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Section-1

Sec 1

Directions for questions 1 to 4: Answer the questions on the basis of the information given below.

Eight sportspersons – A, B, C, D, E, F, G and H – are members at Commonwealth Sports Complex. Each one takes part in a different sport from among Badminton, Basketball, Cricket, Football, Gymnastics, Hockey, Swimming and Volleyball. The monthly coaching fees for each sport is different and it lies between Rs.5,600 and Rs.6,500 (both inclusive). Each of these sportspersons was born in a different year from 1999 to 2006. (Consider only whole number of years completed till 2022. For example if X is born in 1997, then his age = 2022 – 1997 = 25 years)
The following information about the 8 sportspersons is also known that:
(i) The Football player is younger than only B, the Basketball player. G, the Volleyball player, pays Rs.600 more than the Hockey player.
(ii) E pays Rs.6,000 for Badminton coaching. The fees paid by the 19 year old is Rs.6,200 which is Rs.200 less than the fees paid by the 21 year old.
(iii) The one born in 2000 pays Rs.100 more than G. A, who does not play Hockey, is 1 year older than F but pays Rs. 100 less than F.
(iv) H was born in 2006 and pays Rs.800 less than D, who was born in 2001 and likes Swimming. C and A were born in 2000 and 2004 respectively.
(v) The average fees paid by B, C and D is Rs.6,400 whereas the average fees paid by A, E and H is Rs.5,800. The fees for Cricket is lesser than that for Gymnastics.

Q.1 [11831809]
Which sportsperson plays Cricket?

1 ◯ C

2 ◯ F

3 ◯ A

4 ◯ H

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
From conditions (i) and (ii), we can fill the sports for B, E and G and also, fees for B and E.
From condition (iv), we can fill the age for H and D and sport for D.
Also, combining it with condition (ii), we can fill the fees for D and H.
From conditions (iv) and (v), we can fill the ages and fees for C and A.
From condition (iii), we can fill the fees for G.

The information can be shown in the table below:

Person	Sport	Fees (in Rs.)	Age (in years)
A		5800	18
B	Basketball	6500	
C		6300	22
D	Swimming	6400	21
E	Badminton	6000	
F			
G	Volleyball	6200	
H		5600	16

Step 2:
From condition (iii), we can fill the age and fees for F.
From condition (i), we can see that H plays Hockey. Also, from condition (i), we can say that B is 23 years old (as the maximum age is 23) and C plays Football as C is younger than only B. Also, the only age remaining is 20 years, so E is 20 years old.
From condition (v), we can fill the sport for A and F.
Hence, the final table can be shown as:

Person	Sport	Fees (in Rs.)	Age (in years)
A	Cricket	5800	18
B	Basketball	6500	23
C	Football	6300	22
D	Swimming	6400	21
E	Badminton	6000	20
F	Gymnastics	5900	17
G	Volleyball	6200	19
H	Hockey	5600	16

It is clear from the table that A plays Cricket.

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(iv) H was born in 2006 and pays Rs.800 less than D, who was born in 2001 and likes Swimming. C and A were born in 2000 and 2004 respectively.
(v) The average fees paid by B, C and D is Rs.6,400 whereas the average fees paid by A, E and H is Rs.5,800. The fees for Cricket is lesser than that for Gymnastics.

Q.2 [11831809]
What is the difference in ages (in years) of the Basketball player and the Gymnast?

Solution:
Correct Answer : 6

Answer key/Solution

Step 1:
From conditions (i) and (ii), we can fill the sports for B, E and G and also, fees for B and E.
From condition (iv), we can fill the age for H and D and sport for D.
Also, combining it with condition (ii), we can fill the fees for D and H.
From conditions (iv) and (v), we can fill the ages and fees for C and A.
From condition (iii), we can fill the fees for G.

The information can be shown in the table below:

Person	Sport	Fees (in Rs.)	Age (in years)
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C		6300	22
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E	Badminton	6000	
F			
G	Volleyball	6200	
H		5600	16

Step 2:
From condition (iii), we can fill the age and fees for F.
From condition (i), we can see that H plays Hockey. Also, from condition (i), we can say that B is 23 years old (as the maximum age is 23) and C plays Football as C is younger than only B. Also, the only age remaining is 20 years, so E is 20 years old.
From condition (v), we can fill the sport for A and F.
Hence, the final table can be shown as:

Person	Sport	Fees (in Rs.)	Age (in years)
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D	Swimming	6400	21
E	Badminton	6000	20
F	Gymnastics	5900	17
G	Volleyball	6200	19
H	Hockey	5600	16

Required difference = 23 – 17 = 6 years.

Bookmark FeedBack

Directions for questions 1 to 4: Answer the questions on the basis of the information given below.

Eight sportspersons – A, B, C, D, E, F, G and H – are members at Commonwealth Sports Complex. Each one takes part in a different sport from among Badminton, Basketball, Cricket, Football, Gymnastics, Hockey, Swimming and Volleyball. The monthly coaching fees for each sport is different and it lies between Rs.5,600 and Rs.6,500 (both inclusive). Each of these sportspersons was born in a different year from 1999 to 2006. (Consider only whole number of years completed till 2022. For example if X is born in 1997, then his age = 2022 – 1997 = 25 years)
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(iv) H was born in 2006 and pays Rs.800 less than D, who was born in 2001 and likes Swimming. C and A were born in 2000 and 2004 respectively.
(v) The average fees paid by B, C and D is Rs.6,400 whereas the average fees paid by A, E and H is Rs.5,800. The fees for Cricket is lesser than that for Gymnastics.

Q.3 [11831809]
The amount paid as fees by the Volleyball player is equal to the average fees paid by which pair of players among the given options?

1 ◯ C – F

2 ◯ A – B

3 ◯ E – D

4 ◯ D – H

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
From conditions (i) and (ii), we can fill the sports for B, E and G and also, fees for B and E.
From condition (iv), we can fill the age for H and D and sport for D.
Also, combining it with condition (ii), we can fill the fees for D and H.
From conditions (iv) and (v), we can fill the ages and fees for C and A.
From condition (iii), we can fill the fees for G.

The information can be shown in the table below:

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E	Badminton	6000	
F			
G	Volleyball	6200	
H		5600	16

Step 2:
From condition (iii), we can fill the age and fees for F.
From condition (i), we can see that H plays Hockey. Also, from condition (i), we can say that B is 23 years old (as the maximum age is 23) and C plays Football as C is younger than only B. Also, the only age remaining is 20 years, so E is 20 years old.
From condition (v), we can fill the sport for A and F.
Hence, the final table can be shown as:

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D	Swimming	6400	21
E	Badminton	6000	20
F	Gymnastics	5900	17
G	Volleyball	6200	19
H	Hockey	5600	16

The fees paid by the volleyball player is Rs.6,200 which is equal to the average of (6000, 6400), which are paid by E and D.

