A.
- B rolled a number that was twice as that of D's stair number.
- C rolled a number that was greater than the number rolled by E.

The movements were based on the following rules:
If you roll 1: Swap positions with the person who rolled 4.
If you roll 2: Go 4 steps up, if not possible, go 4 steps down.
If you roll 3: Swap positions with the person/persons just below.
If you roll 4: Go to stair 4.
If you roll 5: Swap positions with the person who rolled 1.
If you roll 6: Go to the stair number that is twice that of the current stair number, if not possible, then go to stair number 1.

Question 1 What was the difference between the initial and the final stair number of B?
B's initial stair number was 10 and final stair number was 4. Hence the difference = 10 - 4 = 6
Question 2 Who among the following end up standing on stair number 6?

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a) A,C b) B,E c) C,B
d) F,D e) F,B
F and D end up standing on stair number 6.

Solution:

- C's stair number was thrice that of the number that was rolled by F.
- A rolled a number that was twice as that of the number rolled by F.
- F's stair number was 2 more than the number rolled by A.
- B was standing 2 stairs above F.

Case 1:
F rolled 1, A rolled 2

10		
9		
8		
7		
6	B	
5		
4	F	1
3	C	
2		
1		

Case 2:
F rolled 2, A rolled 4

10		
9		
8		
7		
6	C	
5		
4		
3		
2		
1		

Invalid as F cannot be placed in this arrangement.

Case 3:
F rolled 3, A rolled 6

10	B	
9	C	
8	F	3
7		
6		
5		
3		
2		
1		

- E was standing just above A who was at a gap of 2 stairs from D
- D rolled the same number as his stair number
- D and F rolled consecutive numbers
- B rolled a number that was twice as that of D's stair number

Case 1:
D must have rolled 2

10		
9		
8		
7		
6	B	
5		
4	F	1
3	C	
2	D	2
1		

Invalid as A had rolled 2 in this case

Case 2:
D rolled 2

10	B	4
9	C	
8	F	3
7		
6	E	
5	A	6
4		
3		
2	D	2
1		

Case 3:
D rolled 4

10	B	
9	C	
8	F	3
7		
6		
5		
4	D	4
3		
2		
1		

Invalid as B cannot have rolled 8

- C rolled a number that was greater than the number rolled by E

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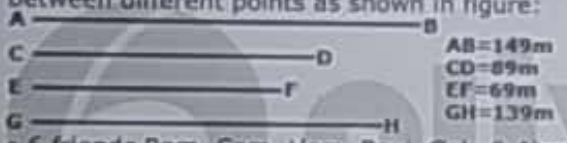
10	B	4
9	C	5
8	F	3
7		
6	E	1
5	A	6
4		
3		
2	D	2
1		

The final arrangement after the movements will be as follows:

	Initial	Final
10	B	C, A
9	C	E
8	F	
7		
6	E	F , D
5	A	
4		B
3		
2	D	
1		

FOUR ROWS LINEAR ARRANGEMENT WITH SHIFTING

Directions [3 to 5]: Four horizontal lines AB, CD, EF & GH, each of a different length are stretched between different points as shown in figure:



• 6 friends Ram, Sam, Hem, Ravi, Golu & Akash are sitting in line AB, facing south & distance between 2 adjacent friends increases when we move from point A to point B, in consecutive integral multiples of 7. Minimum possible distance between 2 friends is 14 in line AB. 2 friends sit between Hem & Akash. Sam sits to immediate right of Ravi & none of them is neighbour of person sitting at extreme positions. No one sits towards right of Ram. Akash & Golu are not immediate neighbours. Person sitting nearest to point B is 6 m away from point B.

• 6 friends Pooja, Kirti, Riti, Sita, Sonu & Kim are sitting in line GH facing south & distance between 2 adjacent friends increases when we move from point G to point H in consecutive integral multiples of 6. Maximum distance between two immediate neighbours in line GH is 36. Sita sits towards left of Riti & distance between them is 54 m. Pooja sits at immediate right of Sonu. Kim doesn't sit towards left of Sita. Person sitting farthest from point G is at distance of 130 m from point G. Riti doesn't sit nearest to point G.

Based on the following conditions there were some movements:

Conditions:

i. In line AB, people whose distance from point B is an even number will move to line EF maintaining their respective positions and others will remain at their respective positions.

ii. In line GH, people whose distance from Point G is a multiple of 10 will move to line CD maintaining their respective position and others will remain at their respective positions

Question 3 How many people changed their positions?

7 people changed their positions

Question 4 After movements what is the minimum distance between 2 people in line AB?

After movements, the minimum distance between 2 people in line AB is 28m

Question 5 After movements what is the maximum distance between 2 people in line GH?

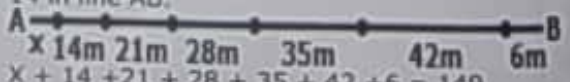
the maximum distance between 2 people in line GH is 72m.

Solution:

• Person sitting nearest to point B is 6 m away from point B.

• Distance between 2 adjacent friends increases when we move from point A to Point B, in consecutive integral multiples of 7.

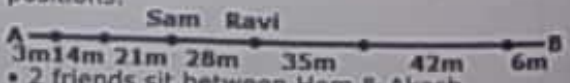
• Minimum possible distance between 2 friends is 14 in line AB.



X + 14 +21 + 28 + 35 + 42 +6 = 149

X = 3m

• Sam sits to immediate right of Ravi & none of them is neighbour of person sitting at extreme positions.



• 2 friends sit between Hem & Akash.

• Akash & Golu are not immediate neighbours.

• No one sits towards right of Ram.

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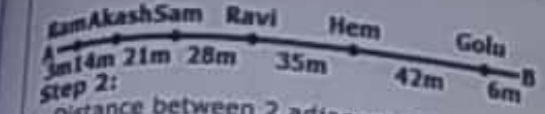
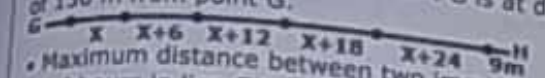


Step 2:

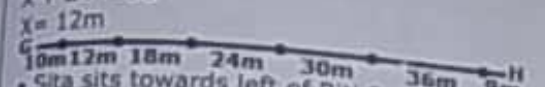
- Distance between 2 adjacent friends increases when we move from point G to Point H, in consecutive integral multiples of 6.
- Person sitting farthest from point G is at distance of 130 m from point G.



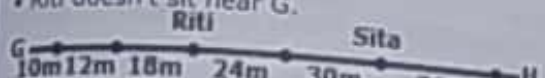
- Maximum distance between two immediate neighbours in line GH is 36.

$X + 24 = 36$

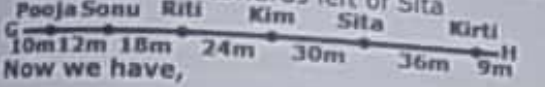
$X = 12m$



- Sita sits towards left of Riti & distance between them is 54 m.
- Riti doesn't sit near G.



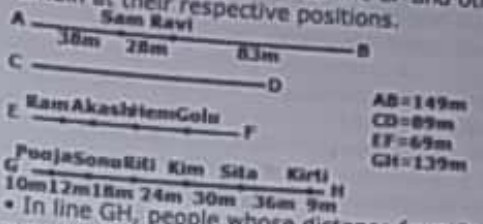
- Pooja sits towards immediate right of Sonu.
- Kim doesn't sit towards left of Sita



Now we have,

Step 4:

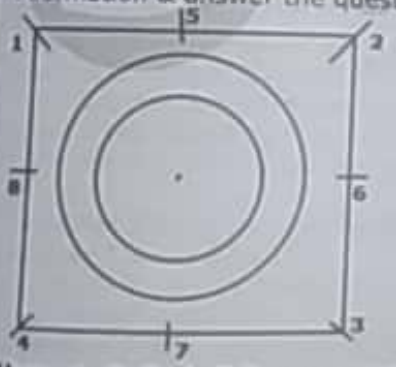
- In line AB, people whose distance from point B is an even number will move to line EF and others will remain at their respective positions.



- In line GH, people whose distance from Point G is a multiple of 10 will move to line CD and others will remain at their respective positions

CONCENTRIC ARRANGEMENT WITH SHIFTING

Directions [6 to 8]: Read the following information & answer the question:



(here 1, 2, 3, 4, 5 & so on are position numbers)

8 friends A, B, C, D, E, F, G & H are sitting around the outer circle . Some of them are facing inside towards the centre while others outside from the centre. If 2 persons are facing the same direction, it means that either both are facing towards the centre or both are facing outside the centre. Everyone is sitting equidistant from each other. If 2 persons are facing opposite directions, it means that one is facing towards the centre and the other is facing outside the centre.

F sits second to right of G. E is not an immediate neighbour of B. Immediate neighbours of G don't face same direction. A is not 2nd to right of E. B & C are facing same directions. Neither F nor G is an immediate neighbour of H. 2 people are sitting between A & D. H sits second to right of C. Both immediate neighbours of E who faces outside the centre, are facing same direction. Both A &D faces same direction. H & F faces same direction. B sits second to left of G. Not more than 3 people facing same direction are sitting together.

B had a pack of well shuffled 52 cards. So, they decided to change their position according to the random card picked by them. They picked card in reverse alphabetical order of their names (like if P, Q & R were three friends then R will pick first, then Q & at last P). Conditions for their movements are as follows

1. If card drawn is heart, then person will not change his position but will face towards the centre.
2. If card drawn is spade then person will draw spade card first will move to position 2 facing towards the centre. Second person to draw spade card will move to position 4 facing towards the centre, similarly third person to position 6 facing towards the centre & So on.
3. If card drawn is club then person will move to inner circle to the position 2nd to left of his initial position & will face direction opposite to his initial direction.
4. If card drawn is diamond then person who will draw diamond card first will move to position 1 facing same direction as initial direction. Second person to draw diamond card will move to position 3 facing same direction of the initial direction,

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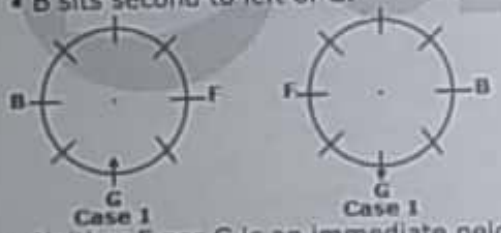
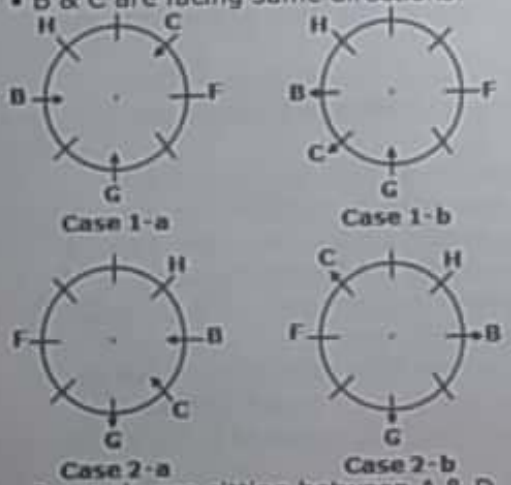
similarly third person to position 5 facing same direction of initial direction & So on.
The cards picked by them are as follows:
i. C picked 5 of diamond.
ii. B picked 6 of spade.
iii. D picked joker of diamond
iv. E picked 3 of club
v. H picked ace of spade
vi. A picked 8 of hearts.
vii. G picked 9 of club
viii. F picked queen of hearts

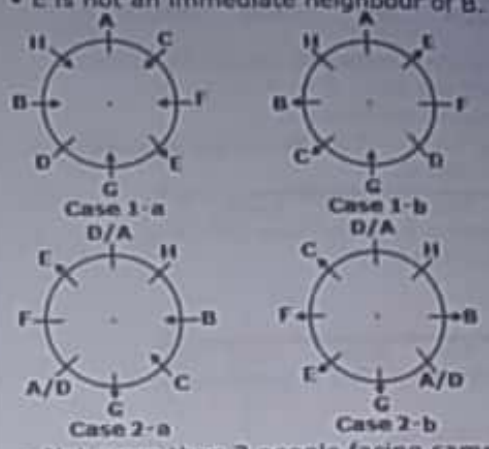
Question 6 How many people have changed their direction after shifting?
B, E & G directions have changed after shifting
Question 7 How many people are sitting between B & C when counted towards right of B (after shifting)?
No one is sitting between B and C after Shifting.
Question 8 Which of the following statements is/are true?
I. After shifting, G is sitting immediate right of E.
II. After shifting, both A & H are facing same directions.
III. After shifting, both E & C are facing same directions.
IV. After shifting, D & G are facing opposite directions.
Option (i), (ii)and(iv) are correct so, Option 3 is the correct choice
Solution:
- F sits second to right of G.
- B sits second to left of G.



- Neither F nor G is an immediate neighbour of H.
- H sits second to right of C.
- B & C are facing same directions.

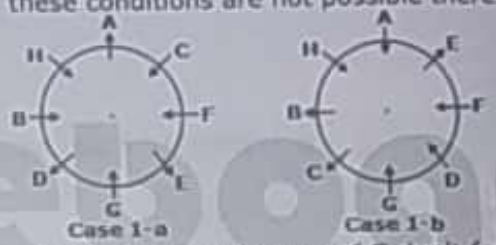


- 2 people are sitting between A & D.
- Both A &D faces same direction.
- Both immediate neighbours of E who faces outside the centre, are facing same direction.
- A is not 2nd to right of E.
- H & F faces same direction.
- E is not an immediate neighbour of B.



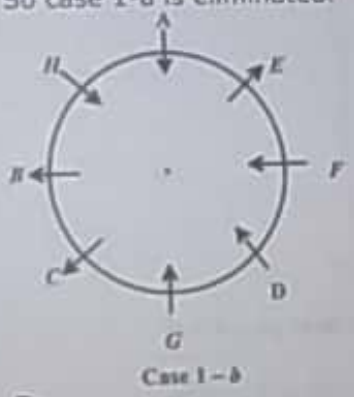
- Not more than 3 people facing same direction are sitting together.
- Both A &D faces same direction.
- Both immediate neighbours of E are facing same direction.
- H & F faces same direction.

So Case 2-b & Case 2-a are eliminated because these conditions are not possible there.

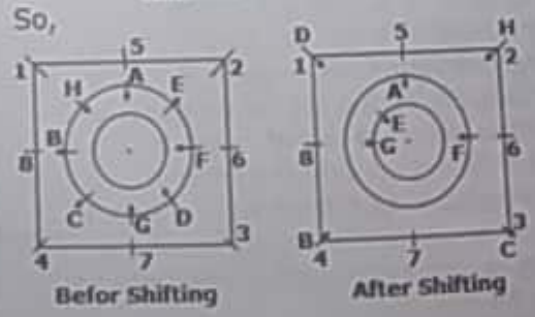


- Immediate neighbours of G don't face same direction.

So case 1-a is eliminated.



So,



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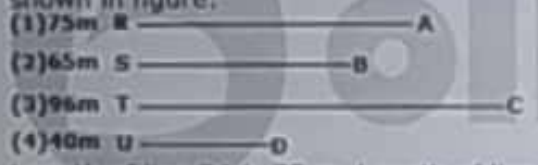
neighbour of J. M & O are 69m apart. I & L are 26 m apart. Distance between K & J is more than 31m. Person nearest to point F is 12 m away from point F. (extreme position)
There are some movements based on the following conditions:
Conditions:
• In line CD, people whose distance from point C is an odd number will move to line AB.
• In line EF, people whose distance from Point F is an even number will move to line GH.

Question 5 How many people changed their positions?
a) 6 b) 7 c) 8
d) 9 e) None of these
Question 6 After movements, what is the maximum distance between adjacent people in line CD?
a) 40 m b) 65 m c) 68 m
d) 56 m e) None of these
Question 7 Four of the following are related in some way, hence form a group. Which of the following is not a part of group?
a) Q b) U c) L d) I e) T

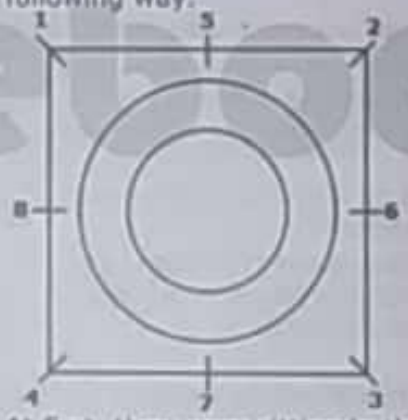
Directions [8 to 10]: Four horizontal lines, numbered as 1, 2, 3, and 4 each of a different length are stretched between different points as shown in figure:



Length of line RA is 75 m. Length of line SB is 65 m. Length of line TC is 96 m. Length of line UD is 40 m.
• There were 4 persons each on line RA and TC
• Veer, Vinod, Varun and Vinay were on line RA such that the distance between the neighbouring persons was the consecutive integral multiple of 6m in increasing order.
• Neha, Namit, Naman and Nikhil were standing on line TC such that the distance between the neighbouring persons was the consecutive integral multiple of 7m in increasing order.
• Veer was 19m away from point R and 54m away from Vinod. Only one person was to the immediate left of Veer.
• Varun was 32m away from one of the ends
• Distance between Nikhil and Neha was 4m more than that between Veer and Varun
• Neha was 49m away from Naman who was 3m away from on of the extreme end.
There were some movements based on the following conditions:
Conditions:
1) In line 1 (RA), people whose distance from extreme right end (point A) of a line is a multiple of 8m will move to line 2(SB) with their respective positions and all other people remain at their respective positions.
2) In line 3 (TC), people whose distance from extreme left end (point T) of the line is a prime number will move to line 4(UD) with their respective positions and all other people remain at their respective positions.
Assume people were facing North

Question 8 Who among the following shifted to line UD?
I. Nikhil II. Neha III. Naman
a) Only I b) Only II c) Only III
d) Both I and II e) Both II and III
Question 9 What was the distance between Vinay and Veer?
a) 12m b) 18m c) 24m
d) 30m e) 42m
Question 10 Four of the following bear a similar relationship and hence form a group, who among the following is not a part of that group?
a) Nikhil b) Vinay c) Vinod
d) Namit e) Veer

Directions [11 to 13]: Study the following information carefully & answer the following questions
Ten friends A, B, C, D, E, F, G, H, I & J were seated in a way such that there were 2 circles (inner circle & outer circle) & 1 Square on the ground in the following way.



At first, they were sitting in the outer circle facing outside the circle & we have the following information regarding their initial position in the outer circle. Consecutive alphabets of English alphabetical series were not adjacent to each other.
A was sitting third to the right of G and two persons were sitting between B and G. B wasn't opposite to F. F was 4th to the left of E. C was an immediate neighbour of F. H & J were immediate neighbours & none of them was an immediate neighbour of B. D was not opposite to I.
The position that they will be seated around the square finally after certain movements are numbered as given in the above figure and not necessarily all will sit around the square finally.
B had a pack of well shuffled 52 cards. So, they decided to change their position according to the random card picked by them. They picked card in alphabetical order of their names (like if P, Q & R

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were three friends then P will pick first, then Q & at last R).
Conditions for their movements are as follows
1. If a card drawn is heart, then person who will draw first will move to position 1 and faces a direction opposite of the initial direction. The second person to draw a heart card will move to position 2 and faces a direction opposite of the initial direction, similarly third person will move to position 3 and faces a direction opposite of the initial direction & so on.
2. If a card drawn is spade then the person will move to the inner circle to the position 2nd to the left of his initial position & will face a direction opposite to his initial direction.
3. If a card drawn is club then the person who will draw first will move to position 5 and faces towards the centre. The second person to draw a club card will move to position 6 and faces towards the centre, similarly third person will move to position 7 and faces towards the centre & so on.
4. If a card drawn is diamond then the person will not change his position but will face towards the centre.
The cards picked by them are as follows:
i. B picked a 4 of diamond.
ii. C picked a king of spade.
iii. A picked an ace of spade
iv. G picked a 3 of club
v. H picked queen of hearts
vi. D picked a Joker of diamond
vii. E picked a 5 of club
viii. F picked a 8 of hearts.
ix. I picked ace of heart
x. J picked a 3 of diamond

Question 11 After movements, how many people sit in the inner circle?
a) 1 b) 2 c) 3 d) 4 e) None of these
Question 12 If D again picked a card & it is 4 of hearts, then how many persons are seating in between D and H when counted from the right side of D?
a) 3 b) 1 c) 2 d) 0 e) None of these
Question 13 After the movements, four of the following are similar in some way. Find the odd one.
a) I b) E c) H d) G e) C

Directions [14 to 16]: 10 friends A, B, C, D , E, F, G, H, I & J are sitting around a circle. Some of them were facing towards centre while others were facing outside the centre. Everyone is sitting equidistant from each other. If 2 persons are facing the same direction, it means that either both are facing towards the centre or both are facing outside the centre. If 2 persons are facing opposite directions, it means that one is facing towards the centre and the other is facing outside the centre. A was sitting 2nd to right of B. J was not immediate neighbour of A. F & H are immediate neighbours. Neither A nor G was immediate neighbour of D. J was sitting fourth to right of D. H & G are not immediate neighbours. C is not second to left of G. C faces outside the centre. E & G are facing same direction. A & D faces same direction. E was sitting second to right of F. Two people were sitting between A & G. E was second to right of I. E & A are not immediate neighbours. More than three people faces inside the circle and more than 3 people faces outside the centre.
B had a pack of well shuffled 52 cards. So, they decided to change their position according to the random card picked by them. They picked card in alphabetical order of their names (like if P, Q & R were three friends then P will pick first, then Q & at last R). Conditions for their movements are as follows
1. If card drawn is Club, then the person will swap its position with person sitting second to left of him and direction of both the people will remain unchanged(for example if R is facing outside & S is facing towards the centre of circle, also S is second to left of R then, if R picked a card of club then R & S will swap position, but R will still face outside & S will face towards the centre of circle)
2. If card drawn is Spade then the person will swap its position with person sitting immediate right of him and direction of both the people will also be interchanged(for example if R is facing outside & S is facing towards the centre of circle, also S is immediate right of R then, if R picked a card of spade then after swapping position S will face outside & R will face towards the centre of circle)
3. If card drawn is Heart then the person will swap its position with person sitting 2nd to right of him and after swapping both people will face towards the centre.
4. If card drawn is Diamond then the person will not change its position but will change its direction.
The cards picked by them are as follows:
1. J picked 3 of heart
2. I picked king of club
3. B picked 7 of spade.
4. F picked Queen of diamond.
5. H picked King of hearts
6. A picked 10 of spade
7. G picked ace of spade
8. E picked 7 of hearts.
9. C picked 9 of diamond
10. D picked 5 of club

Question 14 After swapping, who is 2nd to left of I?
a) F b) J c) E d) D e) None of these
Question 15 After swapping, Who among the following are facing towards the centre?
I. G II. B III. F IV. A
a) All of these b) Only A c) Only F & G
d) Only G e) Only G & A
Question 16 How many people's directions after swapping is different from direction they were facing before swapping?
a) 6 b) 4 c) 3 d) 5 e) 2

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ANSWER KEY

1- e	2- b	3- d	4- c	5- c	6- c	7- e	8- c	9- b
10- a	11- b	12- c	13- e	14- d	15- b	16- d		

DETAILED SOLUTIONS

Question 1 to 2

• D pressed the value that was twice that of the value pressed by A

• A and F pressed consecutive values

1	F
2	A
3	
4	D
5	
6	

Or

1	
2	A
3	F
4	D
5	
6	

Or

1	
2	F
3	A
4	
5	
6	D

Or

1	
2	
3	A
4	F
5	
6	D

• C pressed a value that was 3 more than the value pressed by E. So, possible values pressed by E could be 1, 2 or 3 only.

• Sum of values pressed by B and A together was equal to the value pressed by F

Case 1:

1	F
2	A
3	
4	D
5	
6	

B cannot be placed in this arrangement; hence the case is invalid.

Case 2:

1	B
2	A
3	F
4	D
5	
6	

C and E cannot be placed in the arrangement, hence invalid

Case 3:

1	
2	F
3	A
4	
5	
6	D

B cannot be placed in this arrangement; hence the case is invalid.

Case 4:

1	B
2	E
3	A
4	F
5	C
6	D

Making the movements:

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	Initial position	Final Position
25		
24	F	E
23		
22		
21		
20	E	B
19		
18		
17		
16	D	C
15		F
14		
13		
12	C	
11		
10		D
9		
8	B	A
7		
6		
5		
4	A	
3		
2		
1		

Answer 2 - Difference between B's initial and final positions was the maximum (20 - 8).

QUESTION 3 TO 4

- The number rolled by A was twice as that of the number rolled by F. Possible values can be (2,1) (4, 2) (6,3)
- B was on even numbered step. There were 4 steps between B and C and C was somewhere above B. Possible values can be (2, 7) (4, 9) (6, 11)
- The number rolled by C was 2 less than his step number. Thus, the only possibility is that C was on step 7 and he rolled 5.
- C and E rolled consecutive numbers. Thus, E rolled 4 or 6.

