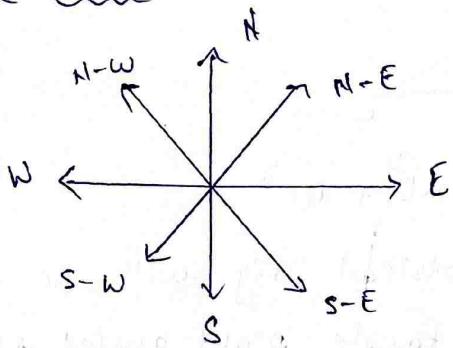


Logical Reasoning

- 1) Direction Sense Test
- 2) Blood relations
- 3) Seating arrangements
- 4) clocks
- 5) Calendars
- 6) analogy: Non-verbal
- 7) Coding and decoding
- 8) Series
- 9) Statement and conclusion / arguments / assumptions.
- 10) Statement and course of action
- 11) Cause and effect
- 12) Syllogism.
- 13) Order and Ranking

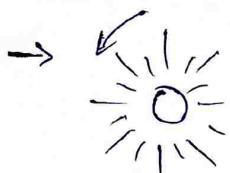
* Logical Reasoning :-

1) Direction Sense Test :-

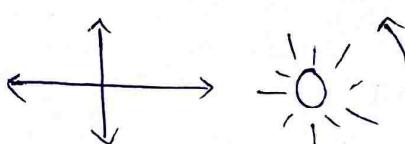


4 Main directions =
N, S, E, W

4 Cardinal directions
b/w main directions
= N-E, N-W, S-E,
S-W.

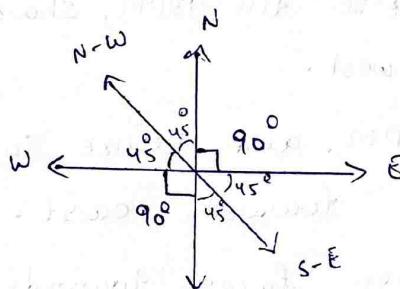


the west.



Rises in the east

→ angles :-

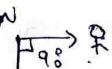


Total angle
 360° .

The angle b/w two main directions is always 90° and angle b/w main direction and its adjacent cardinal direction is 45° .

If they don't mention the angle take 90°

Ex:- A person is facing N & turns right



→ clockwise, anticlockwise :- Selection of right or left depends on clockwise (Right turn) or anti-clockwise (Left turn)

anti-clock ↘ clock ↗

left (anti) ↑ → Right (clock)

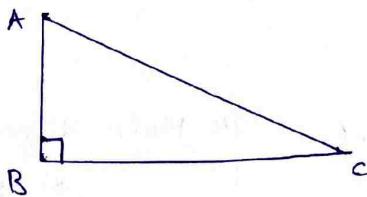
Right (clock) S Left (Anti)

↑ left (anti)
→ E
↓ Right (clock)

Ex:- A boy facing west turns 45° clockwise
w ← (Boy) ↗ (Right side).

w ← ↑ Right (clock)
↓ left (anti)

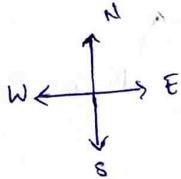
→ Pythagoras theorem:-



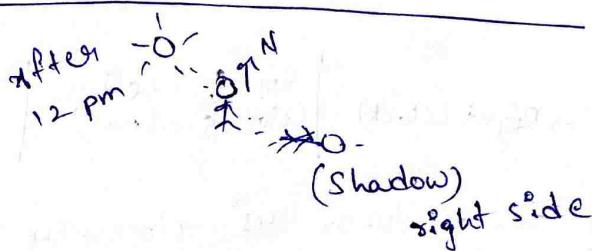
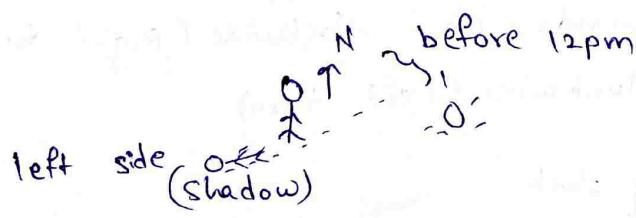
$$(AC)^2 = AB^2 + BC^2$$

Familiar geometrical fig will be asked
(square, rectangle, right angled Δ).

→ Shadow:-



- at 12 Noon, there would be no shadow.
- after sun rise till 12PM, shadow would be towards west.
- after 12 PM. and before sun set, shadow would be towards east.
- If a person faces towards North before 12pm, the shadow would be towards left side & after 12pm it would be towards right side
- " towards South before 12pm, shadow would be towards right & after 12pm it would be towards left side



Question Types

1) Direction based Questions

In these types of questions, student is asked to find out direction from one point to another. This point can be starting position, current position or any other place.

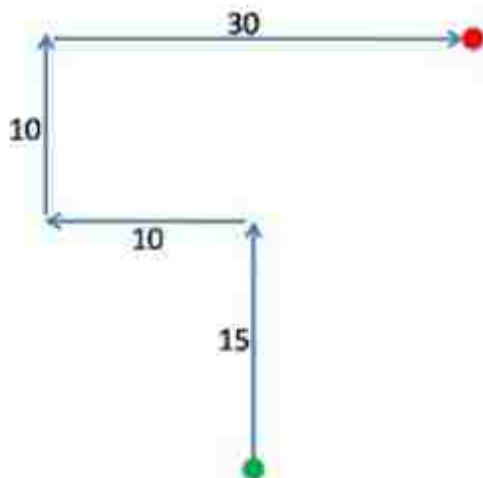
Examples

A) Joe is walking towards North for 15 miles, turns left and walks another 10 miles. He then turns right and walks 10 miles. Now, he again turns right and walks 30 miles. Which direction is he from Starting point?

- a) South-East
- b) North-East
- c) North-West
- d) South-West
- e) None of these

Answer: b) North-East

Diagram:

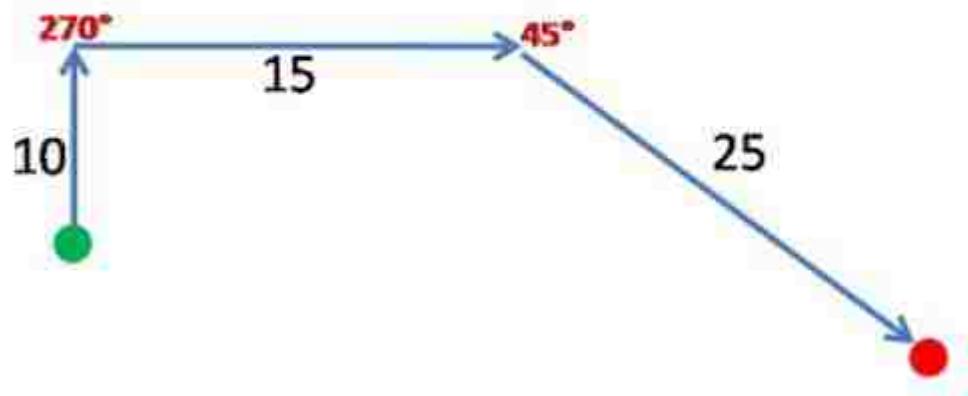


B) Morris is facing North and walks 10kms. He turns 270° anti-clockwise and walks 15kms. Now, he again turns 45° clockwise and walks for 25kms. Which direction is he facing now?

- a) North-West
- b) South-West
- c) North-East
- d) South-East
- e) None of these

Answer: d) South-East

Diagram:

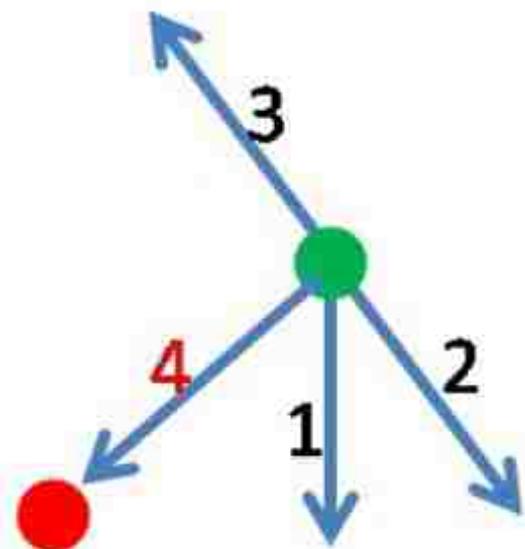


C) Joe is facing towards South and turns 45° anti-clockwise. He turns again 180° in anti-clockwise direction. Now, he turns 270° clockwise. Which direction is he facing?

- a) West
- b) East
- c) South-West
- d) North-East

Answer: c) South-West

Diagram:

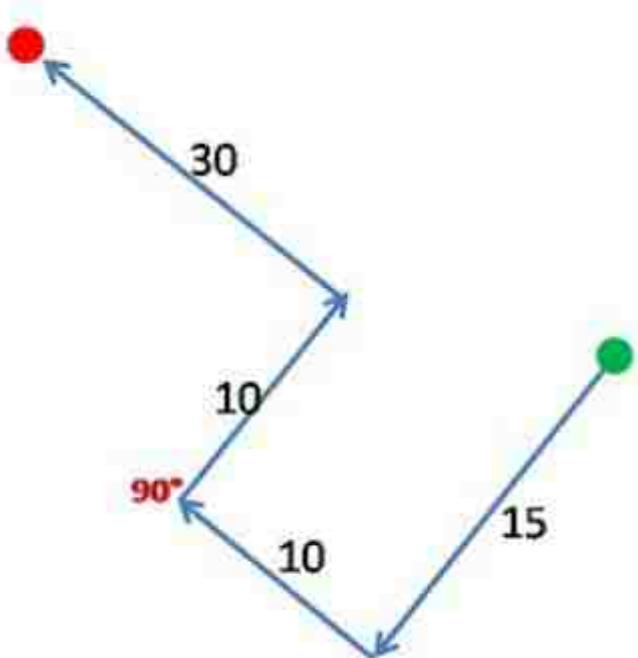


D) Mary is walking towards South-West for 15 miles, turns right and walks another 10 miles. She then turns 90° Clockwise and walks 10 miles. Now, she again turns left and walks 30 miles. Which direction is she facing?

- a) East
- b) West
- c) South-East
- d) North-West
- e) Can't determined

Answer: d) North-West

Diagram:



2) Distance based Questions

In these types of questions, student is asked to find out distance from one point to another. This point can be starting position, current position or any other place.

This question will require Pythagoras theorem in some cases, while in some cases we can easily find out distance between two points by simply drawing diagrams.

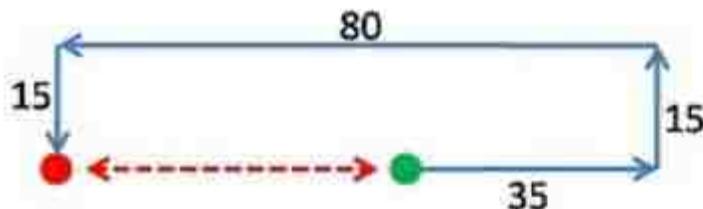
Examples

A) Joe went 35 meters towards east from Mary's house. He turns left and walks 15 meters. Now, he takes a left turn and walks 80 meters. Finally, he turns left and walks for 15 meters. How far Joe is from Mary's house?

- a) 30
- b) 45
- c) 50
- d) 65

Answer: b) 45

Diagram:

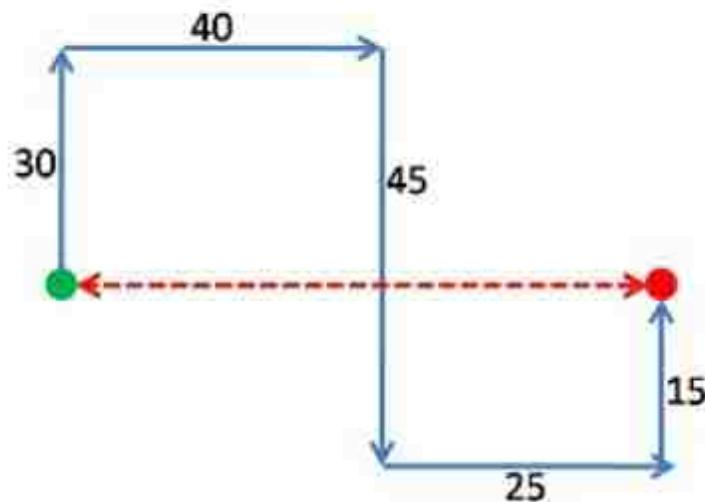


B) Maria walked 30 m towards north. She turned right and walked 40 m. She then turned right and walked 45 m. She turned left and walked 25 m. Finally she turned left and walked 15 m. How far is she from the starting position?

- a) 55
- b) 65
- c) 30
- d) 45

Answer: b) 65

Diagram:

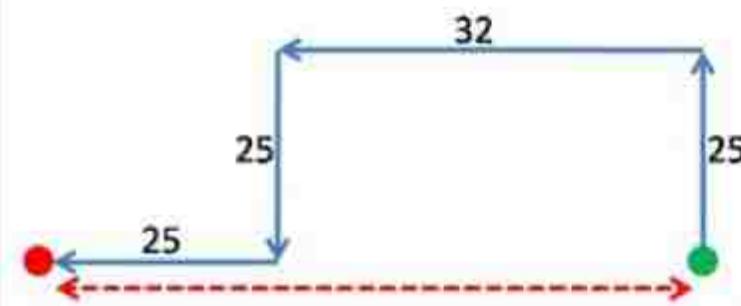


C) Harry walks 25 meters towards North from his friend's house. Then he turns left and walks 32 meters. He again turns left and walks 25 meters. Further, he moves 25 meters after turning to his right. How far is he from his friend's house?

- a) 50
- b) 7
- c) 57
- d) 0
- e) Can't determined

Answer: c) 57

Diagram:

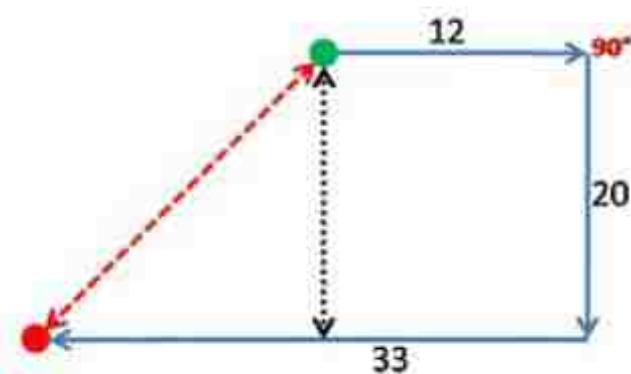


D) A Boy walks 12kms towards east. He turns 90° clockwise and walks 20kms then he turned right and walked for 33kms. How far is he from starting point?

- a) 65
- b) 29
- c) 21
- d) 43

Answer: b) 29

Diagram:



3) Direction-Distance based Questions

In this type of questions, we deal with the final distance and directions between two points; it can be places, persons, things, etc.

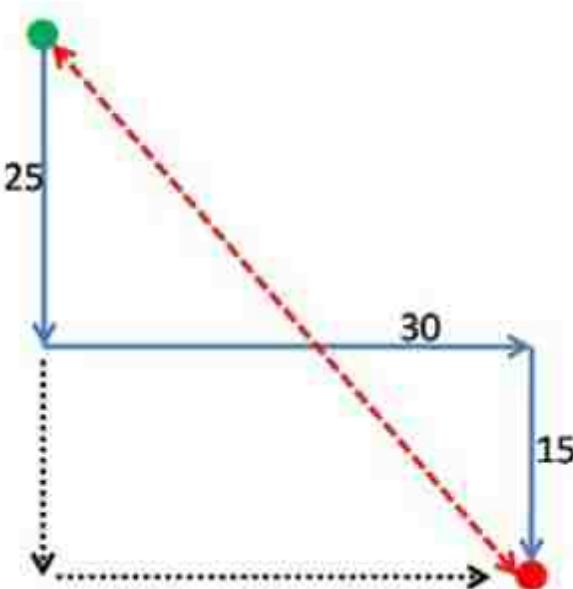
Examples

A) A car travels 25 kms towards south from garage. It turns left and travels 30 kms, then turns right and travels 15 kms. how far is car from the garage and in which direction?

- a) 40 North-East
- b) 70 South-East
- c) 60 North-East
- d) 50 South-East

Answer: d) 50 South-East

Diagram:

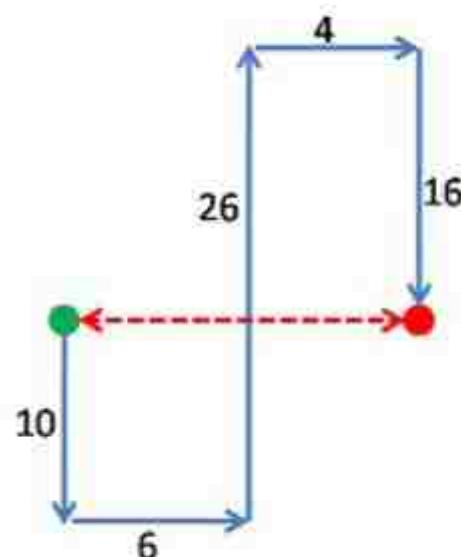


B) Jerry starts walking towards South from his house. After travelling 10 meters, he turns left and walks 6 meters. He turns left and walks 26 meters and then he turns right and walks 4 meters. Finally, he turns right and walks for 16 meters. How far is he from his house and in which direction?