Bookmark FeedBack

Directions for questions 1 to 4: Answer the questions on the basis of the information given below.

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(iv) H was born in 2006 and pays Rs.800 less than D, who was born in 2001 and likes Swimming. C and A were born in 2000 and 2004 respectively.
(v) The average fees paid by B, C and D is Rs.6,400 whereas the average fees paid by A, E and H is Rs.5,800. The fees for Cricket is lesser than that for Gymnastics.

Q.4 [11831809]
Which of the following order is correct for the ages as well as the fees paid by the sportspersons?

1 ◯ C > D > E > A > F

2 ◯ B > D > E > A > H

3 ◯ E > G > A > F > H

4 ◯ D > G > E > F > A

Solution:
Correct Answer : 2

Answer key/Solution

Step 1:
From conditions (i) and (ii), we can fill the sports for B, E and G and also, fees for B and E.
From condition (iv), we can fill the age for H and D and sport for D.
Also, combining it with condition (ii), we can fill the fees for D and H.
From conditions (iv) and (v), we can fill the ages and fees for C and A.
From condition (iii), we can fill the fees for G.

The information can be shown in the table below:

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G	Volleyball	6200	
H		5600	16

Step 2:
From condition (iii), we can fill the age and fees for F.
From condition (i), we can see that H plays Hockey. Also, from condition (i), we can say that B is 23 years old (as the maximum age is 23) and C plays Football as C is younger than only B. Also, the only age remaining is 20 years, so E is 20 years old.
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E	Badminton	6000	20
F	Gymnastics	5900	17
G	Volleyball	6200	19
H	Hockey	5600	16

We can see that option (2) is the correct.

Person	B	D	E	A	H
Fees (in Rs.)	6500	6400	6000	5800	5600
Age (in years)	23	21	20	18	16

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Directions for questions 5 to 8: Answer the questions on the basis of the information given below.

Nine cars are parked in three rows of parking spots as shown in the table.

Car 1	Car 4	Car 7
Car 2	Car 5	Car 8
Car 3	Car 6	Car 9

The cars are either Jeeps or Sedans. They are either green or red. Lastly, they have either four-wheel drive or two-wheel drive. Any two cars are adjacent to each other along the same row or column only. The cars' characteristics are governed by the following constraints:
(i) All cars with four-wheel drive are Jeeps.
(ii) All cars, except one car, adjacent to exactly three cars have four-wheel drive.
(iii) Car 6 is a Sedan and is green.
(iv) All Sedans are adjacent to at least two cars with four-wheel drive.
(v) No car is the same color as any car directly adjacent to it.

Q.5 [11831809]
If all Jeeps are adjacent to at least one Sedan, then which of the following cars can be Sedan?

1 ◯ 3, 5, 6 & 9

2 ◯ 1, 5, 6 & 7

3 ◯ 1, 3, 6 & 9

4 ◯ 3, 6, 9 & 7

Solution:
Correct Answer : 2

Answer key/Solution

From conditions (iii) and (v), Cars 2, 4, 6 & 8 are green and cars 1, 3, 5, 7 & 9 are red.
From condition (ii), Cars 2, 4, 6 and 8 are adjacent to exactly three cars. So, cars 2, 4 and 8 are four-wheel drive.
From condition (i), Cars 2, 4 & 8 are Jeeps.
From condition (iv), Cars 3 and 9 are Jeeps.
The given information can be shown in the following table:

Car 1, Red	Car 4, Green, 4-wheel, Jeep	Car 7, Red
Car 2, Green, 4-wheel, Jeep	Car 5, Red	Car 8, Green, 4-wheel, Jeep
Car 3, Red, 2/4-wheel, Jeep	Car 6, Sedan, Green, 2-wheel	Car 9, Red, 2/4-wheel, Jeep

Car 1, Red, Sedan, 2-wheel	Car 4, Green, 4-wheel, Jeep	Car 7, Red, Sedan, 2-wheel
Car 2, Green, 4-wheel, Jeep	Car 5, Red, Sedan, 2-wheel	Car 8, Green, 4-wheel, Jeep
Car 3, Red, 4-wheel, Jeep	Car 6, Sedan, Green, 2-wheel	Car 9, Red, 4-wheel, Jeep

Hence, cars 1, 5, 6 and 7 can be Sedans.

Bookmark FeedBack

Directions for questions 5 to 8: Answer the questions on the basis of the information given below.

Nine cars are parked in three rows of parking spots as shown in the table.

Car 1	Car 4	Car 7
Car 2	Car 5	Car 8
Car 3	Car 6	Car 9

The cars are either Jeeps or Sedans. They are either green or red. Lastly, they have either four-wheel drive or two-wheel drive. Any two cars are adjacent to each other along the same row or column only. The cars' characteristics are governed by the following constraints:
(i) All cars with four-wheel drive are Jeeps.
(ii) All cars, except one car, adjacent to exactly three cars have four-wheel drive.
(iii) Car 6 is a Sedan and is green.
(iv) All Sedans are adjacent to at least two cars with four-wheel drive.
(v) No car is the same color as any car directly adjacent to it.

Q.6 [11831809]
Which of the following cannot be true about car 5?

1 ◯ Sedan, two-wheel drive

2 ◯ Jeep, four-wheel drive

3 ◯ Sedan, Green

4 ◯ Jeep, two-wheel drive

Solution:
Correct Answer : 3

Answer key/Solution

From conditions (iii) and (v), Cars 2, 4, 6 & 8 are green and cars 1, 3, 5, 7 & 9 are red.
From condition (ii), Cars 2, 4, 6 and 8 are adjacent to exactly three cars. So, cars 2, 4 and 8 are four-wheel drive.
From condition (i), Cars 2, 4 & 8 are Jeeps.
From condition (iv), Cars 3 and 9 are Jeeps.
The given information can be shown in the following table:

Car 1, Red	Car 4, Green, 4-wheel, Jeep	Car 7, Red
Car 2, Green, 4-wheel, Jeep	Car 5, Red	Car 8, Green, 4-wheel, Jeep
Car 3, Red, 2/4-wheel, Jeep	Car 6, Sedan, Green, 2-wheel	Car 9, Red, 2/4-wheel, Jeep

Car 5 cannot be green. Hence, option (3) cannot be true.

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Directions for questions 5 to 8: Answer the questions on the basis of the information given below.

Nine cars are parked in three rows of parking spots as shown in the table.

