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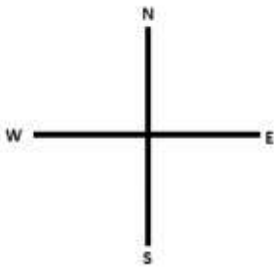
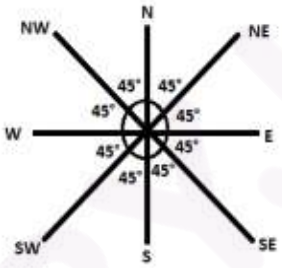
Study Notes On Distance & Direction

Distance and direction

Direction is the data or information which is obtained in the relative position from one point with respect to another point without the actual information of distance. Directions may be either relative to some indicated reference or absolute according to some previously agreed upon frame of reference. In this type of question, we need to make a diagram follow up with the information given in the form of distance or direction in between two points. Based on the information, we need to find out the required answer.

Thus, these kinds of questions are based on simple distance and direction puzzles. The direction chart given below shows the four main directions:





Clockwise /Anti Clockwise turn

- 1 time left / 1 time right (एक बार बाये/ एक बार दाये) = 90°
- 2 time left/ 2 time right (दो बार बाए/ दो बार दाये)= 180°
- 3 time left (तीन बार बाए) = 1 time right (एक बार दाये)
- 3 time right (तीन बार दाये) = 1 time left (एक बार बाये)
- 4 time left / 4 time right (चार बार बाए/ चार बार दाये) = $360^\circ = 0^\circ$

Clockwise /Anti Clockwise turn

- 1 time left + 1 time right (एक बार बाये+ एक बार दाये) = 0^0
- 135° left + 90° right (135° बाए + 90° दाये) = 45° Left (बाये)
- 180° left + 225° right (180° बाए + 225° दाये)= 45° Right (दाये)
- 225° left + 315° right (225° बाए + 315° दाये)= 90° Right (दाये)
- 180° left + 45° right (180° बाए + 45° दाये) = 135° Left (बाये)

Clockwise /Anti Clockwise turn

360° left (बाये)	0° Right (दाये)
315° left (बाये)	45° Right (दाये)
270° left (बाये)	90° Right (दाये)
225° left (बाये)	135° Right (दाये)
180° left (बाये)	180° Right (दाये)
135° left (बाये)	225° Right (दाये)
90° left (बाये)	270° Right (दाये)
45° left (बाये)	315° Right (दाये)
0° left (बाये)	360° Right (दाये)

Some common types of questions asked in the exam,

1. Distance-based
2. Direction-based
3. Distance and direction based
4. Coded Distance and direction
5. Shadow based
6. Angle Based

Below we are going to share the types of series with examples to explain it,

Distance-based:

1. Rohan, after walking 5 km towards the west, turns left and then walks for 12 km more.

Find the shortest distance between his initial and final position.

A. 13 km

B. 7 km

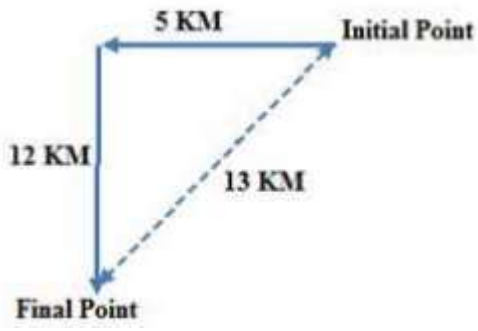
C. 6 km

D. 17 km

Ans. A

Sol.

From the information given in the question,



From the Pythagoras theorem, we can find out the shortest distance:

$\Rightarrow \sqrt{(5^2 + 12^2)}$

$\Rightarrow \sqrt{(25 + 144)}$

$\Rightarrow \sqrt{169} = 13$

Hence, the correct option is A.

2. Shyam walks 5 meters towards the south, then turns to his left and walks 6 meters and then turns to his right and walks 5 meters then turning to his left he walks 6 meters and again turns left he walks 5 meters. What are the direction and shortest distance from his starting point to his final point?