- a) 10 East
- b) 20 West
- c) 16 East
- d) 26 West

Answer: a) 10 East

Diagram:

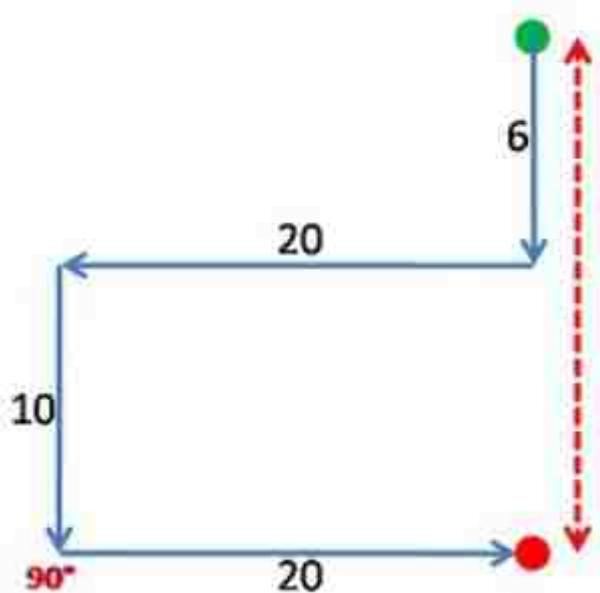


C) Joseph walks 20 meters from his house and after that he turns 90° clockwise and walks 10 kms. He turns right and walks for 20 kms, then he turns left and walks for 6 kms. Finally, he is going towards North. How far Joseph is from his house and in which direction?

- a) 40 South
- b) 20 South
- c) 16 North
- d) 15 North

Answer: c) 16 North

Diagram:

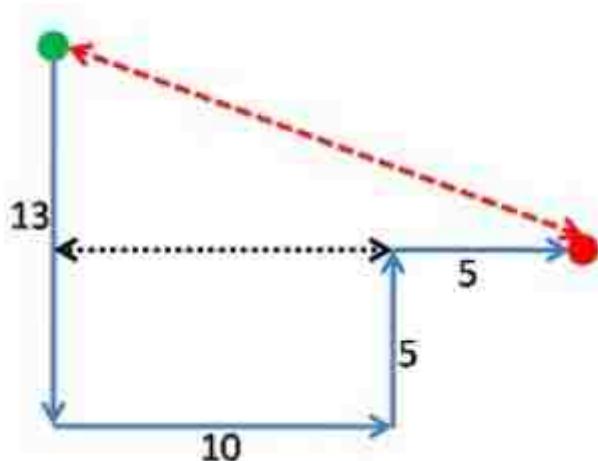


D) Martin walked 13 meters towards South from his Gym. He turned left and walked 10 meters. He took a left turn and walked 5 meters and then he turned right and walked for 5 meters. How far is he from his Gym and in which direction?

- a) 19 North-West
- b) 13 South-East
- c) 15 North-West
- d) 17 South-East

Answer: d) 17 South-East

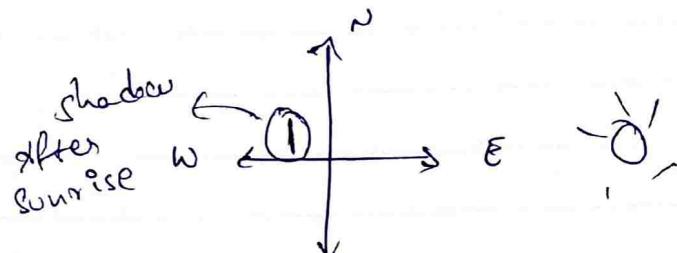
Diagram:



8.) One morning after sunrise, Joe was standing facing a pole. The shadow of the pole fell exactly to his right. To which direction was he facing?

- a) East
- b) South
- c) West
- d) Data is inadequate

[b]



If he is facing - ~~East~~
North, shadow - Left side x

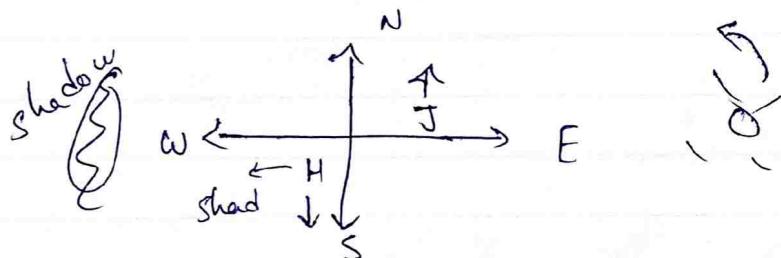
..

" South, shadow - Right side f
shadow - Right side v.

9.) James and Henry were standing facing each other at 8 am. Shadow of the Henry fell exactly to his right. To which direction was James facing?

- a) East
- b) South
- c) North
- d) Data is inadequate

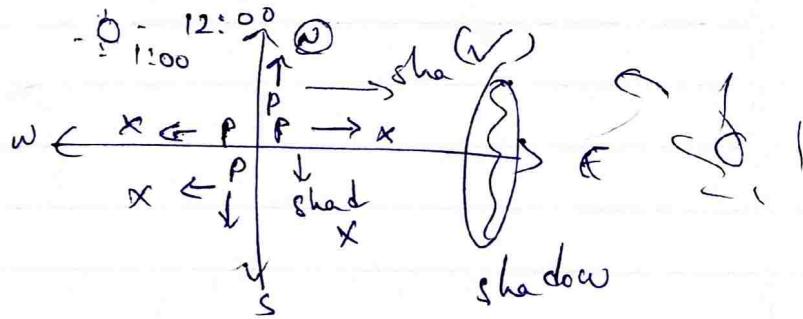
[c]



10) Prince was standing facing to the pole at 1:48 pm. shadow of the pole fell towards his right. To which direction was prince facing.

- a) west
- b) south
- c) east
- d) north

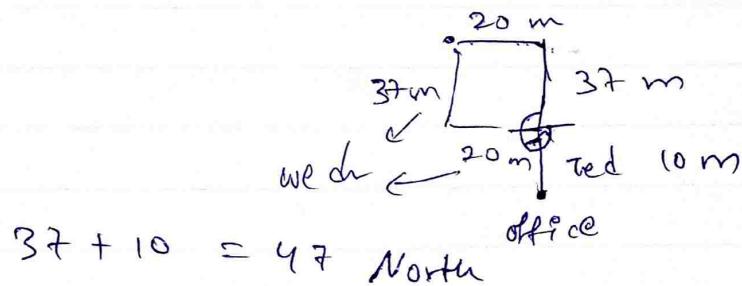
[d]



11) Ted drives a car 10 miles towards North from his office. He turns 270° clockwise & drives for 20 miles. Now, he turns 270° anti-clockwise & drives a car ~~for~~ 37 miles. Finally, he reaches his house after driving ~~for~~ 20 miles to his right. How far is Ted's house from his office and in which direction?

- a) 40 South b) 47 North c) 30 East d) 37 North

[b]



Practice Links:-

- 3) <https://www.indiabix.com/verbal-reasoning/direction-sense-test/introduction>.
- 1) <https://www.careerguide.com/page/directions-questions-and-answers-749.aspx>
- 2) <https://www.careerguide.com/mcq/direction-sense-test-logical-reasoning-mcq-questions-370.aspx>

2.) Blood Relations :-

* Tips:-

i) Draw the diagram.

ii) Every generation should be on new row/ level.

iii) Use symbols (Ex:- female = \ominus , male = \oplus)

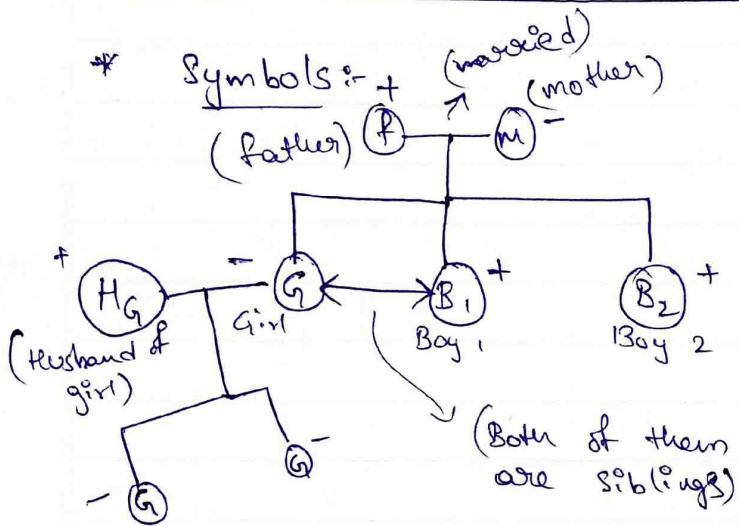
(\oplus) \rightarrow (\ominus) Husband & wife
(married).

iv) Don't draw useless relations (gf, bf, frndz)
These types are not needed.

v) Don't judge the gender based on names.

vi) Draw your family tree. (practice).

* Symbols:-



+ = male
- = female
- - = married
 \leftrightarrow = siblings

* In-pair relations:-

Father of Father or Mother	Grand Father
Mother of Father or Mother	Grand Mother
Wife of Grand Father	Grand Mother
Husband of Grand Mother	Grand Father
Father-in-law of Father/Mother	Grand Father
Mother-in-law of Father/Mother	Grand Mother
Brother of Father	Paternal Uncle
Sister of Father	Paternal Aunt
Brother/Sister of Mother	Maternal Uncle/Aunt

Father of wife/husband	Father-in-law
Mother of wife/husband	Mother-in-Law
Father's/Mother's only son/daughter	oneself
Son/Daughter of uncle/Aunt	Cousin
Brother/sis of Husband/wife	Brother-in-Law/SIL
Husband of sister/SIL	BIL
Son of Bro/sis	Nephew
Daughter of Bro/sis	Niece
Husband of Daughter	Son-in-Law
wife of Bro/BIL	Sis-in-Law
wife of Son	Daughter-in-Law

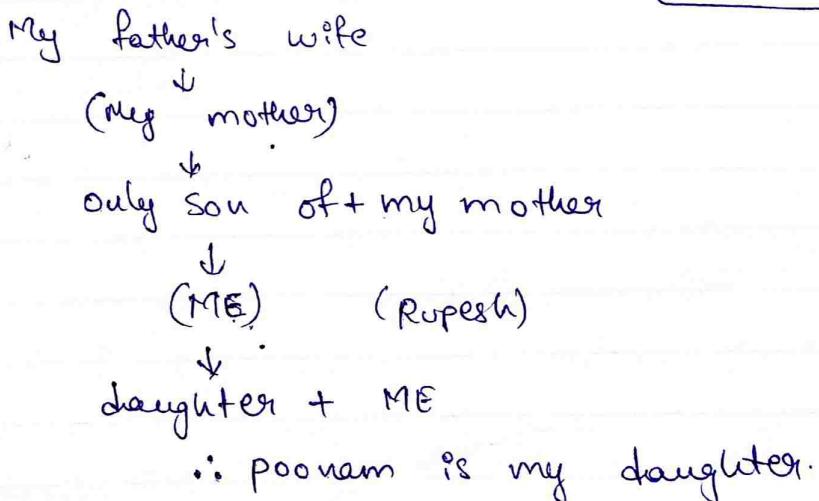
SUMS

I type

- 1.) Rupesh introduces poonam as the daughter of the only son of my father's wife. How is poonam related to Rupesh?
 a) cousin b) Niece c) Daughter d) Aunt

[c]

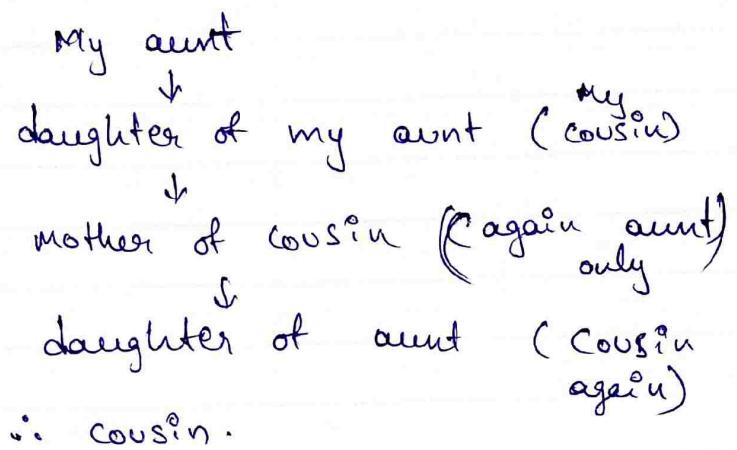
In these type of ques, Tip - come from back.



2) Introducing a girl, a boy said, "she is the daughter of the mother of the daughter of my aunt." How is the girl related to the boy?

- a) cousin b) Niece c) Daughter d) Aunt

[a]



[II type]

3) U-V means U is the brother of V, W-X means W is the father of X, X-Y means X is the sister of Y, Y-Z means Z is the mother of Y. Which of the following means that N is the mother of O?

- a) L+M÷N-O b) L-M×O%P
c) N÷M×L÷O d) M+L÷O×N

[d]

N & O (Mother)

From ques (Y-Z)

Mother = X

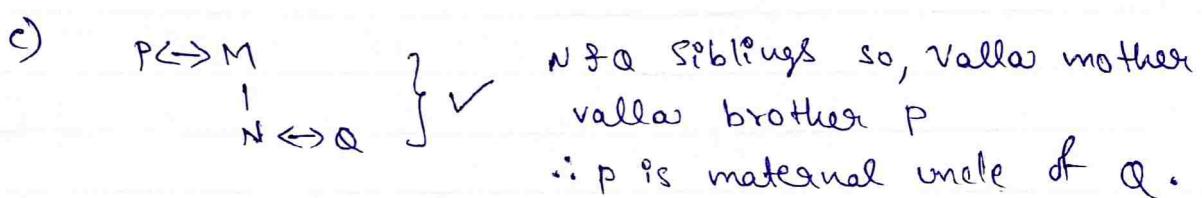
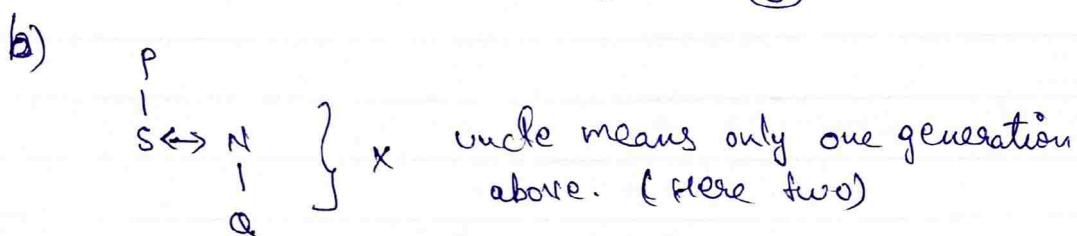
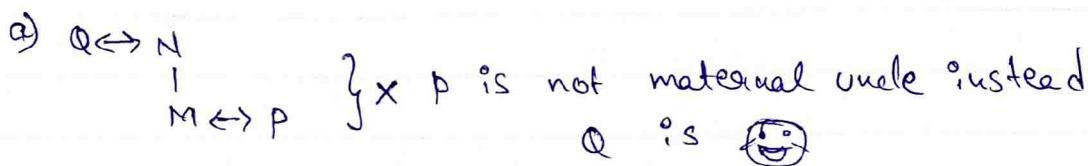
O×N → In options
(d)

4) If $A \# B$ means A is the mother of B , $A - B$ means A is brother of B , $A \% B$ means A is father of B , $A \times B$ means A is sister of B , which of the following shows that P is the maternal uncle of Q ?

- a) $Q - N \# M \times P$
- b) $P \# S \times N - Q$
- c) $P - M \# N \times Q$
- d) $Q - S \% P$

[c] (Directly not given like before).

In these cases, try & error method (Try each option).



5) Read the info carefully & answer the questions. (III type)

- i) A family consists of 6 members P, Q, R, X, Y, Z
- ii) Q is the son of R but R is not mother of Q .
- iii) P and R are married couple.
- iv) Y is the brother of R , X is the daughter of P .
- v) Z is the brother of P .

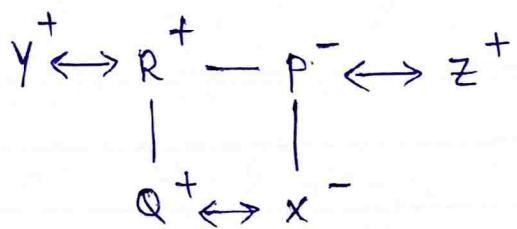
Q1) Who is the brother in law of R ?

Q2) How many female members are there in the family?

Q3) How is Q related to X ?

Q4) How is Y related to P ?

In these type of questions, we need to draw the family tree.



Q1) Z

Q2) Two (P & X)

Q3) They are siblings / Q is brother of X ~~(Brother & sister)~~

~~Brother & sister~~

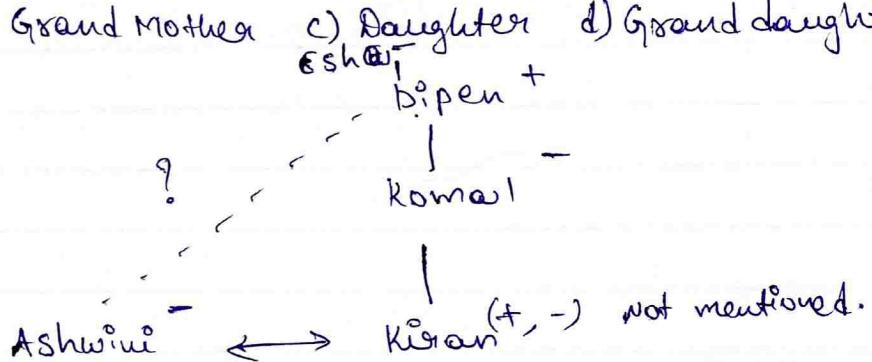
Q4) Y is Brother-in-Law of P.