Car 1	Car 4	Car 7
Car 2	Car 5	Car 8
Car 3	Car 6	Car 9

The cars are either Jeeps or Sedans. They are either green or red. Lastly, they have either four-wheel drive or two-wheel drive. Any two cars are adjacent to each other along the same row or column only. The cars' characteristics are governed by the following constraints:
(i) All cars with four-wheel drive are Jeeps.
(ii) All cars, except one car, adjacent to exactly three cars have four-wheel drive.
(iii) Car 6 is a Sedan and is green.
(iv) All Sedans are adjacent to at least two cars with four-wheel drive.
(v) No car is the same color as any car directly adjacent to it.

Q.7 [11831809]
What is the maximum number of Jeeps that can be parked?

Solution:
Correct Answer : 8

Answer key/Solution

From conditions (iii) and (v), Cars 2, 4, 6 & 8 are green and cars 1, 3, 5, 7 & 9 are red.
From condition (ii), Cars 2, 4, 6 and 8 are adjacent to exactly three cars. So, cars 2, 4 and 8 are four-wheel drive.
From condition (i), Cars 2, 4 & 8 are Jeeps.
From condition (iv), Cars 3 and 9 are Jeeps.
The given information can be shown in the following table:

Car 1, Red	Car 4, Green, 4-wheel, Jeep	Car 7, Red
Car 2, Green, 4-wheel, Jeep	Car 5, Red	Car 8, Green, 4-wheel, Jeep
Car 3, Red, 2/4-wheel, Jeep	Car 6, Sedan, Green, 2-wheel	Car 9, Red, 2/4-wheel, Jeep

Cars 2, 3, 4, 8 & 9 are Jeeps. Also, cars 1, 5 & 7 can be Jeeps.
Hence, the maximum number of jeeps that can be parked is 8.

Bookmark FeedBack

Directions for questions 5 to 8: Answer the questions on the basis of the information given below.

Nine cars are parked in three rows of parking spots as shown in the table.

Car 1	Car 4	Car 7
Car 2	Car 5	Car 8
Car 3	Car 6	Car 9

The cars are either Jeeps or Sedans. They are either green or red. Lastly, they have either four-wheel drive or two-wheel drive. Any two cars are adjacent to each other along the same row or column only. The cars' characteristics are governed by the following constraints:
(i) All cars with four-wheel drive are Jeeps.
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(iii) Car 6 is a Sedan and is green.
(iv) All Sedans are adjacent to at least two cars with four-wheel drive.
(v) No car is the same color as any car directly adjacent to it.

Q.8 [11831809]
If all two-wheeled cars are adjacent to either two or three Jeeps, then which of the following can be true about car 7?

1 ◯ Jeep, two-wheel drive

2 ◯ Jeep, four-wheel drive

3 ◯ Sedan, two-wheel drive

4 ◯ All (1), (2) and (3) can be true.

Solution:
Correct Answer : 4

Answer key/Solution

From conditions (iii) and (v), Cars 2, 4, 6 & 8 are green and cars 1, 3, 5, 7 & 9 are red.
From condition (ii), Cars 2, 4, 6 and 8 are adjacent to exactly three cars. So, cars 2, 4 and 8 are four-wheel drive.
From condition (i), Cars 2, 4 & 8 are Jeeps.
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The given information can be shown in the following table:

Car 1, Red	Car 4, Green, 4-wheel, Jeep	Car 7, Red
Car 2, Green, 4-wheel, Jeep	Car 5, Red	Car 8, Green, 4-wheel, Jeep
Car 3, Red, 2/4-wheel, Jeep	Car 6, Sedan, Green, 2-wheel	Car 9, Red, 2/4-wheel, Jeep

Car 7 could be anything – (Sedan, two-wheel drive), (Jeep, two-wheel drive) or (Jeep, four-wheel drive). Hence, all (1), (2) and (3) options can be true.

Bookmark FeedBack

Directions for questions 9 to 12: Answer the questions on the basis of the information given below.

The Crime Branch, Crime Investigation Department (CB-CID) caught a gang of miscreants that was trying to spread rumors against the government by sending information through special apps that were encrypted end-to-end. However, one of the members of the gang was caught with some smartphones that contained sensitive information but are password protected. The CID team now has to find the passwords of the phones. After many rounds of interrogation, a gang member revealed that:
(i) Most smartphones are protected by a 5 digit password formed by using digits from 1 to 7 such that each digit is used exactly once.
(ii) The passwords of these phones were designed in such a way that the phone could be unlocked even by a password in which either some of the digits were not the same as the original or by a change in the order of the original digits.

Q.9 [11831809]
If the security password allows for exactly two digits (out of the five) to be out of place but all digits of the original password must be present, (For example, a password of 35762 can also be used instead of the actual password of 37562 to open a phone), then what is the maximum number of unsuccessful attempts in unlocking a particular phone?

Answer key/Solution

Solution:
Correct Answer : 2509
This set of questions is based on permutations and combinations. It is known that a total of 7 digits from 1 to 7 can be used to make passwords for the smart phones.

Since the password is not known, total possible passwords of 5 distinct digits = $^{7}C_{5} \times 5!$ (or $^{7}P_{5}$) = 2520
To understand the different number of attempts that will unlock the password, let us take the password to be 12345.
From these 5 digits, 2 of the digits can be out of place but the other three must be at the correct place.
So if 1 and 3 are out of place, then 32145 will also unlock the phone. Had 2 and 5 been out of place, then 15342 would also have unlocked the phone. In other words, for every pair of 2 digits selected, one wrong combination will unlock the phone.
Therefore, the number of attempts that the phone will accept = $^{5}C_{2}$
(where 2 digits are wrongly placed) + 1 (the correct password) = 11
Hence, the number of different unsuccessful attempts
= Total – Successful attempts = 2520 – 11 = 2509.

Bookmark FeedBack

Directions for questions 9 to 12: Answer the questions on the basis of the information given below.

The Crime Branch, Crime Investigation Department (CB-CID) caught a gang of miscreants that was trying to spread rumors against the government by sending information through special apps that were encrypted end-to-end. However, one of the members of the gang was caught with some smartphones that contained sensitive information but are password protected. The CID team now has to find the passwords of the phones. After many rounds of interrogation, a gang member revealed that:
(i) Most smartphones are protected by a 5 digit password formed by using digits from 1 to 7 such that each digit is used exactly once.
(ii) The passwords of these phones were designed in such a way that the phone could be unlocked even by a password in which either some of the digits were not the same as the original or by a change in the order of the original digits.

Q.10 [11831809]
The security settings of a phone allows the input attempt of the five digits to vary from the original sequence by changing places of only two digits at consecutive places. Thus, for example, if 12345 is the original sequence, then 21345 is also allowed, but 52341 is not. How many different possible combinations can be used to unlock the phone, if the digits used in the password are known?