12		
11		
10		
9		
8		
7	C	5
6		
5		
4		
3		
2	B	
1		

- Number rolled by D was same as that his stair number
- The number of steps between A and D was equal to the number rolled by C. A was somewhere above D. Thus, there were 5 steps between A and D. D could not be on a step higher than 6.
- F's stair number was twice as that of D's stair number

Case 1:

12		
11		
10		
9	A	
8		
7	C	5
6	F	
5		
4		
3	D	3
2	B	
1		

Case 2:

12		
11		
10	A	
9		
8	F	
7	C	5
6		
5		
4	D	4
3		
2	B	
1		

Case 3:

12	A	
11		
10		
9		
8		
7	C	5
6	D	6
5		
4		
3		
2	B	
1		

Invalid as F cannot be placed in it

- The number rolled by A was twice as that of the number rolled by F
- C and E rolled consecutive numbers.
- The one who rolled 3 had a step number twice as that of E

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Case 1:

12		
11		
10		
9	A	4/2
8		
7	C	5
6	F	1/2
5		
4		
3	D	3
2	B	
1		

Invalid as D did not have the step number twice as that of E

Case 2:

12		
11		
10	A	2/6
9		
8	F	1/3
7	C	5
6		
5		
4	D	4
3		
2	B	
1		

F cannot roll 3 as E cannot be on step 4 as it is already taken. Thus, B must have rolled 3 and E must be thus on step 1

12		
11		
10	A	2
9		
8	F	1
7	C	5
6		
5		
4	D	4
3		
2	B	3
1	E	6

The movements were based on the following points:

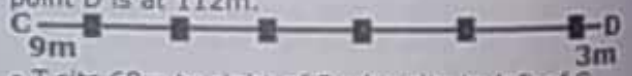
- One who rolled 1: Swapped position with the person who rolled 4
- One who rolled 2: Swapped position with the one who rolled 1
- One who rolled 3: Moved to the step number that is the next multiple of 3. For example, if the person is on step 4 then he moves to step 6
- One who rolled 4: Remains at his original position
- One who rolled 5: Swapped position with the person who was standing the lowest at that time, if the one who rolled 5 was at the lowest position, then swapped places with the person standing the highest.
- One who rolled 6: Swapped position with the one who rolled 3

	Initial		Final
12			
11			
10	A	2	D
9			
8	F	1	A
7	C	5	B
6			
5			
4	D	4	F
3			E
2	B	3	
1	E	6	C

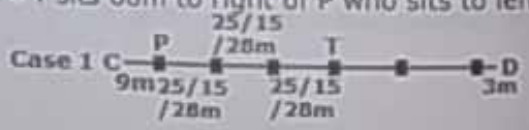
QUESTION 5 TO 7

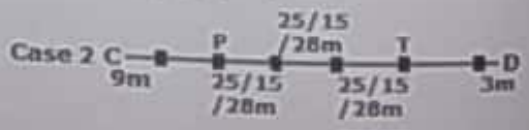
Step 1:

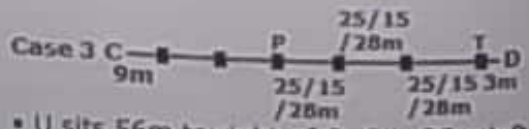
- Person who sits at the maximum distance from point D is at 112m.



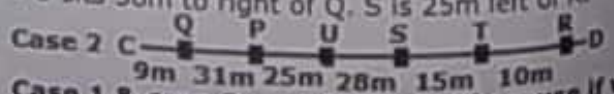
- T sits 68m to right of P who sits to left of S







- U sits 56m to right of Q. S is 25m left of R.



Case 1 & case 3 are eliminated because if we take these conditions together then sitting is not possible in those 2 cases.

- M sits 28m to right of one of immediate neighbour of J.
- I & L are 26 m apart.

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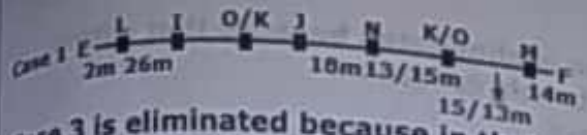
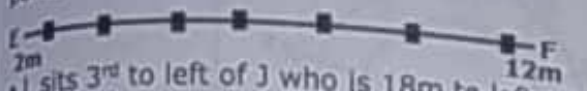


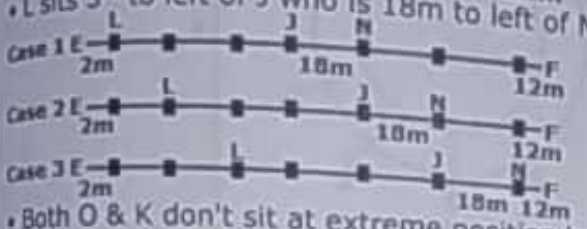
Case 3 is eliminated because in that case no place was available for M

Step 2:

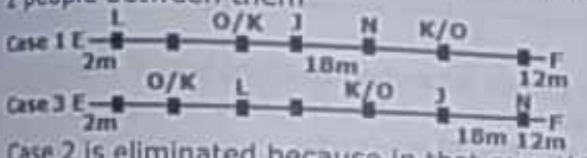
• Person nearest to point F is 12 m away from point F



• L sits 3rd to left of J who is 18m to left of N.



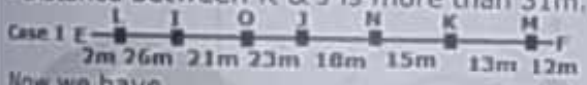
• Both O & K don't sit at extreme position but have 2 people between them



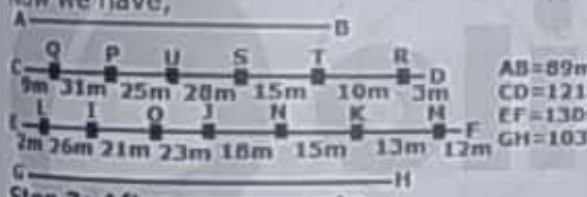
Case 2 is eliminated because in that case this condition is not possible.

• M & O are 69m apart.

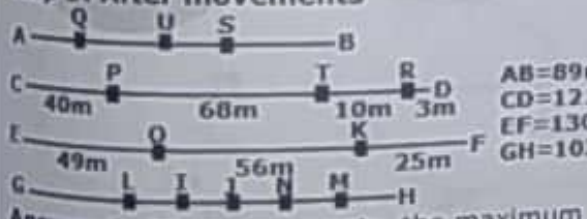
• Distance between K & J is more than 31m.



Now we have,



Step 3: After movements

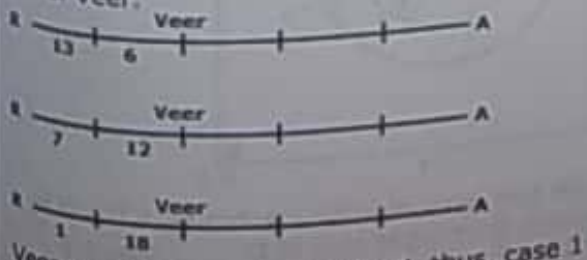


Answer 6- After movements, the maximum distance between adjacent people in line CD is 68m

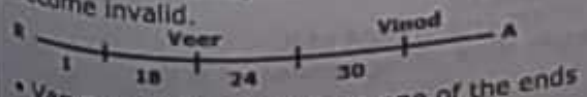
Answer 7- Except T, all have changed their positions

QUESTION 8 TO 10

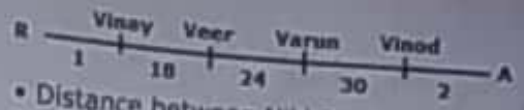
• Veer was 19m away from point R and 54m away from Vinod. Only one person was to the immediate left of Veer.



Veer was 54m away from Vinod, thus, case 1 and 2 become invalid.

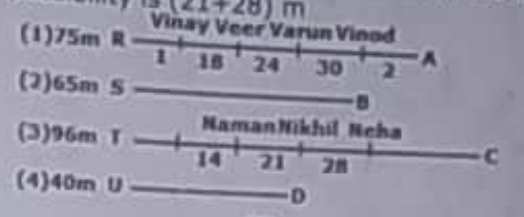


• Varun was 32m away from one of the ends

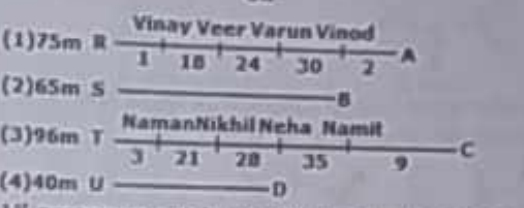


• Distance between Nikhil and Neha was 4m more than that between Veer and Varun, thus, they were at a gap of 28m. 28m cannot be a sum of 2 distances thus, they were neighbouring each other.

• Neha was 49m away from Naman, the only possibility is (21+28) m



OR



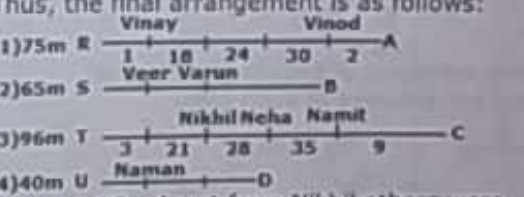
1st arrangement is invalid as Naman cannot be 3m away from the extreme end.

The movements will be:

1) In line 1 (RA), people whose distance from extreme right end (point A) of a line is a multiple of 8m will move to line 2(SB) and all other people remain at respective positions. Thus, Varun and Veer shift to line 2

2) In line 3 (TC), people whose distance from extreme left end (point T) of the line is a prime number will move to line 4(UD) and all other people remain at respective positions. Thus, Naman and shift to line 4.

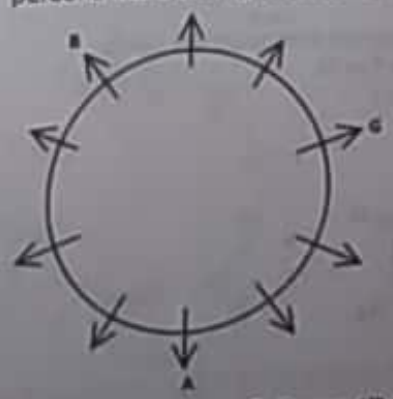
Thus, the final arrangement is as follows:



Answer 10 - Apart from Nikhil others were standing at the extreme ends

QUESTION 11 TO 13

A was sitting third to the right of G and two persons were sitting between B and G.



B wasn't opposite to F. F was 4th to the left of E. C was an immediate neighbour of F.

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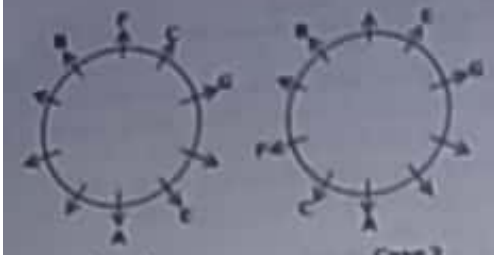
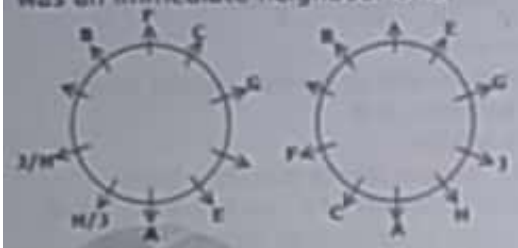


Case 1 Case 2

Case 3

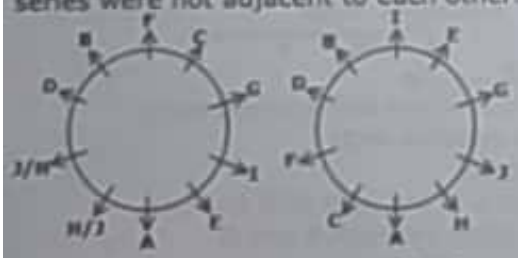
H & J were immediate neighbours & none of them was an immediate neighbour of B.



Case 1 Case 2

Case 3

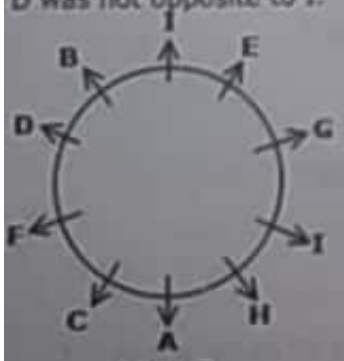
Consecutive alphabets of English alphabetical series were not adjacent to each other.



Case 1 Case 2

Other case is eliminated because no such place was available for D.

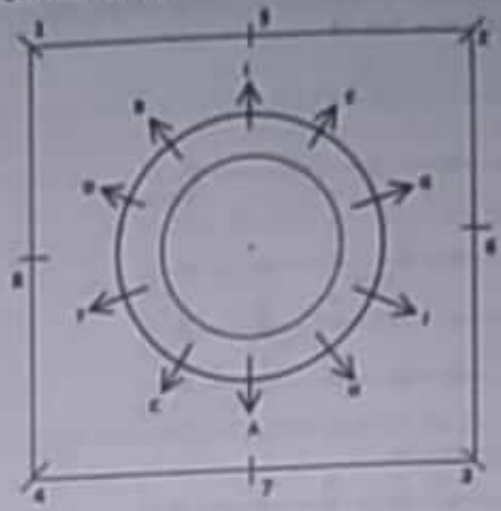
D was not opposite to I.



Case 2

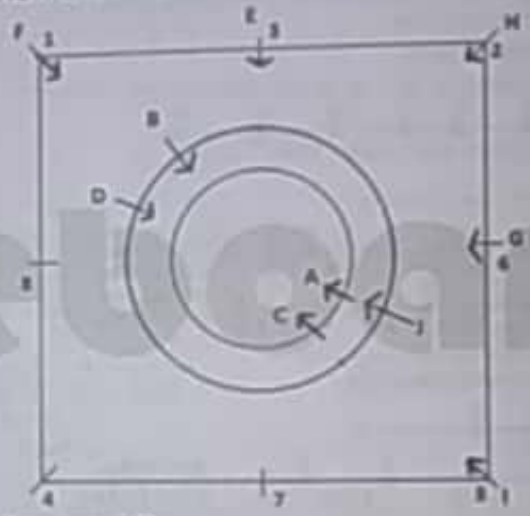
Other case is eliminated because that sitting contradicts this condition.

Now we have,

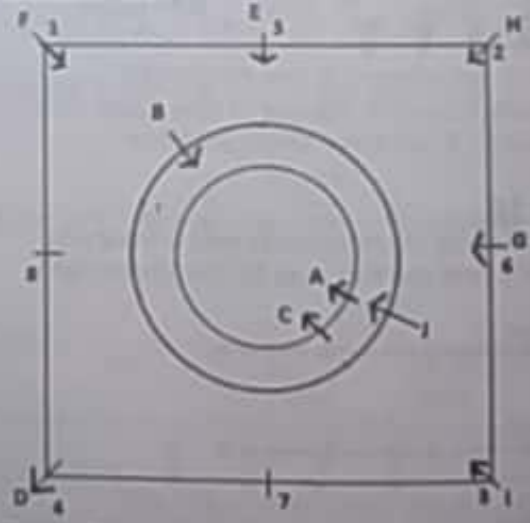


Since they picked according to alphabetical order, so, A picked first then B the C & so on.

Now after movement we have..



Answer 12 -



F and E are two persons sitting in between D and H when counted from right side of D.

Answer 13 - Except C all sits at the square.

QUESTION 14 TO 16

- A was sitting 2nd to right of B.
- Two people were sitting between A & G.

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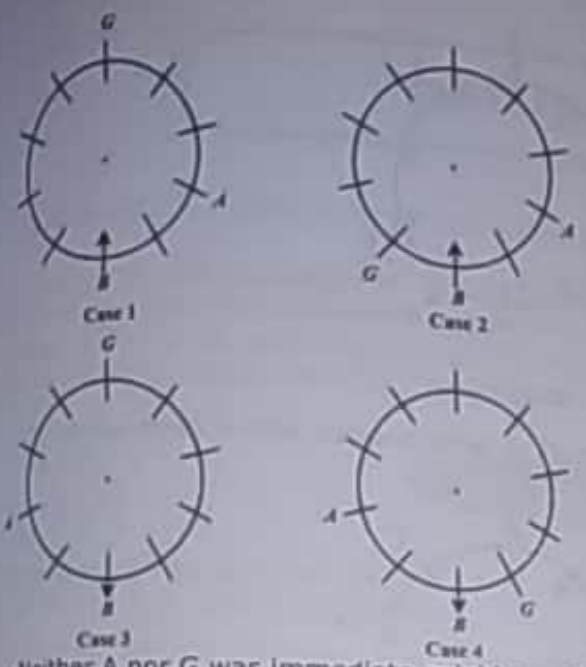
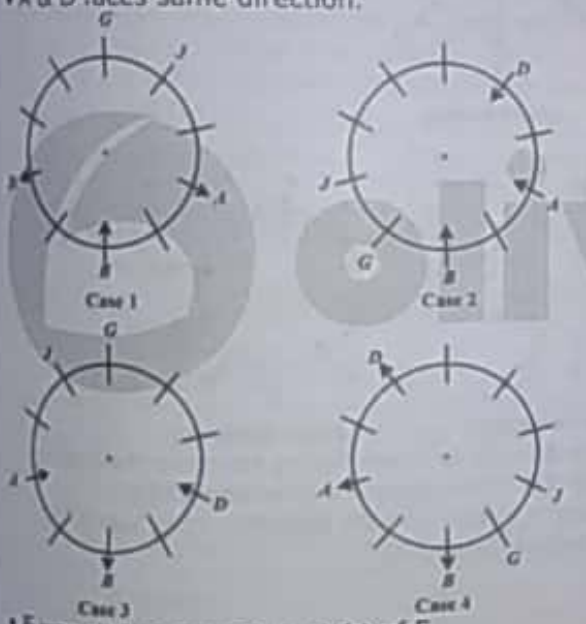
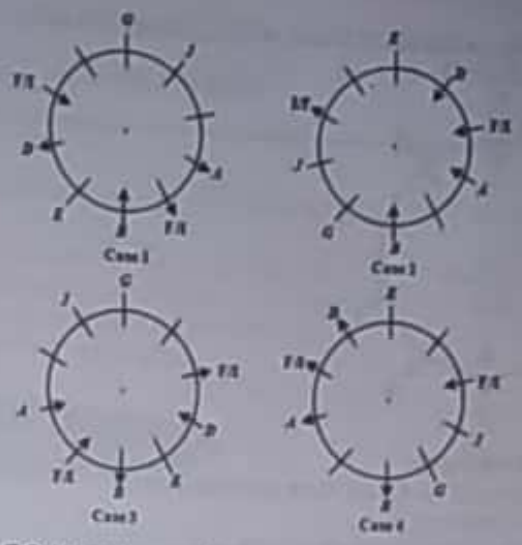


- Neither A nor G was immediate neighbour of D.
- J was sitting fourth to right of D.
- J was not immediate neighbour of A.
- A & D faces same direction.

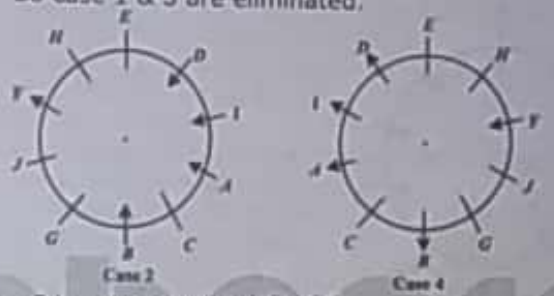


- E was sitting second to right of F.
- E was second to right of I.
- E & A are not immediate neighbours.

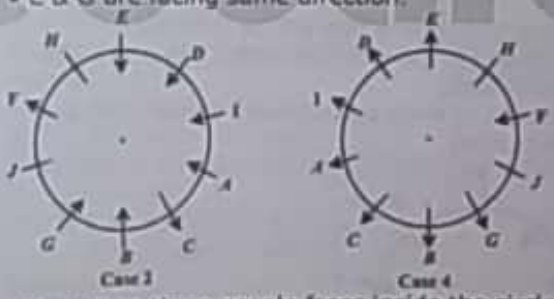


- F & H are immediate neighbours.
- H & G are not immediate neighbours.

So case 1 & 3 are eliminated.

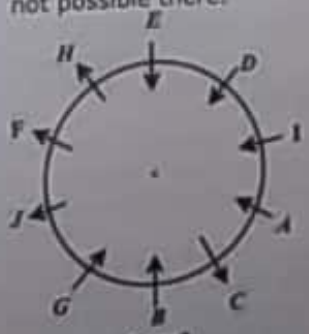


- C is not second to left of G.
- C faces outside the centre.
- E & G are facing same direction.



- More than three people faces inside the circle and more than 3 people faces outside the centre.

So, in case 1 J & H will face outside the centre.
Also, case 4 is eliminated because this condition is not possible there.



Case 2

- A → spade → Will swap position with I (direction will be interchanged)

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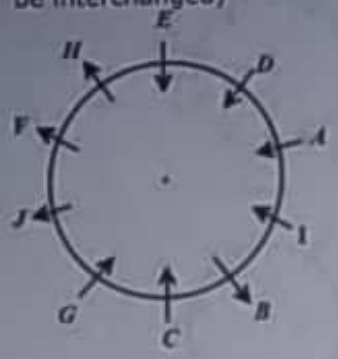
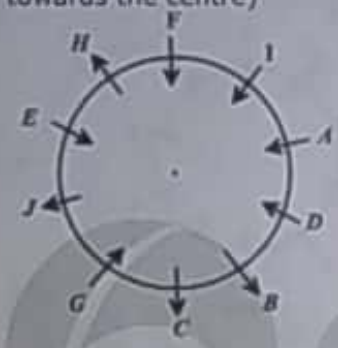
• B → spade → Swap position with C (direction will be interchanged)



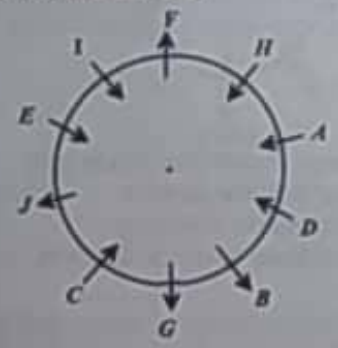
After Swaping

• C → diamond → C will face outside centre (direction change)
• D → club → swap position with I
• E → hearts → swap position with F (both will face towards the centre)



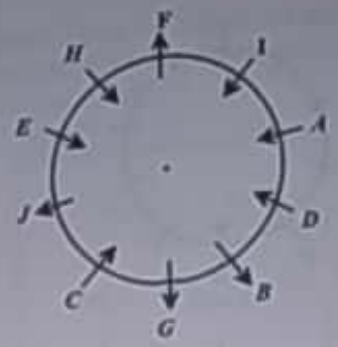
After Swaping

• F → diamond → direction will be changed
• G → spade → swap position with C (direction will be interchanged)
• H → hearts → swap position with I (both will face towards centre)



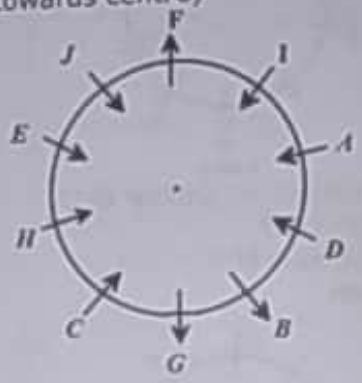
After Swaping

• I → club → swap position with H



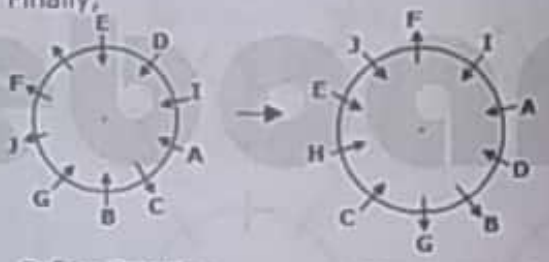
After Swaping

• J → heart → swap position with H (both will face towards centre)



After Swaping

Finally,



Before Swaping After Swaping

Answer 15 - Only A are facing towards the centre.
Answer 16 - Five people's directions after swapping is different from direction they were facing before swapping

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CHAPTER 13 - BUDGET ALLOCATION

This is one of the advanced level type of puzzle, which is asked sometimes in mains level banking exams.

In this puzzle, the knowledge of making best possible combinations (team or group, etc.) out of the given persons or items. This combination is dependent upon the numerical parameter i.e. money. Some budget is already given to us, adhering to which we need to find the best possible combinations.
We will further understand this by the help of the following solved example.