6) Ashwini is Kiran's sister. Komal is Kiran's mother.

Dipen is Komal's father. Esha is Dipen's mother. Then, how is Ashwini related to Dipen?

- a) Grandfather b) Grand Mother c) Daughter d) Grand daughter

[d]



7) There are six persons Ashwin, Kiran, Komal, Dipen, Esha & Mittal. Komal is the sister of Mittal. Kiran is the brother of Esha's husband. Dipen is the father of Ashwin and grandfather of Mittal. There are two fathers, three brothers & one mother in the group. Who is the mother?

- a) Ashwin b) Kiran c) Komal d) Esha

[d]

Dipen +

|

Esha - — Husband (Ash) + \leftrightarrow Kieran +

|

Komal \leftrightarrow Mittal (+,-)

Here they didn't give directly that Ashwin is the husband of Esha but that is the only relation they didn't give b/w Esha & Ash directly i.e., No direct relation b/w them in ques. So it is the most appropriate way.

Here Komal & Esha are female but Komal (not married or we dk) Esha has a husband i.e. Esha.

- 8) Pointing out to a lady, a girl said, "she is the daughter-in-law of the grandmother of my father's only son." How is the lady related to the girl. (I type)

- a) Sis-in-Law b) Mother c) Aunt d) Can't be determined.

[d]

my father's only son = my brother
↓

grandmother of my brother = grandmother
↓

Daugh-in-Law of my grandmother
(Father's mother / mother's mother)

↓ ↓
Mother / Aunt

Two possibilities

∴ Can't be determined.

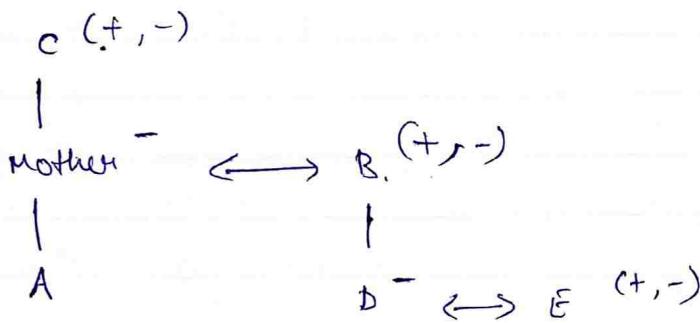
Grandmother can be from mother's side or father's side (Be careful).

9) A's mother is sister of B and daughter of C. D is daughter of B and sister of E. How is C related to E?

III type

- a) Father b) Grandfather c) Grand Mother d) Either
Grandfather or Grand Mother

[d]



10) In a family of six persons A, B, C, D, E and F

→ There are two married couples

- D is grandmother of A and mother of B.

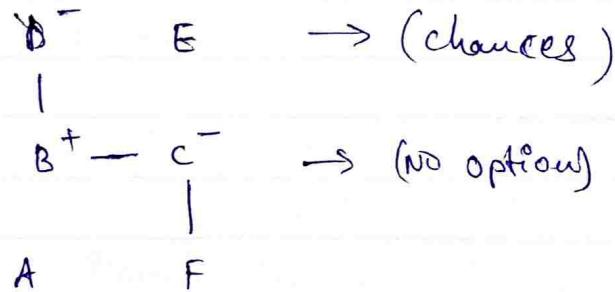
- C is wife of B & mother of F.

- F is granddaughter of E.

who among the following is one of the couples?

a) CD b) DE c) EB d) None of these

[]

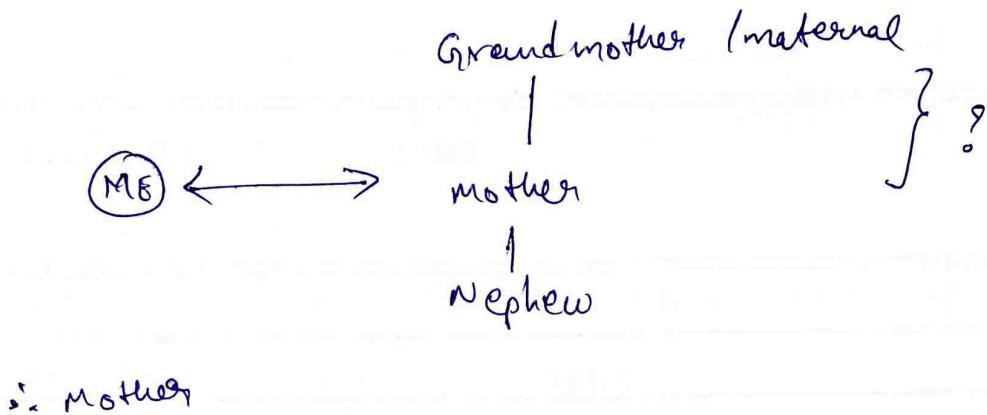


11) Pointing to a photograph the man said, "the lady in the photograph is my nephew's maternal grandmother". How is the lady in the photograph related to the man's sister who has no other sister?

- a) cousin b) sister-in-law c) mother
 - d) mother-in-law

[C]

A type

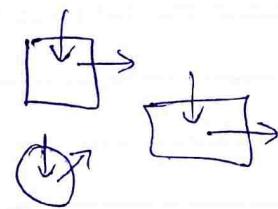
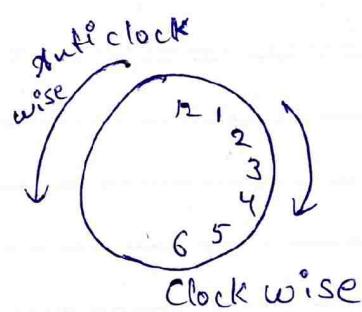
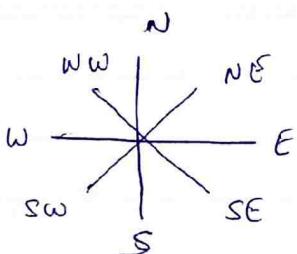


Practice Links:

- 1) <https://www.careerride.com/page/blood-relations-and-family-tree-questions-and-answers-747.aspx>
- 2) <https://www.careerride.com/mcq/blood-relations-and-family-tree-logical-reasoning-mcq-questions-376.aspx>
- 3) <https://www.indiabix.com/verbal-reasoning/blood-relation-test/introduction>.

3) Seating arrangement :-

* Tips :-



Know whether people are facing inside/outside.

Left side ↑ Right side , R ↓ L [Right & Left changes according to the directions they are facing].

* steps :-

- 1) Count the people.
- 2) Draw a frame & arrange them.
- 3) Solve sentence by sentence & merge them.
- 4) Can answer the question.

SUMS

1) A, B, C, D, E, F and G are 7 friends sitting in a single row facing North.

i) D is to the immediate right of C.

ii) E and A are neighbours of F.

iii) B is to the immediate left of C and on second place from left most end.

iv) A is at the right most end.

a) who is in bw c & E ? [D]

b) who are the neighbours of G ? [B]

c) what is the position of E ? [5th position from left / 3rd from right]
left ↑ North

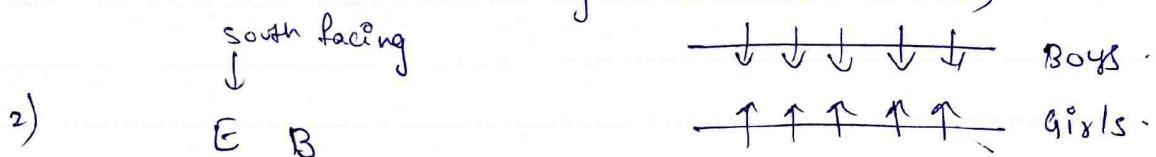
G B C D E F A

Total = 7

Q) Consider the following scenario:

- 1) Five boys Ashwin, Dipesh, Eshan, Chetan and Bipin & 5 girls Parul, Komal, Radha, Savita & Vimla sit in two rows facing towards each other. All the boys in 1 row & all the girls in other row.
- 2) Eshan who is to the immediate right of Bipin and opposite to Parul is not at any end.
- 3) Radha, who is immediate to the right of Komal & opposite to Chetan, is at one of the ends.
- 4) Ashwin is oppo to Komal who is the third to the right of Savita.
- 5) Dipesh and Vimla are not oppo each other.

1) No. of people = 10 facing each other (5:5)



2)

E B

check the direction then right / left decide

3)

~~— — — = C ↓~~
~~— — — K R ↑~~

why I placed Radha this end only bcz they gave one of the ends, but if I place Radha at other end then Komal can't be there as Radha should be the immediate right of Komal & one end.

4)

~~Ashwin~~ C
Savita
? 1st 2nd 3rd right is Komal

5)

Merging it
if the place Bipin won't be Eshan can't be at end so, next to it

E B A C
S P — — K R

6) Remaining

the condition not oppo, (if satisfies)

D E B A C
S P V K R

Q1) who is in the middle of the row of boys? - [Bipin].

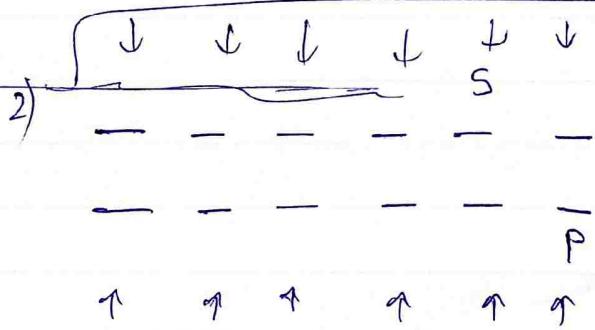
Q2) who is immediately to right of parnel? - [Vinod].

Q3) who is opp of Dinesh? - [Savita].

Q4) How many boys are there b/w Ashwin & Bipin? - [zero].

3) 6 boys Ramesh, Suresh, Dinesh, Rupesh, Parvesh, Kamlesh and 6 girls Seema, Geeta, Rita, Meena, Komal, Radha are standing in rows, such that each girl faces one boy, not necessarily in same order. Seema is to the immediate right of the girl who is facing Parvesh, the boy at extreme right. Only Suresh is between Rupesh and Parvesh. Kamlesh is to the immediate left of Ramesh and to the immediate right of Dinesh. Rita is facing Ramesh and is to the immediate left of Geeta. Radha is third to the left of Meena.

$$1) \text{ Total} = 6 + 6 = 12$$



~~↑↑↑↑↑↑~~ girls.
~~↑↑↑↑↑↑~~ girls } of
 boys } North

If we take oppo, wrong sometimes. we can't assume boys ↓ & girls ↑.

3) — — — — S — J

— — — — — P ↑

4) — G R — S — J

— D K — R — R S — P ↑

5) M G R S K ↓

— — — — — D K R R S P ↑

Q1) which girl is facing Rupesh? [Radha]

Q2) which pair of a girl & a boy is at one of the extreme ends?

- i. Komal - Dinesh
- ii. Meena - Kamlesh
- iii. Seema - Suresh
- iv. Geeta - Paresh

[i]

Q3) who is standing to the immediate left of Rupesh?

[Ramesh]

Q4) which is not same as other

3 options?

- i. Ramesh - Radha
- ii. Suresh - Komal
- iii. Dinesh - Geeta
- iv. Rupesh - Radha

[iv]

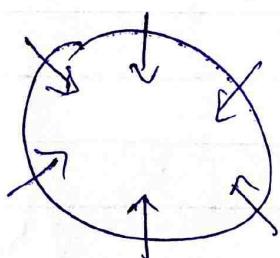
Q5) who are immediate neighbors of the one who is facing Rita?

[Kamlesh & Rupesh]

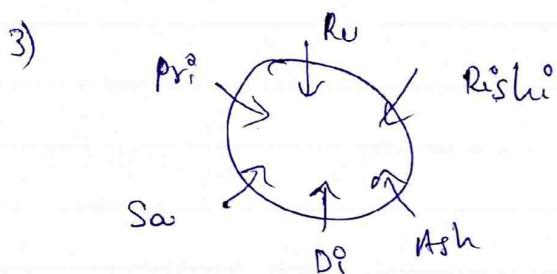
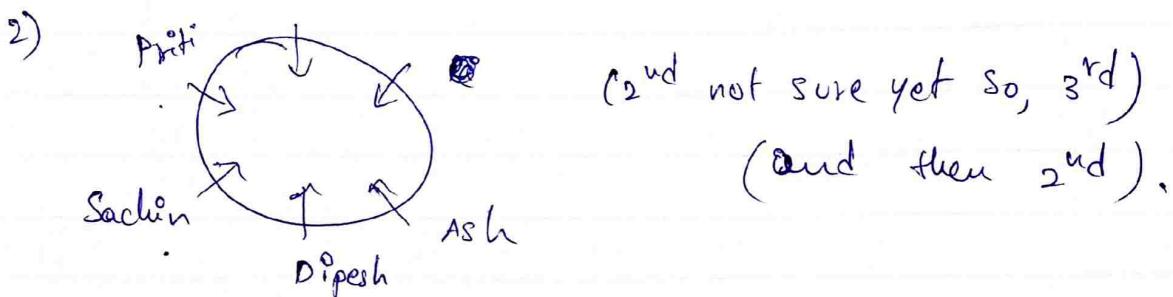
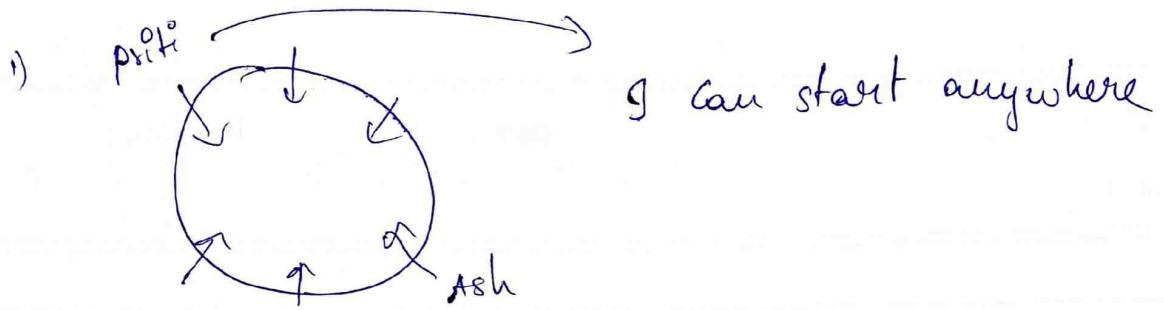
4) Six friends - Priti, Rupesh, Ashwin, Dipen, Rishi and Sachin, are sitting in a circle facing inwards.

- 1) Priti and Ashwin are exactly oppo to each other
- 2) Sachin is in bw Priti and Dipen.
- 3) Dipen is immediately to the left of Ashwin.
- 4) Rishi is not exactly opposite to Dipen.

Total = 6 circle



facing inwards.

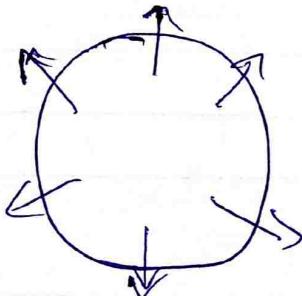


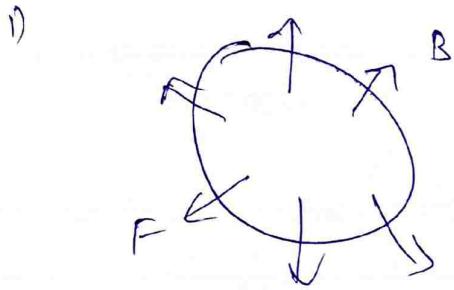
- Q1) who are the neighbours of Dinesh? [Sachin & Ashwin]
- Q2) who is sitting oppo to Dinesh? [Rupesh]
- Q3) who is just right to Ashwin? [Rishi]

5.) Six friends A, B, C, D, E and F are sitting on a circular table facing outwards

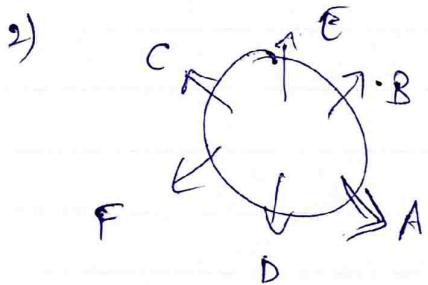
- 1) E is b/w B & C
- 2) B & F are exactly oppo to each other
- 3) A is exactly to the right of B.

Total = 6 (facing outwards - circle)





(2nd)



(3rd) + (1st)

Q₁) Who is in bw D & B? [A]

Q₂) Who are the neighbours of A? [D & B]

Q₃) Who is exactly to the right of D?

- a) A b) C c) F d) E [c] = F

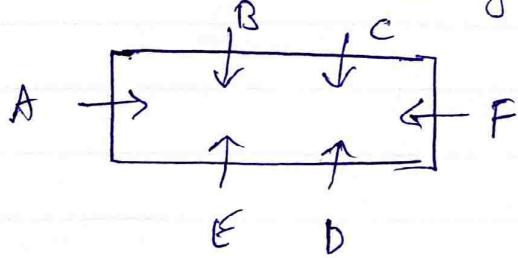
Q₄) In a group discussion A, B, C, D, E and F are sitting around a rectangular table.

- 1) A is sitting on a side alone
- 2) B, C are sitting on the same side.
- 3) F is facing A
- 4) D is the immediate left of F.
- 5) C is facing D.

Total = 6 (rectangular table)

They didn't mention inwards or outwards.

But they said in a group discussion i.e., they are facing inwards only.