1 ◯ 13

2 ◯ 8

3 ◯ 7

4 ◯ 5

Solution:
Correct Answer : 4
This set of questions is based on permutations and combinations. It is known that a total of 7 digits from 1 to 7 can be used to make passwords for the smart phones.

Answer key/Solution

Since the 5 digits are known, no other digit will be tried while attempting to open the phone.
Let the actual password be 12345.
Possible attempts that will open the phone could be:
21345 13245 12435 12354
Hence, 4 possible combinations + 1 original password = 5 passwords.

Bookmark FeedBack

Directions for questions 9 to 12: Answer the questions on the basis of the information given below.

The Crime Branch, Crime Investigation Department (CB-CID) caught a gang of miscreants that was trying to spread rumors against the government by sending information through special apps that were encrypted end-to-end. However, one of the members of the gang was caught with some smartphones that contained sensitive information but are password protected. The CID team now has to find the passwords of the phones. After many rounds of interrogation, a gang member revealed that:
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Q.11 [11831809]
One of the phones can be unlocked if 2 digits of the original password are replaced by 2 other digits (not present in the original) such that the other 3 digits are at their correct places (For example, an attempt of 15724 will unlock the phone whose actual password is 15623). If the investigator has information that the 3rd digit of the password of this phone is 6 while 2 is also used as one of the digits, then how many minimum total different attempts may be required by him to definitely unlock the phone?

1 ◯ 240

2 ◯ 20

3 ◯ 16

4 ◯ 24

Answer key/Solution

Solution:
Correct Answer : 2
This set of questions is based on permutations and combinations. It is known that a total of 7 digits from 1 to 7 can be used to make passwords for the smart phones.

The third digit is known to be 6. Another digit that is known is 2, but its position is not known. Since we only need three digits at their correct places, we need to factor in the position of 2 and try for the third digit.
Let's try with 2 as the first digit. Ensuring we get the second digit right, and randomly put another relevant values of the fourth and the fifth digit will open the phone. So we will input all remaining digits EXACTLY ONCE at the second digit. These will be {1, 3, 4, 5, 7} i.e., 5 options.
The same way, fixing 2 at second, fourth, or fifth places will also have 5 options each.
In total, a minimum of 20 attempts are definitely needed (4 × 5, where the 4 cases are for 2 at each of remaining digits and 5 other digit tries for each case of 2).

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Directions for questions 9 to 12: Answer the questions on the basis of the information given below.

The Crime Branch, Crime Investigation Department (CB-CID) caught a gang of miscreants that was trying to spread rumors against the government by sending information through special apps that were encrypted end-to-end. However, one of the members of the gang was caught with some smartphones that contained sensitive information but are password protected. The CID team now has to find the passwords of the phones. After many rounds of interrogation, a gang member revealed that:
(i) Most smartphones are protected by a 5 digit password formed by using digits from 1 to 7 such that each digit is used exactly once.
(ii) The passwords of these phones were designed in such a way that the phone could be unlocked even by a password in which either some of the digits were not the same as the original or by a change in the order of the original digits.

Q.12 [11831809]
The password of a particular phone required six digits to unlock, where the digit one was used twice and the remaining digits from 1 to 5 were used exactly once. Digits 6 and 7 were not used. The security setting allows a variation of the original sequence (of six digits) where exactly 3 digits can be out of place. What is the minimum number of attempts needed definitely to crack the password?

1 ◯ 72

2 ◯ 132

3 ◯ 60

4 ◯ 144

Solution:
Correct Answer : 1

Answer key/Solution

This set of questions is based on permutations and combinations. It is known that a total of 7 digits from 1 to 7 can be used to make passwords for the smart phones.

Since exactly 3 digits can be out of place, but the other three must be in place, let's only focus on getting the 3 leading digits right and then randomly put the remaining acceptable/ relevant digits at the last three digits.
Case 1: The three leading digits include both 1's.
Let's assume the remaining digit to be 2. So with {1, 1, 2}, three tries/numbers are possible. The same way, 3 each are possible with 3, 4, and 5. So a total of 12 passwords are possible or 12 tries needed in case 1.
Case 2: The three leading digits do not include both 1's, i.e., they are all distinct.
Getting the first three digit rights would mean trying one of _5_ × _4_ × _3_ = 60 passwords.
Hence, the total minimum attempts definitely needed = 60 + 12 = 72.

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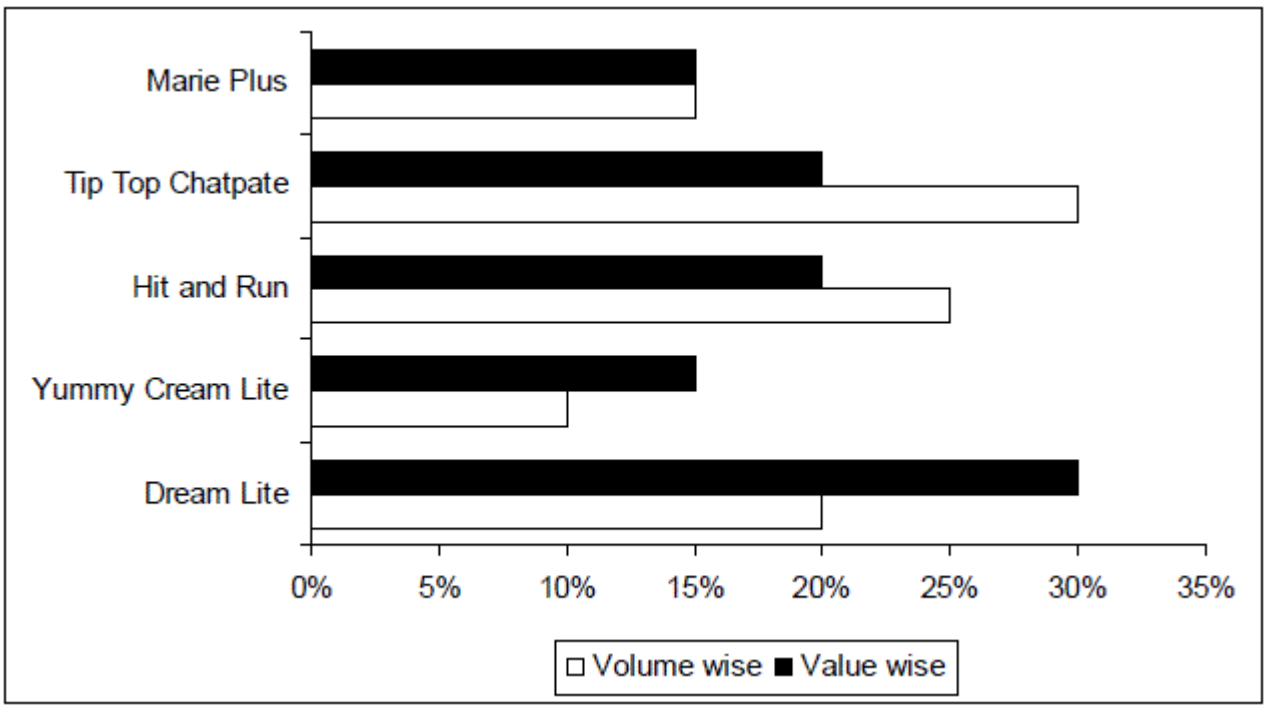
Direction for questions 13 to 16: Answer the questions on the basis of the information given below.