A. 12m

B. 13m

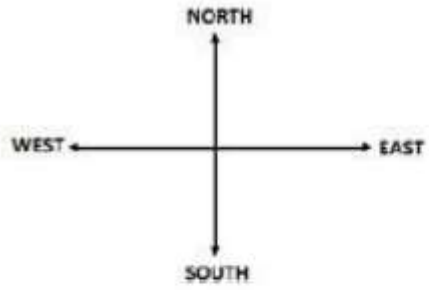
C. 11m

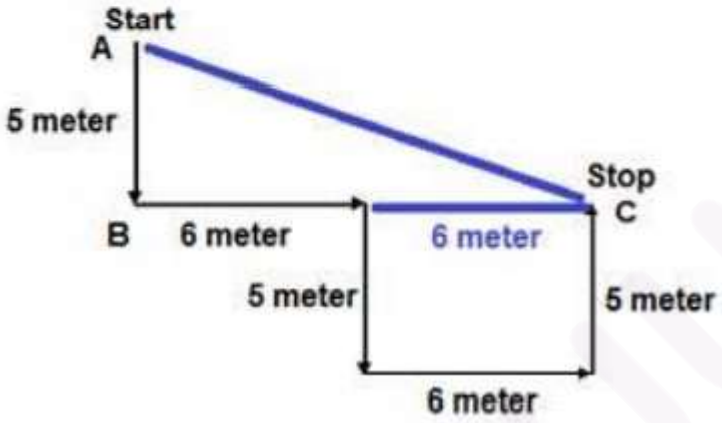
D. 10m

Ans. B

Sol.

Shyam walks 5 meters towards the south, then turns to his left and walks 6 meters and then turns to his right and walks 5 meters then turning to his left he walks 6 meters and again turns left he walks 5 meters and stop.





The above figure shows that we find the distance between A and CIn triangle ABC we apply Pythagoras theorem (base)^2 + (perpendicular)^2 = (hypotenuse)^2

$AB^2 + BC^2 = CA^2$

Given from figure CB = 12 meters, AB= 5 meter and AC we find.

$12^2 + 5^2 = AC^2$

$AC^2 = 144+25$

$AC^2 = 169$

AC = $\sqrt{169}$ meter

AC = 13 meter

So, the correct answer is option B.

Direction-based:

1. A man walks 7 km towards the south and turns to the left. After walking 5 km, he turns to the right and walks 7 km. In which direction is he now from the starting point?

A. West

B. South

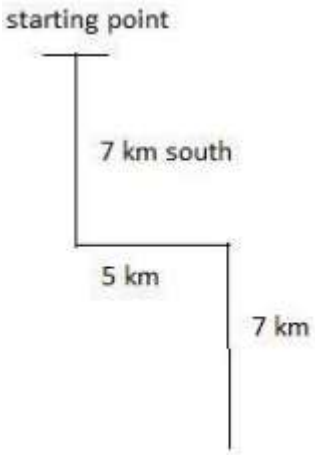
C. South – East

D. North – East

Ans. C

Sol.

From the information given in the question,



We can clearly see that the person is in the south-east direction from his starting point.

Hence, option C is the correct response.

2. Zubin is moving in the west direction on the platform to catch the train. After moving 15m, he took a left turn and moved 5m and took right turn and moved 10m and finally he took right turn and by moving 2m he took his seat. In which direction his seat is from his starting point?

A. North-east

B. North-west

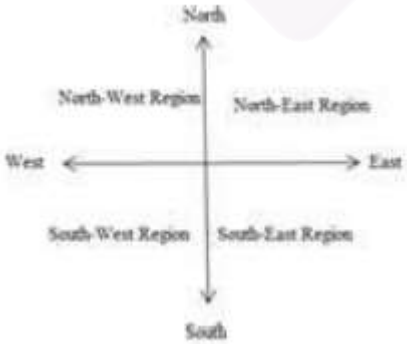
C. South-east

D. South-west

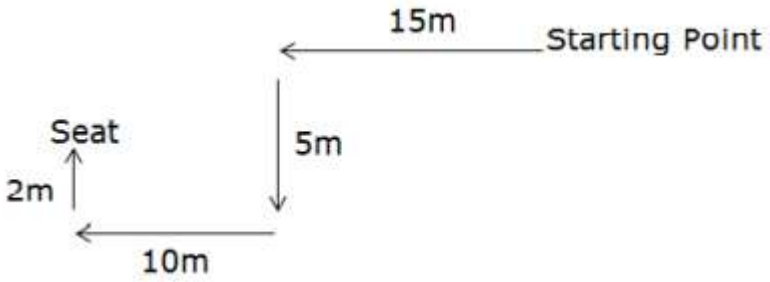
Ans. D

Sol.

We know that:



We can show the given data in the following figure:



From the above figure, we can observe that his seat is in south-west direction from his starting point.

So, the correct answer is option D.

Distance and direction based:

1. A car travels 17 km South, then turns East and travels 11 km, then turns North and travels 9 km, then turns to its left and travels 11 km. Where is the car now with reference to its starting position?