Solved Examples

Directions [1 to 5]: Read the following information & answer the question:

Club X has to play 2 matches, one against Club U & other against Club Z. Club X already has 5 players in its team who are not charging any fee to the club. Club X has to select 6 players from the below-mentioned players for each match. Each of the player mentioned below plays atleast one match. The position & Fee charged by each player are mentioned below:

Players	Position Can Play	Fee Charged
A	Forward / Goalkeeper	Rs 12,000
B	Forward	Rs 15,000
C	Forward	Rs 13,500
D	Forward/Midfielder	Rs 11,700
P	Specialist Goalkeeper	Rs 14,000
Q	Defender	Rs 13,800
R	Defender/ Goalkeeper	Rs 11,000
S	Defender	Rs 10,800
T	Mid Fielder	Rs 14,700

- Atleast 1 forward, 2 defenders, 1 midfielder & 1 goalkeeper should be selected in the team (from above mentioned players).
- A & R cannot play together as both can play as a goalkeeper.
- Club Z team has strong forwards, so Club X decides to have three defenders in the match against Club Z.
- A & C also don't play together as they both can play as forwards.
- T is playing as mid fielder in the match against Club Z.
- If T & D are in the same team then D will play as forward.
- If P & R are in the same team then R will play as a defender
- If A & P are in the same team then A will play as forward.
- The budget for the match against Club Z and Club U is Rs 78,000 and Rs 77,500 respectively

Question 1 What is the total amount paid to the team for match against club U?
a) Rs 77,800 b) Rs 76,500
c) Rs 76,800 d) Rs 77,300
e) None of these

Question 2 What is the total amount paid to the team for match against club Z?
a) Rs 74800 b) Rs 77,500
c) Rs 77200 d) Rs 78000
e) None of these

Question 3 Who among the following play as forwards in match against club U?
a) A & D b) B & D c) C & D
d) B & C e) A & B

Question 4 Who among the following play only against club U?
a) B & D b) B & C c) P & A
d) T & D e) None of these

Question 5 Who among the following play both the matches?
a) P & S b) S & D c) S & T
d) D & P e) None of these

Solution:
- Club Z team has strong forwards, so Club X decide to have three defenders & 1 mid fielder in match against Club Z.
- A & C also don't play together as they both can play as forwards.
- A & R cannot play together as both can play as a goalkeeper.
- T is playing as mid fielder in match against Club Z.
- At least 1 forward, 2 defenders, 1 midfielder & 1 goal keeper should be selected in the team
- The budget for the match against Club Z is Rs 78,000.

Therefore Q, R & S will play as defenders. Since R is playing in the match against club Z so A will in match against club U and P will play as goal keeper in match against club Z. C will play against Z as C cannot be selected with A.

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Match against club Z
Case 1
Q(defender)
R(defender)
S(defender)
P(goalkeeper)
C(forward)
T(midfielder)
Total fee=77800

So, Team is under Budget.

Now for the team against club U:

- Budget for match against Club Z is Rs 78,000 & against club U is Rs 77,500.
- Each of the players mentioned below plays atleast one match.
- A & C also don't play together as they both can play as forwards.

Team against Club Z	Team against Club U	
	Case 1- i	Case 1-ii
Q(defender)	A	A
R(defender)	B	B
S(defender)	D	D
P(goalkeeper)	Q	Q
C(forward)	S	S
T(midfielder)	P	T
Total fee=77800	Total fee= 77300	Total fee= 78000

Case 1-ii will be rejected as the budget is rs.77500

So we have,

Team against Club Z	Team against Club U
Q(defender)	A(forward)
R(defender)	B(forward)
S(defender)	D(midfielder)
P(goalkeeper)	Q(defender)
C(forward)	S(defender)
T(midfielder)	P (goal keeper)
Total fee=77800	Total fee= 77300

Answer 1: Rs 77,300 is the total amount paid to the team for match against club U

Answer 2: Rs 77,800 is the total amount paid to the team for match against club Z

Answer 3: A & B play as forwards in match against club U

Answer 4: B & D play only against club U

Answer 5: P & S play both the matches

Practice Yourself

Directions [1 to 5]: Read the following information & answer the question:

School Z has to play 2 matches one against School Y and another against School X. There are 4 forwards A, B, C & D and 4 defenders Q, R, S & T. E & P are goalkeepers. They have to select 7 players from these for each match (other 4 players are already selected). Each player plays at least one match.

The money paid to each player for one match are as follows:

A → Rs 10,000
B → Rs 8,500
C → Rs 9,700
D → Rs 11,500
E → Rs 13,700
P → Rs 11,800
Q → Rs 9,900
R → Rs 8,800
S → Rs 12,500
T → Rs 7,900

- From the above-mentioned players, atleast 2 forwards & 2 defenders are in a team
- R & S cannot be selected together.
- C & T cannot be selected together.
- E & P cannot be selected together.
- Maximum budget for match against School Y is Rs 71,000 & Budget for match against school X is 75,000 (this budget is for selecting above mentioned players)
- School X team has strong forwards so for that match atleast 3 defenders (from above mentioned players) are selected in team for that match.

Question 1 What is the total amount paid to the team for match against school Y (suppose other 4 player were not paid)?

a) Rs 71,500 b) Rs 71,000
c) Rs 70,300 d) Rs 68,400
e) Rs 70,200

Question 2 What is the total amount paid to the team for match against school X (suppose other 4 player were not paid)?

a) Rs 72,100 b) Rs 74,000
c) Rs 70,300 d) Rs 68,400
e) Rs 74,500

Question 3 Who among the following will play match against school X?

a) S & C b) R & C c) C & E
d) P & B e) S & B

Question 4 Who among the following will play both the matches?

a) D & C b) R & D c) S & P

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d) D & Q e) T & Q

Question 5 Who among the following will play only against school Y?

a) S b) D c) A d) E e) C

Directions [6 to 10]: Company Z allocated budget to 3 different team i.e Content Team, Marketing Team & Video Team. All team spent the budget in buying some items that were required in the team. Atleast 4 different items were bought by each team. (consider 1 as a perfect square) and all the quantity of the given items is sold.

Total quantity of an item bought & Price of each item is given below:

Item	Quantity	Price of each item
A	9	Rs 2000
B	4	Rs 1000
C	5	Rs 1500
D	9	Rs 1700
E	5	Rs 1200
F	9	Rs 1500

Now we have following information about how they used the allocated budget:

- Item A is the only item which was bought by all three teams.
- Item B is only item which was bought by only one team.
- Quantity of Item E bought by Marketing team is less than quantity of item E bought by video team.
- Video team didn't buy item F.
- Quantity of Item D bought by Content team is more than quantity of item D bought by video team.
- Quantity of item E bought by marketing team is a perfect square.
- Item E & B was not bought by same company.
- Total number of quantities bought by video team is 13.
- Quantity of item A bought by Content team & Marketing team are equal, but their combined quantity is less than 8.
- Quantity of item C bought by video team is equal to quantity of item D bought by Video team.
- Total budget of marketing team, video team & content team were Rs 20,000, Rs 21,000 & Rs 25,000 respectively.

Question 6 Which team bought item B?

a) Content team b) Marketing team
c) Video team d) Either (a) or (b)
e) Either (b) or (c)

Question 7 What is the quantity of item F bought by Marketing team?

a) 4 b) 5 c) 6 d) 7 e) None

Question 8 Which of the following statement is true?

a) Marketing team bought item B.
b) Item C was bought by content team
c) Quantity of item A bought by content team is 2
d) None of these
e) All of these

Question 9 What is the total quantity of items bought by Marketing team?

a) 11 b) 12 c) 10 d) 13 e) 14

Question 10 Quantity of item C bought by video team is equal to _____

a) Quantity of item F bought by marketing team
b) Quantity of item C bought by marketing team
c) Quantity of item D bought by content team
d) Quantity of item E bought by marketing team
e) None of these

Directions [11 to 15]: Read the following information & answer the question:

In IPL auction Delhi Daredevils & Mumbai Indian bought total 12 players A, B, C, D, E, F, G, H, I, J, K & L. Each team bought 6 players. Price of each player & their role are as follows:

Player	Role	Fee
A	Batsman	Rs 10,000
B	Batsman	Rs 12,000
C	Batsman	Rs 12,700
D	Batsman	Rs 11,500
E	All Rounder	Rs 13,200
F	All Rounder	Rs 12,000
G	Wicket-keeper	Rs 11,200
H	Wicket-keeper	Rs 9,700
I	Bowler	Rs 8,700
J	Bowler	Rs 9,500
K	Bowler	Rs 9,700
L	Bowler	Rs 10,500

We have following information regarding the players bought by them.

- Each team bought 2 batsman, 1 all-rounder , 1 wicket-keeper & 2 bowlers
- A & D are not in same team.
- I & J are not in same team.
- G & K are in same team.
- F & L are in same team.
- E & C are in same team.
- Total budget for Delhi Daredevils was Rs 64,000 & for Mumbai Indians was Rs 68,000.

Question 11 Who among the following is/are in Mumbai Indians?

I. L II. A III. C IV. B

a) Only I b) Only III c) Both I & III
d) I, II & III e) None of these

Question 12 Which of the following statement can possibly be true?

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a) C belongs to Delhi Daredevils
b) A belongs to Mumbai Indians
c) G belongs to Delhi Daredevils
d) F belongs to Mumbai Indians
e) I belongs to Mumbai Indians

Question 13 What is the total fee charged by all the players which are in Mumbai Indians?
a) Rs 67,000 b) Rs 67,800 c) Rs 67,700
d) Either (a) or (b) e) Either (b) or (c)

Question 14 Which of the following two players are playing in same team?
a) G & L b) C & H c) A & C
d) B & L e) None of these

Question 15 Four of the following are similar in one or other way. Find the odd one out.
a) H b) L c) A d) B e) K

Directions [16 to 20]: East Bengal F.C. has to play 2 matches one against Bengaluru F.C. and another against Pune F.C. They have already selected 3 player which will play both the matches & they all are not charging any fee as they already had signed a bond with them. Now they are left with 12 players. They have to select 8 players from these for each match. Each player plays at least one match.

Player	Position	Fee Charged per match
A	Forward	Rs 11,700
B	Forward	Rs 12,600
C	Forward, midfielder	Rs 13,000
D	Forward, defender	Rs 13,500
E	Specialist Goalkeeper	Rs 14,700
F	Defender, midfielder	Rs 10,900
P	Defender	Rs 13,100
Q	Defender, Goalkeeper	Rs 10,500
R	Defender	Rs 11,900
S	Mid-fielder, Goalkeeper	Rs 12,500
T	Mid-fielder	Rs 12,800
U	Midfielder, Defender	Rs 10,700

Given conditions are for rest 8 players:
- At least 2 players who can play as Goalkeeper (not necessary that both players will play goalkeeper) should be in team.
- Team should have atleast 2 forwards, atleast 1 midfielder and atleast 1 defender.
- P & R cannot play together as both plays at same positions.
- C & S were not selected in same team.
- A & B cannot play together as both plays at same positions.
- Q & S were not selected in same team.
- If both T & C are in team then C will play as forward.
- If 2 defenders are already in team playing with D, then D will play as forwards.
- If E is in team then he will play as Goalkeeper.
- Bengaluru F.C. has strong forwards, so East Bengal F.C. decided to have 4 defenders in for match against Bengaluru F.C.
- East Bengal F.C. has Budget for match against Bengaluru F.C. is Rs 97,000 & for match against Pune F.C. is Rs 1,02,000.
- Difference between the sum of the total fees given to the players for both the matches is less than Rs 4000.

(NOTE: Budget means maximum limit, it doesn't mean that they have to spend all Rs 97,000 in match against Bengaluru F.C)

Question 16 Which of the following statement is definitely true?
I. F is playing as mid-fielder in match against Pune F.C.
II. Q is playing as Goal keeper in match against Pune F.C.
III. T is playing both the matches.
a) Both I & II b) III & either I or II
c) II & III d) Either I or II
e) None of these

Question 17 What is the total fees charged by the players for the match against Bangalore F.C. ?
a) Rs 96,900 b) Rs 96,200 c) Rs 96,500
d) Rs 96,700 e) None of these

Question 18 Who among the following is definitely playing as defender in match against Pune F.C ?
a) F b) U c) P d) Q e) R

Question 19 Who among the following are playing against same team?
a) C & T b) C & B c) A & T
d) U & T e) None of these

Question 20 Who among the following is/are playing both the matches?
I. T II. C III. D IV. U
a) I, II & III b) II & III c) I & IV
d) IV & III e) I & II

ANSWER KEY

1- e	2- b	3- e	4- d	5- e	6- a	7- c	8- d	9- b
10- e	11- b	12- e	13- d	14- d	15- e	16- e	17- a	18- c
19- d	20- d							

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DETAILED SOLUTIONS

Question 1 to 5

- R & S cannot be selected together.
- C & T cannot be selected together.
- E & P cannot be selected together.
- From the above-mentioned players, atleast 2 forwards & 2 defenders are in a team
- School X team has strong forwards so for that match atleast 3 defenders(from above mentioned players) are selected in team for that match.

Now possible 7 players in match against School X are:

Possibility 1	Possibility 2
Q	Q
R	S
T	T
E/P	P/E
A	A
B	B
D	D

- Budget for match against school X is 75,000

Team Against School X			
Possibility 1-a	Possibility 1-b	Possibility 2-a	Possibility 2-b
Q	Q	Q	Q
R	R	S	S
T	T	T	T
E	P	P	E
A	A	A	A
B	B	B	B
D	D	D	D
Total cost= 70,300	Total cost =68400	Total cost= 72100	Total cost= 74000

All are under budget, so anyone can be possible.
Now team for match against School Y will be:

- Each player plays at least one match.
- R & S cannot be selected together.
- C & T cannot be selected together.
- E & P cannot be selected together.

(those who are not playing against school X will play against Y because Each player plays at least one match)

Possibility 1-a			Possibility 1-b		Possibility 2-a		Possibility 2-b	
Against School X	Against School Y	Against School X	Against School Y	Against School X	Against School Y	Against School X	Against School Y
Q	S	Q	S	Q	R	Q	R
R	Q	R	C	S	Q	S	C
T	C	T	Q	T	C	T	Q
E	P	P	E	P	E	E	P
A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B
D	D	D	D	D	D	D	D
Total cost = 70,300	Total cost = 72,100	Total cost =68,400	Total cost= 75,800	Total cost = 72,100	Total cost= 72,100	Total cost= 74,000	Total cost = 70,200

For team against school Y, only case 2-b is fitting in budget so, other cases will be eliminated

Team Against School X	Team Against School Y
Q	R
S	C
T	Q
E	P
A	A
B	B
D	D
Total cost= 74000	Total cost= 70200

Question 6 to 10

- Item A is the only item which was bought by all three teams.
- Video team didn't buy item F.
- Item B is only item which was bought by only one team.

So Item F was bought by Content & Marketing team.

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Content Team	Marketing team	Video Team
A F	A F	A

• Quantity of Item E bought by Marketing team is less than quantity of item E bought by video team.
• Quantity of item E bought by marketing team is a perfect square.
Since quantity of item E is 5, so, perfect square below 5 are 4 & 1. Also Quantity of item E bought by marketing team is less than quantity of item E bought by video team, so
Quantity of item E bought by marketing team is 1, so Quantity of item E bought by video team is 4 (i.e. 5-1 = 4)
• Quantity of Item D bought by Content team is more than quantity of item D bought by video team.

Content Team	Marketing team	Video Team
A D F	A F E (1)	A D E (4)

• Item E & B was not bought by same company. So B was bought by content team.
• Atleast 4 different items were bought by each team.
So C was bought by marketing & video team.

Content Team	Marketing team	Video Team
A D F B	A F E (1) C	A D E (4) C

• Total number of quantities bought by video team is 13.
For video team A + D + C + E = 13
A + D + C = 9 (as E = 4)
• Quantity of item A bought by Content team & Marketing team are equal, but their combined quantity is less than 8.
• Total budget of video team was Rs 21,000
• Quantity of item C bought by video team is equal to quantity of item D bought by Video team
So, quantity of item A bought by content team can be 3 or 2 or 1.
If quantity of item A bought by content team is 1 then quantity of item A bought by marketing team is also 1, so quantity of item A bought by video team is 7 (i.e 9 - 1 - 1 =7)
If quantity of item A bought by content team is 2 then quantity of item A bought by marketing team is also 2, so quantity of item A bought by video team is 5 (i.e 9 - 2 - 2 =5)
If quantity of item A bought by content team is 3 then quantity of item A bought by marketing team is also 3, so quantity of item A bought by video team is 3 (i.e 9 - 3 - 3 =5)
Now for video team:

	Case 1		Case 2			Case 3
	Quantity	Total cost	Quantity	Total cost	Quantity	Total cost
A	7	Rs 14000	5	Rs 10,000	3	Rs 6000
D	1	Rs 1700	2	Rs 3400	3	Rs 5100
E	4	Rs 4800	4	Rs 4800	4	Rs 4800
C	1	Rs 1500	2	Rs 3000	3	Rs 4500
Total cost	Rs 22,000		Rs 21,200			Rs 20,400

So only case 3 is in budget.
So, we have

Content Team	Marketing team	Video Team
A (3) D F B	A (3) F E (1) C	A (3) D (3) E (4) C (3)

Now
quantity of item D bought by content team = 9 - 3 = 6
quantity of item C bought by marketing team = 5 - 3 = 2
Since content team is only team which bought item B, so, quantity of item B bought by content team = 4
Now we have,

Content Team		Marketing team		Video Team	
	Total cost		Total Cost		Total Cost
A (3)	Rs 6000	A (3)	Rs 6000	A (3)	Rs 6000
D (6)	Rs 10,200	F		D (3)	Rs 5100
F		E (1)	Rs 1200	E (4)	Rs 4800
B(4)	Rs 4,000	C (2)	Rs 3000	C (3)	Rs 4500

Now budget left for F in Marketing team = Rs 9,800
budget left for F in content team = Rs 4800

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So, maximum 3 quantity of item F can be bought by Content team.
Also, Maximum 6 quantity of item F can be bought by marketing team.
So only possibility , quantity of item F bought by Content team is 3 & quantity of item F bought by marketing team is 6

So,

Content Team		Marketing team		Video Team	
	Cost		Cost		Cost
A (3)	Rs 6000	A (3)	Rs 6000	A (3)	Rs 6000
D (6)	Rs 10,200	F(6)	Rs 9000	D (3)	Rs 5100
F (3)	Rs 4500	E (1)	Rs 1200	E (4)	Rs 4800
B (4)	Rs 4,000	C (2)	Rs 3000	C (3)	Rs 4500
	Total cost = Rs 24700		Total cost = Rs 19200		Total cost = Rs 20400

QUESTION 11 TO 15

- Each team bought 2 batsman, 1 all-rounder, 1 wicket-keeper & 2 bowlers
- G & K are in same team.

Let us make the 2 teams:
Since both team have 1 wicket-keeper so, G & H are in separate teams.
Also, G & K are in same team. Also, I & J are not in same team & team has 2 bowlers so, either I or J is with K in same team.

Team 1	Team 2
G (wicket-keeper) K (bowler) I/J(bowler)	H(wicket-keeper) I/J (bowler)

Since 2 bowlers are required, so L is in team 2

Team 1	Team 2
G (wicket-keeper) K (bowler) I/J(bowler)	H(wicket-keeper) L (bowler) I/J (bowler)

- F & L are in same team

Team 1	Team 2
G (wicket-keeper) K (bowler) I/J(bowler)	H(wicket-keeper) L (bowler) I/J (bowler) F (all rounder)

Since both team has 1 allrounder so, E was in team 1.

Team 1	Team 2
G (wicket-keeper) K (bowler) I/J(bowler) E (all rounder)	H(wicket-keeper) L (bowler) I/J (bowler) F (all rounder)

- E & C are in same team.
- A & D are not in same team.

This means C is in team 1 & either A or D will be in team 1 as 2 batsman are in each team. So, B will be in team 2 with either A or D

Team 1	Team 2
G (wicket-keeper) K (bowler) I/J (bowler) E (all rounder) C (batsman) A/D (batsman)	H(wicket-keeper) L (bowler) I/J (bowler) F (all rounder) B (Batsman) D/A (Batsman)

Cost for team 1 including only 4 members (G , K, E, & C) = Rs 46,800
Cost for team 2 including only 4 members (H , L, F, & B) = Rs 44,200
Now,
I & D total cost = Rs 20,200
I & A total cost = Rs 18,700
J & D total cost = Rs 21,000
J & A total cost = Rs 19,500
Team 1 doesn't belong to Delhi daredevils because Using any of the above four combinations with team 1, cost to team will exceed the available budget with Delhi Daredevils.
So, team 1 belongs to Mumbai Indians & Team 2 belongs Delhi daredevils.
Budget left for 2 players for delhi daredevils = 64,000 - 44,200 = Rs 19,800
So, Delhi daredevils can have combination (I & A) or (J & A), that means A & either I or J will be in Delhi Daredevils.
Also, Either (I & A) or (J & A) fits in budget with Delhi Daredevils. So, Either (J o& D) or (I & D) is in Mumbai Indians.

Mumbai Indians	Delhi Daredevils
G (wicket-keeper)	H(wicket-keeper)
K (bowler)	L (bowler)
E (all-rounder)	F (all-rounder)
C (batsman)	B (Batsman)
D (batsman)	A (Batsman)
J/I (bowler)	I/J (bowler)
Total fee = Rs 67,000(if I is there) Or Rs 67,800 (if J is there)	Total fee = Rs 62,900 (if I is in team) Or Rs 63,700 (if J is in team)

Answer 12 - Since position of J & I is not clear so I can be in Mumbai Indians.
Answer 13 - Total fee for Mumbai Indians = Rs 67,000(if I is there) Or Rs 67,800 (if J is there).
Answer 15 - Except K all belongs to Delhi Daredevils.

QUESTION 16 TO 20

East Bengal F.C. team against Bengaluru F.C.
- Bengaluru F.C. has strong forwards, so East Bengal F.C. decided to have 4 defenders in for match against Bengaluru F.C.

Now, U, D, F, P, Q & R can play as defender.

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But, we know,

• If 2 defenders are already in team then D will play as forwards.

As we know, there are 4 defenders in team so if D will be in team then he will play as forward, so D cannot play as defender in this team

• P & R cannot play together as both plays at same positions.

So, we have U, F, Q & (P or R)

So,

Case 1	Case 2
U (Defender)	U (Defender)
F (Defender)	F (Defender)
Q (Defender)	Q (Defender)
P (Defender)	R (Defender)

• Q & S were not selected in same team.

So, E will play as goal keeper.

Case 1	Case 2
U (Defender)	U (Defender)
F (Defender)	F (Defender)
Q (Defender)	Q (Defender)
P (Defender)	R (Defender)
E (Goalkeeper)	E (Goalkeeper)
Total amount: Rs 59,900	Total amount: Rs 58,700

• C & S were not selected in same team.

Since S, is not team against Bengaluru F.C so S will play against Pune F.C., so, C cannot play against Pune F.C., that means C will play against Bengaluru F.C.

Case 1	Case 2
U (Defender)	U (Defender)
F (Defender)	F (Defender)
Q (Defender)	Q (Defender)
P (Defender)	R (Defender)
E (Goalkeeper)	E (Goalkeeper)
C (forward/Midfielder)	C (forward/Midfielder)
Total amount: Rs 72,900	Total amount: Rs 71,700

• Team should have atleast 2 forwards, atleast 1 midfielder and atleast 1 defender.

• A & B cannot play together as both plays at same positions.

SO ,if C will play as mid-fielder than for forwards we have 2 combination (B & D) & (A & D)

& if C will play as forward then T will play as midfielder & for forward other option will be A, B or D.

So, in case 1, if T will play as mid-fielder & A (whose price is lowest) will play as forward then total amount will be Rs 97,400 which will exceed the budget so, that is not possible.

In case 2, if T will play as Mid fielder, if T will play as mid-fielder & A (whose price is lowest) will play as forward then total amount will be Rs 96,200

In case 2, if T will play as Mid fielder , if T will play as mid-fielder & B (whose price is 2nd lowest) will play as forward then total amount will be Rs 97,100 which will exceed the budget so this is also not possible.

Case 1	Case 2-a	Case 2-b
U (Defender)	U (Defender)	U (Defender)
F (Defender)	F (Defender)	F (Defender)
Q (Defender)	Q (Defender)	Q (Defender)
P (Defender)	R (Defender)	R (Defender)
E (Goalkeeper)	E (Goalkeeper)	E (Goalkeeper)
C (Midfielder)	C (Midfielder)	C (forward)
		A (forward)
		T (Midfielder)
Total amount: Rs 72,900	Total amount: Rs 71,700	Total amount: Rs 96,200

Now in case 1 & case 2-a we have 2 option, (A & D) or (B & D)

A & D = Rs 25200

B & D = Rs 26100

Now, In case 1, using both combination, total amount exceeds the total budget for team so case 1 is eliminated.