The bar graph given below shows the sales break-up of five different categories of biscuits - Dream Lite, Yummy Cream Lite, Hit & Run, Tip Top Chat pate and Marie Plus - sold by ABC Industries Limited in the year 2021-22.



Q.13 [11831809]
The total sales of ABC Industries Limited for these five categories of biscuits in 2021-22 were 1,50,000 kg, valued at Rs. 90 lakhs. If its value wise market share in 2021-22 increased by 20% as compared to 2020-21, what was the sales volume (in thousand kg) of the company for the year 2020-21? (Assume that the average price of biscuits produced by ABC Industries Limited remains same for both the years.)

1 ◯ 115

2 ◯ 120

3 ◯ 125

4 ◯ 130

Solution:
Correct Answer : 3

Answer key/Solution

Let the total sales of ABC Industries Limited volume wise and value wise be Y and X respectively.

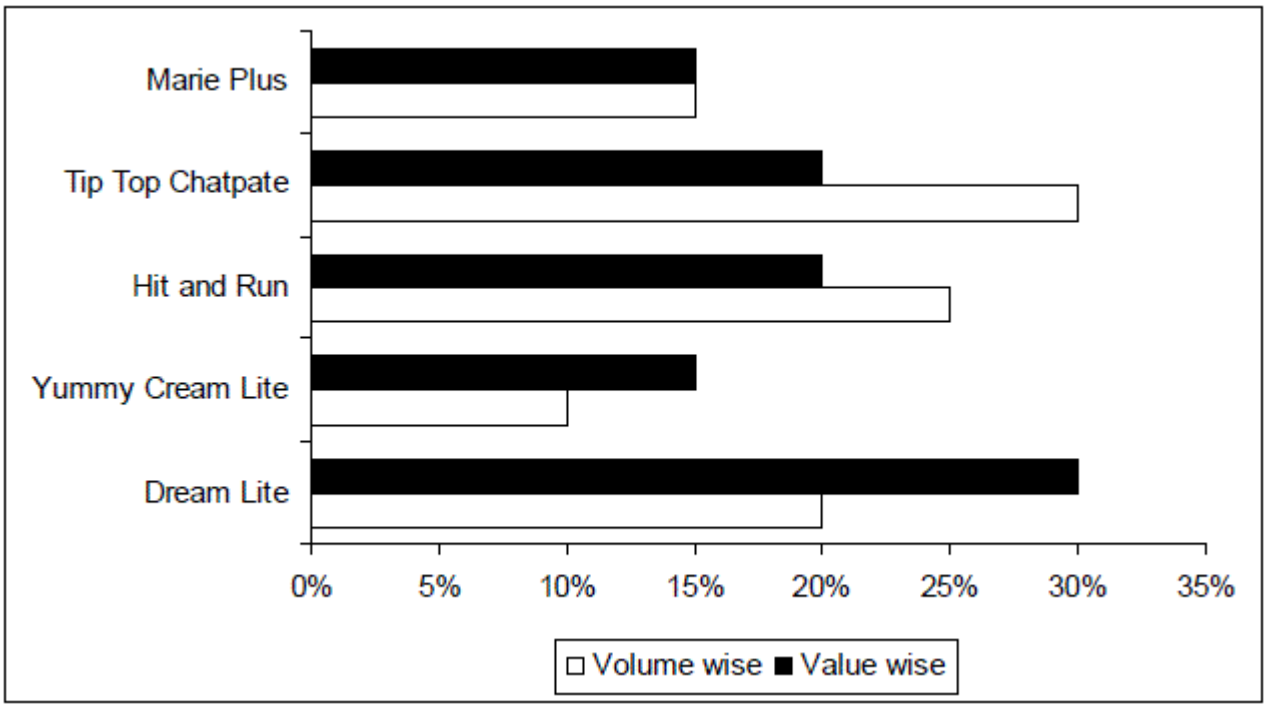
Biscuit	Volume wise	Value wise
Dream Lite	0.2Y	0.3X
Yummy Cream Lite	0.1Y	0.15X
Hit and Run	0.25Y	0.2X
Tip Top Chatpate	0.3Y	0.2X
Marie Plus	0.15Y	0.15X

The sales value in 2020-21 = 90/1.2 = Rs.75,00,000
Average price of biscuits in 2021-22 = 9000000/150000 = Rs. 60/kg
Hence, sales volume in 2021-22 = 7500000/60 = 1,25,000 kg.

Bookmark FeedBack

Direction for questions 13 to 16: Answer the questions on the basis of the information given below.

The bar graph given below shows the sales break-up of five different categories of biscuits - Dream Lite, Yummy Cream Lite, Hit & Run, Tip Top Chat pate and Marie Plus - sold by ABC Industries Limited in the year 2021-22.



Q.14 [11831809]

For how many categories of biscuits of the company was the price per kg less than the average price per kg of all the categories of biscuits in 2021-22?

1 ◯ One

2 ◯ Two

3 ◯ Three

4 ◯ Four

Solution:
Correct Answer : 2

Answer key/Solution

Let the total sales of ABC Industries Limited volume wise and value wise be Y and X respectively.

Biscuit	Volume wise	Value wise
Dream Lite	0.2Y	0.3X
Yummy Cream Lite	0.1Y	0.15X
Hit and Run	0.25Y	0.2X
Tip Top Chatpate	0.3Y	0.2X
Marie Plus	0.15Y	0.15X

Average price per kg of biscuits in 2021-22 = X/Y
Price per kg of Dream Lite = 0.3X/0.2Y = 1.5Y/X
Price per kg of Yummy Cream Lite = 0.15X/0.1Y = 1.5Y/X
Price per kg of Hit and Run = 0.2Y/0.25X = 0.8X/Y
Price per kg of Tip Top Chatpate = 0.2X/0.3Y = 0.67X/Y
Price per kg of Marie Plus = 0.2X/0.3Y = 0.15X/0.15Y = X/Y
Hence, two categories of biscuits of the company was the price per kg less than the average price per kg of all the categories of biscuits.

