



Parul University
Faculty of Engineering and Technology
Department of Applied Science & Humanities Academic Year 2024-25
Subject: Quant and Reasoning
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UNIT 3

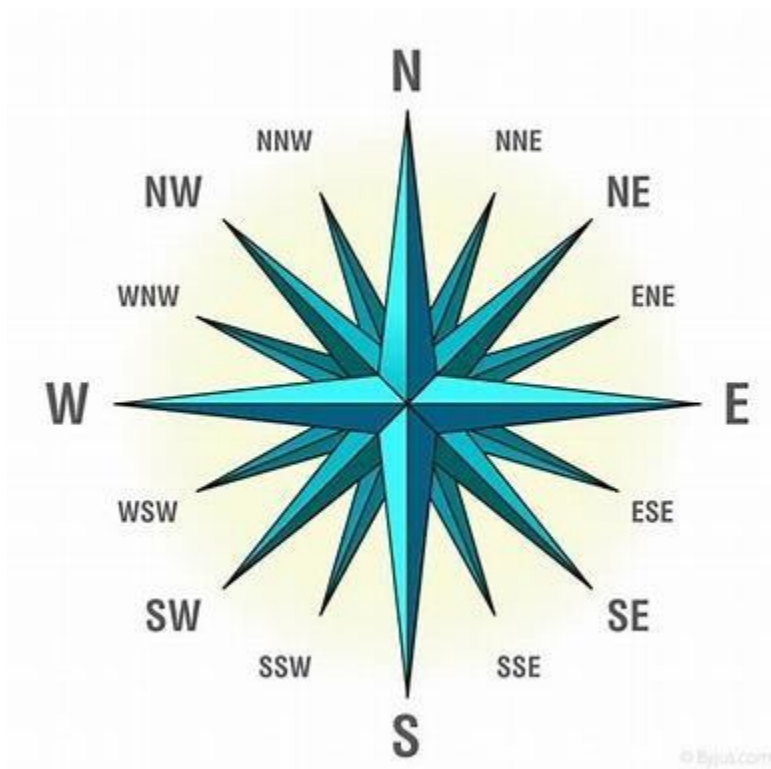
Directions & Seating arrangements

- **Directions**

Introduction:

There are four main directions - East, West, North and South

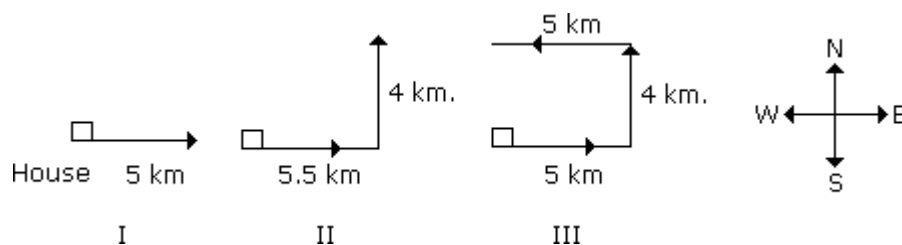
There are four cardinal directions - North-East (N-E), North-West (N-W), South-East (S-E), and South-West (S-W) as shown below:



1. At the time of sunrise if a man stands facing the east, his shadow will be towards west.
2. At the time of sunset the shadow of an object is always in the east.
3. If a man stands facing the North, at the time of sunrise his shadow will be towards his left and at the time of sunset it will be towards his right.
4. At 12:00 noon, the rays of the sun are vertically downward hence there will be no shadow.

Q-1. Siva starting from his house, goes 5 km in the East, then he turns to his left and goes 4 km. Finally he turns to his left and goes 5 km. Now how far is he from his house and in what direction?

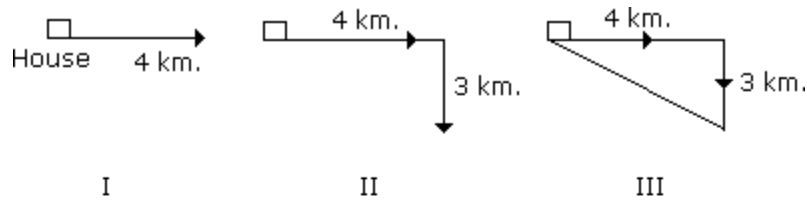
Solution :



From third position it is clear he is 4 km from his house and is in North direction.

Q-2. Suresh starting from his house, goes 4 km in the East, then he turns to his right and goes 3 km. What minimum distance will be covered by him to come back to his house?