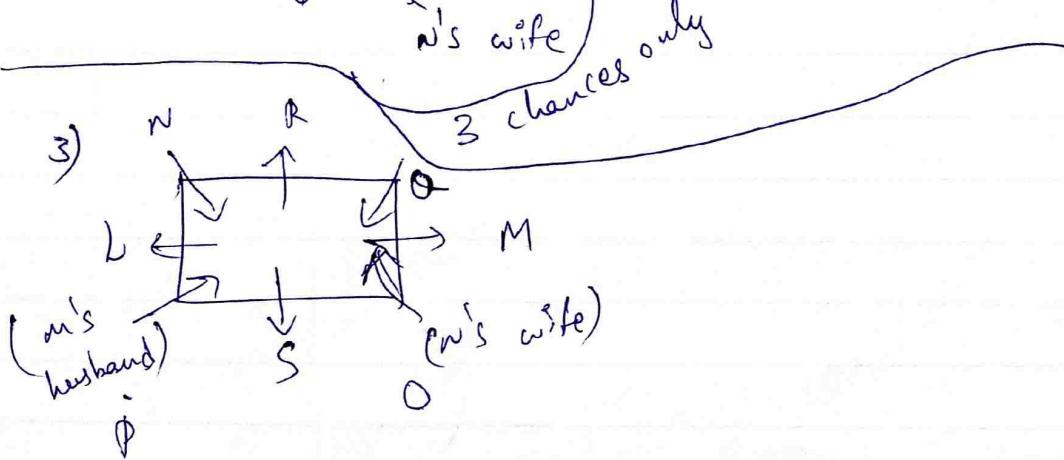
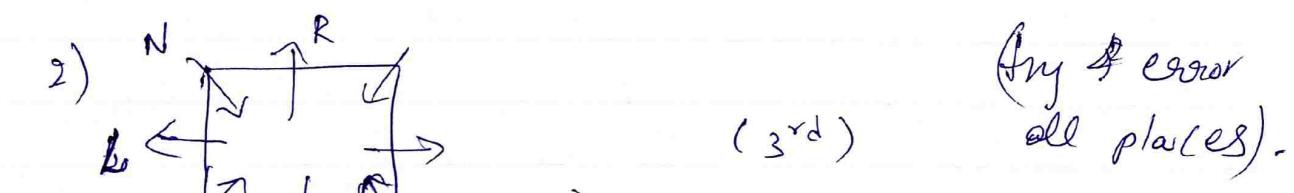
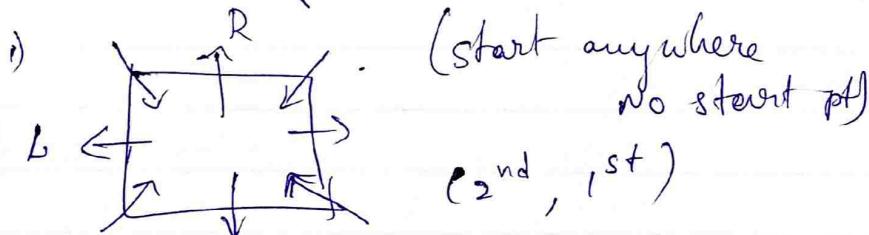
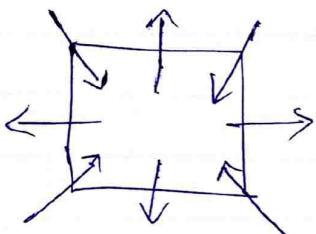
(start anywhere if no starting point).

Q₁) Who is the immediate right of A? [E].

Q₂) Who is bw B & F? [C].

7) L, M, N, O, P, Q, R & S are sitting around a square table, such that 4 of them sit at 4 corners of the square, facing centre, while 4 sit in the middle of each of the 4 sides, facing outside. 2 females sit in the middle of the sides and 2 at the corners.

- 1) L sits second to left of R.
- 2) R sits in the middle of one of the sides.
- 3) N sits fourth to the right of his wife & his wife is not an immediate neighbour of L or R.
- 4) M sits third to right of her husband.
- 5) M does not sit at any of the corners.
- 6) Only O sits b/w M and S.
- 7) S is husband of L and P is a male.



Q₁) which is true [iii]

- i) no two males are immediate neighbours of each other.
- ii) R & S face each other in the seating arrangement.
- iii) B sits in the centre of one of the sides of the square table.
- iv) Q is a male and sits diagonally opposite to P.

Q₂) who is M's husband? [P]

Q₃) How many people sit b/w M & N when counted in anti-clock wise direction from M? [2]

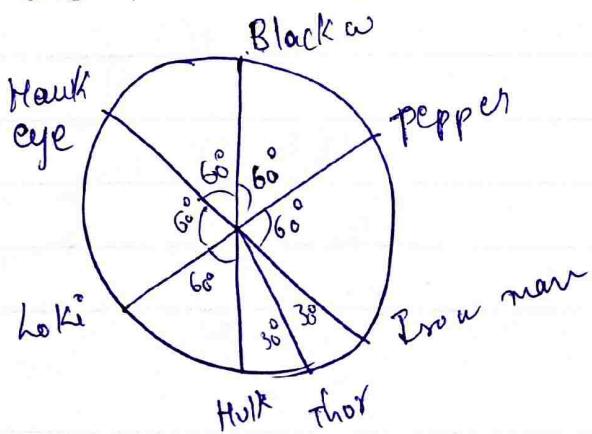
Q₄) Who is the wife of N? [O]

Q₅) What is the position of P with respect to N?

[2nd position to the right of N]

8) Read the following info -

- 1) Pepper, Hulk, Ironman, Hawkeye, Thor, Loki & Black widow are sitting in a circle.
- 2) Pepper, Hulk, Ironman, Hawkeye, Loki and Black widow are sitting at equal distances from each other.
- 3) Ironman is sitting two places right of Loki, who is sitting one place right of Hawkeye.
- 4) Pepper forms an angle of 90° from Thor and an angle of 120° from Hulk.
- 5) Hulk is just oppo to Black widow and is sitting on the left of Thor.



Q₁) who is the only person sitting on the imme left of Black widow [Pepper potts]

Q₂) which is not correct?

- i) Loki is on the right of Hulk [iv]
- ii) Hawkeye is sitting next to Iron man.
- iii) Thor is sitting adjacent to Loki
- iv) all

Q₃) The angle b/w Thor & Hulk in the anti-clockwise direction is? [330°]

$$30 + 60 + 60 + 60 + 60 = 300$$

∴ anti-clock ↗

Q₄) Where is Hawkeye sitting with respect to Black widow?

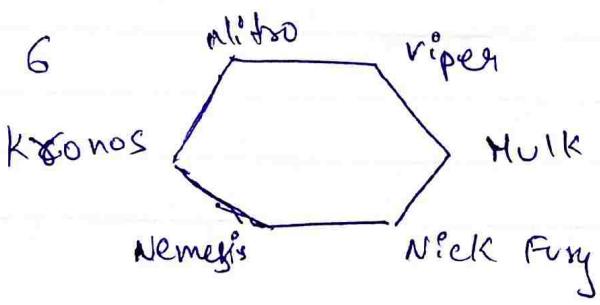
- i) To imme right iii) Exactly oppo [i]
- ii) To imme left iv) None

Q₅) Thor is sitting b/w which pair [Hulk & Iron man]

9.) Read the following -

- 1) Six people Nitro, Nemesis, Nick Fury, Viper, Kronos & Hulk are attending a hexagonal table conference.
- 2) All the sides of the hexagon table so formed are of same length.
- 3) Nitro is not adjacent to Nemesis or Nick Fury, Viper is not adjacent to Nick Fury or Kronos.
- 4) Nemesis & Nick Fury are adjacent, Hulk is in the middle of Viper & Nick Fury.

Total = 6



start
anywhere starting
as no starting point

Q₁) who is placed exactly oppo to Kronos? [Hulk]

Q₂) If one neighbor of Nitro is Viper, who is the other one? [Kronos]

Q₃) Which are right in sequence?

i) Nitro, Hulk, Nemesis

ii) Hulk, Nitro, Kronos

[ii]

iii) Nemesis, Nick Fury, Hulk

iv) Viper, Nitro, Nemesis.

Q₄) Who is at the same distance from Viper as Kronos is from Viper? [Nick Fury]

Q₅) Which of the following pair is neighbor pair of Hulk?

i) Nitro & Viper iii) Nemesis & Kronos

[iv]

ii) Viper & Nemesis iv) Nick Fury & Viper

Practise Links :-

1) <https://www.careerside.com/page/seating-arrangement-questions-and-answers-743.aspx>

2) <https://www.careerside.com/mcq/seating-arrangement-logical-reasoning-mcq-questions-372.aspx>

3) <https://www.indiabix.com/verbal-reasoning/seating-arrangement/introduction>.

4.)

Clocks :-

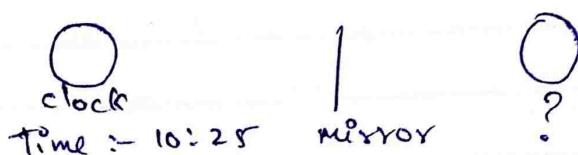
Tips

1) 1 day = 24 hrs
1 hr = 60 mins
1 min = 60 secs

AM = After Meridiem.
PM = Post Meridiem.

2) If they ask clock is placed in front of mirror & guess the time then just subtract the given time out of 11:60.

① Ex:-

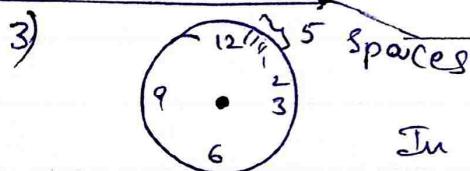


$$\Rightarrow 11:60 - 10:25 = 1:35 //$$

② Ex:- If they give mirror time & ask real time also same formula

$$\Rightarrow 2:45 \text{ in mirror} \Rightarrow \text{Real} = ?$$

$$11:60 - 2:45 = 9:15 //$$



In 12 hours $\Rightarrow 5 \times 12 = 60$ Spaces
60 min spaces.

4) angles:-

In 1 hour

$$\rightarrow \text{min hand} = 360^\circ$$

$$\rightarrow \text{hr hand} = 30^\circ$$

In 1 min

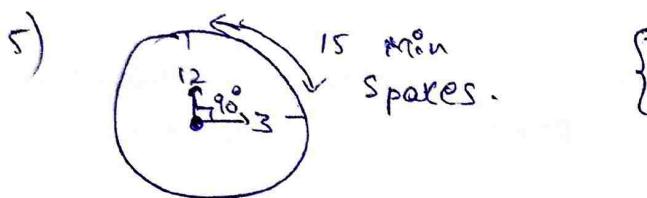
$$\rightarrow \text{second hand} = 360^\circ$$

$$\rightarrow \text{Min hand} = 0.1 \text{ min space} = 6^\circ$$

$$\rightarrow \text{hr hand} = 0.5^\circ$$

In 1 hr

\rightarrow min hand gaining $360 - 5 = 55$ min spaces over hr hand.



$\{90^\circ / \text{right angle}\}$

* In every hr (2 times 90°).

* In 12 hrs = $(12 \times 2 = 24)$ times
But it is \times -

It is only 22 times.

* In 22 hr = 44 times.

6)



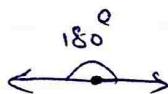
$\{\text{coincide } / 0^\circ\}$

* In every 1 hr the hr & min hand coincide = 1 time.

* In 12 hrs it is 11 times.

* In 1 day / 24 hrs it is 22 times.

7)



$\{\text{opposite } / 180^\circ\}$

$\boxed{\text{straight line}}$

Both

$22 + 22 = 44$
times
in a day.

* In 1 hr = 1 time

* In 12 hrs = 11 times

* In 24 hrs = 22 times

8) Correct time = 12:10 pm

If 12:15 pm

\therefore clock gained / ahead 5 mins.

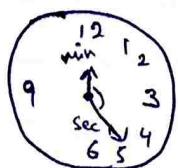
If 12:05 pm

\therefore clock is behind 5 mins.

9)	15 mins past 7 i.e., 7:15	Am \Rightarrow 00:00 to 12 pm
	20 Mins to 8 i.e., 7:40	PM \Rightarrow 12 pm to 00:00 Am
	Quarter past 6 i.e., 6:15	
	Quarter to 6 i.e., 5:45	
	Half past 6 i.e., 6:30	
	Half	

SUMS

- 1) What angle is formed b/w the min hand & seconds hand of clock if they are 25 minutes apart?



$$60 \text{ min spaces} = 360^\circ$$

w.k.t $\therefore 1 \text{ min space} = 6^\circ$

$$25 \Rightarrow 25 \times 6 = 150^\circ.$$

$$\boxed{150^\circ}$$

- 2) Find the angle b/w min hand & hour hand of a clock when time is 6:30

Hour hand

$$6 + \frac{30}{60} \rightarrow (\text{converting min to hrs})$$

$$\frac{360 + 30}{60} = \frac{390}{60} = \frac{39}{6} \text{ hrs}$$

$$\begin{aligned} 360^\circ &\rightarrow 12 \text{ hrs} \\ x^\circ &\rightarrow \frac{39}{6} \text{ hrs} \end{aligned} \Rightarrow 12 x^\circ = \frac{60}{360} \times \frac{39}{6}$$

$$x^\circ = \frac{60 \times 39}{12 \times 6}$$

$$\begin{aligned} \text{Min hand} & (\text{converting hrs to min}) \\ 6 \times 60 &= 360 \text{ (hr hand)} + 30 \text{ min} = 390 \text{ min} \end{aligned}$$

$$360^\circ \rightarrow 60 \text{ min}$$

$$x^\circ \rightarrow 390 \text{ min}$$

$$360^\circ \rightarrow 60 \text{ min}$$

$$x^\circ \rightarrow 30 \text{ min} \Rightarrow$$

(But, if we do, will be larger value instead in Ques
if is asked for 6:30 find for 30)

$$\begin{aligned} 60 x^\circ &= \frac{360 \times 30}{60} \\ x &= \frac{360 \times 30}{60 \times 2} = 180^\circ \end{aligned}$$

$$\text{Subtract them} \Rightarrow 195^\circ - 180^\circ = 15^\circ$$

{ Ask the same problem with diff time; just find the hr hand & min hand & subtract them? }

Types of Questions

1) Angle Between the Hands of clock

Examples

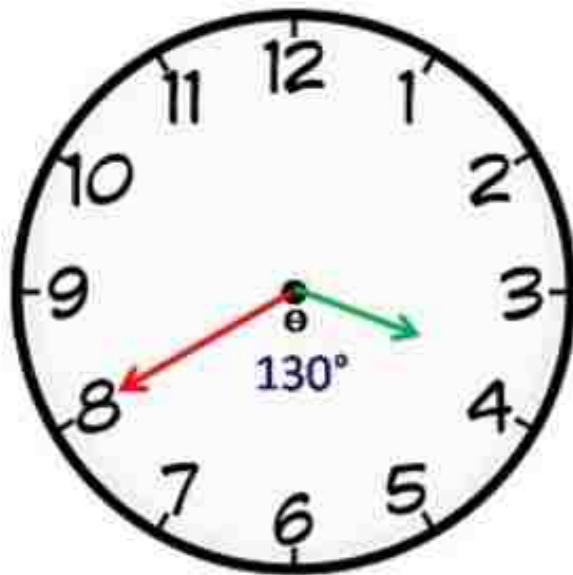
i) What is the angle between the hands of the clock at 3:40?

- a) 240°
- b) 110°
- c) 130°
- d) 190°

Correct Option: (c)

→ Hour Hand (Short Hand)

→ Minute Hand (Long Hand)



At 3 o' clock, the hour hand is at 90 degrees from the vertical.

In 40 minutes,

$$\text{Hour hand} = 90 + 40 \times (0.5) = 90 + 20 = 110 \text{ (The hour hand moves at } 0.5 \text{ dpm)}$$

$$\text{Minute hand} = 40 \times (6) = 240 \text{ (The minute hand moves at } 6 \text{ dpm)}$$

$$\text{Difference or angle between the hands} = 240 - 110 = 130 \text{ degrees.}$$

ii) If it is 09:20, then what is the angle between the hands of the clock?

- a) 160°
- b) 180°
- c) 150°
- d) 190°

Correct Option: (a)

→ Hour Hand (Short Hand)

→ Minute Hand (Long Hand)



At 9 o' clock, the hour hand is at 270 degrees from the vertical.

In 20 minutes,

$$\text{Hour hand} = 270 + 20 \times (0.5) = 270 + 10 = 280 \text{ (The hour hand moves at } 0.5 \text{ dpm)}$$

$$\text{Minute hand} = 20 \times (6) = 120 \text{ (The minute hand moves at } 6 \text{ dpm)}$$

$$\text{Difference or angle between the hands} = 280 - 120 = 160 \text{ degrees.}$$

iii) A Clock is started at Noon, by 10 minutes past 7, the hour hand has turn through:

- a) 215
- b) 180
- c) 210
- d) 195

[View solution](#)

Correct Option: (a)

→ Hour Hand (Short Hand)

→ Minute Hand (Long Hand)



In a clock, 12 hours form 360° degree. So one hour forms 30° . Therefore 7 hours form 210° ($30^\circ \times 7$) degree.

In a minute, hour hand moves 0.5° degree, so in 10 minutes it moves $0.5^\circ \times 10 = 5^\circ$

Thus, by 10 Minutes past 7, hour hand has turn through $210^\circ + 5^\circ = 215^\circ$

2) Position of Hands of clock

Examples

i) If the minute hand of a clock has moved 300° , how many degrees has the hour hand moved?

- a) 25°
- b) 150°
- c) 50°
- d) 300°

[View solution](#)

Correct Option: (a)

The speed of hour hand is 0.5 dpm (Degree per Minute)

And the speed of minute hand is 6 dpm .