In case 2-a, using B & D as forwards also exceed the budget amount.

So, in case 2-a A & D will play as forwards.

Case 2-a	Case 2-b
U (Defender)	U (Defender)
F (Defender)	F (Defender)
Q (Defender)	Q (Defender)
R (Defender)	R (Defender)
E (Goalkeeper)	E (Goalkeeper)
C (Midfielder)	C (forward)
A (forward)	A (forward)
D (forward)	T (Midfielder)
Total amount: Rs 96,900	Total amount: Rs 96,200

Now, we know each player has to play atleast one match & At least 2 players who can play as Goalkeeper (not necessary that both players will play goalkeeper) should be in team.

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Case 2-a	Case 2-b		
Team against Bengaluru F.C.	Team against Pune F.C.	Team against Bengaluru F.C.	Team against Pune F.C.
U (Defender)	E (Goalkeeper)	U (Defender)	E (Goalkeeper)
F (Defender)	B (forward)	F (Defender)	B (forward)
Q (Defender)	P (defender)	Q (Defender)	P (defender)
R (Defender)	S	R (Defender)	S
E (Goalkeeper)	T (midfielder)	E (Goalkeeper)	D
C (Midfielder)		C (forward)	
A (forward)		A (forward)	
D (forward)		T (Midfielder)	
Total amount: Rs 96,900	Total amount: Rs 65,700	Total amount: Rs 96,200	Total amount: Rs 66,400

Now,
Since A & B were not in same team, also, C & S were not in same team, so D will play as forward in team against Salgoacar F.C. as atleast 2 forwards should be in team.
Also, we know, P & R cannot play together, Q & S cannot be in same team, so, F & U will play in team against Salgoacar F.C.

Case 2-a	Case 2-b		
Team against Bengaluru F.C.	Team against Pune F.C.	Team against Bengaluru F.C.	Team against Pune F.C.
U (Defender)	E (Goalkeeper)	U (Defender)	E (Goalkeeper)
F (Defender)	B (forward)	F (Defender)	B (forward)
Q (Defender)	P (defender)	Q (Defender)	P (defender)
R (Defender)	S (mid fielder)	R (Defender)	S (mid fielder)
E (Goalkeeper)	T (midfielder)	E (Goalkeeper)	D (forward)
C (Midfielder)	D (forward)	C (forward)	F (defender /mid fielder)
A (forward)	F (defender / mid fielder)	A (forward)	U (defender / mid fielder)
D (forward)	U (defender / mid fielder)	T (Midfielder)	T (mid fielder)
Total amount: Rs 96,900	Total amount: Rs 1,00,800	Total amount: Rs 96,200	Total amount: Rs 1,00,800

• Difference between the sum of the total fees given to the players for both the matches is less than Rs 4000.
Now case 2-b is eliminated because there difference (1,00,800 - 96,200 = 4,600) exceeds Rs 4000
So,

Case 2-a	
Team against Bengaluru F.C.	Team against Pune F.C.
U (Defender)	E (Goalkeeper)
F (Defender)	B (forward)
Q (Defender)	P (defender)
R (Defender)	S (mid fielder)
E (Goalkeeper)	T (midfielder)
C (Midfielder)	D (forward)
A (forward)	F (defender / mid fielder)
D (forward)	U (defender / mid fielder)
Total amount: Rs 96,900	Total amount: Rs 1,00,800

Answer 18 - P is definitely playing as defender in match against Pune F.C.
Answer 19 - Both U & T are playing against Pune F.C.

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CHAPTER 14 - SOME MISCELLANEOUS CONCEPTS

In this chapter, we will discuss some miscellaneous concepts being used across various banking and insurance exams.

I. SLOT BASED

In this type of question, conditions are given with respect to the "time slots".
For example: In a school, different subjects are taught in different time slots, such as – 9:00 am – 10:00 am, etc.
Here, there may or may not be time gap between the given slots. Also, the time slots may or may not be of same duration.
We have solved question in the example part.

II. ALPHABET WITH NUMBERS

This is one question type in which knowledge of various numbers as well as alphabets along with arrangement is been judged.
Here, we are given with certain numbers and letters of a word, which are to be arranged against each number according to the given conditions.

III. ARRANGEMENT IN ALPHABETICAL ORDER

This is a small variation been done in exams, mostly in linear arrangement.
Here, we are not given with the names of the persons sitting in the row. Instead it is given that they are sitting in **consecutive alphabetical order**. Also, the conditions are given with respect to one or two letters, by the help of which we get the names of other persons, as they are in consecutive alphabetical order.
For example: If from left to right end, P, Q, R, S, T are sitting, then this is a consecutive alphabetical order. In the directions, we will be given conditions with respect to R (let), then, we get the names of other person by the help of position of R.

IV. LINEAR ARRANGEMENT OF MEANINGFUL WORD

This type is again a form of linear arrangement, where we are given to arrange certain letters, which after arrangement may or may not form a meaningful word. The question is asked with respect to the meaningful word thus formed.

V. CODED PUZZLES

In this, we are given the hints and conditions in the form of codes.
For example: If, it is given that, A#B means A is second to right of B, so, hints will be in this form only, such as A#B, F#G, R$F, etc.

Solved Examples

SLOTS BASED

Directions [1 to 3]: Six different doctors A, B, C, D, E and F worked in a hospital and each had the visit in the general ward at different time slots. Each visit was of 1 hour and no 2 doctors had the same slot for visit. The slots were continuous, for example the slots can be 1PM-2PM, 2PM-3PM, 3PM-4PM (not necessarily the actual slots) and so on. The doctors had different specialisations. They were oncologist, cardiologist, physician, dentist, orthopaedic and psychiatrist not necessarily in the same order. The slots were numbered 1-6 as per their sequence i.e. the 1st slot was numbered 1 and so on.
B's slot number was twice as that of the slot number of the psychiatrist. The psychiatrist and orthopaedic had consecutive slots. There were 2 visits between A's and F's visit. A's visit was made just after the visit of the oncologist. The cardiologist visited the ward at 3 PM. The cardiologist's slot number was 3 more than that of

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C's slot number. C and dentist had consecutive slots. The physician visited the ward just before D. D and E did not have consecutive slots.

Question 1 When was the orthopaedics' slot?
Question 2 Who was the Physician?
Question 3 Which of the following is the correct combination of slot number: name: specialisation?
a) 1: E: Physician b) 2: B: Dentist
c) 3: C: Orthopaedic d) 4: D: cardiologist
e) 5: A: Dentist

Solution:

- The cardiologist visited the ward at 3 PM
- The cardiologist's slot number was 3 more than that of C's slot number. The slot numbers can be (1, 4) (2, 5) or (3, 6)

Case 1:

Slot Number	Name	Time	Profession
1	C	12-1 PM	
2		1-2 PM	
3		2-3 PM	
4		3-4 PM	Cardiologist
5		4-5 PM	
6		5-6 PM	

Case 2:

Slot Number	Name	Time	Profession
1		11-12 PM	
2	C	12-1 PM	
3		1-2 PM	
4		2-3 PM	
5		3-4 PM	Cardiologist
6		4-5PM	

Case 3:

Slot Number	Name	Time	Profession
1		10-11 PM	
2		11-12 PM	
3	C	12-1 PM	
4		1-2 PM	
5		2-3 PM	
6		3-4 PM	Cardiologist

- B's slot number was twice as that of the slot number of the psychiatrist
- The psychiatrist and orthopaedic had consecutive slots
- C and dentist had consecutive slots

Case 1:

Slot Number	Name	Time	Profession
1	C	12-1 PM	Psychiatrist
2	B	1-2 PM	Dentist
3		2-3 PM	
4		3-4 PM	Cardiologist
5		4-5 PM	
6		5-6 PM	

The case is invalid as the orthopaedic cannot be placed in it

Case 1a:

Slot Number	Name	Time	Profession
1	C	12-1 PM	
2		1-2 PM	Dentist
3		2-3 PM	Psychiatrist
4		3-4 PM	Cardiologist
5		4-5 PM	
6	B	5-6 PM	

Case 2:

Slot Number	Name	Time	Profession
1		11-12 PM	Dentist
2	C	12-1 PM	Psychiatrist
3		1-2 PM	Orthopaedic
4	B	2-3 PM	
5		3-4 PM	Cardiologist
6		4-5PM	

Case 2a:

Slot Number	Name	Time	Profession
1		11-12 PM	Dentist
2	C	12-1 PM	Orthopaedic/
3		1-2 PM	Psychiatrist
4		2-3 PM	/Orthopaedic
5		3-4 PM	Cardiologist
6	B	4-5PM	

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Case 2b:

Slot Number	Name	Time	Profession
1		11-12 PM	Orthopaedic
2	C	12-1 PM	Psychiatrist
3		1-2 PM	Dentist
4	B	2-3 PM	
5		3-4 PM	Cardiologist
6		4-5PM	

Case 3:

Slot Number	Name	Time	Profession
1		10-11 PM	Psychiatrist
2	B	11-12 PM	Orthopaedic
3	C	12-1 PM	
4		1-2 PM	Dentist
5		2-3 PM	
6		3-4 PM	Cardiologist

Case 3a:

Slot Number	Name	Time	Profession
1		10-11 PM	/Orthopaedic
2		11-12 PM	Psychiatrist
3	C	12-1 PM	Orthopaedic/
4	B	1-2 PM	Dentist
5		2-3 PM	
6		3-4 PM	Cardiologist

Case 3b:

Slot Number	Name	Time	Profession
1		10-11 PM	
2		11-12 PM	Dentist/Orthopaedic
3	C	12-1 PM	Psychiatrist
4		1-2 PM	Orthopaedic/Dentist
5		2-3 PM	
6	B	3-4 PM	Cardiologist

- There were 2 visits between A's and F's visit
- A's visit was made just after the visit of the oncologist
- The physician visited the ward just before D
- D was either the oncologist or the cardiologist

Case 1a:

Slot Number	Name	Time	Profession
1	C	12-1 PM	
2	F	1-2 PM	Dentist
3		2-3 PM	Psychiatrist
4		3-4 PM	Cardiologist
5	A	4-5 PM	
6	B	5-6 PM	Oncologist

Invalid as the physician cannot be placed in it

Case 2:

Slot Number	Name	Time	Profession
1		11-12 PM	Dentist
2	C	12-1 PM	Psychiatrist
3		1-2 PM	Orthopaedic
4	B	2-3 PM	Physician
5	D	3-4 PM	Cardiologist
6		4-5PM	Oncologist

Invalid as A cannot be placed in it

Case 2a:

Slot Number	Name	Time	Profession
1		11-12 PM	Dentist
2	C	12-1 PM	Orthopaedic/
3		1-2 PM	Psychiatrist
4		2-3 PM	/Orthopaedic
5		3-4 PM	Cardiologist
6	B	4-5PM	

Invalid as A and F cannot be placed as per the conditions

Case 2b:

Slot Number	Name	Time	Profession
1		11-12 PM	Psychiatrist
2	C	12-1 PM	Orthopaedic
3		1-2 PM	Dentist
4	B	2-3 PM	Oncologist
5	A	3-4 PM	Cardiologist
6		4-5PM	

Invalid as F cannot be placed as per the conditions

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Case 3:

Slot Number	Name	Time	Profession
1	F	10-11 PM	Psychiatrist
2	B	11-12 PM	Orthopaedic
3	C	12-1 PM	Oncologist
4	A	1-2 PM	Dentist
5	E	2-3 PM	Physician
6	D	3-4 PM	Cardiologist

D and E did not have consecutive slots; thus, the case is invalid.

Case 3a:

Slot Number	Name	Time	Profession
1	E	10-11 PM	Oncologist
2	A	11-12 PM	Psychiatrist
3	C	12-1 PM	Orthopaedic
4	B	1-2 PM	Dentist
5	F	2-3 PM	Physician
6	D	3-4 PM	Cardiologist

Case 3b:

Slot Number	Name	Time	Profession
1	F	10-11 PM	Physician
2		11-12 PM	Dentist/Orthopaedic
3	C	12-1 PM	Psychiatrist
4	A	1-2 PM	Orthopaedic/Dentist
5		2-3 PM	Oncologist
6	B	3-4 PM	Cardiologist

D cannot be placed in the arrangement; hence case is invalid.

Thus, the final arrangement is as follows:

Slot Number	Name	Time	Profession
1	E	10-11 PM	Oncologist
2	A	11-12 PM	Psychiatrist
3	C	12-1 PM	Orthopaedic
4	B	1-2 PM	Dentist
5	F	2-3 PM	Physician
6	D	3-4 PM	Cardiologist

Answer 1: The orthopaedic visited the ward from 12-1PM

Answer 2: F was the Physician

Answer 3: C had the 3rd slot and was the orthopaedic

ALPHABETS AND NUMBERS BASED

Directions [4 to 5]: First 20 natural numbers are written from the bottom to top. The letters of the word 'TRIP' are written in alphabetical order against the successive multiples of 5(One letter against one number from the bottom to top). Letters A, B, C, D, E, F, G and H not necessarily in the same order are written against 8 of the numbers and the nothing is written against rest of the numbers.

C was written against a number that was 6 times the number against which G was written. H was above D. There was one letter between H and D. Both were written against prime numbers. There are 5 places(numbers) between H and A. B and R were written on consecutive places. There are 2 places between F and I. E and C were not on consecutive positions. No alphabet was written between F and G. Only one alphabet was written between A and G. Only one alphabet was written between R and E.

Question 4 How many alphabets were written between A and E?

Question 5 How many alphabets were written above B?

Solution:

'TRIP' written in alphabetical order becomes 'IPRT'

20	T
19	
18	
17	
16	
15	R
14	
13	
12	
11	
10	P
9	
8	
7	
6	
5	I
4	
3	
2	
1	

- C was written against a number that was 6 times the number against which G was written. Combinations can be (1, 6) (2, 12) or (3, 18)
- There were two places between F and I
- No alphabet was written between F and G

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	Case 1	Case 2
20	T	T
19		
18	C	
17		
16		
15	R	R
14		
13		
12		
11		
10	P	P
9		
8		
7		
6		C
5	I	I
4		
3	G	
2	F	F
1		G

• H was above D and There was one letter between H and D. Both were written against prime numbers. The numbers can be (19, 17) or (13, 11)
• There are 5 places between H and A.
• Only one alphabet was written between A and G. If A is written above P then there will be at least 2 alphabets between A and G. Thus, H and D will be written against 13 and 11.

	Case 1	Case 2
20	T	T
19		
18	C	
17		
16		
15	R	R
14		
13	H	H
12		
11	D	D
10	P	P
9		
8		
7	A	A
6		C
5	I	I
4		
3	G	
2	F	F
1		G

The case 2 becomes invalid as there are 3 alphabets between A and G

• B and R were written on consecutive places
• Only one alphabet was written between R and E
• E and C were not on consecutive positions.

	Case 1	Case 2
20	T	T
19		E
18	C	C
17		
16	B	
15	R	R
14		B
13	H	H
12	E	
11	D	D
10	P	P
9		
8		
7	A	A
6		
5	I	I
4		
3	G	G
2	F	F
1		

E and C were not on consecutive positions thus, case 2 is invalid.
The final arrangement is as follows:

20	T
19	
18	C
17	
16	B
15	R
14	
13	H
12	E
11	D
10	P
9	
8	
7	A
6	
5	I
4	
3	G
2	F
1	

Answer 4: 2 alphabets were written between A and E

Answer 5: 2 alphabets were written above B

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LINEAR ARRANGEMENT OF MEANINGFUL WORD

Question 6 Following the given steps, a 6-letter meaningful English word can be formed (6 different letters). The word ends with the letter N and the word also contains E. R is written second to left of A. Only one letter is written between O and A. No letter is written between O and S. Which of the following is the third letter from the right? Consider the directions as per your left and right.

a) N b) E c) S d) A

e) Cannot be determined as more than one word is possible

Solution:

• The word ends with N.

We get,

					N

Now,

• R is written second to left of A.

We get,

Case I:

		R		A	N

Case II:

	R		A		N

Case III:

R		A			N

Now,

• Only one letter is written between O and A

We get,

Case I: becomes invalid as O cannot be placed.

Case II: becomes invalid as O cannot be placed.

Only possible case is:

R		A		O	N

Now,

• No letter is written between O and S.

• E is one of the letters of word.

We get the final word as:

R	E	A	S	O	N

Finally arranged word is - **REASON**

Third letter from the right = **S**

Question 7 Following the given steps, a 7-letter meaningful English word can be formed (7 different letters). S is written to immediate left of T and towards right of I. Only one letter is written between E and D, with E towards left of D. A is written to immediate right of the letter third to right of N. What is the last letter of the word formed? Consider the directions as per your left and right.

a) D b) A

c) Cannot be determined as more than one word is possible

d) I e) S

Solution:

• A is written to immediate right of the letter third to right of N.

We get,

Case I:

		N				A

Case II:

	N				A	

Case III:

N				A		

We have,

• S is written to immediate left of T and towards right of I.

• Only one letter is written between E and D, with E towards left of D.

So, we get,

Case I:

I	E	N	D	S	T	A

Case II:

I	N	S	T	E	A	D

Case III:

N	S	T	E	A	D	I

Since, the word formed is meaningful, so case I and III become invalid, and the word formed is - **INSTEAD**

So, The last letter of the word is D.

ARRANGMENT IN ALPHABETICAL ORDER

Directions [8 to 10]: There are several people sitting in a row having different items among pen, pencil, eraser, ball, bat and key. Each person has only one item. They are sitting in consecutive alphabetical order facing either north or south. Equal number of people face north and south. The one having ball face in the north direction. V having pen sits to the immediate right of one having eraser. The one having pencil faces the same direction as the one having bat. The immediate neighbours of V face in the opposite direction. There are three people between the one having key and one having eraser, with the key owner sitting closer to the left end of the row as compared to the eraser owner. The one having Bat sits to the right of the one having ball. The ball owner is neither adjacent to the pen owner nor to the left of the key owner.

Question 8 What is the position of the Bat owner with respect to the Ball owner?

a) second to the right b) second to the left

c) third to the right d) third to the left

e) cannot be determined

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Question 9 Who among the following is sitting in the row?
(I) W (II) R (III) X
Question 10 Who all are facing south?
a) S, V, W b) W, T, S c) S, W, U
d) S, V, U e) Cannot Be determined
Solution:
There are three people between the one having key and one having eraser, with the key owner sitting closer to the left end of the row as compared to the eraser owner.

KEY _____ _____ _____ ERASER

Now we have
V having pen sits to the immediate right of one having eraser.
So, from this statement, V can sit on either side as we don't know which side the eraser owner is is facing. So, we have two cases:
CASE 1:

KEY _____ _____ V PEN ERASER

CASE 2:

KEY _____ _____ _____ ERASER V PEN

Now we have, The immediate neighbours of V face in the opposite direction.
Total items = 6
Each person has only one item so, total people = 6
If V has immediate neighbours, then in case 2, we will have more number of people than required so it will turn out to be invalid. Hence, we drop the case 2.
Moving ahead with Case 1, since V is sitting to the right of eraser owner, therefore the eraser owner will face towards south and the other neighbour of V will face north:

KEY _____ _____ V PEN ERASER

Since we know that the persons are sitting in alphabetical order, so we have the order as R, S, T, U, V, W or S, T, U, V, W, X.

Case 1(a):

S KEY T U V PEN W ERASER X

OR
Case 1(b):

R S KEY T U V PEN W ERASER

The one having ball face in the north direction and the one having Bat sits to the right of the one having ball, so the ball owner can sit at T or U in case 1(a) or at R and T in case 2(b).
But The ball owner is neither adjacent to the pen owner nor to the left of the key owner.
So, in Case 1(a) ball owner cannot be U.
Now in case 1(a), if T is the ball owner facing north, U and X will be pencil and bat owner in no particular order facing in the same direction i.e. north and so the rest will face south as equal number of people will face both the directions.

S KEY T BALL U PENCIL /BAT V PEN W ERASER X BAT/ PENCIL

But as it is given that the ball owner is not to the left of the key owner, so this case is not valid.
So, eliminating all the cases, we have:

R BALL S KEY T PENCIL U BAT V PEN W ERASER

OR

R BALL S KEY T BAT U PENCIL V PEN W ERASER

Answer 8: As the position of the bat owner is not known so it cannot be determined.
Answer 9: W and R are sitting in the row
Answer 10: S, V and W are facing south.

Practice Yourself

Directions (1 to 4): Lectures of 6 subjects Geography, Hindi, English, Chemistry, Accounts and History were to be taken in a school in different time slots on a day. There was no gap between two consecutive slots. The total duration of all six lectures was of 14 hours. Either the lectures started or ended at a time such as 9:00AM or half past of any hour such as 9:30AM. No lecture started or ended at a time like 9:12AM or 9:20AM. Number of lectures after history lecture was twice as that of the number of lectures before the English lectures. English lecture was not the first lecture. Accounts lecture ended at 1:30PM. The Chemistry lecture started at 4:30PM. Duration of the English lecture was 1 hour more than the duration of the accounts lecture. History lecture was taken before the Hindi lecture. They were not taken consecutively. The least duration for any lecture was of 1.5 hours. Last lecture started at 6:30PM. Geography lecture was taken for 2 hours. The duration of the last lecture was twice as that of the duration of the lecture that started at 12:00PM

Question 1 At what time did the Geography lecture start?
a) 7:00AM b) 7:30AM c) 8:00AM
d) 8:30AM e) 9:30AM

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Question 2 Which of the following lecture was taken the last?
a) Chemistry b) Hindi c) Accounts
d) English e) Cannot be determined

Question 3 At what time did the last lecture end?
a) 8:00PM b) 8:30PM c) 9:00PM
d) 9:30PM e) 10:00PM

Question 4 How many lectures were taken between Geography and Accounts?
a) None b) One c) Two
d) Three e) Cannot be determined

Directions [5 to 8]: Eight candidates - A, B, C, D, E, F, G and H, had their bank interviews scheduled (each one has interview for different bank) at the same venue. Each one had interview in different slot not necessarily in the same order and each interview slot was of one-hour duration. The different banks for which interview was held are - PNB, BOB, UBI, SBI, Axis, Dena, ICICI and HDFC, not necessarily in the same order. Between the two slots, there was gap of some time. No two slots of interview were held consecutively. (the gap between two slots is seen as the time between the end of first slot and start of second slot given)

- First interview started at 7:00 am and last interview end at 10:30 pm.
- E gave interview for PNB, in the slot immediately after the interview slot of UBI, which was not given by A.
- F's interview was in the last slot.
- Number of slots before the interview slot of SBI are equal to number of slots after the interview slot of Axis bank, which started at 6:30 pm and, neither of the two interviews are at start or end.
- One of the interviews started at 10:30 am, which is not SBI.
- There is a difference of 1 hour between the slots of SBI and HDFC, HDFC been started immediately after SBI.
- Three people gave interview between C's and E's interview. (C's interview is before E's)
- UBI interview ended at either 2:30 pm or 1:45 pm.
- ICICI interview, which was not given by G, started at 11:45 am and there are two slots between ICICI and BOB's slot. BOB's slot is before ICICI's slot.
- A gave interview at before B and after H. There was 1 slot between A and B and same is true for H and A.
- Gap of 4 hours 30 minutes is there between HDFC and PNB interview slots.

Question 5 Which of the following bank(s') interview took place between 11:00 am to 6:00 pm?
I: SBI II: AXIS
III: PNB IV: Dena
a) Both I and III b) Both I and II
c) Only IV d) Only III
e) I, II and IV

Question 6 At what time did the interview of PNB end?
a) 6:00 pm b) 2:00 pm c) 3:00 pm
d) 4:00 pm e) 5:00 pm

Question 7 How many persons gave interview after ICICI's interview?
a) Four b) One c) Three
d) More than four e) Two

Question 8 If the interview of D stretches out for 25 more minutes than the actual slot timings then, after how many minutes from the end of D's interview will UBI's interview take place?
a) 30 minutes b) UBI's slot is before D's slot
c) 20 minutes d) 150 minutes
e) 120 minutes
D's interview in actual, ends at 12:45 pm but stretches out for 25 more minutes so ends at 1:10 pm and UBI's interview starts at 1:30. So, 20 minutes difference is there, hence, option (c).

Directions [9 to 10]: First 12 natural even numbers are written from bottom to top. The letters of word 'RAIN' are written in alphabetical order against each multiple of 6 (One letter against one number from bottom to top). No alphabet is written against one of the numbers, thus the position is vacant. The letters B, C, D, E, F, G and H are written against rest of the numbers.
Only 4 alphabets are written below I. There are two places in between the vacant place and E. E is below the vacant place. E and H were written on consecutive positions. There are two letters between C and G. B and N were written on consecutive positions. D was above F and there were 2 letters between D and F. Only one alphabet was written between B and G.