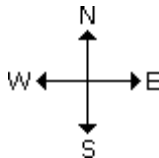
Solution :



$$\begin{aligned}
 \text{Minimum distance} &= \sqrt{(4)^2 + (3)^2} \\
 &= \sqrt{16 + 9} \\
 &= \sqrt{25} \\
 &= 5 \text{ km.}
 \end{aligned}$$

Q-3. One morning after sunrise Juhi while going to school met Anshika at Boring road crossing. Anshika's shadow was exactly to the right of Juhi. If they were face to face, which direction was Juhi facing?

Solution: In the morning sunrises in the east.



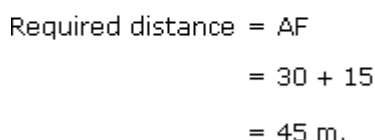
So in morning the shadow falls towards the west.
Now Anshika's shadow falls to the right of the Juhi. Hence Juhi is facing South.

Q-4. Hema starting from her house walked 5 km to reach the crossing of Palace. In which direction she was going, a road opposite to this direction goes to Hospital. The road to the right goes to station. If the road which goes to station is just opposite to the road which IT-Park, then in which direction to Hema is the road which goes to IT-Park?

Solution:



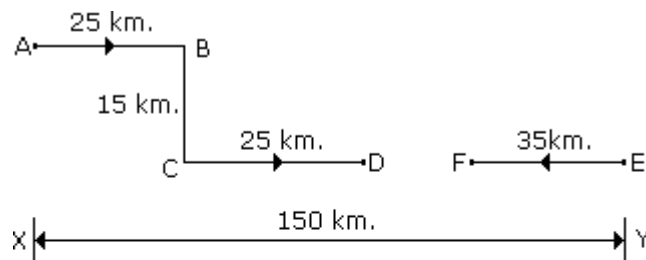
Solution:



Hence the required answer is '45 m East'.

Q-6. Two cars start from the opposite places of a main road, 150 km apart. First car runs for 25 km and takes a right turn and then runs 15 km. It then turns left and then runs for another 25 km and then takes the direction back to reach the main road. In the mean time, due to minor break down the other car has run only 35 km along the main road. What would be the distance between two cars at this point?

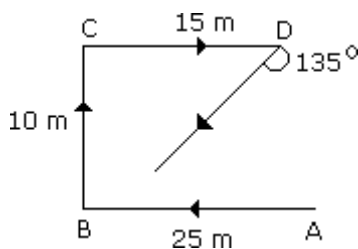
Solution :



$$\begin{aligned}\text{Required distance} &= DF \\ &= 150 - (25 + 25 + 35) \\ &= 150 - 85 \\ &= 65 \text{ km.}\end{aligned}$$

Q-7. P started from his house towards west. After walking a distance of 25 m. He turned to the right and walked 10 m. He then again turned to the right and walked 15 m. After this he is to turn right at 135° and to cover 30 m. In which direction should he go?

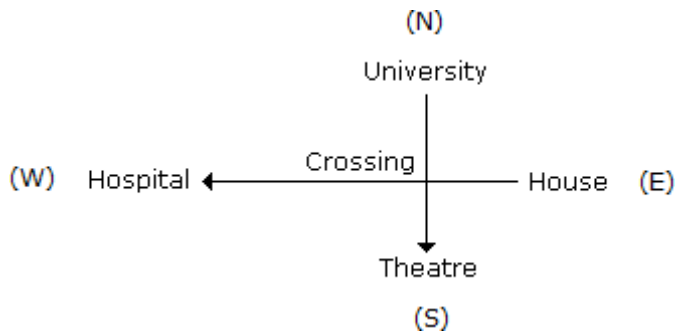
Solution :



Hence he should go in the South-West direction.

Q-8. Hemant in order to go to university started from his house in the east and came to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the university?

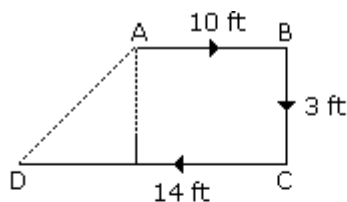
Solution :



Therefore university is in North.

Q-9. Reena walked from A to B in the East 10 feet. Then she turned to the right and walked 3 feet. Again she turned to the right and walked 14 feet. How far is she from A?