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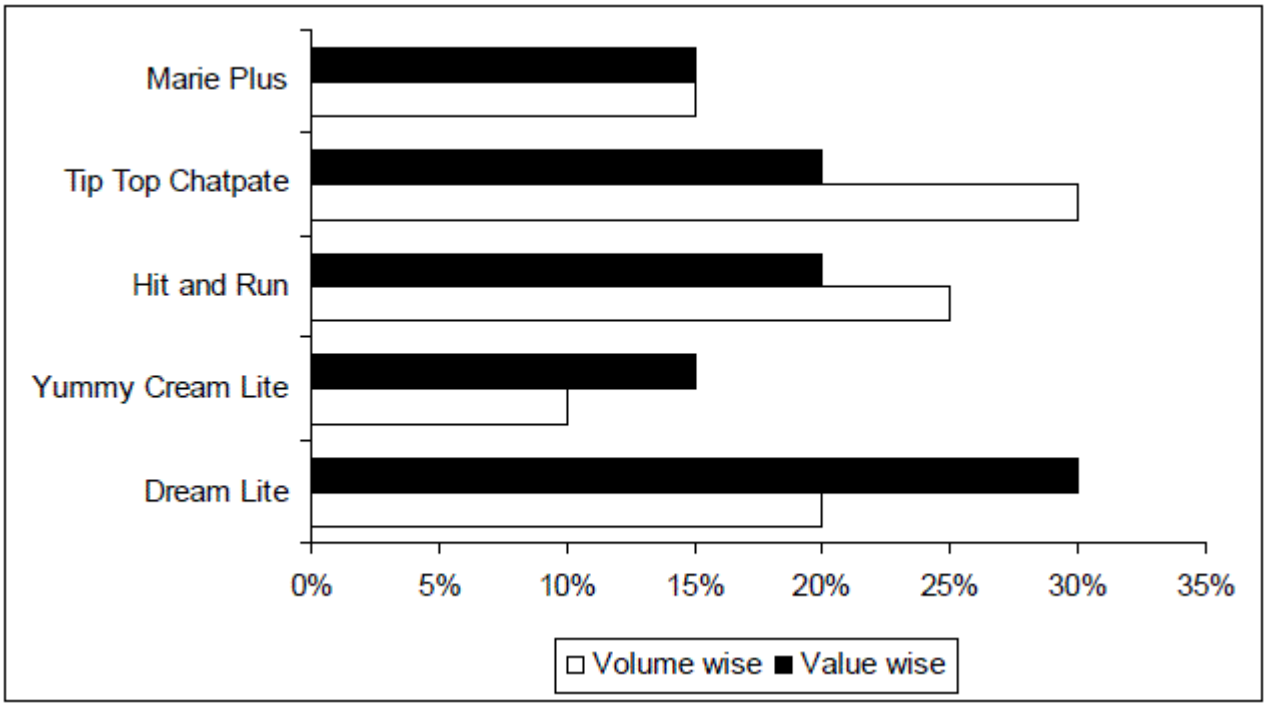
Direction for questions 13 to 16: Answer the questions on the basis of the information given below.

The bar graph given below shows the sales break-up of five different categories of biscuits - Dream Lite, Yummy Cream Lite, Hit & Run, Tip Top Chat pate and Marie Plus - sold by ABC Industries Limited in the year 2021-22.



Q.15 [11831809]

Volume wise ABC Industries Limited sold biscuits in the ratio 4 : 3 : 2 : 1 respectively in only 4 regions P, Q, R and S of the country in 2021-22. If the total sales of ABC Industries Limited for these five categories of biscuits in region P in 2021-22 was 6,400 kg, then the total sales of Tip Top Chatpate biscuits was how much (in kg) more than the total sales of Dream Light biscuits of the company in the same year?

Solution:

Correct Answer : 1600

Answer key/Solution

Let the total sales of ABC Industries Limited volume wise and value wise be Y and X respectively.

Biscuit	Volume wise	Value wise
Dream Lite	0.2Y	0.3X
Yummy Cream Lite	0.1Y	0.15X
Hit and Run	0.25Y	0.2X
Tip Top Chatpate	0.3Y	0.2X
Marie Plus	0.15Y	0.15X

$0.4Y = 6400 \Rightarrow Y = 16{,}000$ kg

Hence, required answer = $16000 \times (0.3 - 0.2) = 1600$ kg.

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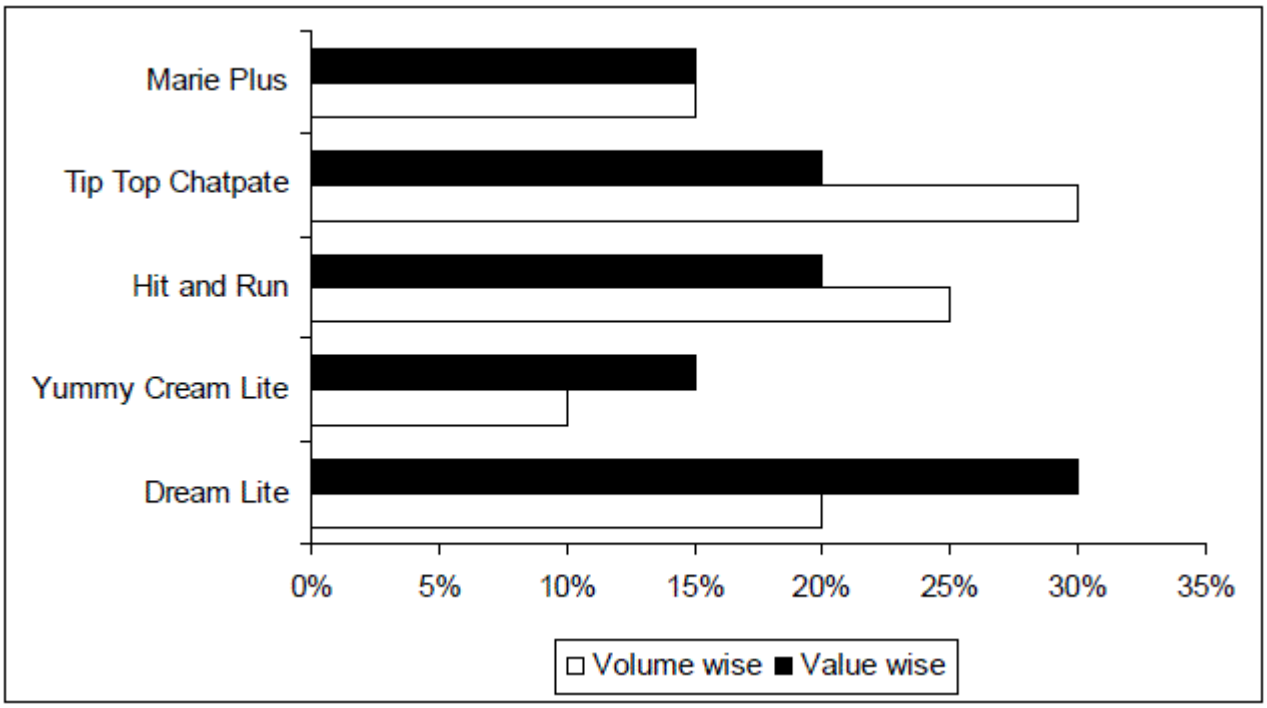
Direction for questions 13 to 16: Answer the questions on the basis of the information given below.