Question 9 If the alphabets written against the numbers 12, 16, 18 and 24 are considered then a meaningful word can be formed, which of the following will be the 1st alphabet of that word. Mark 'x' as your answer if more than one meaningful words can be formed using these alphabets.
a) G b) R c) N d) X e) I
Words that can be formed are: ring, grin.

Question 10 Which of the following alphabet was written against number 14?
a) C b) B c) F d) D e) G

Directions [11 to 12]: First 12 multiples of number 4 are written from top to bottom. The letters of word 'VAPOUR' are written in alphabetical order against each multiple of 8 (One letter against one number from top to bottom). The letters D, E, F, G, H and I are written against rest of the numbers.
There were 3 letters between G and F and G is written above F. F and U were written at consecutive positions. There were 2 letters between O and E. Number of letters written below H was one more than the number of letters written

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above I. H was written somewhere below I. D and P were not written on consecutive positions.

Question 11 Which of the following alphabet was written against number 4?
a) D b) F c) I d) G e) E

Question 12 How many alphabets were written above D?
a) None b) Two c) Four
d) Six e) Eight

Question 13 8 letters are arranged to form a meaningful word which starts with A and ends with T. Only one letter appears twice, and 6 letters appear only once in the word. Letters A is placed 3rd to the left of T, which is placed to the immediate right of E. Letter L is placed to the immediate left of P. 2 letters are placed between P and B. Either H or G is present in the word but not both. Which letter is 4th from the left end in that meaningful word?(take conventional left and right)
a) G b) H c) F d) D e) T

Question 14 On Following the given steps, a 7-letter meaningful English word can be formed (7 different letters). There were only 3 alphabets between R and L. R was written to the immediate right of A. I was written second to the right of R. There were 3 letters between T and E, but T was not written at either ends and There was 1 letter between C and E.
Which of the following alphabet was written to the immediate right of 'T' as per given arrangement? [Consider the directions from your left to right]
a) A b) I c) L d) R e) None of these

Question 15 On Following the given steps, a 9-letter meaningful English word can be formed (9 different letters). There were three alphabets between G and T. M was written at one of the immediate neighbor position of H and there were two alphabets between G and I. There were 3 letters between O and H and A was written at either end and as an immediate neighbor of L. M was written second to right of T and O is to the left of R but not at the either ends. Which of the following letter was written second to left of R, consider the directions as per your left and right?
a) I b) T c) O d) M e) G

Directions (16 to 19): 8 persons A, B, C, D, E, F, G and H are standing around the circle facing towards the centre. The weight of every person is different among 36, 44, 48, 50, 63, 72, 75 and 88, not necessarily I the same order.
Following conditions are used to determine the weight of some persons.
a. "?" means the weight of that person is twice the person standing to the immediate left of him. (E.g. "A?" means weight of A is twice of the person standing to his immediate left)
b. "&" means the weight of that person is 12 kg more than the weight of person facing him.
c. "%" means the weight of that person is the odd multiple of 9.
A is 25kg less than C, who is standing to the immediate right of A. H is facing A and is 25 kg more than the person standing to the immediate right of H. E is standing adjacent to C and F is standing adjacent to A. D is neither standing adjacent to G nor standing adjacent to F.
It is also known that;
F?, E&, B%

Question 16 Who is facing the 50 kg heavy person?
a) 88 kg person b) 63 kg person c) A
d) C e) D

Question 17 Who is standing 2nd to the left of the heaviest person?
a) H b) B c) D d) E e) C

Question 18 Who is standing to the immediate right of the lightest person?
a) F b) C c) D d) G e) E

Question 19 How many persons are standing between heaviest and lightest person, when counted from the left of the heaviest person?
a) 4 b) 5 c) 3 d) 2 e) Less than 2
5 persons are standing between heaviest and lightest person, when counted from the left of the heaviest person.

Directions (20 to 23): 8 persons A, B, C, D, E, F, G and H are standing in a row facing towards north. Each person has different amount with him among 100, 200, 300, 400, 500, 600, 700 and 800 not necessarily in the same order.
Following conditions are used to determine the amount of money with some persons.
a. "@" means the amount of money with that person is the sum of amount with both persons standing adjacent to him. (E.g. "A@" means amount of money with A is the sum of amount of money with person standing to his immediate right and the person standing to his immediate left)
b. "#" means the amount of money with that person is twice the amount of money with the person standing 2nd to the right of him.
c. "&" means the amount of money with that person is half the amount of money with the person standing to the immediate right of him.
F is standing 2nd to the left of the one with 500 Rs., who is standing to the immediate left of the one with most money with him. H is standing adjacent to the one with most money. 2 persons are standing between H and G, who is not standing adjacent to F. Only 1 person is standing between G and B, who does not have most amount of money with him. A is standing adjacent to C and D. C has 100 Rs more than D.
We also know that: - D@, C#, E&

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Question 20 How many persons are standing between the one with highest amount and the one with 200 Rs?

a) 2 b) 1 c) 3
d) 4 e) More than 4

Question 21 Who is standing 2nd to the left of H?

a) C b) H c) A d) B e) G

Question 22 Who is standing 2nd to the right of the one with 100 Rs?

a) C b) E c) B d) G e) D

Question 23 Who has 600 Rs?

a) D b) C c) A d) G e) E

Directions [24 to 26]: Seven students in a school are sitting in a linear row from left to right, some are facing north while some are facing south. Each one of them studies in a different class from I to VII (if a student studies in class I, then he is younger than the one studying in class II, and so on). They are sitting in consecutive English alphabetical order from left end.

The one who is sitting second to right of H, is in class VI. Either the one in class III or the one in class IV (none of these two is K) sits towards immediate left of the class VI student. Student of IV is towards left of VI class student. One who is in class II sits 2nd to the right of the one in class V. The immediate neighbours of class II student face in same direction. Class IV student sits second to right of the class III student, who faces south. Student of VII is not next to that of III. The student in class VII is to immediate left of the student of class II, and there are 3 students between the student of class II and the student of class IV. Neither of II and IV students is C. The student who is immediate right to the class V student faces north. The ones sitting at extreme ends face in opposite directions. (if one faces north, other faces south)

Question 24 How many students face in south direction?

a) One b) Two c) Three
d) Four e) More than four

Question 25 Who is not among the students mentioned who are sitting in the row?

a) E b) G c) I d) K e) M

Question 26 Who among the following studies in class IV?

a) I b) G c) K d) J e) None of these

Directions [27 to 30]: There are six children, who like different fruits among Apple, litchi, banana, papaya, kiwi and mango not necessarily in the same order. They are sitting in a linear row from left to right. They are sitting in consecutive English alphabetical order from left end. Equal number of children are facing towards north and south direction in the row.

One who likes Litchi sits to immediate right of one who likes banana. The one who likes kiwi sits 4th to the left of the one who likes papaya. The one who likes apple faces north. U, who likes mango sits to immediate left of the one who likes papaya. The immediate neighbours of U, face opposite direction. (if one faces north then other faces south and vice versa). Neither T nor V, like banana. The one who likes kiwi faces in the same direction as the one who likes Litchi. One who likes apples sits towards the right of one who likes Kiwi. The children sitting at the extreme ends, face in same direction.

Question 27 Who among the following are sitting in the given row?

I: P II: Q III: W

a) Only III b) Only I c) Both I and II
d) Only II e) None of the given

Question 28 Which of the following statements is true as per the given arrangement?

a) The one who likes Kiwi is facing in north direction.
b) U is sitting towards right of the child who likes Litchi.
c) The children sitting at extreme ends are facing south.
d) The children who sits at extreme right end is V.
e) All the given statements are false.

Question 29 The child sitting to immediate right of the one who likes apple, likes _____.

a) Papaya b) Litchi c) Mango
d) Banana e) Kiwi

Question 30 T is immediate right of ____

a) S only b) U only c) Q only
d) S and U both e) U and Q both

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ANSWER KEY

1- b	2- b	3- d	4- b	5- d	6- e	7- a	8- c	9- d
10- d	11- c	12- b	13- b	14- b	15- e	16- a	17- d	18- a
19- b	20- a	21- c	22- b	23- d	24- c	25- a	26- b	27- d
28- d	29- e	30- d						

DETAILED SOLUTIONS

Question 1 to 4

• Number of lectures after history lecture was twice as that of the number of lectures before the English lectures

• English lecture was not the first lecture.

Case 1:

English		
History		

Case 2:

History		
English		

• Accounts lecture ended at 1:30PM

• The Chemistry lecture started at 4:30PM. Thus, there was at least one lecture between accounts and chemistry lecture. The least duration for any lecture was of 1.5 hours. There is a gap of 3 hours between the 2 lectures. The combinations can be 2 lectures (1.5 hour, 1.5hours) or 1 lecture of 3 hours.

Case 1:

Accounts		-1:30PM
English	3 hours	1:30-4:30PM
Chemistry		4:30-
History		

Case 1a:

English		
Accounts		-1:30PM
History	3 hours	1:30-4:30PM
Chemistry		4:30-

Case 1b:

English		
Accounts		-1:30PM
History	1.5 hours	1:30-3:00PM
	1.5 hours	3:00-4:30PM
Chemistry		4:30-

Case 2:

Accounts		-1:30PM
History	1.5 hours	1:30-3:00PM
English	1.5 hours	3:00-4:30PM
Chemistry		4:30-

Case 2a:

History		
English		
Accounts		-1:30PM
	3 hours	1:30-4:30PM
Chemistry		4:30-

• History lecture was taken before the Hindi lecture. They were not taken consecutively.

• Last lecture started at 6:30PM. Thus, cases 1b and 2a become invalid.

Case 1:

Accounts		-1:30PM
English	3 hours	1:30-4:30PM
Chemistry		4:30-
History		
		-6:30
Hindi		6:30-

The case is invalid as the gap between starting of 3rd and ending of 5th lecture is of 2 hours. As the lectures were not less than 1.5 hours, the case becomes invalid.

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Case 1a:

Geography		
English		
Accounts		-1:30PM
History	3 hours	1:30-4:30PM
Chemistry	2 hours	4:30-6:30
Hindi		6:30

Case 2:

Accounts		-1:30PM
History	1.5 hours	1:30-3:00PM
English	1.5 hours	3:00-4:30PM
Chemistry		4:30-
		-6:30
		6:30-

The case is invalid as the gap between starting of 4th and ending of 5th lecture is of 2 hours. As the lectures were not less than 1.5 hours, the case becomes invalid.

- Duration of the English lecture was 1 hour more than the duration of the accounts lecture
- Geography lecture was taken for 2 hours
- The duration of the last lecture was twice as that of the duration of the lecture that started at 12:00PM. Only accounts lecture can start at 12:00 PM as no lecture was less than 1.5 hours.

Geography	2 hours	
English	x+1	
Accounts	x	12:00-1:30PM
History	3 hours	1:30-4:30PM
Chemistry	2 hours	4:30-6:30
Hindi	2x	6:30

(2+x+1+x+3+2+2x) =14
8+4x=14
4x=6
X=1.5 hours

Geography	2 hours	7:30-9:30AM
English	2.5 hours	9:30-12:00PM
Accounts	1.5hours	12:00-1:30PM
History	3 hours	1:30-4:30PM
Chemistry	2 hours	4:30-6:30PM
Hindi	3 hours	6:30-9:30PM

Question 5 to 8

- First interview started at 7:00 am and last interview end at 10:30 pm. (keep in mind that slots are of 1 hour, such that the slot starting at 7:00 am will end at 8:00 am)
- F's interview was in the last slot.
- Three people gave interview between C's and E's interview. (C's interview is before E's)

We get the following cases:

Case I:

Person	Interview Slot	Bank
C	7:00 am - 8:00 am	
E		
F	9:30 pm - 10:30 pm	

Case II:

Person	Interview Slot	Bank
	7:00 am - 8:00 am	
C		
E		
F	9:30 pm - 10:30 pm	

Case III:

Person	Interview Slot	Bank
	7:00 am - 8:00 am	
C		
E		
F	9:30 pm - 10:30 pm	

- E gave interview for PNB, in the slot immediately after the interview slot of UBI, which was not given by A.
- A gave interview at before B and after H. There was 1 slot between A and B and same is true for H and A.

Thus, case I becomes invalid, as, A cannot be placed.

Case II:

Person	Interview Slot	Bank
H	7:00 am - 8:00 am	
C		
A		
B		UBI
E		PNB
F	9:30 pm - 10:30 pm	

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Case III:

Person	Interview Slot	Bank
	7:00 am - 8:00 am	
H		
C		
A		
B		UBI
E		PNB
F	9:30 pm - 10:30 pm	

Now,

• Number of slots before the interview slot of SBI are equal to number of slots after the interview slot of Axis bank, which started at 6:30 pm and, neither of the two interviews are at start or end.

• HDFC interview started immediately after SBI.

Thus, case III becomes invalid and we get,

Case II(a):

Person	Interview Slot	Bank
H	7:00 am - 8:00 am	
C		SBI
A		HDFC
B		UBI
E		PNB
	6:30 pm - 7:30 pm	AXIS
F	9:30 pm - 10:30 pm	

Case II(b):

Person	Interview Slot	Bank
H	7:00 am - 8:00 am	
C	6:30 pm - 7:30 pm	AXIS
A		
B		UBI
E		PNB
		SBI
F	9:30 pm - 10:30 pm	HDFC

• ICICI interview, which was not given by G, started at 11:45 am, and there are two slots between ICICI and BOB slots. BOB is before ICICI.

Thus, case II(b) becomes invalid, as Axis bank interview then cannot be before ICICI's.

Also, D gave ICICI interview.

We get,

Case II(a):

Person	Interview Slot	Bank
H	7:00 am - 8:00 am	BOB
C		SBI
A		HDFC
D	11:45 am - 12:45 pm	ICICI
B		UBI
E		PNB
G	6:30 pm - 7:30 pm	AXIS
F	9:30 pm - 10:30 pm	Dena

Now,

• UBI interview ended at either 2:30 pm or 1:45 pm.

Since, UBI is immediately after ICICI, so, we cannot end UBI at 1:45 as it has to then start at 12:45 pm, which is not possible as, ICICI ends at that time and, no two slots of interview were held consecutively.

We get thus, that, UBI starts at 1:30 and ends at 2:30 pm.

Person	Interview Slot	Bank
H	7:00 am - 8:00 am	BOB
C		SBI
A		HDFC
D	11:45 am - 12:45 pm	ICICI
B	1:30 pm - 2:30 pm	UBI
E		PNB
G	6:30 pm - 7:30 pm	AXIS
F	9:30 pm - 10:30 pm	Dena

Now,

• One of the interviews started at 10:30 am, which is not SBI.

Thus, it must be HDFC, which will end at 11:30 am.

• There is a difference of 1 hour between the slots of SBI and HDFC, thus, SBI ends at 9:30 am and starts thus, at 8:30 am.

• Gap of 4 hours 30 minutes is there between HDFC and PNB interview slots.

Thus, PNB starts at 11:30 + 4.5 hrs. = 4:00 pm

Final arrangement is as follows:

Person	Interview Slot	Bank
H	7:00 am - 8:00 am	BOB
C	8:30 am - 9:30 am	SBI
A	10:30 am - 11:30 am	HDFC
D	11:45 am - 12:45 pm	ICICI
B	1:30 pm - 2:30 pm	UBI
E	4:00 pm - 5:00 pm	PNB
G	6:30 pm - 7:30 pm	AXIS
F	9:30 pm - 10:30 pm	Dena

Question 9 to 10

RAIN when arranged alphabetically will become 'AINR' which will be written against the multiples of 6.

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24	R
22	
20	
18	N
16	
14	
12	I
10	
8	
6	A
4	
2	

• Only 4 alphabets are written below I. 5 alphabets should have been written below I, thus, one of the positions below I must be vacant.
• There are two places in between the vacant place and E. E is below the vacant place.
• E and H were written on consecutive positions.

24	R
22	
20	
18	N
16	
14	
12	I
10	VACANT
8	
6	A
4	E
2	H

Or

24	R
22	
20	
18	N
16	
14	
12	I
10	
8	VACANT
6	A
4	H
2	E

• There were 2 letters between C and G.
• B and N were written on consecutive positions.
• Only one alphabet was written between B and G.

Case 1:

24	R
22	C
20	B
18	N
16	G
14	
12	I
10	VACANT
8	
6	A
4	E
2	H

Or

24	R
22	
20	G
18	N
16	B
14	C
12	I
10	VACANT
8	
6	A
4	E
2	H

Case 2:

24	R
22	C
20	B
18	N
16	G
14	
12	I
10	C
8	VACANT
6	A
4	H
2	E

Or

24	R
22	
20	G
18	N
16	B
14	C
12	I
10	
8	VACANT
6	A
4	H
2	E

• D was above F and there were 2 letters between these 2, thus, the only possible arrangement will be as follows:

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24	R
22	C
20	B
18	N
16	G
14	D
12	I
10	VACANT
8	F
6	A
4	E
2	H

QUESTION 11 TO 12

VAPOUR when arranged alphabetically will become 'AOPRUV' which will be written against the multiples of 8

4	
8	A
12	
16	O
20	
24	P
28	
32	R
36	
40	U
44	
48	V

• There were 3 letters between G and F and G is written above F

• F and U were written at consecutive positions

4	
8	A
12	
16	O
20	
24	P
28	G
32	R
36	
40	U
44	F
48	V

Or

4	
8	A
12	
16	O
20	G
24	P
28	
32	R
36	F
40	U
44	
48	V

• there were 2 letters between O and E

4	E
8	A
12	
16	O
20	
24	P
28	G
32	R
36	
40	U
44	F
48	V

Or

4	
8	A
12	
16	O
20	G
24	P
28	E
32	R
36	F
40	U
44	
48	V

Or

4	E
8	A
12	
16	O
20	G
24	P
28	
32	R
36	F
40	U
44	
48	V

• Number of letters written below H was one more than the number of letters written above I.

• H was written somewhere below I

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4	E
8	A
12	I
16	O
20	D
24	P
28	G
32	R
36	H
40	U
44	F
48	V

D and P were not written on consecutive positions hence, the case is invalid.

Or

4	I
8	A
12	D
16	O
20	G
24	P
28	E
32	R
36	F
40	U
44	H
48	V

Or

4	E
8	A
12	
16	O
20	G
24	P
28	
32	R
36	F
40	U
44	
48	V

H and I cannot be placed as per the conditions hence the case is invalid.

The final arrangement is as follows:

4	I
8	A
12	D
16	O
20	G
24	P
28	E
32	R
36	F
40	U
44	H
48	V

QUESTION 13

A						T

Letters A is placed 3rd to the left of T, which is placed to the immediate right of E.

Case 1: -

A		E	T			T

Case 2: -

A			A		E	T

Letter L is placed to the immediate left of P. 2 letters are placed between P and B.

So, case 1 is invalid.

Case 2: -

A	L	P		A	B	E	T

Either H or G is present in the word but not both.

So, we get: -

Case 2 (a): -

A	L	P	H	A	B	E	T

Case 2 (b): -

A	L	P	G	A	B	E	T

This is not a meaningful word, so this case is invalid.

Final Solution:

A	L	P	H	A	B	E	T

QUESTION 14

We have:

- R was written to the immediate right of A.
- There were only 3 alphabets between R and L
- I was written second to the right of R.

Thus, from above data we have following result:

Case 1: L _ _ A R _ I

Case 2: A R _ I _ L

Again, we have:

- There were 3 letters between T and E and T was not written at either ends.

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• There was 1 letter between C and E, thus case 1 is not valid.
Thus, from above data we have following result:

Case 1: A R T I C L E

Case 2: A R E I C L T

• There were 3 letters between T and E. Thus, we get 2 possibilities: 'ARTICLE' and 'AREICLT'. Word formed in case 2 is not a meaningful word.
Hence, the final arrangement is as follows:

A R T I C L E

Thus, I is to the immediate right of T.

QUESTION 15

We have:
• There were three alphabets between G and T.
• There were two alphabets between G and I.
• M was written second to right of T.
From above information we get:

Case 1: G _ _ I T _ M

Case 2: T _ M _ G _ _ I

Again, we have:
• M was written immediate neighbor of H.
• There were 3 letters between O and H.
From above information we get:

Case 1: G O _ I T H M

Case 2: T H M _ G O _ I

Case 3: O T _ M H G _ _ I

• As 'A' was placed at either end immediate neighbor of L then, case 2 and Case 3 is not valid.
• After placing remaining letter 'R'.
From above information we get:

A L G O R I T H M

G O R I T H M A L

• We get two possibilities "ALGORITHM" and "GORITHMAL" case 2 is not a meaningful word.
Thus, from above given information we get:

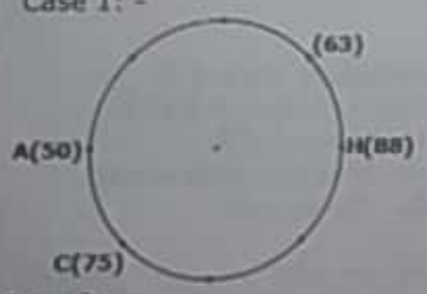
A L G O R I T H M

Thus, 'G' is second to left of R.

QUESTION 16 TO 19

A is 25 kg less than C, who is standing to the immediate right of A.
H is facing A and is 25 kg more than the person standing to the immediate right of H.

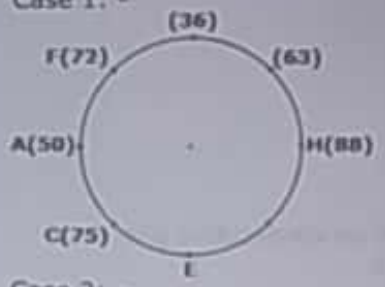
Case 1: -



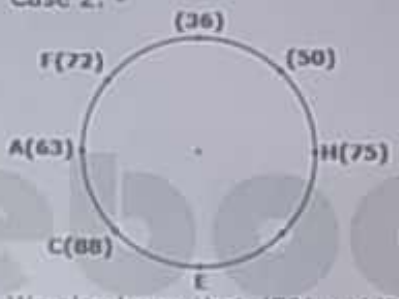
Case 2: -

E is standing adjacent to C and F is standing adjacent to A.
Now we know that 'F?' where "?" means the weight of that person is twice the person standing to the immediate left of him.

Case 1: -

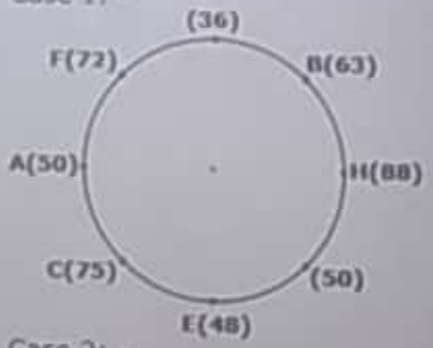


Case 2: -

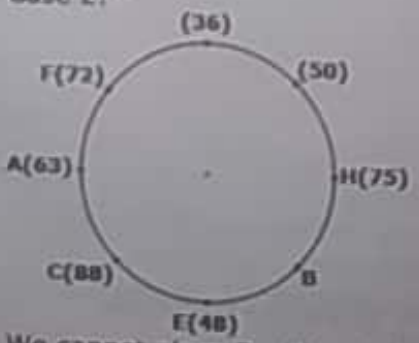


We also know that, 'E&' and 'B%' where "&" means the weight of that person is 12 kg more than the weight of person facing him and "%" means the weight of that person is the odd multiple of 9.
So, E must be 48 kg and B must be 63 kg.
We get: -

Case 1: -



Case 2: -



We cannot place B with weight of 63 kg in case 2.

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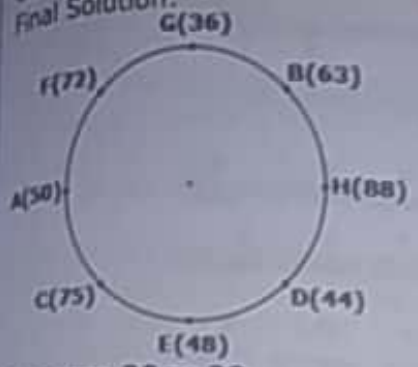
Case 2 is invalid.

Final Solution:



QUESTION 20 TO 23

F is standing 2nd to the left of the one with 500 Rs., who is standing to the immediate left of the one with most money with him.

So, we get: -

F ___ 500 ___ 800 ___

H is standing adjacent to the one with most money.

2 persons are standing between H and G, who is not standing adjacent to F.

So, we get: -

Case 1: -

F ___ H 500 ___ 800 ___ ___ G

Case 2: -

F ___ 500 800 H ___ ___ G

Only 1 person is standing between G and B, who does not have most amount of money with him.

Case 1: -

F ___ H 500 800 ___ G ___ B

Case 2: -

F ___ 500 800 H B ___ G

A is standing adjacent to C and D. so, case 1 is invalid.