Solution :



Required distance = AD

$$= \sqrt{3^2 + (14 - 10)^2}$$

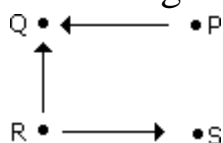
$$= \sqrt{9 + 16}$$

$$= 5 \text{ ft}$$

Q-10. If A x B means A is to the south of B; A + B means A is to the north of B; A % B means A is to the east of B; A - B means A is to the west of B; then in P % Q + R - S, S is in which direction with respect to Q?

Solution :

According to P % Q + R - S



S is in the South-East of Q.

EXERCISE :

1 . A child went 90 m in the East to look for his father, then he turned right and went 20 m. After this he turned right and after going 30 m he reached to his uncle's house. His father was not there. From there he went 100 m to his north and met his father. How far did he meet his father from the starting point?
(ANS – 100 m)

2. Four friends A, B, C and D live in a same locality. The house of B is in the east of A's house but in the north of C's house. The house of C is in the west of D's house. D's house is in which direction of A's house?
(ANS – South -east)

3. Umesh directly went from P, to Q which is 9 feet distant. Then he turns to the right and walked 4 feet. After this he turned to the right and walked a distance which is equal from P to Q. Finally he turned to the right and walked 3 feet. How far is he now from P?
(ANS – 1 ft)

4. Umesh directly went from P, to Q which is 9 feet distant. Then he turns to the right and walked 4 feet. After this he turned to the right and walked a distance which is equal from P to Q. Finally he turned to the right and walked 3 feet. How far is he now from P?
(ANS – 10 km)

5. Sachin walks 20 km towards North. He turns left and walks 40 km. He again turns left and walks 20 km. Finally he moves 20 km after turning to the left. How far is he from his starting position?
(ANS – 20 km)

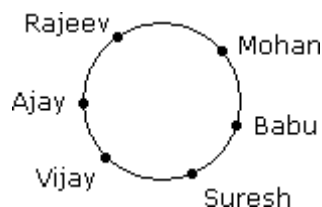
Seating arrangements

In order to solve seating arrangement questions, first of all diagram should be made. By doing so questions are easily and quickly solved.

Q-1. 6 Boys are sitting in a circle and facing towards the centre of the circle. Rajeev is sitting to the right of mohan but he is not just at the left of Vijay. Suresh is between Babu and Vijay. Ajay is sitting to the left of Vijay.

Who is sitting to the left of Mohan ?

Solution :

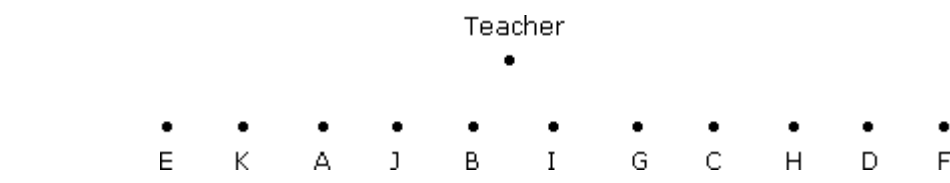


Hence, Babu is sitting to the left of Mohan.

Q-2. Eleven students A, B, C, D, E, F, G, H, I, J and K are sitting in first line facing to the teacher. D who is just to the left of F, is to the right of C at second place. A is second to the right of E who is at one end. J is the nearest neighbour of A and B and is to the left of G at third place. H is next to D to the left and is at the third place to the right of I.

Who is just in the middle ?

Solution :

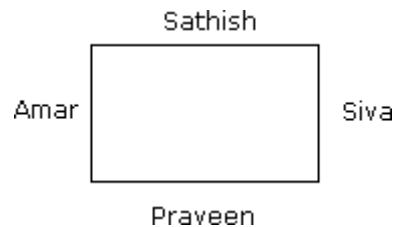


Hence, I is just in the middle.

Q-3. Siva, Sathish, Amar and Praveen are playing cards. Amar is to the right of Sathish, who is to the right of Siva.

Who is to the right of Amar ?

Solution :



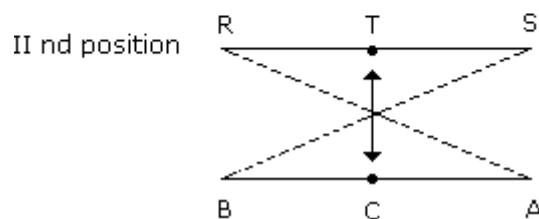
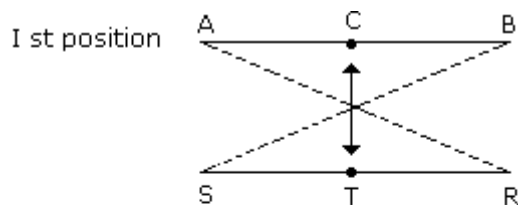
Hence Praveen is to the right of Amar.