So, 300 degree traverse by minute hand in $300/6 = 50$ Minutes.

Thus, angle moved by the hour hand in 50 minutes is $50/0.5 = 25^\circ$ degrees.

ii) A clock when seen in a mirror shows 11:25. What is the correct time?

- a) 1:25
- b) 12:35
- c) 1:35
- d) 12:25

[View solution](#)

Correct Option: (b)

→ Hour Hand (Short Hand)

→ Minute Hand (Long Hand)



Mirror Image



Real Image

Shortcut is to subtract the given time from 11:60 (As mentioned in key Point N). Thus the correct time is $11:60 - 11:25 = 0:35$ and 0:35 mean 12:35 So, Answer is 12:35.

iii) If real time is 12:10 then what will be mirror image of that clock?

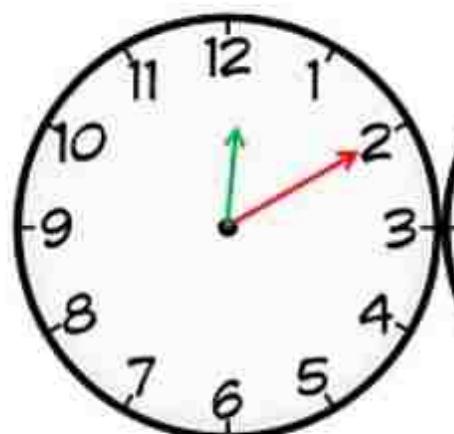
- a) 10:50
- b) 11:50
- c) 12:50
- d) 1:50

[View solution](#)

Correct Option: (b)

→ Hour Hand (Short Hand)

→ Minute Hand (Long Hand)



Real Image



Mirror Image

Shortcut is to subtract the given time from 11:60 (As mentioned in key Point N). Thus the correct time is $11:60 - 00:10 = 11:50$ because 12:10 mean 00:10.

3) Faulty Clocks

Examples

i) A watch gain 8 seconds in 4 minutes and was set right at 4 AM. What time will it show at 11 PM on the same day?

- a) 11:08
- b) 12:38
- c) 11:38
- d) 12:08

[View solution](#)

Correct Option: (c)

8 Seconds in 4 Minutes mean 120 Seconds (or 2 Minutes) in one hour.

From 4AM to 11PM (on the same day) = 19 hours

So, total seconds gain in 19 hours = 19×120 (Seconds gain per hour) = 2280 Seconds.

Now, 2280 Seconds = 38 Minutes (i.e. $2280/19 = 38$)

Thus incorrect clock will show 11:38PM at 11PM.

ii) A clock loses 5 minutes every hour and was set right at 11AM on a Monday. When will it show the correct time again?

- a) 11AM on Sunday
- b) 11AM on Monday
- c) 11AM on Tuesday
- d) 11AM on Wednesday

[View solution](#)

Correct Option: (a)

As mentioned in Key Point 0, faulty clock will show correct time when it loses or gains 12 Hours.

In the given problem, clock loses 5 Minutes in an hour. So, 1 Minute lost in every 12 minutes ($60 \text{ minutes} / 5 \text{ minutes} = 12 \text{ minutes}$).

Now, for losing 12 hours i.e. 720 Minutes($12 \times 60 = 720$) it will take $720 \times 12 = 8640 \text{ Minutes} = 144 \text{ Hours} = 6 \text{ Days}$.

So, Clock will show correct time after 6 days from 11AM Monday.

Thus, Answer is 11AM on Sunday.

iii) My watch, which gains uniformly, is 2 min and show at noon on Sunday, and is 4 min 48 seconds fast at 2PM on the following Sunday when was it correct?

- a) Wednesday noon
- b) Sunday 2PM
- c) Monday noon
- d) Tuesday 2PM

[View solution](#)

Correct Option: (d)

At noon on Sunday watch gains 2 Minutes.

And at 2PM on following Sunday it is 4 Minutes 48 Seconds fast.

So, it gains 6 Minutes 48 Seconds i.e. 2 Minutes + 4 Minutes 48 Seconds (total 408 Seconds) in 170 Hours (Hours from Sunday Noon (12PM) to following Sunday 2PM)

Therefore, watch gains 120 Seconds (2 Minutes) in $170 \times 120 / 408 = 50$ Hours

50 Hours = 2 Days 2 Hours

Thus, Watch was correct after 2 days 2 hours from Sunday noon that is Tuesday 2PM.

i) How many times in a day, are the hands of a clock in straight line but opposite in direction.

- a) 20
- b) 22
- c) 24
- d) 48

[View solution](#)

Correct Option: (b)

Key points – H.

ii) How many times in a day, are the hands of the clock straight?

- a) 22
- b) 44
- c) 24
- d) 48

[View solution](#)

Correct Option: (b)

iii) How many times do the hands of a clock coincide in a day?

- a) 20
- b) 21
- c) 22
- d) 24

[View solution](#)

Correct Option: (c)

Key Points – I.

iv) How many times do the hands of a clock are in perpendicular to each other in a day?

- a) 22
- b) 24
- c) 44
- d) 48

[View solution](#)

Correct Option: (c)

Key Points – E.

v) In a minute, how many degrees hour hand traverses?

- a) 0.5°
- b) 1°
- c) 1.5°
- d) 3°

[View solution](#)

Correct Option: (a)

Key Points – C.

vi) In 6 minutes, how many degrees minute hand traverses?

- a) 6°
- b) 30°
- c) 5°
- d) 36°

[View solution](#)

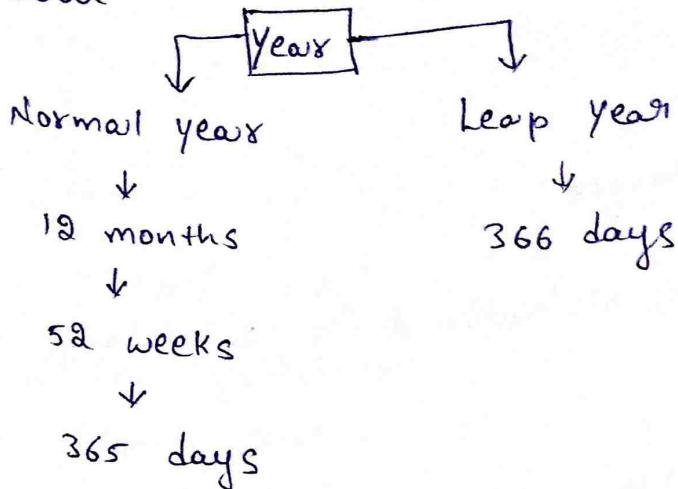
Correct Option: (d)

Key Points - C. In a minute, minute hand traverses 6° degree. So in 6 minutes, it traverses $6 \times 6^\circ = 36^\circ$.

Practise Links :-

- 1) <https://www.careerdrive.com/mcq/clocks-logical-reasoning-mcq-questions-377.aspx>
- 2) <https://www.indiabix.com/aptitude/clock/>

5) Calenders:



$$\frac{365}{7} = 52 \text{ weeks} + 1 \text{ extra/odd day.}$$

* Normal year \rightarrow Begins + ends on same day of the week.

Normal year	Days	weeks	odd days
	365	52	1
Leap year	366	52	2

NOT

wed-Tue wed-Tue
wed Tue wed Tue --- wed-Tue + 1 day
 week-1 week-2 week-52 (Wednesday)

Leap

wed-Tue wed-Tue --- wed-Tue + 1 day + 1 day
wed Tue wed Tue wed Tue week-52 (wed) (Thurs).

* Leap year \rightarrow Begins and ends on next day.

\rightarrow To find whether it is leap yr or not

we hv 2 ways:-

1) Divide by 4 (1756, 1832, 1858) only last 2 digits (completely divisible, leap yr)

2) Divide by 400 (century yrs - 00 at end)
 (1900, 2000, 2200)

→ Does a leap year come after every 4 years?

Not true,

$$1896 - 1900 - 1904$$

✓ ✗ ✓

→ How many leap years in 100 years?

No. of years	Leap years	Normal years	No. of odd days
100	24	76	5
200	48	152	3
300	72	228	1
400	96	303	0

→ odd days:-

$$\text{Jan (31 days)} = \overline{7) \overline{31} \overline{28}} \quad \begin{matrix} 4 \\ 2 \\ 3 \end{matrix}$$

= 4 weeks + 3 odd days

$$10 \text{ days} = \overline{7) \overline{10}} \quad \begin{matrix} 1 \\ 3 \end{matrix} \quad = 1 \text{ week} + 3 \text{ odd days}$$

$$\alpha \quad 365 \text{ days} = \overline{7) \overline{365}} \quad \begin{matrix} 52 \\ 1 \end{matrix} \quad = 52 \text{ weeks} + 1 \text{ odd day}$$

$$366 \text{ days} = \overline{7) \overline{366}} \quad \begin{matrix} 52 \\ 2 \end{matrix} \quad = 52 \text{ weeks} + 2 \text{ odd days}$$

odd days can only be 0, 1, 2, 3, 4, 5, 6
(remainder)
∴ if 7 it is a week again.

0 - Sunday

1 - Monday

2 - Tuesday

3 - wed

4 - Thurs

5 - Fri

6 - Sat

Century leap years (800, 1600, 2000, 2400...) has zero odd days.

#

Days:-

0 - Sun, 1 - Mon, 2 - Tue, 3 - Wed, 4 - Thurs,
 5 - Fri, 6 - Sat

Month:-

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	3	3	6	1	4	6	2	5	0	3	5

Year:-

$$1600 - 1699 \rightarrow 6$$

$$1700 - 1799 \rightarrow 4$$

$$1800 - 1899 \rightarrow 2$$

$$1900 - 1999 \rightarrow 0$$

$$2000 - 2099 \rightarrow 6$$

Sums:-

1) What was the day of the 26th Jan 1947?

Steps to solve:-

i) Last two digit of yr $\rightarrow 47$

ii) Div by 4 (900) $\rightarrow 47/4 = 11$ (quotient)

iii) Take the date $\rightarrow 26$

iv) Take no. of Month $\rightarrow 0$

v) Take no of year $\rightarrow \frac{0}{84}$

vi) Add & Div them by 7 $\rightarrow \frac{84}{7} = 0$

$$7) 84 \text{ (12)} \\ \underline{84} \\ 0$$

(Remainder)

0 = Sunday //

3) 29th feb 2012

$\rightarrow 12$
 $\rightarrow \frac{12}{4} = 3$ (completely div, leap yr)
 $\rightarrow 29$
 $\rightarrow 3$
 $\rightarrow 6$
 $\overline{53}$
 $\rightarrow \frac{53}{7} = 4 \Rightarrow 4 - 1 = 3 = (\text{Wednesday}) \checkmark$

4) what dates of May 2002 did monday fall?

$\rightarrow 02$ Let's cal for 1st May 2002

$$\rightarrow \frac{02}{4} = 0$$

$$\rightarrow 1$$

$$\rightarrow 1$$

$$\rightarrow 6$$

$$\overbrace{10}$$

$$\rightarrow \frac{10}{7} = 3 \quad (\text{wed})$$

1st Monday = 6

1	2	3	4	5	6	7
W	T	F	S	S	M	

To know other Mondays add 7

6, 13, 20, 27 - //

5) Today is Monday, after 30 days it will be ?

$$7) \frac{30}{4} \rightarrow \begin{array}{l} \text{Monday} \\ +2 \\ \hline \text{Wednesday} \end{array}$$

6) Jan 4, 2016 falls on Monday. What day of the week does Jan 4, 2017 lies?

2016

$$\frac{16}{4} = 0 \text{ (Leap year)} \\ \therefore 2 \text{ odd days}$$

Jan 4, 2016 - Monday

$$\text{Jan 4, 2017} - \begin{array}{l} +2 \\ \hline \text{wed} \end{array}$$

7) Jul 5, 2022 falls on Tue, what will be on Jul 5, 2023.

2023

$$\frac{23}{4} \rightarrow \begin{array}{l} 5 \\ 20 \\ 3 \\ \hline \end{array} \text{ (Not leap yr)} \\ \therefore 1 \text{ odd day}$$

Jul 5, 2022 - Tue

$$\text{Jul 5, 2023} - \begin{array}{l} +1 \\ \hline \text{wed} \end{array}$$

8) 1 Mar 2006 falls on wed, what day does 1st Mar 2010 falls on?

2007 → 1 odd day

2008 → 2 (Leap)

2009 → 1

$$2010 \rightarrow \begin{array}{l} 1 \\ \hline 5 \end{array}$$

1 Mar 2006 - wed + 5 = Monday.

9) Today is Monday. After 64 days it will be?

$$\begin{array}{r} 64 \\ \times 7 \\ \hline 63 \\ 14 \\ \hline 1 \end{array}$$

perfect 9 weeks + 1 odd day

after 9 weeks

$$\text{Monday} + 1 = \text{Tuesday.}$$

10) If 8th March, 2006 is wed, then what was the day of the week on 8th March 2005.

2005 → 1 odd day

2006 to 2005 (sub 1)

$$\text{wed} - 1 = \text{Tuesday.}$$

If they ask for more years back calc odd days for every yr & subtract (same as prv method but here sub)

11) Radha celebrated her birthday on Tuesday 30th Sep 1997. When will she celebrate her next brd on same day?

1998 → 1 (Not leap)

1999 → 1

2000 → 2

2001 → 1

2002 → 1

2003 → 1

$$\begin{aligned} 1997 + 6 \text{ yrs} \\ = 2003 // \end{aligned}$$

Tues will again come after '7'.
but one leap yr is there so only 6 yrs

No. of years	Leap years	Normal years	No. of odd days
100	24	76	5
200	48	152	3
300	72	228	1
400	97	303	0

Q2) How many days are there in x weeks x days?

x weeks + x days

$$7x + x = 8x$$

use $7x_1 + x_2$; when weeks = x_1 & Days = x_2

$\underbrace{\quad}_{\text{Diff}}$

use $8x$; if both are same

Ex:- 5 weeks & 5 days.

Practise Links:-

1) <https://www.indiabix.com/aptitude/calendar/>

6.) analogy : Non-verbal :-

Observation

- 1) Similarity
- 2) observe the changes.
- 3)

Types :- Rotation, Dislocation of fig, Interchange of fig.

Types of Questions

A) Rotation of Figure

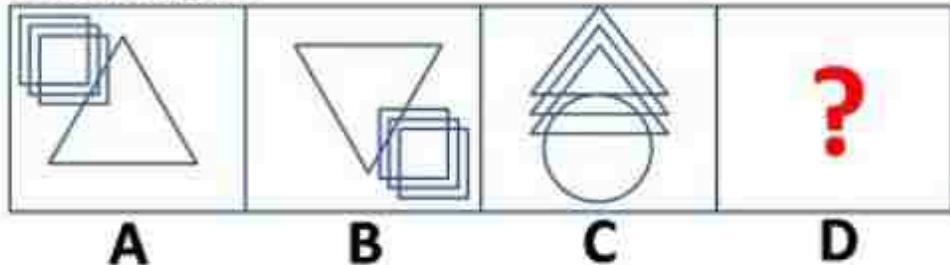
In this type of question, resultant figure (Whole figure or Some part of figure) is rotated by some degree and in specific direction like, 90° Clockwise or 180° Anti-Clockwise.

We have to find out direction and degree of analogy and have to relate it with our question for getting answer.