A. 8 km – North

B. 8 km – South

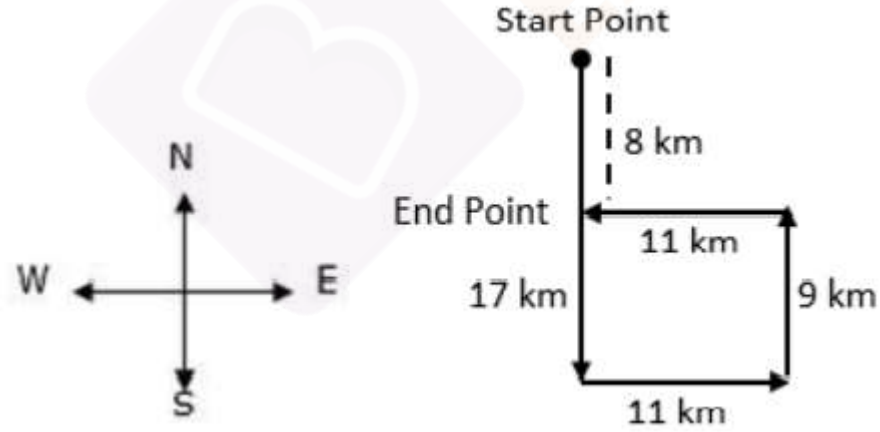
C. 26 km – South

D. 26 km – North

Ans. B

Sol.

From the information given in the question,



Thus now car is 8 km south with reference to its starting position.

Hence, option B is correct.

2. Ram and Shyam start from a fixed point. Ram moves 6 km south and turns right and then covers 8 km. Shyam moves 10 km east and turns right and walks 6 km. Now how far and which direction is Ram from Shyam?

A. 18 km – west

B. 25 km – north

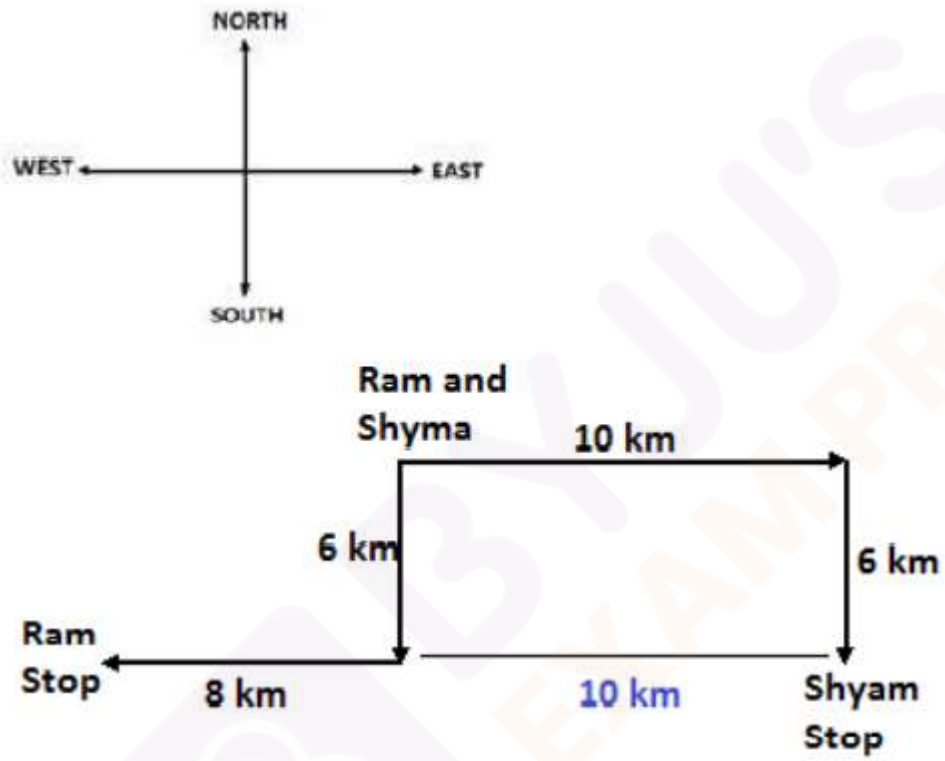
C. 20 km – east

D. 22 km – west

Ans. A

Sol.

From the information given in the question,



The distance between Ram and Shyam is

= 10 + 8

= 18 km.

So the distance between Ram from Shyam is 18 km and the direction is West.

Coded distance and direction

1. A+B means A is in the south direction of B at 20cm, A-B means A is in the north direction of B at 20cm, A*B means A is in the north-east direction of B at 20cm and A/B means A is in the East direction of B at 20cm. In the expression-T*H+M/W-V, V is in which direction with respect to T?