C has 100 Rs more than D.

So, we get: -

C = 800 Rs and D = 700 Rs

F D 700 A 500 C 800 H B E G

Now, using: - D@, C#, E&

a. "@" means the amount of money with that person is the sum of amount with both persons standing adjacent to him. (E.g. "A@" means amount of money with A is the sum of amount of money with person standing to his immediate right and the person standing to his immediate left)

b. "#" means the amount of money with that person is twice the amount of money with the person standing 2nd to the right of him.

c. "&" means the amount of money with that person is half the amount of money with the person standing to the immediate right of him.

So, "D@" means, D = F + A

F = D - A = 700 - 500 = 200 Rs

"C#" means. C = 2 x B

800 = 2B

B = 400 Rs

F 200 D 700 A 500 C 800 H B 400 E G

Now, H, E and G have 100, 300 and 600 in no particular order.

"E&" is the amount of money with E is half the amount of money with person standing to the immediate right.

So, E = 300 and G = 600

F 200 D 700 A 500 C 800 H 100 B 400 E 300 G 600

This is the final solution.

QUESTION 24 TO 26

- The one who is sitting second to right of H, is in class VI.
- Either the one in class III or the one in class IV (none of these two is K) sits towards immediate left of the class VI student.

We get following cases:

Case I: when H faces north

H↑ I III J↑ VI

H↑ I IV J↑ VI

Case II: when H faces south

F↓ VI G III H↓

F↓ VI G IV H↓

I III F↑ VI G H↓

I IV F↑ VI G H↓

Now,

- Class IV student sits second to right of the class III student, who faces south.

We get,

For case I:

G IV H↑ I↓ III J↑ VI

H↑ I IV J↑ VI K↓ III

For case II:

I IV F↓ VI G↓ III H↓

F↓ VI G IV H↓ I↓ III

C IV D I↓ III F↑ VI G H↓

I IV F↑ VI G↓ III H↓

- The student in class VII is to immediate left of the student of class II, and there are two students between class II and class IV student.

And,

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- One who is in class II sits 2nd to the right of the one in class V.
- Student of VII is not next to that of III.
- Student of IV is towards left of VI class student.
- Neither of II and IV students is C.

For case I:

G	H↑	I↓	J↑	K↓	L	M↓
IV	I	III	VI	II	VII	V

E↓	F	G↓	H↑	I	J↑	K↓
II	VII	V	I	IV	VI	III

For case II:

F↓	G	H↓	I↓	J↓	K	L↓
VI	IV	I	III	II	VII	V

E	F↑	G↓	H↓	I↓	J	K↓
IV	VI	III	I	II	VII	V

Now,
- The student who is immediate right to the class V student faces north.
- The immediate neighbours of class II student face in same direction.

We get,
Only valid case is,

G	H↑	I↓	J↑	K↓	L↑	M↓
IV	I	III	VI	II	VII	V

- The ones sitting at extreme ends face in opposite directions. (If one faces north, other faces south)

Final arrangement is:

G↑	H↑	I↓	J↑	K↓	L↑	M↓
IV	I	III	VI	II	VII	V

Question 27 to 30

- The one who likes kiwi sits 4th to the left of the one who likes papaya.
- U, who likes mango sits to immediate left of the one who likes papaya.

We get,

R	S	T	U	V↑	W
Kiwi			mango	papaya	

Q	R	S	T	U	V↑
	Kiwi			mango	papaya

S	T↓	U	V	W	X
	papaya	Mango			Kiwi

T↓	U	V	W	X	Y
papaya	Mango			Kiwi	

- One who likes Litchi sits to immediate right of one who likes banana.
- T and V, both doesn't like banana.

Also,
- The one who likes apple faces north.

We get,

R	S↑	T	U	V↑	W↑
Kiwi	banana	litchi	mango	papaya	apple

Q↑	R	S↑	T	U	V↑
apple	Kiwi	banana	litchi	mango	papaya

S↑	T↓	U	V	W↓	X
apple	papaya	Mango	litchi	banana	Kiwi

T↓	U	V	W↓	X	Y↑
papaya	Mango	litchi	banana	Kiwi	apple

- The immediate neighbours of U, face opposite direction. (If one faces north then other faces south and vice versa)

Also,
- The one who likes kiwi face in the same direction as the one who likes Litchi.

We get,

R↓	S↑	T↓	U	V↑	W↑
Kiwi	banana	litchi	mango	papaya	apple

Q↑	R↓	S↑	T↓	U	V↑
apple	Kiwi	banana	litchi	mango	papaya

S↑	T↓	U	V↑	W↓	X↑
apple	papaya	Mango	litchi	banana	Kiwi

T↓	U	V↑	W↓	X↑	Y↑
papaya	Mango	litchi	banana	Kiwi	apple

- The children sitting at the extreme ends, face in same direction.

Thus,
First and last case gets eliminated.
Also, three students face north and, three students face south. (equal number as given in question)
We get,

Q↑	R↓	S↑	T↓	U↓	V↑
apple	Kiwi	banana	litchi	mango	papaya

S↑	T↓	U↓	V↑	W↓	X↑
apple	papaya	Mango	litchi	banana	Kiwi

- One who likes apples sits towards the right of one who likes Kiwi.

Thus,
Case II above gets eliminated and we get the final arrangement as follows:

Q↑	R↓	S↑	T↓	U↓	V↑
apple	Kiwi	banana	litchi	mango	papaya

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CHAPTER 15 - PUZZLES BASED DATA SUFFICIENCY

Data sufficiency is asked across every exam and across every topic. Here, we will learn how to approach Data sufficiency questions based on puzzles, for prelims as well as mains level exams.

Let's learn the approach...

→ Start with the common data if given and, reach the information that can derived from there.
→ Solve each statement alone as well as in combinations, to reach the correct answer i.e. to see whether alone or by combination of statements, the given question can be answered or not.
Data sufficiency can be asked in following forms –

I. Two statements type – These contain two statements and a question for which sufficiency of statements is to be checked. Largely, these are asked in preliminary level of bank/insurance exams.
II. Three statements type – Instead of two, there are three statements, so, there are more number of possible combinations of statements from which answer can be obtained.
III. Statements in options – This is a new type been asked in the latest exams. In this, each option has certain statement and it is asked – "Which option alone is sufficient to answer the given question". So, basically, in this, you need to solve each option alone, to check that it is sufficient or not.
IV. Redundant Data type – These are a new type, generally been asked in mains level of exams. In this, instead of sufficient data, you are asked to determine the statements which are redundant (not needed) to answer the given question. It has 3 or more statements given in the question.
We will practice each of these types in the given solved examples. (Note: Data sufficiency is been asked across every topic such as blood relations, coding decoding, etc., but in this chapter, we will learn about only the puzzles type DS)

KEY POINTS

⇒ Data sufficiency questions do not demand complete solution i.e. we need not find the correct answer to the question asked. We just need to judge whether the given statements are sufficient or not, to answer the question. So, time shouldn't be wasted in reaching the final answer.
⇒ In case of questions, where the redundant statements are asked, look for the minimum number of statements from which answer can be obtained and, then mark all the remaining statements as redundant. For example: If 3 statements are given, and the answer can be obtained from I alone, then II and III become redundant.
⇒ In case of three statement DS, answer can be determined by the help of options also.
For example: Let say, if there are three options – I only, II only, I and III, then you need to check for only these and not any other combinations.

Solved Examples

TWO STATEMENTS TYPE

Question 1 The question below consists of a question and two statements I and II given below it. You have to decide whether data provided in the statements are sufficient to answer the question.
A, B, C, D, E, F, G are sitting in a linear row consisting seven seats facing north not necessarily in the same order. Who is seated at the exact middle position?
I. D is seated second from the left and there are three people between E and G.
II. A is adjacent to E and F and, C is third to the left of B.
a) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question
b) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question
c) If the data either in statement I alone or in statement II alone are sufficient to answer the question
d) If the data given in both statements I and II together are not sufficient to answer the question
e) If the data in both statements I and II together are necessary to answer the question

Solution:
From I: D is seated second from the left and there are three people between E and G.
___ D ___ ___ ___ ___ ___
From II:

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A is adjacent to E and F and, C is third to the left of B.
We cannot get any other information.
From I and II together:
Now we have different cases:
Case 1:
___ D ___ E ___ A ___ F ___ ___ G
But then C is not third to the left of B. Hence this case is invalid.
Case 2:
G ___ D ___ F ___ A ___ E ___ ___
But then C is not third to the left of B. Hence this case is invalid.
Case 3:
___ D ___ F ___ A ___ E ___
Here, 3 people are not there between E and G. Hence this case is invalid.
Case 4:
G ___ D ___ ___ E ___ A ___ F
But then C is not third to the left of B. Hence this case is invalid.
Case 5:
C ___ D ___ G ___ B ___ F ___ A ___ E
So, B sits at the middle position. Hence both the statements are required.

THREE STATEMENTS TYPE

Question 2 The question below consists of a question and three statements numbered I, II and III given below it. You have to decide whether the data provided in the statements are sufficient to answer the question:
Eight friends O, P, Q, R, S, T, U and V lives on eight floored building numbered 1 to 8 such that lowest floor numbered as 1 then who lives on floor number 3?
I. There is one floor in between O, who sits at odd number floor and Q, who lives just below P. There are three floors in between R, who lives on floor number 8 and S.
II. There are two floors in between V who lives on floor number 2 and Q, who lives just below P.There are two floors in between R and Q, who lives just above S.
III. There are two floors in between Q, who lives on odd number floor and V. There is one floor in between V and S. R lives on topmost floor and T lives on lowermost floor.
a) All I, II and III
b) Both I and III
c) Any two
d) Either I and II or II and III
e) None are sufficient.
Solution:
From I and II:
R lives on floor number 8 then S must be on floor number 4.
V lives on floor number 2 then Q must be on floor number 5. P must be on floor number 6.
Based on above data we get following results:

Name	Floor
R	8
	7
P	6
Q	5
S	4
	3
V	2
	1

Hence, statement I and II are not sufficient.
From II and III:
We have:
V lives on floor number 2 then Q must be on floor number 5.
P lives on floor number 6 and R must be on floor number 8.
S must be on floor number 4 and T must be on floor number 1.
Based on above data we gets following results:

Name	Floor
R	8
	7
P	6
Q	5
S	4
	3
V	2
T	1

Hence, statement II and III together not sufficient.
From I and III:
We have:
R lives on floor number 8 and T on floor number 1.
S must be on floor number 4 and V must be on floor number 2.
There are two floors in between Q, who lives on odd number floor and V. Q must be on floor number 5.P must be on floor number 6.
Based on above data we gets following results:

Name	Floor
R	8
	7
P	6
Q	5
S	4
	3
V	2
T	1

Hence, statement I and III together not sufficient.
From I, II and III:
Based on above data we get the following results

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Name	Floor
R	8
	7
P	6
Q	5
S	4
	3
V	2
T	1

Hence, statement I, II and III together not sufficient.

STATEMENTS IN OPTIONS TYPE

Question 3 Certain number of persons are sitting in a linear row from left to right, all facing in the north direction. What is P's position from the left end, if R is sitting fifth from the right end? Which of the following options taken alone is sufficient to answer the given question?

a) P sits second to left of Q, who is sitting 34th from the right end.

b) R's position from the left end is 33rd.

c) Twelve persons sit between Q and P, who sits towards left of Q, who is sitting second to left of R and is 20th from the left end.

d) Fifteen persons sit towards right of P and ten persons sit between R and P.

e) None of these is sufficient alone.

Solution:

We know, R's position from the right end = 5th

Option(a) - all the positions are given from right end, hence, total number of persons sitting cannot be found due to which P's position also cannot be found from left end.

Option (b) - No statement for P is given hence, it's not sufficient.

Option (d) - No statement is there to find total persons in the row.

Now, from option (c), we get,

Q's position from right end = 5+2= 7th

Q's position from left end = 20th

P is to the left of Q.

P's position from left end = 20 - 12 - 1= 7th

Hence, this statement alone is sufficient.

REDUNDANT DATA TYPE

Directions [4 to 5]: 12 people A, B, C, D, E, F, P, Q, R, S, T & U are sitting in 2 parallel rows facing each other. A, B, C, D, E & F are sitting in one row facing north while P, Q, R, S, T & U are sitting in another row facing south. Each person of one row faces the person of another row.

Statement I: 2 people are sitting between C & B. The person sitting immediate right of B faces T. Number of people sitting between A & F is equal to number of people sitting between U & S.

Statement II: At least 3 people sit towards right of Q who is 2nd to left of S. F is towards right of A. B & A are not immediate neighbours. D is 2nd to right of F. Neither R & T is adjacent to P. C is not facing S.

Statement III: E is towards left of D. Neither E nor D faces P. R is 3rd to right of T. One person is sitting between E & A. B & C are not immediate neighbours. A doesn't sit at any of the extreme end.

Question 4 Which of the following statement is redundant to answer the following question? How many people are sitting between A and D?

a) Statement I

b) Statement II

c) Statement III

d) Either Statement I or Statement III

e) None of these

Question 5 Which of the above statements data is sufficient to answer the following question? Who is facing U?

a) If the data in statement I and II together is sufficient to answer the question, and the data in statement III is not required to answer the question.

b) If the data in statement I and III together is sufficient to answer the question, and the data in statement II is not required to answer the question.

c) If the data in statement II and III is sufficient to answer the question, and the data in statement I is not required to answer the question.

d) If the data in all three statements together is needed to answer the question.

e) If the data in all the statements, even together are not sufficient to answer the question.

Solution:

From I & II:

- 2 people are sitting between C & B.
- F is towards right of A.
- D is 2nd to right of F.
- B & A are not immediate neighbours.
- The person sitting immediate right of B faces T.

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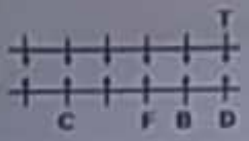
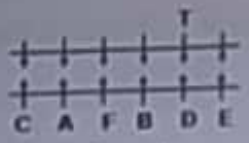
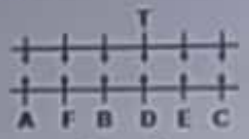


Case 1

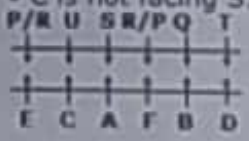


Case 2

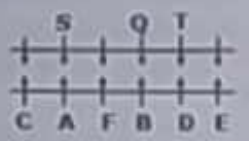


Case 3

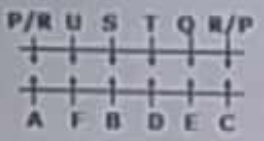
- Number of people sitting between A & F is equal to number of people sitting between U & S.
- At least 3 people sit towards right of Q who is 2nd to left of S.
- Neither R & T is adjacent to P.
- C is not facing S.



Case 1



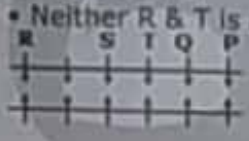
Case 2



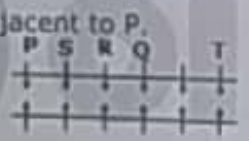
Case 3

From II & III:

- R is 3rd to right of T.
- At least 3 people sit towards right of Q who is 2nd to left of S.
- Neither R & T is adjacent to P.

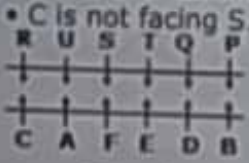


Case 1

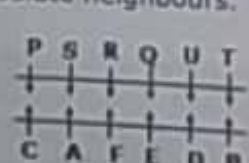


Case 2

- F is towards right of A.
- B & A are not immediate neighbours.
- D is 2nd to right of F.
- E is towards left of D.
- Neither E nor D faces P.
- One person is sitting between E & A.
- B & C are not immediate neighbours.
- C is not facing S.



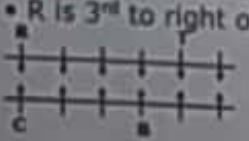
Case 1



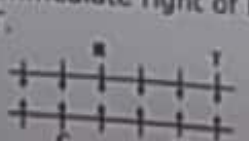
Case 2

From I & III:

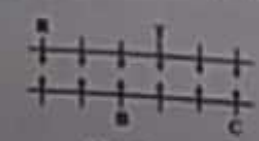
- 2 people are sitting between C & B.
- The person sitting immediate right of B faces T.
- R is 3rd to right of T.



Case 1

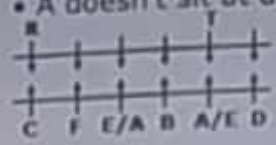


Case 2

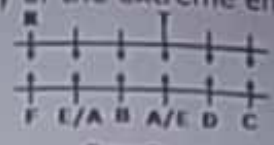


Case 3

- E is towards left of D.
- One person is sitting between E & A.
- A doesn't sit at any of the extreme end.



Case 1



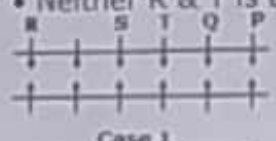
Case 3

- Number of people sitting between A & F is equal to number of people sitting between U & S.
- Neither E nor D faces P.

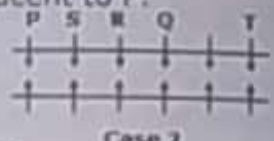
So we cannot move any further.

From I , II & III:

- R is 3rd to right of T.
- At least 3 people sit towards right of Q who is 2nd to left of S.
- Neither R & T is adjacent to P.

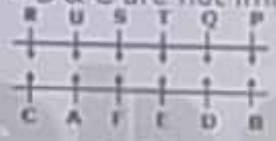


Case 1



Case 2

- F is towards right of A.
- B & A are not immediate neighbours.
- D is 2nd to right of F.
- E is towards left of D.
- Neither E nor D faces P.
- One person is sitting between E & A.
- B & C are not immediate neighbours.



Case 1

Case 2

- 2 people are sitting between C & B.

So, both cases are eliminated that means we cannot combine all these 3 statements.

Answer 4: Using I & II , we find that there are 2 people between A & D

Using II & III , we find that there are 2 people between A & D

So, Statement II & Either I or III is necessary to answer the question that means Either I or III is redundant to answer the question.

Answer 5: Option (e) is correct.

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Directions (1 to 4): The questions below consist of a question and two statements 1 (or I) and 2 (or II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statement and give answer.

Question 1 Eight friends A, B, C, D, E, F, G and H are sitting around a square table, four are at the centre of the sides and four are at the corners. Who among them are facing the centre?

Statement 1: People sitting at the sides are facing the Centre and the ones at the corners are facing opposite to the Centre, 'B' and 'C' are facing each other.

Statement 2: 'H' is sitting second to the right of 'B', 'A' is sitting third to the left of 'G', who is at a corner.

a) If the data in statement 1 alone is sufficient to answer the question, while the data in statement 2 alone is not sufficient to answer.

b) If the data in statement 2 alone is sufficient to answer the question, while the data in statement 1 alone is not sufficient to answer.

c) If the data either in statement 1 alone or in statement 2 alone is sufficient to answer.

d) If the data in both the statements 1 and 2 together are not sufficient to answer.

e) If the data in both statements 1 and 2 together are necessary to answer the question.

Question 2 Seven persons A, B, C, D, E, F and G are having different heights. Who among the following is the tallest person?

I. Only two persons are taller to A. B is taller to D but shorter to E. E is shorter to A.

II. F is taller to G but shorter to C. F is taller to A. The number of person taller to F is same as shorter to B.

a) If the data in both the statements I and II together are necessary to answer the question.

b) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.

c) If the data either in statement I alone or in statement II alone are sufficient to answer the question.

d) If the data in both the statements I and II together are not sufficient to answer the question.

e) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.

Question 3 Ten persons DEEP, JAY, RAVI, RIYA, RITU, DIYA, HARI, RAJ, GURU and RAM not necessarily in the same order live in a ten-floored building numbered 1 to 10 such that the lowermost floor is marked as 1 and the floor above it is marked as 2 and so on then who lives just below RAM?

I. There are two floors in between GURU and HARI. There are four floors in between HARI and RIYA. Diya lives on floor number 7 and there are two floors between Diya and RITU.RITU lives just above DEEP. There are two floors in between RAM and JAY, who lives on floor number8.Ravi lives just above Riya. DEEP doesn't live on floor number 3.

II. There are two floors in between DEEP and HARI.DEEP lives on floor number9.HARI lives above GURU, there are two floors in between them. There are three floors between JAY and RAJ. There is one floor between RAJ and RAVI. There are two floors between RAJ and RIYA, who lives on the lowermost floor and There are three floors between HARI and RITU.

a) If the data in Statement I alone is sufficient to answer the question, while the data in Statement II alone is not sufficient to answer the question.

b) If the data in Statement II alone is sufficient to answer the question, while the data in Statement I alone is not sufficient to answer the question.

c) If the data either in Statement I alone or in Statement II alone is sufficient to answer the question.

d) If the data in both the Statements I and II together are not sufficient to answer the question.

e) If the data in both the Statements I and II together are necessary to answer the question.

Question 4 Eight friends A, B, C, D, E, F, G and H visited their hometown in the same year in the months January, March, April or May on either 2nd or 21st of these months. No two visits were made on the same day. When did E visit his hometown?

I. A visited his hometown in March. Two visits were made between A's and F's visit. F visited after A. Number of visits made before H's visit was twice as that of the number of visits made after C's visit. Not more than two persons made their visits after D. D and F did not visit on consecutive turns. G visited just after B

II. Number of persons who made the visit after A was twice as that of the number of visits made before E's visit. C visited his hometown on April 21. E and H made consecutive visits. A was not the last to make his visit. 2 persons made visits between B's and G's visit. B made his visit before G.

a) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question

b) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question

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c) If the data either in statement I alone or in statement II alone are sufficient to answer the question
d) If the data given in both statements I and II together are not sufficient to answer the question
e) If the data in both statements I and II together are necessary to answer the question

Directions (5 to 7): The questions below consist of a question and three statements 1 (or I), 2 (or II) and 3 (or III). You have to decide whether the data provided in the statements are sufficient to answer the question. Read all the statements and give answer.

Question 5 Seven friends A, B, C, D, E, F and G are having different heights then who among the following is the tallest in the group?
I. E is taller than D and F. C is taller than A but shorter than B.
II. A is taller than E. B is taller than C but not the tallest.
III. E is only taller than D and F. B is taller than C but shorter than G. C is taller than A.
a) All I, II and III b) Only III
c) Either I or III d) None are sufficient
e) Either I and II or only III

Question 6 Nine persons M, N, O, P, Q, R, S, T and U not necessarily in the same order are sitting in a circular table facing the centre, then who sits to the immediate right of M?
I. R sits second to the left of U, who sits third to the left of O. N sits second to the right of P, who sits to the immediate right of T and S sits third to the right of Q, who is not a neighbour of U.
II. S sits third to the left of P, who sits third to the left of Q. O sits second to the right of T who sits third to the left of N and U sits third to the left of O, who is a immediate neighbour of P.
III. T sits third to the right of R, who sits second to the left of U. P is not a neighbour of R and S sits third to the right of Q. N sits to the immediate left of Q, who sits second to the right of O.
a) All I, II and III
b) Both I and II
c) Either I and II or III alone
d) Either I or III alone
e) None are sufficient

Question 7 Seven persons A, B, C, D, E, F and G like different colours among Red, Blue, Yellow, Black, White, Green and Orange not necessarily in the same order. Who likes Orange colour?
I. Either A or B likes Green and either C or D likes black colour. Neither F nor G nor E likes Red colour. Either A or D likes White colour.
II. Either E or F likes Yellow and either F or G likes Blue. Either A or D likes green colour. Either C or G likes Black colour.
III. Neither D nor G likes Blue colour. E and B likes red and yellow in no particular order. Similarly, A and C likes Green and Black colour in no particular order. Either C or D likes white.
a) Any 2 statements are sufficient and necessary
b) Either I and III or II and III together are sufficient and necessary
c) III alone is sufficient and I and II together are not sufficient
d) All three statements are necessary
e) All three statements are not sufficient

Question 8 The question below is followed by some statements given in the options. Find out the option sufficient to answer the question.
6 persons A, B, C, D, E and F have different heights. Who is the 2nd tallest person?
a) A is taller than D and is shorter than at-least 2 other persons. Only 1 person is shorter than B, who is shorter than D. F is neither tallest not shortest.
b) F is shorter than E and is taller than A. D is taller than B, who is taller than C. No one is taller than B and at the same time shorter than D. Also, no one is taller than C and at the same time shorter than B. No one is taller than F and at the same time shorter than E. Also, no one is taller than A and at the same time shorter than F.
c) B is shorter than D, who is shorter than A. F is shorter than E, who is not the 2nd shortest person. Only 1 person is taller than A but shorter than E and B is not the shortest.
d) Height of 3 other persons ranges between the height of F and height of C. F is taller than C. D is taller than B and is shorter than A as well as E.
e) A is taller than E, who is taller than 3 other persons. B is taller than D, who is taller than only 2 persons. F is not the shortest.