Q-4. A, B and C are three boys while R, S and T are three girls. They are sitting such that the boys are facing the girls. A and R are diagonally opposite to each other. C is not sitting at any of the ends. T is left to R but opposite to C.

(A). Who is sitting opposite to B ?

(B). Who is sitting diagonally opposite to B ?

Solution :

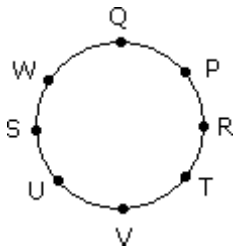


(A) Hence, R is sitting opposite to B.

(B) Hence, S is sitting diagonally opposite to B.

Q-5. P, Q, R, S, T, U, V and W are sitting round the circle and are facing the centre. P is second to the right of T who is the neighbour of R and V. S is not the neighbour of P. V is the neighbour of U. Q is not between S and W. W is not between U and S. What is the position of S ?

Solution :

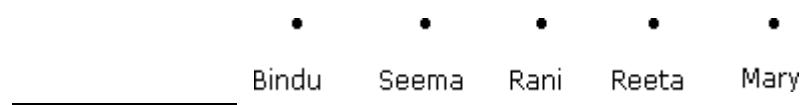


 In between U and W Or opposite to R.

Q-6 . Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary.

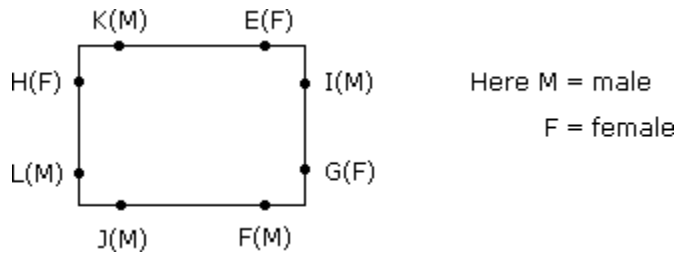
- 1. Who is sitting immediate right to Reeta ?**
- 2. Who is in the middle of the photograph ?**
- 3. Who is second from the right ?**
- 4. Who is second from the left in photograph ?**

Solution :



Q-7 . 8 persons E, F, G, H, I, J, K and L are seated around a square table - two on each side. There are 3 ladies who are not seated next to each other. J is between L and F. G is between I and F. H, a lady member is second to the left of J. F, a male member is seated opposite to E, a lady member. There is a lady member between F and I. How many persons are seated between K and F ?

Solution :

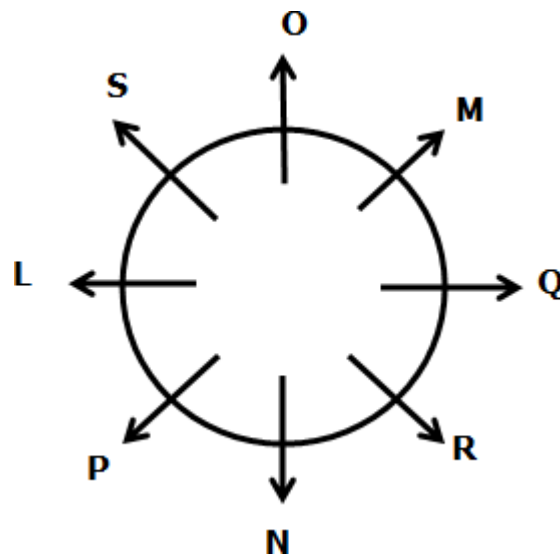


Three persons are seated between K and F(H, L and J) or E, I and G.

Q-8 . Eight persons- L, M, N, O, P, Q, R, and S are sitting at the circular table facing outside but not necessarily in the same order. P sits second to the right of R. Two persons are sitting between S and Q. Q sits adjacent to R. M sits third to the right of L. M and P are not immediate neighbors. L sits second to the left of O. The number of persons sitting between N and M is the same as between N and S.

1. How many people sit between N and M when counted from the right of N?
2. What is the position of P with respect to O?

Solution :



1. Four
2. Third to the left