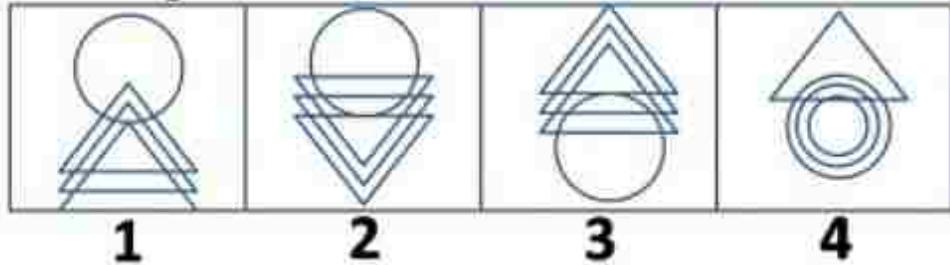
Examples:

i) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



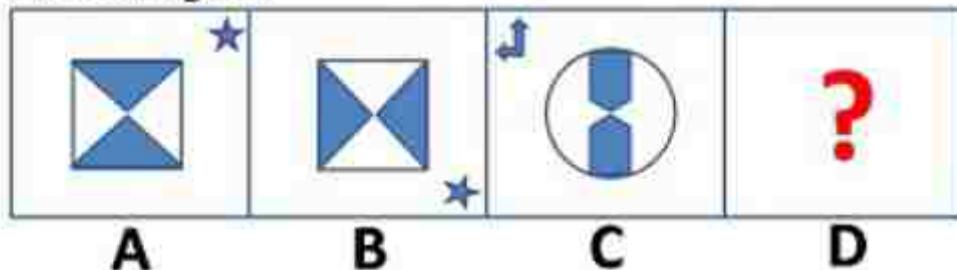
[View solution](#)

Correct Option: (2)

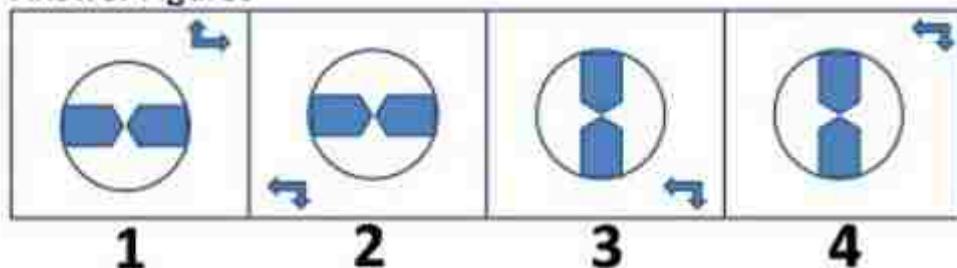
Entire figure rotates 180 degree CW - 2

ii) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



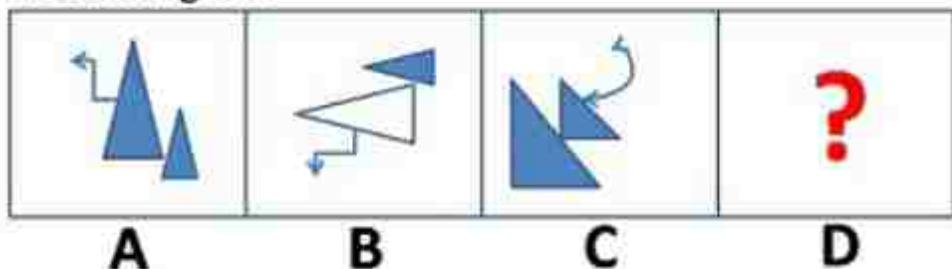
[View solution](#)

Correct Option: (1)

Entire figure rotates 90 degree CW - 1

iii) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



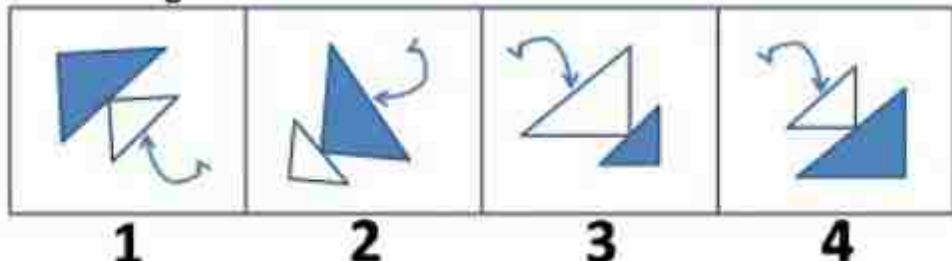
A

B

C

D

Answer Figures



1

2

3

4

[View solution](#)

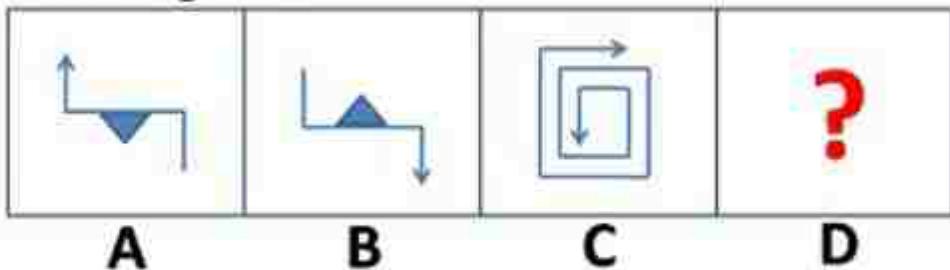
Correct Option: (4)

Entire figure rotates 90 degree ACW - 4.

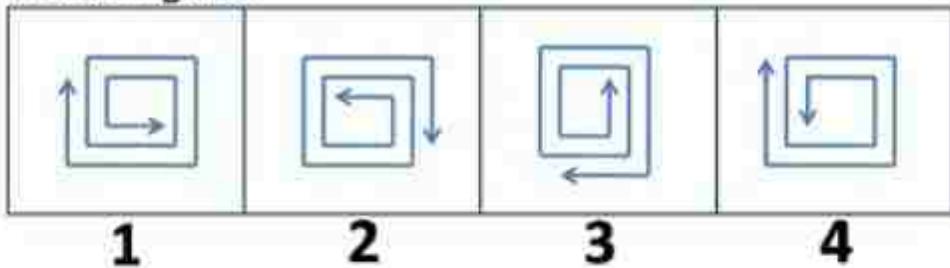
The shape having arrow invert its color.

iv) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



[View solution](#)

Correct Option: (3)

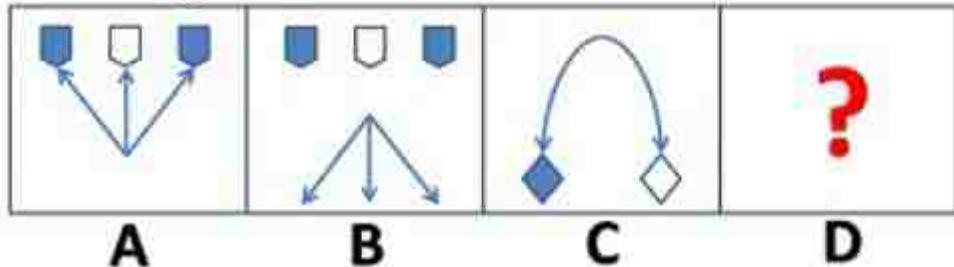
Entire figure rotates 180 degree - 3

B) Dislocation of Figure

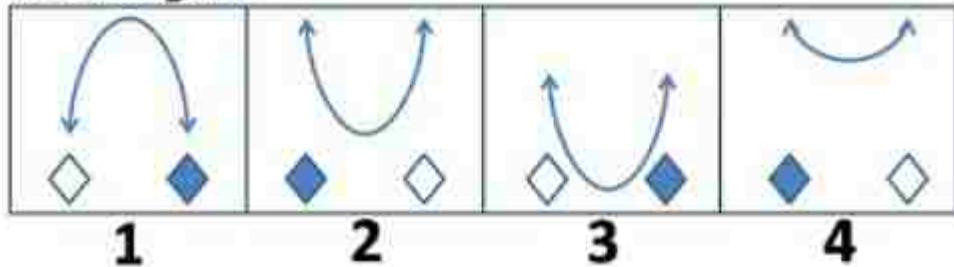
In this type of question, we have to concentrate on entire figure or some part of the figure which has been dislocated.

i) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



[View solution](#)

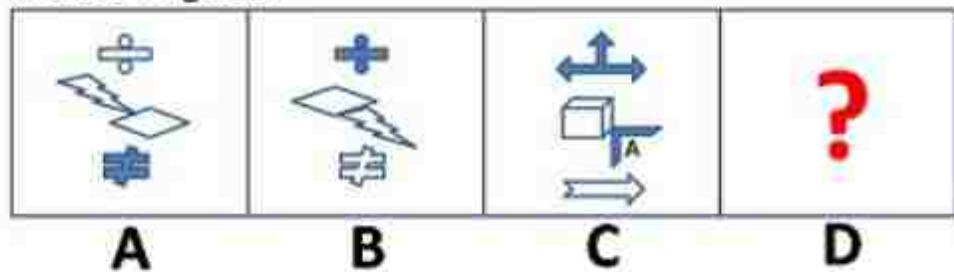
Correct Option: (2)

Arrows rotate 180 degree - 2

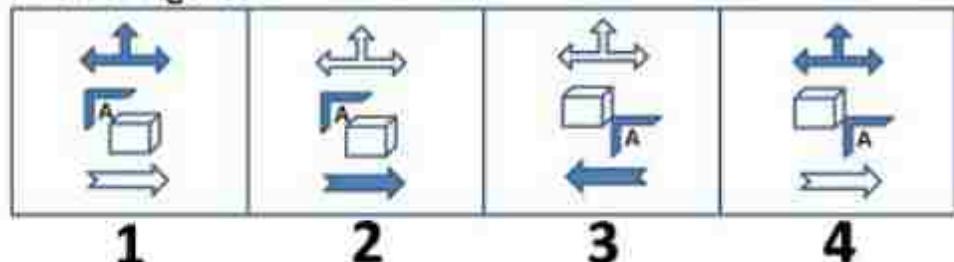
Connectors are on the same place

ii) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



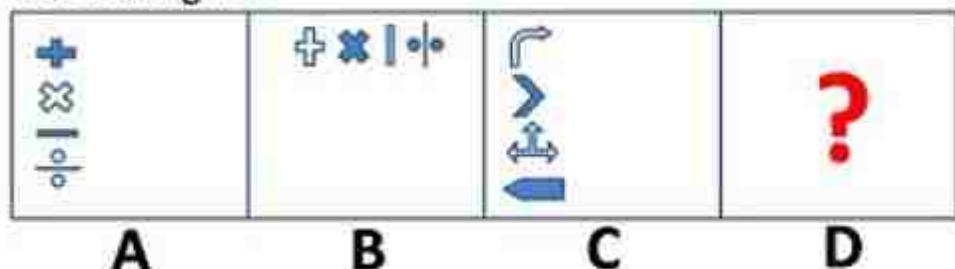
[View solution](#)

Correct Option: (2)

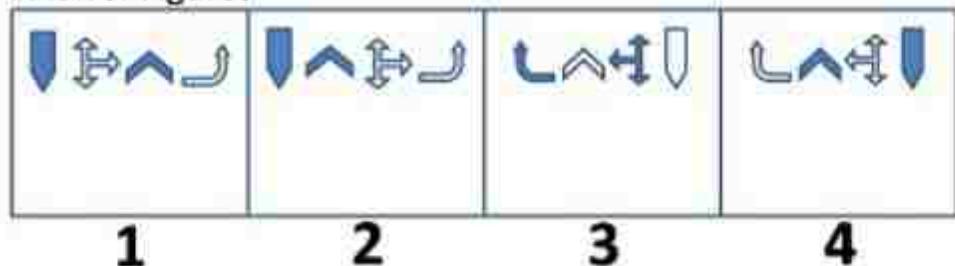
Mathematical sign is inverted and dislocation of Rhombus is on another edge of Lightning shape - 2

iii) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



[View solution](#)

Correct Option: (3)

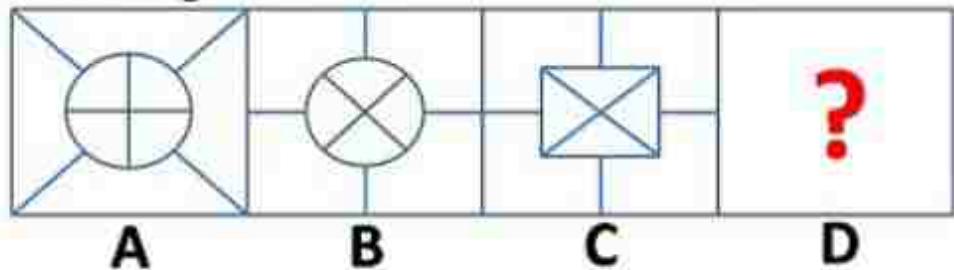
Entire figure inverts and rotates 90 degree ACW - 3

C) Interchange of Figures

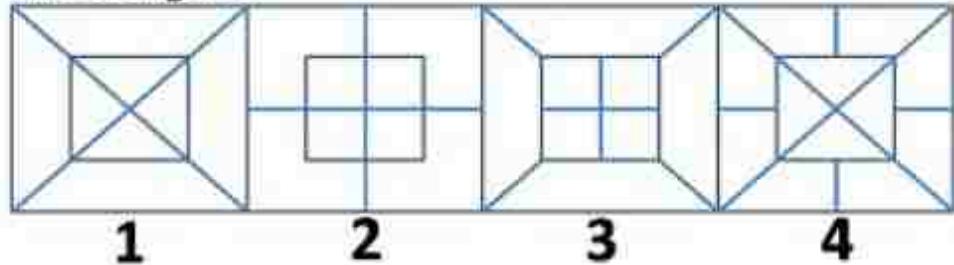
In this type of question, one or more sub figures are interchanged with others.

i) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



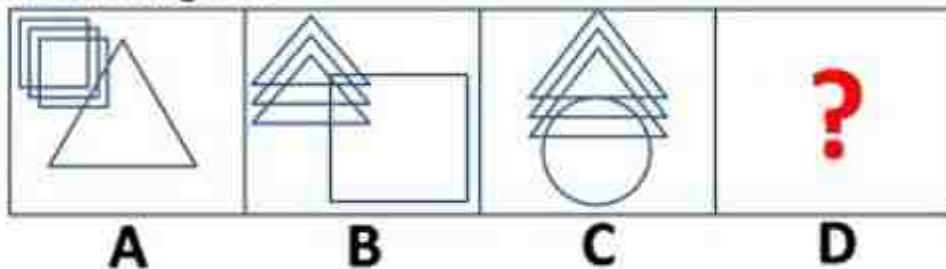
[View solution](#)

Correct Option: (3)

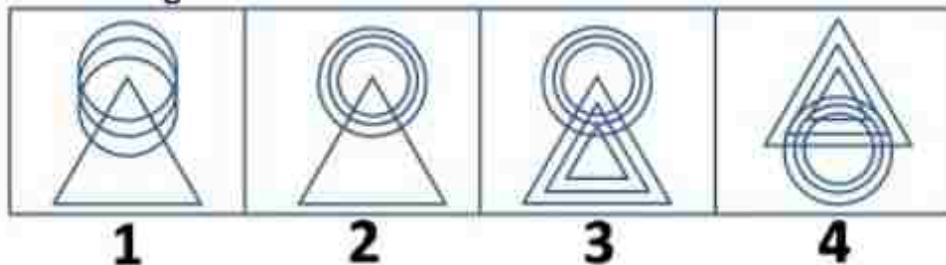
Cross sign coming inside and plus sign going outside doing opposite - 3

ii) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



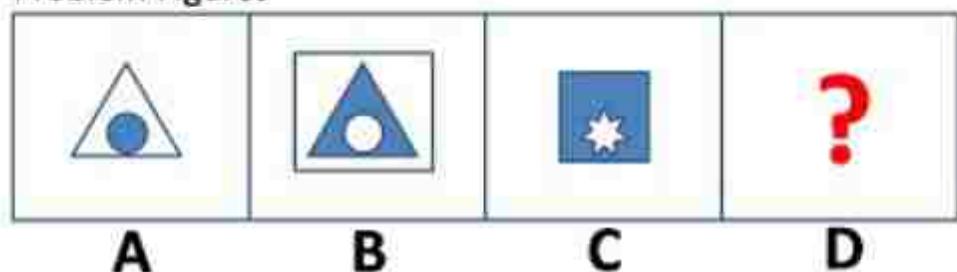
[View solution](#)

Correct Option: (1)

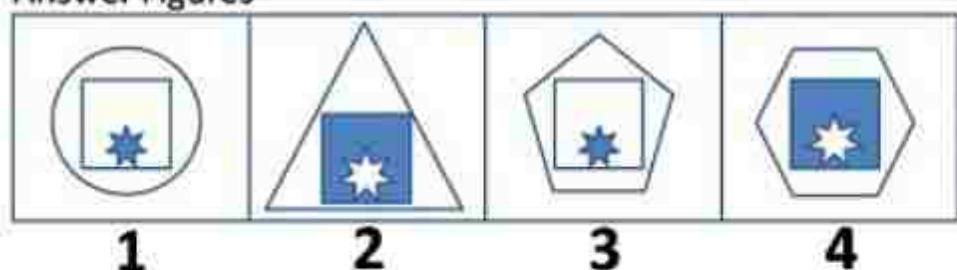
Interchange of shape with repetition - 1

iii) Find out missing figure (?) of the problem from the given answer figures.

Problem Figures



Answer Figures



[View solution](#)

Correct Option: (3)

Resultant figure is obtained by inverting the color and enclosing the original figure (the outer shape i.e. Triangle) by one more side. - 3

Practise Links:-

- 1) <https://www.careerside.com/mcq/page/non-verbal-analogy-questions-and-answers-746.aspx>
- 2) <https://www.careerside.com/mcq/non-verbal-analogies-logical-reasoning-mcq-questions-380.aspx>
- 3) <https://www.indiabix.com/non-verbal-reasoning/analogy/>

7.)

Coding - Decoding:-

Very imp to know the numeric position of each alphabet in normal order as well as in reverse order.

First:-

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Second:-

To quickly get the reverse position value of a particular letter you can subtract its original position's number from 27.

Ex:- Reverse position of D

$$27 - 4 = 23.$$

Types

Coding and Decoding questions can be divided into following types:

- Letters
- Numeric
- Symbols
- Group of Words

1. Letters and Numeric

In letters and Numeric type, there can be many combinations but some expected and common types are explained with example.

Example

1. In a certain language, if SUNSHINE is coded as TVOTIJOF then how will MOON be coded:

- a. NPPQ
- b. NPPO
- c. PPON
- d. NQQP

Answer: NPPO

+1 in all the letters.

This is one type of question. In similar way for the same type there can be +2, +3 or there can be -2, -4, etc.

2. In a certain language, if WRONG is coded as GNORW then how will RIGHT be coded:

- a. HIRGT
- b. SJHIU
- c. GHIRT
- d. None of the above

Answer: GHIRT

If you observe carefully then the coded word GNORW has same letters as in the original word. So, if we go by elimination method then option b is eliminated here itself. Now if we look at the pattern of coding, it can be observed that all the letters of WRONG are arranged in Ascending Order. So, in the same way, RIGHT will be coded as GHIRT.

There can be same type of question asked but instead of ascending, the words can be in descending order.

3. If SNOW is coded as 7100, then WALL will be coded as

- a. 5000
- b. 4700
- c. 4800
- d. 4000

Answer: 4800

Here, Total of all the individual letters' numeric position is done and just to add some more complexity 00 is appended at the end. S=19, N=14, O=15 and W=23. So $19+14+15+23= 7100$.