Directions (9 to 10): 10 friends A, B, C, D, E, F, G, H, I & J are sitting around a circular table facing towards the centre of the table. No two persons who have names in consecutive alphabetical order are sitting adjacent to each other (For example: B cannot sit adjacent to A and C, H cannot sit adjacent to G etc).
Statement I: 2 people are sitting between A & B. Neither F nor E is adjacent to I. H is not adjacent to A.
Statement II: C is opposite to J who is immediate left of G. 2 people are sitting between A & D. D is not facing I.
Statement III: C & H have 2 people between them. Neither G nor E is adjacent to B. A is 4th to left of F.

Question 9 Which of the above statements are sufficient to answer the following question?
How many people are sitting between G & I when counted towards right of G?
a) If the data in statement I and II together is sufficient to answer the question, and the data in statement III is not required to answer the question.
b) If the data in statement II and III is sufficient to answer the question, and the data in statement I is not required to answer the question.

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c) If the data in statement II & either Statement I or statement III is sufficient to answer the question.
d) If the data in all three statements together is needed to answer the question.
e) If the data in all the statements, even together are not sufficient to answer the question.

Question 10 Which of the following statement is redundant to answer the following question?
Who is facing the person sitting immediate right of H?
a) Statement I
b) Statement II
c) Statement III
d) Either Statement I or Statement III
e) None of these

Directions [11 to 12]: 8 friends A, B, C, D, E, F, G & H were born on 1st June but in different years 1984, 1986, 1988, 1990, 1992, 1994, 1996 & 1998(not necessarily in same order). H & E were not born in a leap year. 2 people were born between H & D.

Statement I: 2 people were born between A & B. Difference in G & F's age is equal to difference in B & E's age. Atleast 2 people were born between A & E.
Statement II: 2 people were born between C & G. G is born after F but before A. E was born after F.
Statement III: D is born after E but before B. Atleast 1 person was born between H & G. no one was born between D & E.

Question 11 Which of the above statement is redundant to find the answer of given question?
How many people were born between H & C?
a) Statement I
b) Statement II
c) Statement III
d) Either I or II
e) Either II or III

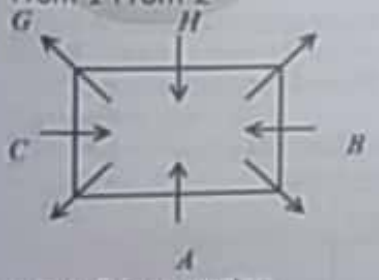
Question 12 Which of the above statements is necessary to answer the given question?
Who was born in 1984?
a) I & II
b) II & III
c) Any two of the above statements.
d) All of these are required to answer the question
e) All statements together are not sufficient to answer the question.

ANSWER KEY

1- e	2- a	3- a	4- a	5- e	6- d	7- c	8- a	9- c
10- a	11- d	12- c						

DETAILED SOLUTIONS

QUESTION 1
From 1 From 2



H,B,A,C face centre
Hence, the data in both statements 1 and 2 together are necessary to answer the question.

QUESTION 2
From I
Only two persons are taller to A. B is taller to D but shorter to E. E is shorter to A.
So, A, B, D and E are not tallest. But we can't figure out who among others is tallest.
Hence statement I is not sufficient to answer the question.
From I
F is taller to G but shorter to C. F is taller to A. The number of person taller to F is same as shorter to B.
So, from this we can figure out that F, G, A and B are tallest. But we can't figure out who among other is tallest.
From I and II,
Only two persons are taller to A. F is taller to A so either F is tallest or the 2nd tallest. C is taller to F so C must be the tallest person.
So statement I and II are sufficient to answer the question.
Hence, option a.

QUESTION 3
From I:
We have:
Diya lives on floor number 7 and Jay lives on floor number 8.
There are two floors in between RAM and JAY, who lives on floor number 8,
then Ram must be on floor number 5.
There are four floors in between HARI and RIYA and Ravi lives just above Riya.
There are two floors between Diya and RITU.
then RITU must be on floor 10.
RITU lives just above DEEP
Riya must be on floor number 1.
There are two floors in between GURU and HARI.
Based on the above data we get:

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Name	Floor
RITU	10
DEEP	9
JAY	8
DIYA	7
HARI	6
RAM	5
RAJ	4
GURU	3
RAVI	2
RIYA	1

Hence, statement I alone is sufficient.
From II:
We have:
There are two floors in between DEEP and HARI.DEEP lives on floor number 9, then HARI must be on floor number 6.
HARI lives above GURU, there are two floors in between them. Then Guru must be on floor number 3.
There are two floors between RAJ and RIYA, who lives on the lowermost floor, then RAJ must be on floor number 4.
There are three floors between JAY and RAJ then JAY must be on floor number 8.
There is one floor between RAJ and RAVI, then RAVI must be on floor number 2.
There are three floors between HARI and RITU, then RITU must be on floor number 10.
Based on the above data we get:

Name	Floor
RITU	10
DEEP	9
JAY	8
	7
HARI	6
	5
RAJ	4
GURU	3
RAVI	2
RIYA	1

Hence, statement II alone is not sufficient.

QUESTION 4

- A visited his hometown in March.
- Two visits were made between A's and F's visit. F visited after A.

	Case 1	Case 2
January 2		
January 21		
March 2	A	
March 21		A
April 2		
April 21	F	
May 2		F
May 21		

- Not more than two persons made their visits after D.
- D and F did not visit on consecutive turns. Thus, case 2 becomes invalid.

	Case 1	Case 2
January 2		
January 21		
March 2	A	
March 21		A
April 2		
April 21	F	
May 2		F
May 21	D	

- G visited just after B
- Number of visits made before H's visit was twice as that of the number of visits made after C's visit.

January 2	B
January 21	G
March 2	A
March 21	E
April 2	C
April 21	F
May 2	H
May 21	D

Hence E visited his hometown on March 21
From statement II:
- Number of persons who made the visit after A was twice as that of the number of visits made before E's visit. A was not the last to make his visit.
- C visited his hometown on April 21.
- E and H made consecutive visits.

	Case 1	Case 2
January 2		
January 21	H	A
March 2	E	
March 21	A	E
April 2		
April 21	C	C
May 2		
May 21		

- 2 persons made visits between B's and G's visit. B made his visit before G.

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	Case 1	Case 2
January 2		
January 21	H	A
March 2	E	H
March 21	A	E
April 2	B	B
April 21	C	C
May 2		
May 21	G	G

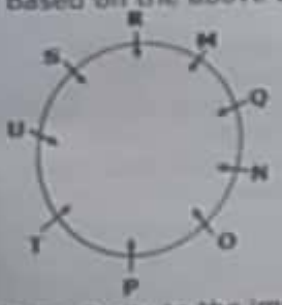
Thus, we cannot determine when did E made the visit.

Question 5

From I and II,
E is taller than D and F. A is taller than E.
A>E>D/F
C is taller than A but shorter than B. B is taller than C but not the tallest. So, G must be the tallest.
G>B>C>A>E>D/F
Hence, I and II are sufficient.
From III,
E is only taller than D and F. So, E must be the 3rd shortest. B is taller than C but shorter than G. C is taller than A. So, G is the tallest.
G>B>C>A>E>D/F
Hence only III is sufficient.

Question 6

From I:
We have:
R sits second to the left of U and U sits third to the left of O.
N sits second to the right of P and P sits to the immediate right of T.
S sits third to the right of Q and Q is not a neighbour
r of U.
Based on the above data we get:



Thus, R sits to the immediate right of M.
Hence, statement I alone is sufficient.
From II:
We have:
O sits second to the right of T and T sits third to the left of N.
U sits third to the left of O and S sits third to the left of P.
P sits third to the left of Q and O is a immediate neighbour of P.

Based on the above data we get:

Hence, statement II alone is not sufficient.
From III:
We have:
S sits third to the right of Q and N sits to the immediate left of Q.
Q sits second to the right of O and T sits third to the right of R.
R sits second to the left of U and P is not a neighbour of R.
Based on the above data we get:

Thus, R sits to the immediate right of M.
Hence, statement III alone is sufficient.

Question 7

From I alone: -
Either A or B likes Green and either C and D likes black colour.

	Case 1	Case 2	Case 3	Case 4
A	Green	Green		
B			Green	Green
C	Black		Black	
D		Black		Black
E				
F				
G				

Neither F nor G nor E likes red. Either A or D likes White colour. So, case 2 is invalid.
So, we get: -

	Case 1	Case 3	Case 4
A	Green	White/Red	White
B	Red	Green	Green
C	Black	Black	Red
D	White	Red/White	Black
E			
F			
G			

From II alone: -

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Either E or F likes Yellow and either F or G likes Blue.

	Case 1	Case 3	Case 4
A			
B			
C			
D			
E	Yellow	Yellow	
F	Blue		Yellow
G		Blue	Blue

Either A or D likes green colour.
Either C or G likes Black colour.
So, we get: -

	Case 1	Case 3	Case 4
A	Green/	Green/	Green/
B			
C	Black/	Black	Black
D	Green/	Green/	Green/
E	Yellow	Yellow	
F	Blue		Yellow
G	/Black	Blue	Blue

So, II alone is not sufficient to answer the question.
From III alone: -
Neither D nor G likes Blue colour. E and B likes red and yellow in no particular order.

A	
B	Red/Yellow
C	
D	Not blue
E	Red/Yellow
F	
G	Not blue

Similarly, A and C likes Green and Black colour in no particular order.

A	Green/Black
B	Red/Yellow
C	Black/Green
D	
E	Red/Yellow
F	Blue
G	

Either C or D likes white.
So, D likes white and we get: -

A	Green/Black
B	Red/Yellow
C	Black/Green
D	White
E	Red/Yellow
F	Blue
G	Orange

So, statement III alone is sufficient to answer the question.
From I and II together: -

From I alone we already have;

A	Green	White/Red	White
B	Red	Green	Green
C	Black	Black	Red
D	White	Red/White	Black
E			
F			
G			

From II alone we know that either A or D likes green.
So, case 2 and case 3 are invalid.

A	Green
B	Red
C	Black
D	White
E	
F	
G	

I and II together are not sufficient to answer the question.

Question 8

Option a: -
A is taller than D and is shorter than at-least 2 other persons.
Only 1 person is shorter than B, who is shorter than D.
So, we get: -
__ > __ > A > D > B > __
F is neither tallest not shortest.
So, we get: -
__ > F > A > D > B > __
So, option a is sufficient to answer the question.
Option b: -
F is shorter than E and is taller than A.
D is taller than B, who is taller than C.
No one is taller than B but shorter than D. Also, no one is taller than C but shorter than B.
No one is taller than F but shorter than E. Also, no one is taller than A but shorter than F.
So, we get: -
E > F > A > D > B > C
Or
D > B > C > E > F > A
So, option b is not sufficient to answer the question.
Option c: -
B is shorter than D, who is shorter than A.
F is shorter than E, who is not the 2nd shortest person.
Only 1 person is taller than A but shorter than E and B is not the shortest.
So, we get: -

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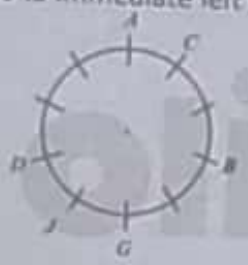
E > F/C > A > D > B > C/F
So, option c is not sufficient to answer the question.
Option d: -
Height of 3 other persons ranges between the height of F and height of C. F is taller than C.
D is taller than B and is shorter than A as well as E.
So, we get: -
E/A > F > A/E > D > B > C
Or
F > A/E > E/A > D > B > C
So, option d is not sufficient to answer the question.
Option e: -
A is taller than E, who is taller than 3 other persons.
B is taller than D, who is taller than only 2 persons.
F is not the shortest.
A/B> B/A > E > D > F > C
So, option e is not sufficient to answer the question.

QUESTION 9 TO 10

From I & II:
- 2 people are sitting between A & B.
- 2 people are sitting between A & D.
- C is opposite to J who is immediate left of G.

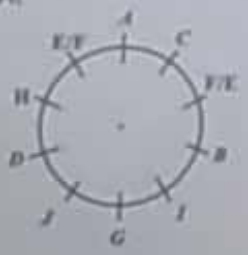
Case 1



Case 2

- D is not facing I.
- Neither F nor E is adjacent to I.
- H is not adjacent to A.

Case 1



Case 2

From II & III:
- C is opposite to J who is immediate left of G.
- C & H have 2 people between them.

Case 1

- 2 people are sitting between A & D.
- A is 4th to left of F.

Case 1 – a

Case 1 – b

- D is not facing I.
- Neither G nor E is adjacent to B.

Case 1 – b

From I & III:
- 2 people are sitting between A & B.
- A is 4th to left of F.

Case 1

Case 2

- Neither F nor E is adjacent to I.
- H is not adjacent to A.
- C & H have 2 people between them.
- Neither G nor E is adjacent to B.

Using this we cannot move further.

Answer 9 – From I & II: No one is sitting between G & I when counted towards right of G
From II & III: one person is sitting between G & I when counted towards right of G

Answer 10 – From II & III: E is facing the person sitting immediate right of H

QUESTION 11 TO 12

From I & II:
- 2 people were born between A & B.
- G is born after F but before A.

Year	Person	Person	Person	Person	Person
1998	A/B				
1996		A/B			
1994			A/B		
1992	B/A			A	
1990		B/A			A
1988			B/A		
1986				B	
1984					B
	Case 1	Case 2	Case 3	Case 4	Case 5

- Atleast 2 people were born between A & E.
- E was born after F.
- H & E were not born in a leap year

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Year	Person	Person	Person	Person	Person
1998	A/B			E	E
1996		A/B			
1994			A/B		
1992	B/A			A	
1990		B/A			A
1988			B/A		
1986				B	
1984					B
	Case 1	Case 2	Case 3	Case 4	Case 5

- Difference in G & F's age is equal to difference in B & E's age.
- 2 people were born between C & G.
- G is born after F but before A.
- E was born after F.
- H & E were not born in a leap year

So, case 3, 4 & 5 are eliminated

Year	Person	Person	Person	Person
1998	A	A		E
1996		C	A	B
1994	C		C	
1992	B	B		
1990	E	G	B	A
1988	G		G	
1986	F	E	E	
1984		F	F	
	Case 1-a	Case 1-b	Case 2-a	Case 2-b

- H was not born in a leap year.
- 2 people were born between H & D.

Year	Person	Person
1998	H	E
1996	A	B
1994	C	H
1992	D	C
1990	B	A
1988	G	D
1986	E	G
1984	F	F
	Case 2-a	Case 2-b

From II & III:

- H & E were not born in a leap year.
- 2 people were born between H & D.
- E was born after F.
- D is born after E but before B
- no one was born between D & E.

Year	Person	Person	Person	Person
1998	H		B	
1996			D	
1994		H	E	
1992	D			D
1990	E		H	E
1988		D		
1986		E		H
1984		F		
	Case 1	Case 2	Case 3	Case 4

- 2 people were born between C & G.
- At least 1 person was born between H & G.

Year	Person	Person	Person	Person	Person
1998	H		G	B	
1996		C		D	
1994	G/C	H	H	E	G
1992	D		C	C	D
1990	E	G		H	E
1988	C/G	D	D		C
1986		E	E	G	H
1984		F	F		
	Case 1	Case 2-a	Case 2-b	Case 3	Case 4

- G is born after F but before A.
- D is born after E but before B

Soc case 1, case 2-b are eliminated.

- E was born after F.

Year	Person	Person	Person
1998	A/B	B	B/A
1996	C	D	A/B
1994	H	E	G
1992	B/A	C	D
1990	G	H	E
1988	D	A	C
1986	E	G	H
1984	F	F	F
	Case 2-a	Case 3	Case 4

From I & III:

- H & E were not born in a leap year.
- 2 people were born between H & D.
- D is born after E but before B.
- No one was born between D & E.

Year	Person	Person	Person	Person
1998	H		B	
1996			D	
1994		H	E	
1992	D			D
1990	E		H	E
1988		D		
1986		E		H
1984		F		
	Case 1	Case 2	Case 3	Case 4

- 2 people were born between A & B.
- At least 2 people were born between A & E.
- D is born after E but before B.

So case 1, case 3 & case 4 are eliminated.

Year	Person
1998	
1996	
1994	H
1992	
1990	
1988	D
1986	E
1984	F
	Case 2

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- Difference in G & F's age is equal to difference in B & E's age.
- At least 1 person was born between H & G.
- 2 people were born between A & B

Year	Person
1998	A
1996	C
1994	H
1992	B
1990	G
1988	D
1986	E
1984	F
	Case 2

Answer 11 – From I & III: no one was born between H & C
From II & III: no one was born between H & C
Answer 12 - From I & II: F was born in 1984.
From II & III: F was born in 1984.
From I & III: F was born in 1984.

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Directions [1 to 5]: Eight friends A, B, C, D, E, F, G, H plan to visit cricket stadium to watch match. There are four females in the group. Due to thick rush they are not able to book seats together and get seats in four different rows i.e. I, II, III, IV. These rows are in form of steps with row IV being the lowest step and row I being highest. Numbering of seats in these rows is from left to right such that left most seat in row I is numbered 1 and subsequent seats as 2,3,4... so on and likewise for all rows. They sit in such a way that their sitting arrangement forms a circular pattern and also each row has 2 persons, none of which belong to same gender. A is male and sits in row I and seat number 5. One of his friends sits immediately left to him. On step immediately below them, seats corresponding to their seats are occupied by 2 strangers who are immediate neighbours of two of their friends, who are not immediate neighbour of each other. D is a female and sits in row III and seat number 7. Both persons sitting to immediate right and immediate front on a step lower to D are not her friends. B and E are immediate neighbours and are nearest to field. F sits exactly below C who is a female sitting on seat number 4. G does not sit in same row as A. Considering playing field in south direction answer the following questions:

Question 1 Who sits with A?
a) C b) F c) D d) H e) None of these

Question 2 What are seat and row number of B and E?
a) Row-II seat 5 and 6
b) Row-III seat 4 and 7
c) Row-I seat 4 and 5
d) Row-IV seat 5 and 6
e) None of these

Question 3 If the circular pattern formed by them is visualized as a table where all are facing centre then who sits third to the left of F?
a) C b) H c) D
d) G e) Cannot be determined

Question 4 Which combination is correct?
a) A-G b) C-D c) F-D
d) None is correct e) All are correct

Question 5 Who are females in the group?
a) CAHG b) HCDB c) CGBE
d) DCHE e) Either b or d

Directions [6 to 8]: There is one square shaped park. Eleven persons are sitting in the park who are - L, M, N, O, P, Q, R, S, T, U and V. Eight persons are sitting on the boundary of the park, such that one person sits at each corner and one person sits at the middle of the side of the boundary. One person sits at the centre of the park and among remaining two, each sits on either side of the person at the centre, in same line of sight along the diagonal. The persons sitting at the middle of the boundary of the park are facing outside the centre and the rest of the persons are facing in exact North-east or exact south-west directions.

N sits at one of the corners and is immediate right of U, who is sitting along the diagonals, but not at the centre and the corner. M and P are facing each other, one of them is sitting at the diagonal. One person sits between P and S, who is to the immediate left of O. S doesn't sit at the middle of the boundary and L doesn't sit along the diagonal's line of sight. O and P are not adjacent to each other. R, who faces towards west, is not adjacent to M. L and M are not adjacent to each other. T sits adjacent to L. T faces in the direction which is opposite to P. N and V are not sitting together. Immediate neighbours of V face in same direction. N and U face in same directions. V faces either in same direction as N or in east direction. Neither S and M, nor N and M, are in same line of sight.

Question 6 Among the following who are sitting inside the park and not at the boundary?
I: P II: M III: T
a) Only II b) Only III c) Both I and III
d) Both II and III e) Only I

Question 7 In which direction is P facing?
a) North b) South-west c) North-east
d) Either (b) or (c) e) East

Question 8 If the persons who are sitting at the boundary of the park are made to sit in alphabetical order starting from the position where person is sitting facing north (in clockwise manner), then how many persons will not change their positions?
a) One b) None c) Two
d) Three e) More than three

Directions [9 to 12]: Eight persons A, B, C, D, E, F, G and H went to a conclave. It was seen that each person was of a different age. The partial sequence of their ages is as follows:

$\underset{(39)}{__}, __, \underset{}{\underline{F}}, \underset{(27)}{__}, __, \underset{(23)}{__}, \underset{}{\underline{D}}, __$

They were seated in a straight row facing the North. The partial arrangement is shown below:

$__ \underset{(25)}{\underline{B}} __ __ __ __ \underset{(36)}{__} \underset{}{\underline{G}}$

The numbers shown in the brackets denote age.
- The person aged 31 was seated 3rd to the left of the one who was aged 27
- B was aged more than G
- The person who was 39 years old was seated 2nd to the left of F
- E was the 2nd eldest person and was seated to the immediate right of C
- The person aged 23 was to the immediate right of the one who was aged 22

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• A was seated 3rd to the left of the one who was 19 years old
• D was not the eldest.

Question 9 What was the age of the person who was at the extreme left end of the row?
a) 31 b) 19 c) 22
d) 39 e) Cannot be determined

Question 10 What was the difference between the age of A and C?
a) 1 year b) 2 years c) 3 years
d) 4 years e) 9 years

Question 11 Who among the following was seated to the immediate left of D?
a) A b) E c) F d) B e) H

Question 12 Who among the following was the 3rd youngest person?
a) D b) B c) C d) A e) F

Directions [13 to 17]: Eight persons, each of whom speak different language are sitting around a circular table, all facing towards the centre. P sits second to left of the one who speaks _____(i)_____. The one who speaks German sits third to left of L, who speaks Spanish. Hindi is spoken by the person who is sitting second to right of the one who speaks African, who sits to immediate right of _____(ii)_____. Latin is spoken by N, who sits second to right of L. O speaks _____(iii)_____. Hindi is spoken by _____(iv)_____, who sits immediate right to R. Q doesn't speak Korean, which is spoken by person immediate left to O. _____(v)_____ speaks French. The person sitting second to left of K speaks English. Q doesn't speak English. M sits second to right of O.

Question 13 What will come in place of (v)?
a) P b) Q c) K
d) Cannot be determined e) R

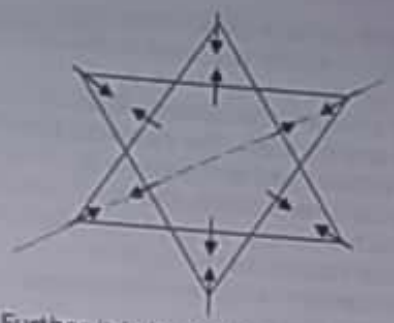
Question 14 What will come in place of (i)?
a) French b) English c) African
d) Korean e) German

Question 15 What will come in place of (ii)?
a) K b) M c) O d) P e) N

Question 16 What will come in place of (iii)?
a) English b) French c) German
d) Hindi e) African

Question 17 What will come in place of (iv)?
a) Q b) M c) R d) P e) None of these

Directions [18 to 22]: Shape of a park is star shaped as shown in the figure. Twelve persons are standing in the park at the places denoted by arrows in the figure. The persons standing on the outer vertices of star are facing towards the centre and those standing inside the park are facing away from centre, as shown by arrow. The persons facing inside are facing the persons facing outside.



Further it is known that:
• Person standing in between any two persons means they are standing in same line of sight. (as shown with the dotted line)
• No two persons who appear consecutively in the alphabetical series, face each other. (For ex. A doesn't face B, C doesn't face D, etc.)
Two persons, J and A, are standing between K and E. G faces the person, who is standing between G and L, who faces D, who stands facing towards the centre. C stands to immediate left of L. H doesn't face F. No one stands between C and F. L is not immediate left of A and J is immediate left of neither B nor F. F doesn't face I.

Question 18 Who is facing I?
a) H b) None of these c) C
d) G e) Either (c) or (d)

Question 19 Find the odd one among the following:
a) A b) F c) C d) L e) J

Question 20 What is the position of C with respect to H?
a) Cannot be determined b) Second to left
c) Third to right d) Immediate left
e) Fourth to right

Question 21 Whom is H facing?
a) B b) G c) E
d) C e) Cannot be determined

Question 22 Which of the pairs is correct which face each other?
I. A, J II. H, B III. G, C
a) Both I and II b) Only II
c) Only III d) None is correct
e) Both II and III

Directions [23 to 27]: Anand and Carlsen are playing the WCC on the 8 x 8 chess board. The rows are numbered 1 to 8 respectively from bottom to top. Columns are numbered from A to H respectively from left to right. The position of piece is given by the combination of row and column. E.g. C5 means the piece is in Cth column and 5th row.
The queen of Anand is on the board and the pieces of Carlson which are on the same column or same row or placed diagonally to queen are under attack of the queen unless there is another piece placed in between Queen and that piece. Only 1 piece can be placed in any box.
The rook of Carlson is placed in the prime numbered row and in the column denoted by vowel

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and that rook is under diagonally attack from the queen of Anand. Queen of Anand is placed in the vowel and the prime number greater than 3. There are 2 rows and 1 column in between The Bishop of Carlsonand and his rook. The pawn-2 of Carlson is to the immediate right of his pawn-1. Pawn-1 of the Carlson is 2 rows below and 2 columns to the right of his Bishop. King of Carlson is 2 rows below and one column to the right of pawn-2. Knight of the Carlson is one row below and in the same column to his bishop.