A. South East

B. North East

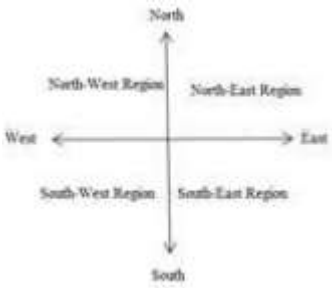
C. North – West

D. South – West

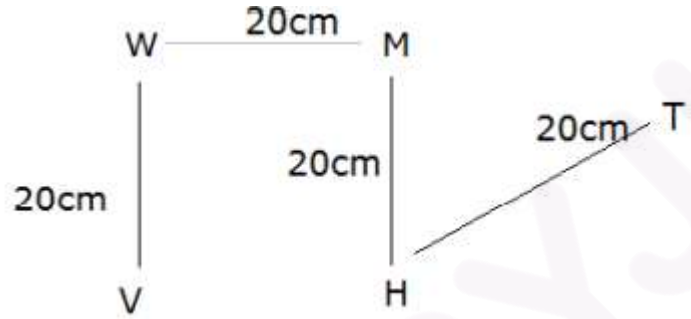
Ans. D

Sol.

We know that:



We can show the given data in the following figure:



From the above diagram, its clearly can be seen that V is in the south-west of T.

So, the correct answer is option D.

Shadow Based:

1. Mukul was standing facing towards a pole at 7:00 AM. The shadow of the pole fell exactly to his right. Find the direction in which he was facing.

A. West

B. East

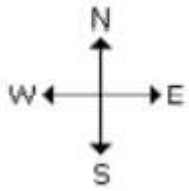
C. South

D. North

Ans. B

Sol.

At 7:00 AM Sun was in the east direction. The shadow of the pole fell to his right. Therefore the sun was to his left. This means he was standing facing south direction.



Hence, option (C) is the correct response.

2. One morning after sunrise, Gangadhar was walking facing a pole. The shadow of the pole fell exactly to his right, which direction was he facing?

A. South

B. West

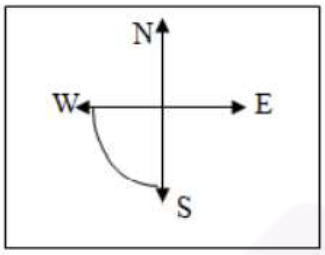
C. East

D. North

Ans. A

Sol.

Sunrises from the east in the morning; hence the shadow of an object will be in the opposite site of the sun (in the west direction)



From the given problem, Gangadhar was walking facing a pole and the shadow of the pole fell exactly to Gangadhar's right. West is in the right of the south, hence Gangadhar was facing into the south direction.

Hence, option (A) is the correct response.

Angle based

1. A man is facing towards the east. He turns 270 degrees clockwise and then takes a right turn. Finally, he turns 90 degrees anticlockwise. Which direction is he facing now?

A. West

B. South

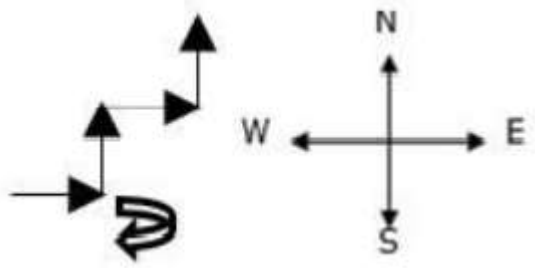
C. North

D. East

Ans. C

Sol.

The rotation followed by the man is as follows,



Thus the man is finally facing towards North.

2. Ravi is walking in the East direction. After covering the distance of one kilometre, he turns 45° left and then 90° right. In which direction is he now?

A. South East

B. North West

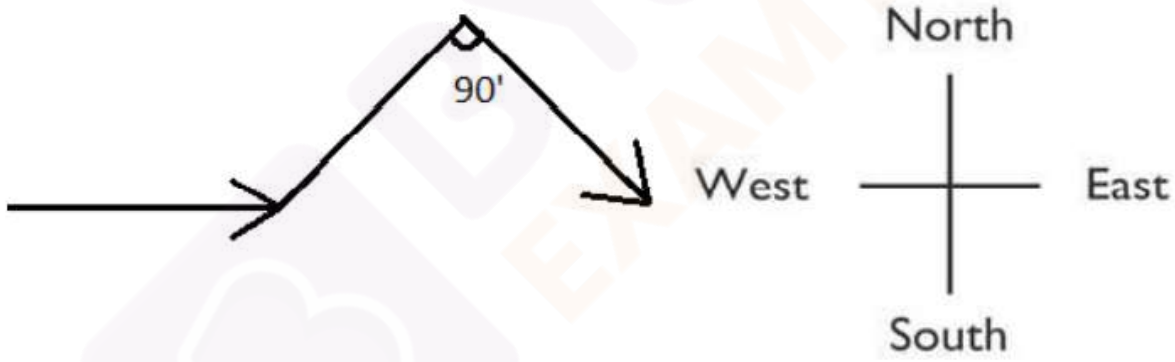
C. North

D. West

Ans. A

Sol.

From the information given in the question,



Hence, the final direction would be in the south east direction

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