The bar graph given below shows the sales break-up of five different categories of biscuits - Dream Lite, Yummy Cream Lite, Hit & Run, Tip Top Chat pate and Marie Plus - sold by ABC Industries Limited in the year 2021-22.



Q.16 [11831809]

Value wise ABC Industries Limited sold biscuits in the ratio 4 : 3 : 2 : 1 respectively in only 4 regions P, Q, R and S of the country in 2021-22. If value wise sales of Marie Plus biscuits was 12% of the total value wise sales of region Q, then value wise sales of Marie Plus biscuits in region Q was what percent of the total value wise sales of Marie Plus biscuits of the company in 2021-22?

1 ◯ 18%

2 ◯ 20%

3 ◯ 36%

4 ◯ 24%

Solution:
Correct Answer : 4

Answer key/Solution

Let the total sales of ABC Industries Limited volume wise and value wise be Y and X respectively.

Biscuit	Volume wise	Value wise
Dream Lite	0.2Y	0.3X
Yummy Cream Lite	0.1Y	0.15X
Hit and Run	0.25Y	0.2X
Tip Top Chatpate	0.3Y	0.2X
Marie Plus	0.15Y	0.15X

Value wise sales of Marie Plus biscuits in region Q = 0.3X × 0.12 = 0.036X
Value wise total sales of Marie Plus biscuits of the company = 0.15X
Hence, required percentage = (0.036X/0.15X) × 100 = 24%.

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Directions for questions 17 to 20: Answer the questions on the basis of the information given below.

Bhavyesh, Debasish, Mrugank, Purnima, Ramana and Sriraj - are six stockbrokers each having some shares with him/her of a company ABC. The total number of shares with six of them taken together is 465. Further, it is also known that:
(i) Each of them has at least 25 shares.
(ii) The number of shares with Bhavyesh is the square of a natural number.
(iii) The ratio of the number of shares with Purnima and Ramana is 7 : 9 respectively.
(iv) The number of shares with Mrugank is the cube of a natural number.
(v) The number of shares with Sriraj is 50% more than the number of shares with Debasish.
(vi) The sum of the number of shares with Purnima and Ramana is equal to the number of shares with Bhavyesh.

Q.17 [11831809]

If the number of shares with Bhavyesh is the cube of a natural number, then who has the second highest number of shares?

1 ◯ Sriraj

2 ◯ Ramana

3 ◯ Devasish

4 ◯ Mrugank

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
From condition (iii), let the number of shares with Purnima and Ramana be 7x and 9x respectively, where x is a natural number.
From condition (vi), the number of shares with Bhavyesh = 7x + 9x = 16x
From condition (ii), since the number of shares with Bhavyesh is a perfect square, the value of 16x is 16, 64, 144, 256 or 400, where x = 1, 4, 9, 16 or 25.
Now, x = 16 or 25 is not possible. In these cases the total number of shares will exceed 465. From condition (i), x = 1 is also not possible.
Therefore, only x = 4 or 9 are possible.

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64			28	36	
Case 2	144			63	81	

Step 2:
Let the number of shares with Debasish and Mrugrank be a and b respectively.
Case 1: a + 1.5a + b = 337 ⇒ 2.5a + b = 337
From condition (iv), b = 1 or 8 or 27 or 64 or 125 or 216
From condition (i), b = 1 or 8 is not possible.
When b = 27, then 2.5a = 310 ⇒ a = 124 and 1.5a = 186 (This is possible.)
When b = 64, then 2.5a = 273 ⇒ a = 109.2 (is not an integer.)
When b = 125, then 2.5a = 212 ⇒ a = 84.8 (is not an integer.)
When b = 216, then 2.5a = 121 ⇒ a = 48.4 (is not an integer.)
Case 2: a + 1.5a + b = 177 ⇒ 2.5a + b = 177
From condition (iv), b = 1 or 8 or 27 or 64 or 125
When b = 27, then 2.5a = 150 ⇒ a = 60 and 1.5a = 90 (This is possible.)
When b = 64, then 2.5a = 113 ⇒ a = 45.2 (is not an integer.)
When b = 125, then 2.5a = 52 ⇒ a = 20.8 (is not an integer.)
Step 3:
The final table is:

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64	124	27	28	36	186
Case 2	144	60	27	63	81	90

In case 1, Devasish has the second highest number of shares i.e., 124.

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Directions for questions 17 to 20: Answer the questions on the basis of the information given below.

Bhavyesh, Debasish, Mrugank, Purnima, Ramana and Sriraj - are six stockbrokers each having some shares with him/her of a company ABC. The total number of shares with six of them taken together is 465. Further, it is also known that:
(i) Each of them has at least 25 shares.
(ii) The number of shares with Bhavyesh is the square of a natural number.
(iii) The ratio of the number of shares with Purnima and Ramana is 7 : 9 respectively.
(iv) The number of shares with Mrugank is the cube of a natural number.
(v) The number of shares with Sriraj is 50% more than the number of shares with Debasish.
(vi) The sum of the number of shares with Purnima and Ramana is equal to the number of shares with Bhavyesh.

Q.18 [11831809]
What is the maximum number of stockbrokers that can have an odd number of shares?

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
From condition (iii), let the number of shares with Purnima and Ramana be 7x and 9x respectively, where x is a natural number.
From condition (vi), the number of shares with Bhavyesh = 7x + 9x = 16x
From condition (ii), since the number of shares with Bhavyesh is a perfect square, the value of 16x is 16, 64, 144, 256 or 400, where x = 1, 4, 9, 16 or 25.
Now, x = 16 or 25 is not possible. In these cases the total number of shares will exceed 465. From condition (i), x = 1 is also not possible.
Therefore, only x = 4 or 9 are possible.