Question 23 What is the position of the Rook of Carlson?
a) A5 b) A7 c) E5 d) E7 e) None of these
Question 24 What is the position of Pawn-2?
a) F3 b) D5 c) F4 d) E6 e) G5
Question 25 What is the position of the king?
a) F3 b) G2 c) F5 d) H3 e) H2
Question 26 If queen attacks the Pawn-1 to take its place and Carlson doesn't move any of its piece, then which if the following pieces are under attack?
a) Knight and Rook
b) Bishop, Pawn-2
c) King
d) Both option B and option C
e) All the pieces present on board

Question 27 How many pieces are under attack by the Queen? What is the position of the queen?
a) 2 pieces and E7 b) 3 pieces and A5
c) 2 pieces and E3 d) 4 pieces and E5
e) None of the above

Directions [28 to 30]: RIMCO corporation organized a tournament wherein the winner would be offered a flat in an 8 floor apartment. The floors were numbered from 1-8 where the 8th floor was the topmost floor and the lowermost floor was 1st floor. The tournament had eight participants A, B, C, D, E, F, G, H. Each participant was allotted a floor and only one participant was there in each floor. According to the rules of the tournament each player has to play a game with another participant. There were several rounds of the tournament and in each round every player played only once. The loser of each game has to leave the apartment while the winner will come to the floor of the looser (For e.g. If there was a match between A living on 3rd floor and B living on 6th floor, and A won the match, so B will leave the apartment and A will shift to 6th floor). Nobody returned to the floor to which they were allotted in the previous rounds. Only one person was living in each floor at any moment. Further it was known that H who was allotted 5th floor competed with B in round 1.F was shifted to 5th floor after round 2.At last only one person was left and declared as the winner. C was at an odd numbered floor in both round 1 and round 2 but not on the 1st floor. There were at least 4 people living between A and G before the start of round 1 where A was living above G.D had a match with the person living on 6th floor. None of B, D and C reached the final round. B competed with F in one of the rounds. E was at 2nd floor in round 2.A was not allotted a floor which was adjacent to either B or E. The candidate who was on 7th floor after round 2 was on the 1st floor at the beginning. The person allotted 6th floor was not the winner. F and D both lived at the same numbered floor once but in different rounds.
(Note:- The allotment refers for the initial stage only. After the 1st round, the floors were won by the participants)

Question 28 Who was the winner?
a) A b) E c) F d) C e) None of the above
Question 29 How many floors were there between the floor which was allotted to D and the floor which was allotted to B in the initial round?
a) 1 b) 2 c) 4 d) 5 e) None of these
Question 30 Who among the following was living in the same floor in round 2 as the floor in which B was living in round 1?
a) C b) F c) E
d) D e) Nobody was living in that floor in round 2.

ANSWER KEY

1- d	2- d	3- b	4- c	5- e	6- e	7- c	8- a	9- d
10- d	11- c	12- d	13- b	14- d	15- a	16- e	17- b	18- d
19- b	20- c	21- a	22- b	23- e	24- c	25- b	26- d	27- a
28- b	29- e	30- e						

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DETAILED SOLUTIONS

Question 1 to 5

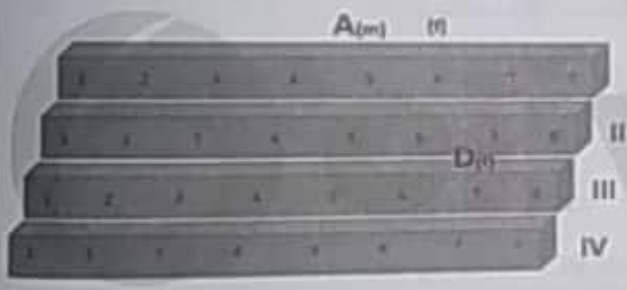
Following is the step by step explanation:

Playing Field

Rows are in form of steps with row IV being the lowest step and row I being highest. Numbering of seats in these rows is from left to right such that left most seat in row I is numbered 1 and subsequent seats as 2,3,4... so on and likewise for all rows

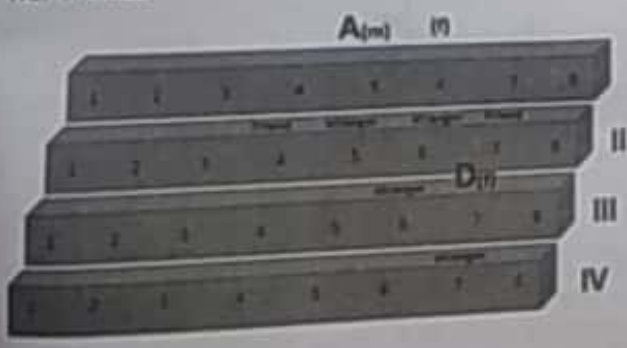
A is male and sits in row I and seat number 5. One of his friends sits immediately left to him.

D is a female and sits in row III and seat number 7



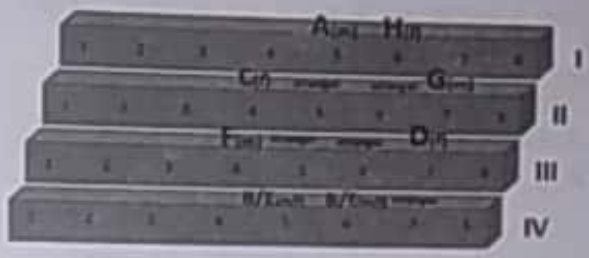
Playing Field

On step immediately below them, seats corresponding to their seats are occupied by 2 strangers who are immediate neighbours of two of their friends, who are not immediate neighbour of each other. Both persons sitting to immediate right and immediate front on a step lower to D are not her friends



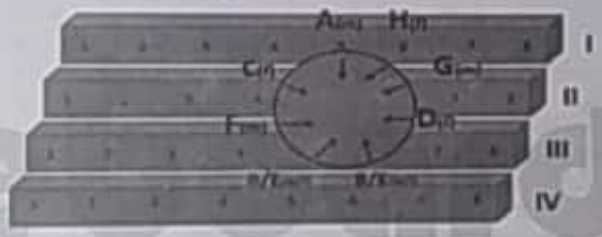
Playing Field

B and E are immediate neighbours and are nearest to field. F sits exactly below C who is a female sitting on seat number 4. G does not sit in same row as A. Now for B and E to be immediate neighbours only row left for them is row IV also C has to sit on seat number 4 in row II to have F sit exactly below herG does not sit in same row as A therefore H sits with A and G sits with C.As stated in question they sit in circular pattern G sits just above D and B and E sit on seat number 5 and 6 in row IV



Playing Field

Answer 3 - when all are facing the centre then H sits third to the left of F



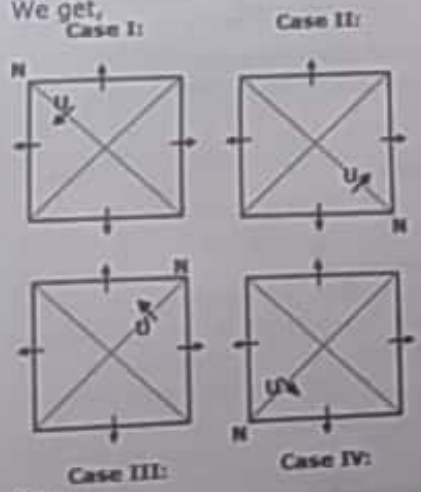
Playing Field

Question 6 to 8

• N sits at one of the corners and is immediate right of U, who is sitting along the diagonals, but not at the centre and the corner.

So, U must be sitting on either side of person sitting at the centre.

We get,



Now,

• M and P are facing each other, one of them is sitting at the diagonal.

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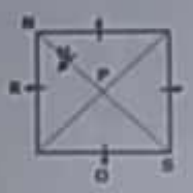
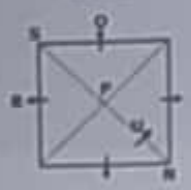
• One person sits between P and S, who is to immediate left of O.
• S doesn't sit at the middle of the boundary.
So, P must be at the centre and M at one of the corners. S is also at the corner with one person sitting on one side of person at centre i.e. P.
Since,
• O and P are not adjacent to each other.
So, O must not be sitting at the diagonal on either side of P.
Also, since R faces west, case III becomes invalid.
• Neither S and M, nor N and M, are in same line of sight.
We get,

Case I:



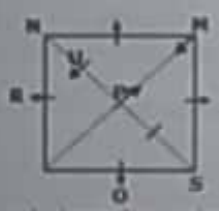
Case II:



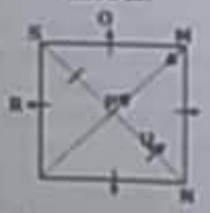
Case IV:

Now,
Since, the directions given are exact North-east or exact south-west directions.
So, case IV gets eliminated straightaway as U faces south-east.
• R, who faces towards west, is not adjacent to M.
Also, since there are two persons, each is sitting on either side of P.
We get,

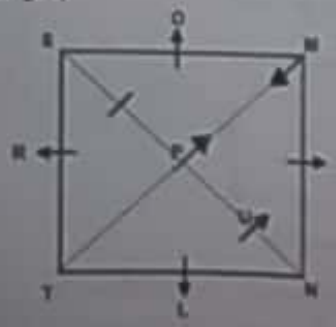
Case I:



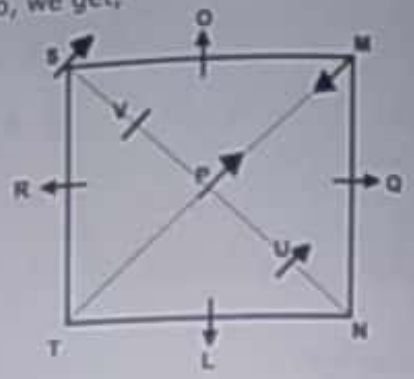
Case II:



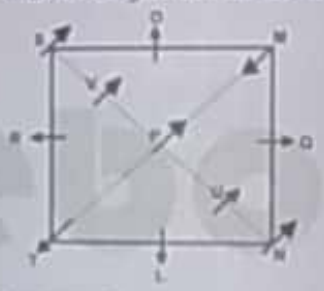
• L doesn't sit along the diagonal's line of sight.
• L and M are not adjacent to each other.
• T sits adjacent to L.
Thus,
Case I becomes invalid.
We get,



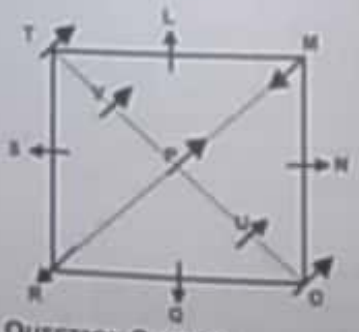
Now,
• N and V are not sitting together.
• Immediate neighbours of V face in same direction.
So, we get,



• T faces in the direction which is opposite to P.
Thus, T faces south-west.
• N and U face in same directions.
• V faces either in same direction as N or in east direction. (since in early cases there was 2 positions possible for V, so after elimination only possibility is V faces in same direction of N)
Final arrangement is as follows:



Answer 8: O is sitting facing north, we start in clockwise manner from here.
We get that, only M didn't change its position.



QUESTION 9 TO 12

From the 2 sequences we get 5 ages: 39, 36, 27, 25 and 23. From the pointers given we get 3 more ages: 31, 22 and 19. Thus, the sequence of ages will be:

$\frac{}{(39)}, \frac{}{(36)}, \frac{F}{(31)}, \frac{}{(27)}, \frac{}{(25)}, \frac{}{(23)}, \frac{D}{(22)}, \frac{}{(19)}$

• E was the 2nd eldest person and was seated to the immediate right of C. Thus, E was 36 years old.

$\frac{}{}, \frac{B}{(25)}, \frac{}{}, \frac{}{}, \frac{C}{}, \frac{E}{(36)}, \frac{G}{}$

• The person aged 31 was seated 3rd to the left of the one who was aged 27. Thus, F was 3rd to the left of the one who was 27 years old.

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• B was aged more than G. B was 25 years old. G was aged 23 or 19.

— B (25) F (31) — — C (27) E (36) G

F (31) B (25) — (27) — C — E (36) G

• The person who was 39 years old was seated 2nd to the left of F. Thus, 2nd arrangement is invalid.

(39) B (25) F (31) — — C (27) E (36) G

• A was seated 3rd to the left of the one who was 19 years old

• B was aged more than G. B was 25 years old. G was aged 23 or 19.

A (39) B (25) F (31) (19) — C (27) E (36) G (23)

(39) B (25) F (31) — A — C (27) E (36) G (19)

• The person aged 23 was to the immediate right of the one who was aged 22. Thus, 1st arrangement becomes invalid.

(39) B (25) F (31) (22) A (23) C (27) E (36) G (19)

• D was not the eldest.

Thus, the arrangement and age sequence will be as follows:

H (39) B (25) F (31) D (22) A (23) C (27) E (36) G (19)

H (39), E (36), F (31), C (27), B (25), A (23), D (22), G (19)

Question 13 to 17

Start picking the statements whose data is already known.

We know,

• The one who speaks German sits third to left of L, who speaks Spanish.

• Latin is spoken by N, who sits second to right of L.

Thus, we get,

• Korean is spoken by the person sitting immediate left to O.

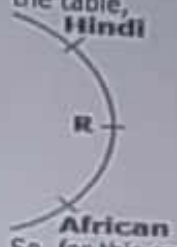
We get,

Here, we come to know from the statements that,

• Hindi is spoken by the person who is sitting second to right of the one who speaks African.

• Hindi is spoken by ___(iv)___, who sits immediate right to R. i.e., person speaking Hindi sits immediate right to R.

So, it must be following arrangement anywhere on the table,



So, for this condition doesn't fits in case I and case III. Thus, these two cases become invalid. It only fits in case II.

We get,

Now,

• M sits second to right of O.

• The person sitting second to left of K speaks English.

• One language spoken is French.

We get,

Since,

• Q doesn't speak Korean. Also, Q doesn't speak English.

Thus, case II(b) becomes invalid.

Q thus, speaks French and P is only left, so, P speaks English.

We get the final arrangement:

Thus, we get all the blanks:

• P sits second to left of the one who speaks ___(i) Korean___.

• Hindi is spoken by the person who is sitting second to right of the one who speaks African, who sits to immediate right of ___(ii) K___.

• O speaks ___(iii) African___.

• Hindi is spoken by ___(iv) M___, who sits immediate right to R.

• ___(v) Q___ speaks French.

Question 18 to 22

It is given -

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oliveboard

• Person standing in between any two persons means they are standing in same line of sight. (as shown with the dotted line)
• No two persons who appear consecutively in the alphabetical series, face each other. (For ex. A doesn't face B, C doesn't face D, etc.)
Now,
• Two persons, A and J, are standing between K and E.
J cannot face K, thus A faces K.
We get,

• G faces the person, who is standing between G and L, who faces D, who stands facing towards the centre.
• C stands to immediate left of L.
Thus, L stands in inner shown boundary facing away from centre.

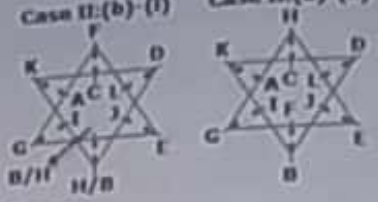
Case I: Case II:

Since,
• L is not immediate left of A.
Thus, case I becomes invalid.
Now, we have only case II and we have B, F, H and I, to be placed.
G cannot face F and H as these appear consecutively with G.
So, G may face either B or I.
We get,

Case II:(a) Case II:(b)

• H doesn't face F.
In case II(a): H cannot face I and, also, cannot face F. So, C faces H. and F faces I.
• but, F doesn't face I.
so, this becomes invalid.
In case II(b): C cannot face B, so C may face either F or H.
Also,
• No one stands between C and F.
We get,

Case II:(b)-(I) Case II:(b)-(II)



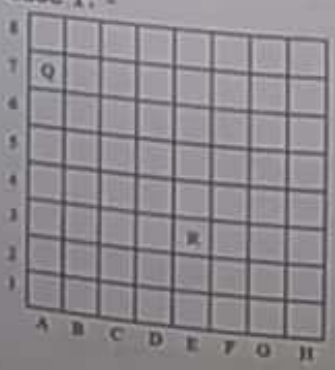
Since,
• J is immediate left of neither B nor F.
Thus, case II(b-ii) becomes invalid.
We get the final arrangement as follows:

Answer 19 - F is at the vertices facing inside while all others are standing in inner side of park.

QUESTION 23 TO 27

The position of piece is given by the combination of row and column. E.g. C5 means the piece is in Cth column and 5th row.

The rook of Carlson is placed in the prime numbered row and in the column denoted by vowel and that rook is under diagonally attack from the queen of Anand.
So, row number = 2/3/5/7 and column number = A/E
The queen of Anand is placed in the vowel and the prime number greater than 3.
Row number = 5/7 and column number = A/E
If Queen in A5 then we cannot place the rook.
If queen is in A7 then rook must be in E3.
If queen is in E5 then we cannot place the rook.
If queen is in E7 then rook must be in A3.
So, we get: -
Case 1: -



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Case 2: -

The Bishop of Carlson is 3 rows above and 2 columns to the right of his rook.
The pawn-2 of Carlson is to the immediate right of his pawn-1.
Pawn-1 of the Carlson is 2 rows below and 2 columns to the right of his Bishop.
So, we get: -

Case 1: -

This case is invalid as we cannot place the pawn-1 and pawn-2.

Case 2: -

King of Carlson is 2 rows below and one column to the right of pawn-2.
Knight of the Carlson is one row below and in the same column to his bishop.
So, we get: -

This is the final solution.

Answer 26 – From the position of the Pawn-1; Bishop, Pawn-2 and King will be under attack by Queen.

Answer 27 – 2 pieces are under attack by Queen and the position of Queen is E7.

QUESTION 28 TO 30

From the given statements we have

Each player has to play a game with another participant. There were several rounds of the tournament and in each round every player played only once. The loser of each game has to leave the apartment while the winner will come to the floor of the looser

We can deduce that there will be only one person left after 3 rounds.

So, in
round 1: 8 people
round 2: 4 people
round 3:- 2 people
round 4(/Winner):- only 1

Now
H who was allotted 5th floor competed with B in round 1.
F was shifted to 5th floor after round 2.
E was at 2nd floor in round 2.

	Round 1	Round 2	Round 3	Round 4/Winner
Floor	Person	Person	Person	Person
8				
7				
6				
5	H		F	
4				
3				
2		E		
1				

Since F was shifted to 5th floor after round 2, so H must have lost in round 1.

C was at the odd numbered floor in both round 1 and round 2 but not on 1st floor.

So, C was at either 7th or 3rd floor in round 1 and at 3rd or 7th floor in round 2 as in order to be at floor 5 in round 2 he as to compete with H in round 1.
But H is already competing with B in round 1 as per the directions given. Hence C cannot take 5th floor in round 2.

Case 1:

	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8				
7	C			
6				
5	H		F	
4				
3		C		
2		E		
1				

Case 2:

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	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8				
7		C		
6				
5	H		F	
4				
3	C			
2		E		
1				

This implies that person competing with C was either in 3rd or 7th floor and lost to C in round 1.
Also,
H who was allotted 5th floor competed with B in round 1.
B competed with F in one of the rounds.
This implies that B went further after 1st round and the rest of the two persons in round 2 are B and F as F went to the 3rd round.
There were at least 4 people between A and G.
So, if A is at 8th floor, G would be on 3rd or 2nd. G can not be on 1st floor as it is given that **the candidate who was on 7th floor after round 2 was in 1st floor at the beginning** and we know that only B, C, E, F went to the further rounds. So, G will not be on 1st floor. Since we know that B and F were the rest two persons in round 2, and F was shifted to 5th floor after round 2, so this implies that B was at 5th floor in round 2 and got eliminated after that. So even B cannot be at 1st floor in the beginning.
Also, C did not go to the final round , so it has to be E on the 7th floor in round 3 and at 1st floor in round 1.
Case 1:

	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8	A			
7	C		E	
6				
5	H	B	F	
4				
3	G	C		
2		E		
1	E			

Now since in round 2, B competed with F, so C and E will compete . But E was at 7th floor in round 3 which is a contradiction with the rules as E should be on the 3rd floor in round 3.
Hence this case is ruled out.
Moving ahead with Case 2:
Case 2:

	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8				
7		C		
6				
5	H		F	
4				
3	C			
2		E		
1				

There were at least 4 people between A and G.
G cannot be on 1st floor as it is given that the candidate who was on 7th floor after round 2 was in 1st floor at the beginning and we know that only B, C, E, F went to the further rounds. So , G can only be on 2nd floor. Since we know that B and F were the rest two persons in round 2, and F was shifted to 5th floor after round 2, so this implies that B was at 5th floor in round 2 and got eliminated after that. So even B cannot be at 1st floor in the beginning.
Also, C did not go to the final round , so it has to be E on the 7th floor in round 3 and at 1st floor in round 1.
Case 2(a):
When A is at 8th floor

	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8	A			
7		C	E	
6				
5	H	B	F	
4				
3	C			
2	G	E		
1	E			

D had a match with the person living on 6th floor.
So, D will either be in 7th or 4th floor.
Case 2(a(i)):
When D was on 7th floor

	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8	A			
7	D	C	E	
6				
5	H	B	F	
4				
3	C			
2	G	E		
1	F			

Again, we have two cases for this for the position of B :
Case 2 (a(i-A)):-
When B is on 6th floor

	Round 1	Round 2	Round 3	Round 4
Floor	Person	Person	Person	Person
8	A			
7	D	C	E	
6	B			
5	H	B	F	
4	F			
3	C			
2	G	E		
1	E			

But we are given that D had a match with the person living on 6th floor, so according to it B and D will have a match in round 1(**as D did not went further after round 1)** . But we are already given that B had a match with H in round 1. So, this is contradictory. Hence this case is invalid.
Case 2 (a(i-B)):-
When B is on 4th floor:

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Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8	A			
7	D	C (F)	E	
6	F			
5	H	B	F	
4	B			
3	C			
2	G	E		
1	E			

D had a match with the person living on 6th floor. So according to that D had a match with F and since F moved to the next so F should come in 7th place after round 1. But that is already occupied by C. this is again contradictory , hence this case is also invalid.

Case 2(a(ii)):

When D was on 4th floor

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8	A			
7		C	E	
6				
5	H	B	F	
4	D			
3	C			
2	G	E		
1	E			

Now we are given that B was not adjacent to A, so B will come on 6th and F on 7th floor.

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8	A			
7	F	C	E	
6	B			
5	H	B	F	
4	D			
3	C			
2	G	E		
1	E			

Now according to the statement that

D had a match with the person living on the 6th floor.

So, B had a match with D, but we are given that B had match with H in round 1. this is contradictory hence this case is also invalid.

Case 2(b):

When A was at 7th floor:

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8				
7	A	C	E	
6				
5	H	B	F	
4				
3	C			
2	G	E		
1	E			

Since B was not adjacent to A in round 1, so B will come at 4th position in round 1.

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8				
7	A	C	E	
6				
5	H	B	F	
4	B			
3	C			
2	G	E		
1	E			

D had a match with the person living on 6th floor in round 1. So, D will come at 8th position and will have a match with F at 6th position.

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8	D			
7	A	C	E	
6	F			
5	H	B	F	
4	B			
3	C			
2	G	E		
1	E			

So, the following is the match and winners for round 1:-

D-F (Winner-F)
A-C (Winner-C)
B-H (Winner-B)
G-E (Winner-E)

So that gives the position of F in round 2:-

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8	D	F		
7	A	C	E	
6	F			
5	H	B	F	
4	B			
3	C			
2	G	E		
1	E			

Also, with the positions of E and F in round 3 implies that they had a match with C and B respectively in round 2.

Also, **the person allotted 6th floor was not the winner.**

So, this implies that E was the winner.

Floor	Round 1 Person	Round 2 Person	Round 3 Person	Round 4 Person
8	D	F		
7	A	C	E	
6	F			
5	H	B	F	E
4	B			
3	C			
2	G	E		
1	E			

Answer 29 – 3 floors were there between the floor which was allotted to D and the floor which was allotted to B in round 1.

Answer 30 – B was allotted 4th floor in which nobody was living in round 2.

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