4. If MOUSE is coded as ONUFT, then CLOCK will be coded as

- a. MDOLD
- b. MDPLD
- c. NDOLD
- d. MDOLE

Answer: MDOLD

Grouping. So here grouping of letters is done. First 2 letters- M and O are grouped and last 2 letters S and E are grouped. After grouping, +1 is added and the position of the letters is interchanged. Like in MO group, +1 is added so the result will be NP and then the letters are interchanged and so the result for 1st group will be PN. Same for the second group and the middle odd letter is as it is.

5. In a certain language, CAP is coded as 66, how will PEN be coded

- a. 40
- b. 66
- c. 80
- d. 46

Answer: 46

This is an interesting question and you will often get confuse. Because even if you try to add the numeric value you won't get the answer. But here reverse numeric value concept is used. So, in this question the reverse numeric values are considered and added. C=24, A=26, P=11. $24+26+11=61$ and the same logic for PEN. P=11, E=22 and N=13. Answer=46

6. If KEYS= MDAR, then LOCK= ?

- a. NEJJ
- b. NNEJ
- c. JENN
- d. JENJ

Answer: NNEJ

+2 Increment and -decrement in the next letter. So, K=M, E=D, Y=A and S=R.

2. Symbols Coding - Decoding

Example

If RADAR is coded as "*?*?#" and DOOR is coded as "?%%#" then DAM will be coded as

- a. ?#%
- b. *#?
- c. *#/
- d. ??#

Answer: *#/

In this question the coding of words is given in symbol form. So we need to first decode and understand which symbol represents which letter. Now RADAR is coded as *?*?#. There are 2 'R' and 'A' in RADAR and in code also there are 2 '*' and '?'. So it is very clear from this that D=#.

Now let's take next word which is DOOR. So DOOR is coded as ?%%#. There are 2 'O's and 2 '%'. So, O=% . D is already decoded as #. So the remaining alphabet is R and its symbol is ?. So R=? . As R=? so from RADAR we can easily draw a conclusion t that A=*. So for DAM we know 2 symbols would be # and *. Now looking at the options we can easily eliminate options A and D. Now ? is for R and in the word DAM there is no R. So correct option would be c.

3. Group of Words

Example

In a certain language,

- (A)** 'hu ma sam' means 'Water is life'.
- (B)** 'sam na zo' means 'Glass of water'.
- (C)** 'chi zo ma' means 'life of PI'.

Which of the following represents 'PI' in that language?

- a. hu
- b. ma
- c. chi
- d. sam

Answer: chi

Bucket Of Questions:

1. In a certain language, TEARS is coded as 18, so how will be WATER coded

- a. 25
- b. 22
- c. 18
- d. 20

[View solution](#)

Correct Option: (b)

Numeric position of each letters is first added until it reaches to a single digit number and then all the numeric values are added.

$$T=20 \text{ so } 2+0=2,$$

$$E=5$$

$$A=1$$

$$R=18, 1+8=9$$

$$S=19, 1+9=10, 1+0=1;$$

$$2+5+1+9+1=18$$

2. If LIFE is coded as FELI, how is MORE coded as

- a. EROM
- b. OREM
- c. REMO
- d. MERO

[View solution](#)

Correct Option: (c)

1st letter's position is interchanged with 3rd letter and vice versa. 2nd with 4 and vice versa.

3. In a certain language,

- (A) 321 means 'Cup of Coffee'.**
- (B) 426 means 'Coffee is Brown'.**
- (C) 796 means 'Bears are Brown'.**

Which of the following represents 'is' in that language?

- a. 6
- b. 7
- c. 4
- d. 2

[View solution](#)

Correct Option: (c)

4. If FIRE is coded as '#*?%', then FREEZE will be coded as

- a. #&%%?*
- b. ??%%#*
- c. %%%?^^
- d. ???%#@

[View solution](#)

Correct Option: (d)

Now this is a tricky question. You won't be able to solve the question, so you have to follow "Options elimination" approach. Now one basic thing to be kept in mind is that FREEZE contains 3 E's. and as per FIRE code we can assume that any one of the symbols can be for E and so it will be repeated 3 times in the answer. Option a and b are directly eliminated because there is no symbol repeating thrice. Now in option C if we notice, there is a new sign which is ^. So this sign can be for Z. but there is only one Z in FREEZE. So two ^^ are not possible. In option D there are ??? which can be for E. and @ which can be for Z. and rest % # for F and R.

5. If THUMB is coded as BMAHT then CRUMB will be coded as

- a. BCARM
- b. BMARC
- c. RCEMB
- d. None of the above

[View solution](#)

Correct Option: (b)

The middle letter is a vowel. So, next Vowel in chain that is again A is replaced. Rest letters are written in reverse order.

Practise Links:-

- 1) <https://www.careerride.com/page/coding-decoding-questions-and-answers-737.aspx>
- 2) <https://www.careerride.com/mcq/coding-decoding-logical-reasoning-mcq-questions-368.aspx>
- 3) <https://www.indiabix.com/logical-reasoning/letter-and-symbol-series/>

8.)

Series :-

Types of questions

There are basically 3 major types of problems asked.

A) Numerical

In this type of problems series of numeric are given and in series, there must be some sort of relation or logic exists. We have to find out the relation as well as logic amongst given series.

Logic might be of:

- i) **Addition or Subtraction** - In addition or Subtraction, difference between two numbers is small. This logic comes under Arithmetic Progression(AP)

- ii) Multiplication or Division** - If the relation between two numeric is of Multiplication or Division, then difference is High. This logic comes under Geometric Progression(GP)
- iii) Squares or Cubes** - If it is Squares or Cubes, then difference is too High
- iv) Prime or Composite numbers** - Series are provided with prime numbers or composite numbers also. i.e. 2, 3, 5, 7, 11, 13 are prime number while 4, 6, 8, 9, 10, 12 are composite numbers
- v) Factorial or Fibonacci** - Problems are asked based on factorial of a number or from a Fibonacci series
- vi) Other miscellaneous types** - In this type of problems, it can have some observation type of logic. We can't apply some addition, subtraction or any arithmetic operation directly. We have to observe the given problem and then we can get some solution like, breaking down each number or reversing each number from series

Examples:

i) 8, 10, 12, 14, ?

- a) 18
- b) 15
- c) 26
- d) 16

[View solution](#)

Correct Option: (d)

Arithmetic progression type of question. +2 difference

ii) 19, 25, 32, 40, ?, 59

- a) 46
- b) 49
- c) 55
- d) 51

[View solution](#)

Correct Option: (b)

Observe difference between two terms. It is not randomly incrementing. So it might be arithmetic progression type of question.

Let's try to solve it. Difference is in increasing order. Difference is +6, +7, +8, +9 .. So, $40+9=49$

iii) 9, 18, 54, 216, ?, 6480

- a) 432
- b) 864
- c) 1080
- d) 1512

[View solution](#)

Correct Option: (c)

As we can see that difference between two terms is high. So it there is possibilities that this is geometric progression type of question. Let's try to solve it. $*2, *3, *4, *5 \dots$ So $216 * 5 = 1080$

iv) 216, 72, 36, 12, ?, 2

- a) 8
- b) 6
- c) 4
- d) 3

[View solution](#)

Correct Option: (b)

As we can see from series that difference is random. So might be geometric progression type of series and more on terms are in decreasing order, so it must be division operation applied. Difference is $/3, /2, /3, /2 \dots$ So, $12/2=6$

v) 8, 27, 64, 125, ?, 343

- a) 312
- b) 216
- c) 189
- d) 225

[View solution](#)

Correct Option: (b)

We can clearly see that 8, 27, 64 are the cubes of 2, 3, 4 respectively. So after 125 there must be $6^3 = 216$. So answer is 216

vi) 1, 4, 27, 16, 125, ?, 343

- a) 216
- b) 25
- c) 36
- d) 225

[View solution](#)

Correct Option: (c)

Problem has fluctuated terms and they are in random order. As we can see, all the terms are combination of squares and cubes. Let's find out pattern between terms $4=2^2$, $27=3^3$, $16=4^2$, $125=5^3$ and $343=7^3$. So missing term will be $6^2=36$. Pattern is like 2^2 , 3^3 , 4^2 , 5^3 , 6^2 ...

vii) 2, 5, 10, 17, 28, ?

- a) 37
- b) 35
- c) 41
- d) 40

[View solution](#)

Correct Option: (c)

Let's find out difference between two terms. We are getting difference like +3, +5, +7, +11 all differences are prime numbers, next prime number after 11 is 13. So answer is $28+13=41$

viii) 21, 34, 55, 89, 144, ?, 377

- a) 199
- b) 233
- c) 220
- d) 241

[View solution](#)

Correct Option: (b)

First we have to find out difference between two terms because numbers are not randomly increasing. We got differences are +13, +21, +34, +55. Differences clearly show the Fibonacci series (i.e. Addition of previous 2 numbers). So answer is $144+89=233$

ix) 41, 93, 165, 257, 369, ?

- a) 4861
- b) 4211
- c) 4911
- d) 4411

[View solution](#)

Correct Option: (c)

Let's find out differences. But from differences we are not getting any kind of relations. This is miscellaneous type of question in which, we can break down numbers. Let's break down each and every numbers. So we got proper logic for this series i.e. first half is the squares of some continuous numbers like 2, 3, 4, 5, 6 and second half is continuous odd numbers

B) Alphabetical Series

Examples:

i) C E H, ?, O Q T, U W Z

- a) A C G
- b) I K N
- c) F G J
- d) K L M

[View solution](#)

Correct Option: (b)

2nd letter is obtained by skipping 1 letter in alphabet from 1st letter and 3rd letter is obtained by skipping 2 letters from 2nd letter

ii) BDA, FHE, ?, NPM

- a) JKL
- b) IMJ
- c) JLI
- d) INJ

[View solution](#)

Correct Option: (c)

Series starts from 3rd letter. i.e. I

1st letter (J)- next letter in the alphabet of the 3rd letter.

2nd letter (L)- skip 1 letter in the alphabet from 1st letter(J)

iii) HFD, NLJ, ??O, XVT

- a) PQ
- b) SQ
- c) QP
- d) QS

[View solution](#)

Correct Option: (b)

Series is in reverse order. i.e. series starts from the last letter of the word. Then keep on skipping 1 letter

iv) AEFG, BHIJ, ?, DNOP

- a) CIJK
- b) CFGH
- c) CKLM
- d) CKMN

[View solution](#)

Correct Option: (c)

There are two series in this question. 1st series is with the first letter only- ABCD. The second series involve the remaining letters- EFG, HIJ, KLM and NOP

C) Alphanumeric

In this type of series, problems asked with combination of alphabet, symbols and numbers.

i) 2E2, 1H9, 1K6, 1N3, ?

- a) 1P4
- b) 1J9
- c) 1Q0
- d) 1R8

[View solution](#)

Correct Option: (c)

This is alphanumeric type of question. In first term 2E2, E is 22nd letter from Z – So, 2E2.

Similarly, K is 16th letter from Z – So, 1K6.

So, Answer is 1Q0 – M is 10th letter from Z

ii) H8, L12, O15, S19, ?

- a) U21
- b) W23
- c) V22
- d) Y25

[View solution](#)

Correct Option: (c)

Alphabet letter of first term is H and number in it is 8 i.e. numerical position of H in alphabet. Same way in second term 12 is the numerical position of L in alphabet. Let's find out difference between two terms. So, we got differences are +3, +2, +3, +2... So next term will be S + 2 letters from S = V. Thus answer is V22

Practise Links:-

- 1) <https://www.careerdrive.com/page/series-questions-and-answers-751.aspx>
- 2) <https://www.careerdrive.com/mcq/series-logical-reasoning-mcq-questions-371.aspx>
- 3) <https://www.indiabix.com/numerical-reasoning/number-series/>

9.) Statement and Conclusion/arguments / assumptions:-

Steps to Solve

- Read the passage or given statements thoroughly.
- Analyze each statement individually.
- Draw a logical conclusion based on the given statement.

Tips and Tricks

To arrive to a solution within few seconds you need to keep in mind these listed points.

1. Do Not Assume

Only Make those assumptions that can be drawn or inferred from the given passage or statements. Do not assume anything which is not related to the passage.

Example: Teacher scolded Ram in front of all the students.

Conclusion: The teacher disliked Ram

Explanation: Here, given statement is the teacher scolded Ram but no specific reason is mentioned. It can be because Ram was late to attend the class or Ram did not complete his homework. So just by assuming that the teacher disliked Ram and so she scolded him is totally wrong. So, avoid such conclusions.

2. Advice or Result

If a given conclusion is in advice form or a certain result can be deduced out of it then such a conclusion will always be true. But of course, the conclusions should be related to the given statement.

Example: With the increase in consumption of petroleum products, it is feared that petrol will be a rare commodity in near future.

Conclusion: Petroleum Products should be used efficiently.

Explanation: Here the given conclusion is in advice form. So such a conclusion is always true.

3. Avoid Pre-Assumptions

If a given conclusion contains a "Pre-Assumption" then such a conclusion is always wrong.

Example: Many people have been admitted in the hospital. It is assumed that junk food is poisonous.

Conclusion: Junk food is always poisonous.

Explanation: Now as per the given conclusion, it is very clear that we are trying to make a "Pre-Assumption" based on the unhealthy effects of junk food. So, such "Pre-Assumed" conclusions are always wrong.

4. Do not go by Morals

For certain questions, when you go by the options for finding out an appropriate conclusion, sometimes it may happen that the answer option may not be morally correct, still that will be the correct answer. So, if an option is related to the statement and if you find it to be logically correct then that option should be selected even if it is morally incorrect.

Example: Many Medicines contain Fish oil.

Conclusion:

1. All the vegetarians are also Pescetarians.
2. Some vegetarians consume such medicines to cure their diseases.

Explanation: Correct option is 2nd one. So even if the option is not morally correct as vegetarians should not consume fish but to cure certain diseases it is necessary to consume such medicines. So, some conclusions like the one given above are correct even if they are morally incorrect but are logically correct and are related to the given statement.

Questions

In each question below is given a statement followed by two conclusions numbered 1 and 2. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them is logically correct and related to the statement.

Give answer:

- (A) If only conclusion 1 follows
- (B) If only conclusion 2 follows
- (C) If either 1 or 2 follows
- (D) If neither 1 nor 2 follows
- (E) If both 1 and 2 follow.

Statement: An advertisement of a company XYZ- "If you are a software engineer we want to hire you".

Conclusion:

1. Company hires no person with other qualification.
2. Company XYZ is in need of software engineers.

[View solution](#)

Correct Option: (B)

Option no 1 is not appropriate as nothing is mentioned in the statement about Company XYZ not hiring people from any other profession.

Statement: India is a democratic country

Conclusion:

1. No other country in the world is democratic.
2. There are many other countries in the world that are democratic.

[View solution](#)

Correct Option: (D)

Neither 1 nor 2 follows. This is because in the statement, nothing is mentioned about other countries. The statement only talks about India.

Statement: Shyam is one of the probable students for securing 1st rank in the class.

Conclusion:

1. Shyam will secure 1st rank.
2. Shyam will not secure 1st rank.

[View solution](#)

Correct Option: (C)

Either 1 or 2 follows. As the statement says, only 2 possible outcomes are possible. One Shyam will be 1st in his class or he won't be. But both the things cannot happen simultaneously. Hence option C is appropriate.

Statement: An advertisement- "50% off on all Electronic Goods up till 31st January".

Conclusion:

1. After 31st January, no discount will be provided.
2. No sale of electronic goods after 31st January.

[View solution](#)

Correct Option: (A)

Option 2 is not valid as the statement clearly says that the sale is up till 31st Jan. Nothing like the sale of electronic goods will stop after 31st Jan is mentioned. So only option no 1 follows.

Statement: Due to recession, Company X has fired its 200 employees.

Conclusion:

1. Company X is well known for firing people.
2. All other competitors of Company X are also affected because of recession.

[View solution](#)

Correct Option: (D)

Neither 1 nor 2 follows. Company X has fired its employees because of current recession. Nothing is mentioned about the history of the company X. So, option 1 is false.

The competitors may or may not be affected because of recession. We are not aware of that fact. So, option no 2 is also false.

Practise Links:-

- 1) <https://www.careerdrive.com/page/statements-conclusion-questions-and-answers-744.aspx>
- 2) <https://www.careerdrive.com/mcq/statements-conclusions-logical-reasoning-mcq-questions-374.aspx>
- 3) <https://www.indiabix.com/logical-reasoning/statements-and-conclusion/>

10) Statement and course of action:-

"A course of action is a suitable step adopted to minimize or solve the given problem".

Statement- Action is one of the main topics in Critical Reasoning. In this topic, a statement is given followed by two actions. Based on appropriate logic you have to identify a correct course of action that will be practically viable and will help in solving the problem.

Tips:

1. Without any second thought choose actions which are

- Practical in Nature (should be related to the statement)
- Solve or Minimize the given problem

2. Action should not give birth to another problem

Like there will be a case in which-- among the two given actions, if you select a particular action, it might happen that it would help you in solving the problem but indirectly it will give birth to many other problems. So, such actions should be avoided.

Example

Statement: On a particular highway, number of road accidents have increased by many folds.

Action: Personal monitoring should be done by the police officials on each and every vehicle.

Explanation: The mentioned action will definitely yield a good result but if we think practically then it is not at all possible to personally monitor each and every vehicle. This will in turn give birth to many other problems.

3. Unpredicted Outcomes

Always avoid those actions whose outcomes cannot be predicted. There may be cases where you will not be able to predict the result of the selected action. So, such actions should be ignored.

Example

Statement: Company Z is incurring huge losses due to many competitors in the market

Actions:

- a. Company Z should offer a huge discount on all its products and attract customers.
- b. Company Z should study its competitors, their products and methods.

Answer: Option b.

Explanation: Now we can also think of option a to be a practical solution but one of the major reasons of option a being wrong is because we cannot predict that even after reducing the price, customers will be attracted towards the company. So, the outcome is unknown and so such actions should be avoided.