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64			28	36	
Case 2	144			63	81	

Step 2:
Let the number of shares with Debasish and Mrugrank be a and b respectively.
Case 1: a + 1.5a + b = 337 ⇒ 2.5a + b = 337
From condition (iv), b = 1 or 8 or 27 or 64 or 125 or 216
From condition (i), b = 1 or 8 is not possible.
When b = 27, then 2.5a = 310 ⇒ a = 124 and 1.5a = 186 (This is possible.)
When b = 64, then 2.5a = 273 ⇒ a = 109.2 (is not an integer.)
When b = 125, then 2.5a = 212 ⇒ a = 84.8 (is not an integer.)
When b = 216, then 2.5a = 121 ⇒ a = 48.4 (is not an integer.)
Case 2: a + 1.5a + b = 177 ⇒ 2.5a + b = 177
From condition (iv), b = 1 or 8 or 27 or 64 or 125
When b = 27, then 2.5a = 150 ⇒ a = 60 and 1.5a = 90 (This is possible.)
When b = 64, then 2.5a = 113 ⇒ a = 45.2 (is not an integer.)
When b = 125, then 2.5a = 52 ⇒ a = 20.8 (is not an integer.)
Step 3:
The final table is:

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64	124	27	28	36	186
Case 2	144	60	27	63	81	90

In case 2, Mrugank, Purnima and Ramana can have odd number of shares.

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Directions for questions 17 to 20: Answer the questions on the basis of the information given below.

Bhavyesh, Debasish, Mrugank, Purnima, Ramana and Sriraj - are six stockbrokers each having some shares with him/her of a company ABC. The total number of shares with six of them taken together is 465. Further, it is also known that:
(i) Each of them has at least 25 shares.
(ii) The number of shares with Bhavyesh is the square of a natural number.
(iii) The ratio of the number of shares with Purnima and Ramana is 7 : 9 respectively.
(iv) The number of shares with Mrugank is the cube of a natural number.
(v) The number of shares with Sriraj is 50% more than the number of shares with Debasish.
(vi) The sum of the number of shares with Purnima and Ramana is equal to the number of shares with Bhavyesh.

Q.19 [11831809]
Which of the following pairs can have the minimum sum of the number of shares?

1 ◯ Bhavyesh & Mrugank

2 ◯ Mrugank & Ramana

3 ◯ Devasish & Purnima

4 ◯ Devasish & Mrugank

Solution:
Correct Answer : 2

Answer key/Solution

Step 1:
From condition (iii), let the number of shares with Purnima and Ramana be 7x and 9x respectively, where x is a natural number.
From condition (vi), the number of shares with Bhavyesh = 7x + 9x = 16x
From condition (ii), since the number of shares with Bhavyesh is a perfect square, the value of 16x is 16, 64, 144, 256 or 400, where x = 1, 4, 9, 16 or 25.
Now, x = 16 or 25 is not possible. In these cases the total number of shares will exceed 465. From condition (i), x = 1 is also not possible.
Therefore, only x = 4 or 9 are possible.

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64			28	36	
Case 2	144			63	81	

Step 2:
Let the number of shares with Debasish and Mrugrank be a and b respectively.
Case 1: a + 1.5a + b = 337 ⇒ 2.5a + b = 337
From condition (iv), b = 1 or 8 or 27 or 64 or 125 or 216
From condition (i), b = 1 or 8 is not possible.
When b = 27, then 2.5a = 310 ⇒ a = 124 and 1.5a = 186 (This is possible.)
When b = 64, then 2.5a = 273 ⇒ a = 109.2 (is not an integer.)
When b = 125, then 2.5a = 212 ⇒ a = 84.8 (is not an integer.)
When b = 216, then 2.5a = 121 ⇒ a = 48.4 (is not an integer.)
Case 2: a + 1.5a + b = 177 ⇒ 2.5a + b = 177
From condition (iv), b = 1 or 8 or 27 or 64 or 125
When b = 27, then 2.5a = 150 ⇒ a = 60 and 1.5a = 90 (This is possible.)
When b = 64, then 2.5a = 113 ⇒ a = 45.2 (is not an integer.)
When b = 125, then 2.5a = 52 ⇒ a = 20.8 (is not an integer.)
Step 3:
The final table is:

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64	124	27	28	36	186
Case 2	144	60	27	63	81	90

In case 1, Mrugank & Ramana have minimum sum (i.e., 63) of shares.

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Directions for questions 17 to 20: Answer the questions on the basis of the information given below.

Bhavyesh, Debasish, Mrugank, Purnima, Ramana and Sriraj - are six stockbrokers each having some shares with him/her of a company ABC. The total number of shares with six of them taken together is 465. Further, it is also known that:
(i) Each of them has at least 25 shares.
(ii) The number of shares with Bhavyesh is the square of a natural number.
(iii) The ratio of the number of shares with Purnima and Ramana is 7 : 9 respectively.
(iv) The number of shares with Mrugank is the cube of a natural number.
(v) The number of shares with Sriraj is 50% more than the number of shares with Debasish.
(vi) The sum of the number of shares with Purnima and Ramana is equal to the number of shares with Bhavyesh.

Q.20 [11831809]
Which among the following can be the possible absolute difference between the number of shares with Purnima and Sriraj?

1 ◯ 158

2 ◯ 159

3 ◯ 27

4 ◯ Either (1) or (3)

Solution:
Correct Answer : 4

Answer key/Solution

Step 1:
From condition (iii), let the number of shares with Purnima and Ramana be 7x and 9x respectively, where x is a natural number.
From condition (vi), the number of shares with Bhavyesh = 7x + 9x = 16x
From condition (ii), since the number of shares with Bhavyesh is a perfect square, the value of 16x is 16, 64, 144, 256 or 400, where x = 1, 4, 9, 16 or 25.
Now, x = 16 or 25 is not possible. In these cases the total number of shares will exceed 465. From condition (i), x = 1 is also not possible.
Therefore, only x = 4 or 9 are possible.

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64			28	36	
Case 2	144			63	81	

Step 2:
Let the number of shares with Debasish and Mrugrank be a and b respectively.
Case 1: a + 1.5a + b = 337 ⇒ 2.5a + b = 337
From condition (iv), b = 1 or 8 or 27 or 64 or 125 or 216
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When b = 216, then 2.5a = 121 ⇒ a = 48.4 (is not an integer.)
Case 2: a + 1.5a + b = 177 ⇒ 2.5a + b = 177
From condition (iv), b = 1 or 8 or 27 or 64 or 125
When b = 27, then 2.5a = 150 ⇒ a = 60 and 1.5a = 90 (This is possible.)
When b = 64, then 2.5a = 113 ⇒ a = 45.2 (is not an integer.)
When b = 125, then 2.5a = 52 ⇒ a = 20.8 (is not an integer.)
Step 3:
The final table is:

Stockbroker	Bhavyesh	Debasish	Mrugank	Purnima	Ramana	Sriraj
Case 1	64	124	27	28	36	186
Case 2	144	60	27	63	81	90

The required absolute difference between the number of shares with Purnima and Sriraj can be 186 – 28 = 158 or 90 – 63 = 27.

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