4. Avoid Negative and Harsh Actions if possible (explained in one of the below given questions) but if there is no other option available then such actions should be undertaken. Consider the given example.

Example

Statement: Company X has been incurring losses since 3 years. As per the internal study, it has been found that 60% of the employees are above the age of 60

Actions:

1. Company X should take some loan from bank or other financial institutions.
2. Due to low productivity of the employees, Company X should fire some of its employees who are above the age of 60 and should recruit young employees.

Explanation: As the given solution may sound a bit immoral but for the betterment of the company it is necessary that the productivity of the employees is as high as possible. So such options even if they appear to be immoral and the actions are harsh in nature but if it's the best option or solution then it should be adopted.

Note:

Some actions may appear to be a practically viable solution and logically correct but if they are not related to the given statement then do not make a mistake by selecting them.

General Format

In each question there is a statement given followed by two courses of action numbered 1 and 2. You have to assume everything in the statement to be true and on the basis of the information given in the statement, decide which of the suggested courses of action logically follows for pursuing.

Give answer

- (A) If only I follows
- (B) If only II follows
- (C) If either I or II follows
- (D) If neither I nor II follows
- (E) If both I and II follow.

Types

- Problem-Solution
- Situation-Improvement

Generally, questions can be asked on these two types.

1. Problem-Solution

Statements mention the problem and actions state the ways to counter the problems.

Example

Statement: Concerns have risen about air pollution in Indian cities. A recent report by the World Health Organization (WHO) states that of the 20 most polluted cities in the world, 13 are in India.

Action:

I. Pollution committee should immediately take certain measures to control the pollution levels in India.

II. Licenses of polluting industries should be cancelled and owners should be put behind the bars.

- A. Only I follows
- B. Only II follows
- C. Either I or II follows
- D. Neither I nor II follows
- E. Both I and II follow

Answer: A

Explanation: Only one follows. The given statement describes the problem and the actions mention the solutions for the same. Second option is to be avoided because it is a negative and harsh approach. As listed in tips and tricks section also Options which are negative in nature and provide harsh solutions should be avoided.

2. Situation-Improvement

The statement talks about only a particular situation and the actions provide a way to improve such situations.

Example

Statement: The authorities in Society X are cracking down on street hawkers, blaming them for traffic jams near their society.

Actions:

- I. Street hawkers should not be allowed during peak hours
 - II. Street hawkers should be warned and asked not to create chaos.
-
- A. Only I follows
 - B. Only II follows
 - C. Either I or II follows
 - D. Neither I nor II follows
 - E. Both I and II follow

Answer: B

Explanation: Here a situation of traffic jam is depicted and the actions mentioned, give different ways for improving the situation.

Bucket Of Questions:

Statement: Many people in city Y are suffering from flu.

Action:

- I. The Municipal Corporation should take immediate steps to control the disease.
 - II. People in the city should be advised to take certain measures from their end to prevent the disease.
-
- A. Only I follows
 - B. Only II follows
 - C. Either I or II follows
 - D. Neither I nor II follows
 - E. Both I and II follow

[View solution](#)

Correct Option: (E)

So here, both the options have a positive approach and objective of both the approaches is to treat and eradicate the disease.

Statement: According to a survey, the current water reservoir will deplete by 50% by 2050

Action:

- I. Government of all the countries should appeal to all the citizens to use water carefully and avoid wastage.
 - II. Scientists should start finding an alternative solution to water.
-
- A. Only I follows
 - B. Only II follows
 - C. Either I or II follows
 - D. Neither I nor II follows
 - E. Both I and II follow

[View solution](#)

Correct Option: (A)

Second option is not at all justifiable. Water is a basic necessity for survival. So, wasting money and efforts for finding something which doesn't even exist makes no sense. 2nd option would have been a good and preferable option if it would have been something other than water like petrol or any such thing.

Statement: An earthquake measuring 3.7 hit Delhi and its surrounding areas a little before 3 pm today.

Action:

- I. Government should immediately provide financial assistance to the families.
 - II. People should blame the government for not taking appropriate preventive measures.
-
- A. Only I follows
 - B. Only II follows
 - C. Either I or II follows
 - D. Neither I nor II follows
 - E. Both I and II follow

[View solution](#)

Correct Option: (D)

1st option is not a valid option because financial assistance should be provided by the government but not at this stage. First Priority should be to evacuate people from earthquake hit area.

2nd option is also false because earthquake is a natural disaster. So, blaming government will be of no use.

Statement: The World Bank estimates that India is one of the highest-ranking countries in the world for the number of children suffering from malnutrition.

Action:

- I. Government, People and various NGOs should come together and try to eradicate the problem.
 - II. Government should take help financial help from foreign countries to eradicate this problem.
-
- A. Only I follows
 - B. Only II follows
 - C. Either I or II follows
 - D. Neither I nor II follows
 - E. Both I and II follow

[View solution](#)

Correct Option: (A)

1st option is appropriate. People, government and NGOs all of them should join their hands and work in a coordinated way to solve this problem.

2nd option is not true because in country like India, to solve such problems there is no need of getting financial aid from foreign countries. A proper budget and planning can solve the problem.

Practise links:-

- 1) <https://www.careerride.com/page/statement+course-of-action-questions-and-answers-745.aspx>
- 2) <https://www.careerride.com/mcq/statement-courses-of-action-logical-reasoning-mcq-questions-373.aspx>
- 3) <https://www.indiabix.com/logical-reasoning/course-of-action/>

ii)

cause and effect :-

Introduction:

In this type of questions two statements are given. Out of these two statements one may be the cause and other the effect or either these two may be independent causes any effect or independent effects of any cause etc.

The following examples will give you a clear cut idea to solve this type of problems.

Example 1:

Statements:

1. Ram's father was ill.
2. Ram brought medicine after consulting the doctor.

Answer with Explanation:

As Ram's father was ill, he brought medicine on the advice of doctor.

Therefore, I statement is the cause while II statement is the effect.

Example 2:

Statements:

1. The Central Government has recently declared to finish the rebate on farming.
2. The Central Government faces financial loss on account of giving rebate on farming for the last few years.

Answer with Explanation:

As the Central Government faced financial loss on accounts of giving rebate on farming for the last few years, therefore, they declared to finish the rebate of farming.

Hence statement II is the cause while statement I is the effect.

practise Links:-

- 1) <https://www.indiabix.com/logical-reasoning/cause-and-effect>
- 2) <https://www.indiabix.com/verbal-reasoning/cause-and-effect>

12)

Syllogism :-

Introduction:

The questions which are asked in this section contain two or more statements and these statements are followed by two or more conclusions. You have to find out which of the conclusions logically follow from the given statements. The statements have to be taken true even if they seem to be at variance from the commonly known facts.

For such questions, you can take the help of *Venn Diagrams*. On the basis of the given statements, you should draw all the possible diagrams, and then derive the solution from each of these diagrams separately. Finally, the answer common to the all the diagrams is taken.

Example 1:

Statements:

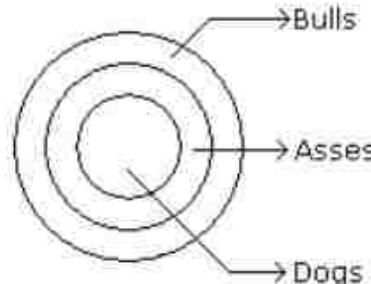
1. All dogs are asses.
2. All asses are bulls.

Conclusions:

1. Some dogs are not bulls.
2. Some bulls are dogs.
3. All bulls are dogs.
4. All dogs are bulls.

Solution:

On the basis of both statements, the following one diagram is possible.



From the diagram it is clear that (2) and (4) conclusions logically follow.

Example 2:

Statements:

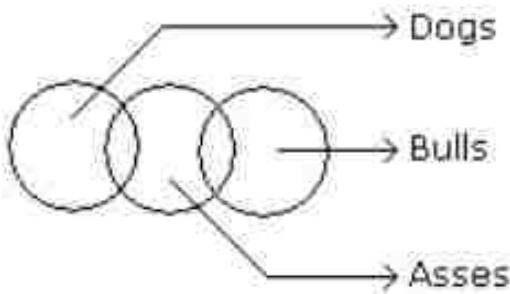
1. Some dogs are asses.
2. Some asses are bulls.

Conclusions:

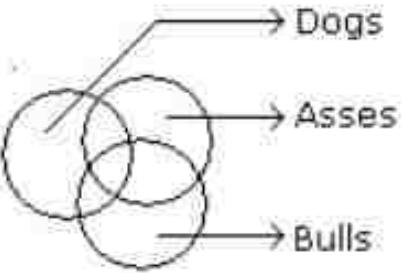
1. Some asses are not dogs.
2. Some dogs are bulls.

Solution:

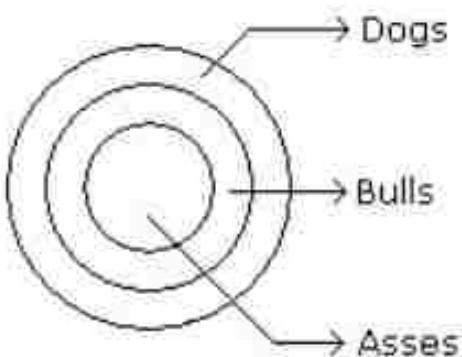
From these given statements the following diagrams are possible:



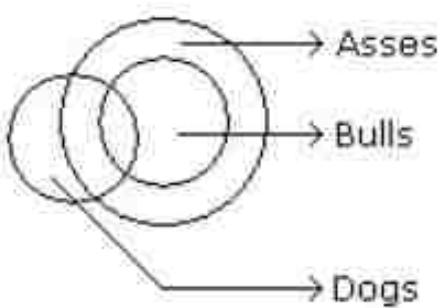
(1)



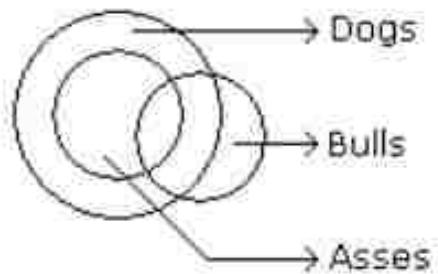
(2)



(3)



(4)



(5)

From the diagram neither (1) nor (2) conclusions follow.

Practise Links :-

- 1) <https://www.careerride.com/mcq/syllogism-logical-reasoning-mcq-questions-378.aspx>
- 2) <https://www.indiabix.com/verbal-reasoning/syllogism/>

13) Order and ranking

What Is Order And Ranking In Reasoning?

Order and Ranking reasoning broadly deals with the problems related to the arrangement of persons or objects in ascending or descending order based on different parameters like height, weight, merit, position, and so on. Determining the position of a person or object in a row or queue and the problems related to the time sequence test, wherein candidates need to find out a particular day based on the given conditions.

Different types of order and ranking questions are covered such as sequential order or arrangement, position test, time sequence test, and so on. Several types of problems based on order and ranking reasoning sections are asked in various government competitive exams.

1. Ranking Based

In this type of order and ranking reasoning, candidates need to find the position or rank of a person. Ranking based questions can be further divided into various categories and some of them are given below.

- (a) **Rank from Left/Right:** In these type of questions on order and ranking in reasoning, candidates need to find the position or rank of a person from left or right end, according to the given question.
- (b) **Total Person in a Row:** In these type of order and ranking reasoning questions, candidates need to find the total number of people in a row or a class.
- (c) **Person between two people:** This type of order and ranking reasoning is also known as overlapping based reasoning. In this type of order and ranking reasoning, candidates need to find the number of persons between two people when their rank satisfies the condition of overlapping.
- (d) **Persons between two people:** This type of order and ranking reasoning is also known as non overlapping based reasoning. In this type of order and ranking reasoning, candidates need to find the number of persons between the two people when their rank does not satisfy the condition of overlapping.
- (e) **Interchanging the positions:** In these type of order and ranking reasoning questions, candidates need to find the position of person or the total number of persons in the row when 2 people change their positions.
- (f) **Ratio Based Problems:** In these type of questions on order and ranking in reasoning, candidates need to find the position or rank of a girl or a boy when the ratio of them is given.

2. Comparison Based

In this type of order and ranking reasoning, candidates need to **compare different quantities** to determine the correct order.

How to Solve Order and Ranking Reasoning Questions - Tips and Tricks

Candidates can find various tips and order and ranking reasoning tricks from below for solving the questions that may come in govt. competitive exams:

Tip # 1: Position can be from either side of the row, and rank is always from top or bottom of the row.

Tip # 2: Candidates can calculate the total number of persons in a row or column by using the formula:
 $\text{Total Person} = \text{Rank from left} + \text{Rank from right} - 1$

Tip # 3: For non overlapping type questions, number of persons between two people = The total number of persons – Sum of positions of two different people from opposite sides.

Tip # 4: For overlapping type questions, number of persons between two people = Sum of positions of two different persons from opposite end – total number of persons – 2

Tip # 5: Condition for overlapping is, The sum of positions of the two persons from opposite ends > total number of persons

Here is a Sample Question to showcase the 5 tips and order and ranking shortcuts:

In a row of students, John is 8th from the left end, and Mary is 12th from the right end. Calculate the total number of students in the row.

- A) 18
- B) 19
- C) 20
- D) 21

Answer:

- C) 20

Explanation (using Tip #2):

Total number of students = Rank from left + Rank from right - 1

Total number of students = 8 + 12 - 1

Total number of students = 20

This means there are 20 students in the row.

Let's go through the other tips as well:

Tip #3 (For non-overlapping type questions):

Question (non-overlapping): How many students are there between John and Mary?

Using Tip #3:

Number of students between John and Mary = Total number of students - (Position of John from left + Position of Mary from right)

Number of students between John and Mary = $20 - (8 + 12)$

Number of students between John and Mary = $20 - 20$

Number of students between John and Mary = 0

So, there are 0 students between John and Mary.

Tip #4 (For overlapping type questions):

Question (overlapping): How many students are there between the student who is 4th from the left end and the student who is 6th from the right end?

Using Tip #4:

Number of students between the two students = Sum of positions of two different students from opposite ends - Total number of students - 2

Number of students between the two students = $(4 + 6) - 20 - 2$

Number of students between the two students = $10 - 20 - 2$

Number of students between the two students = -12

Since the number is negative, there are no students between the specified positions.

Tip #5 (Condition for overlapping):

For overlapping type questions, the sum of positions of the two persons from opposite ends should be greater than the total number of persons.

In this case, $4 + 6 = 10$, which is less than the total number of students (20). So, it's not an overlapping type question.

Sample Order and Ranking Questions

Given below are sample order and ranking reasoning questions to help you better understand the concepts behind them:

Question 1: In a row of 60 cars, car A is 32nd from the right end. What is its position from the left end?

Solution: Position from left end = (Total number of cars + 1) – Position from right end

$$\text{Position from left end} = (60 + 1) - 32 = 61 - 32 = 29.$$

Hence, the position of car A from left end is 29.

Question 2: Radha selected the 27th card from the left in a row of 50 cards. What will be the position of the same card from the right?

Solution: Total number of cards = Position of the card from right + Position of the card from left – 1

$$50 = \text{Position of Radha's card from right} + 27 - 1$$

$$\text{Position of Radha's card from right} = 50 - 27 + 1 = 24.$$

Hence, the position of the card from the right end is 24.

Question 3: Radhika ranks 16th from the top and 13th from the bottom in a certain examination. How many students are there in the class?

Solution: Number of students in the class = $16 + 13 - 1 = 29 - 1 = 28$.

Hence, "28" is the correct answer.

Question 4: In a row of 54 persons, A is 35 from left side and B is 22 from right. Find the total number of persons between them.

Solution: $35 + 22 = 57 >$ total number of persons i.e. 54

$$\text{Total number of persons between them} = (35 + 22) - 54 - 2 = 1$$

Hence, there is only one person between them.

Question 5: In a row 54 persons, A is 15th from left side and B is 20th from right side. Find the total number of persons between A and B

Solution: $15 + 20 = 35 <$ Total number of persons.

$$\text{Number of persons between the two end persons} = 54 - (15 + 20) = 19.$$

Hence, there are only 19 persons between them.

Question 6: Sahil and Gaurav are standing in a row of persons. Sahil is 12th from left side and Gaurav is 18th from the right side of the row. If they interchanged their positions Sahil becomes 25th from left. What is the total number of persons standing in the row?

Solution: Total person = Position from Left + Position from right - 1

Position of Sahil from Left = 25 (after interchanging)

Position of Sahil from Right = 18 (position of Sahil from right end is same as Gaurav after interchanging) - 1

Total person = $25 + 18 - 1 = 42$

Question 7: In a School, there are 147 people, the ratio of girls : boys is 1:6. Soumya is a girl who stands 15th from the top of that row and 7 girls are in front of her. How many boys are behind her?

Solution: Total number of students = 147

Girls : Boys = 1:6

$$x + 6x = 147$$

$$7x = 147$$

$$x = 21$$

Girls = 21 and boys = 126

Now Soumya is in 15th position from the top and 7 girls are in front of her.

Now boys are behind him = 7 as total 14 students are in front of him.

So, the number of boys, behind him is $126 - 7 = 119$

Hence, the correct answer is 119.

Question 8: Height of five students A, K, L, M and T are compared. Height of K is more than only two students. Height of M is greater than T and Height of T is greater than K. How many students are smaller than T?

Solution: Five students – A, K, L, M and T are compared.

1. Height of K is more than only two students.

_ > _ > K > _ > _

2. Height of M is greater than T and Height of T is greater than K. $M > T > K$

From 1 and 2, we get:

$M > T > K > _ > _$

So, 3 students are smaller than T.