CHAPTER
8

Directions Decision Making

LEARNING OBJECTIVES

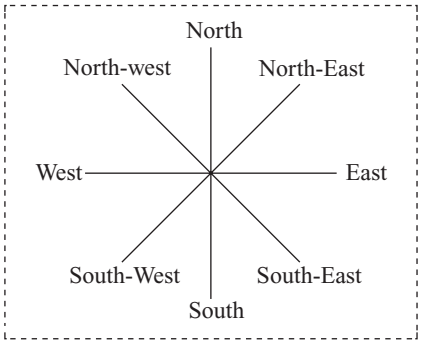
- Deciding the direction–pre movement and post movement
- Drawing the diagram
- Methods to solve the questions

Direction questions test student's ability to process the information based upon directions swiftly and make decisions on the basis of it. Further, mapping of the whole schema to things as per the conditions required and terms used like clockwise/anti-clockwise/southeast etc.

To solve these questions, student should have a clear idea of the directions and be able to draw the diagram as per the information given in the question.

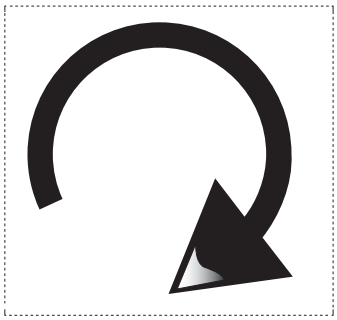
Pictorial Presentation of Directions/Movements on a Map

(a) Directions



If question mentions North East, it means it is equally inclined with North and East (exactly at 45°).

(b) Clockwise movement



(c) Anti-clockwise movement

We will now learn how to draw the diagrams and arrive at final conclusion.

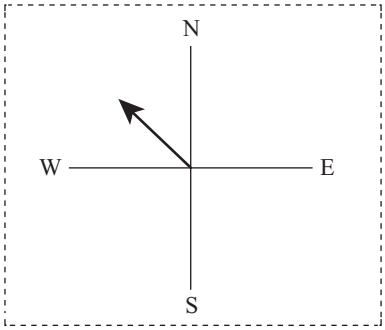
Example

1. A man is facing north-west. He turns 90° in the clockwise direction and then 135° in the anti-clockwise direction. Which direction is he facing now?

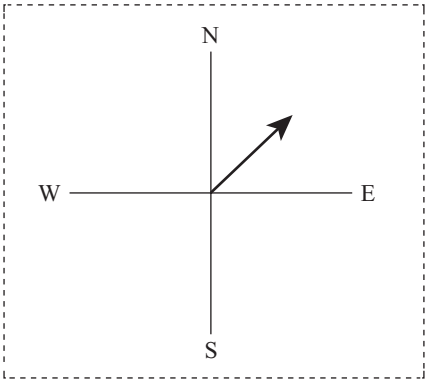
(a) East (b) West
(c) North (d) South

Solution

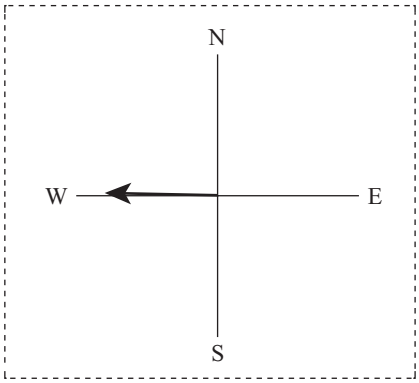
Step 1: A man is facing north-west.



Step 2: He turns 90º in the clockwise direction.



Step 3: And then 135º in the anti-clockwise direction.



As obvious from the diagram, he is now facing West.

Hence, option (b) is the correct answer.

Example

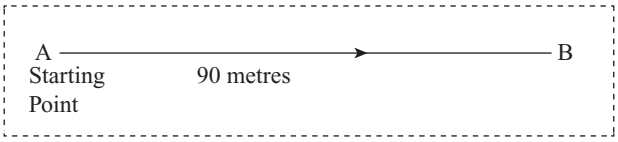
2. Goki is looking for his wife Vartika. He went 90 metres in the east before turning to his right. He went 20 metres before turning to his right again. He walked 30 metres further to look for Vartika at his uncle's place, but was told that Vartika has already left. Disappointed he went 100 metres to his north before meeting Vartika. How far did Goki meet his wife from starting point?

(a) 80 metres (b) 100 metres

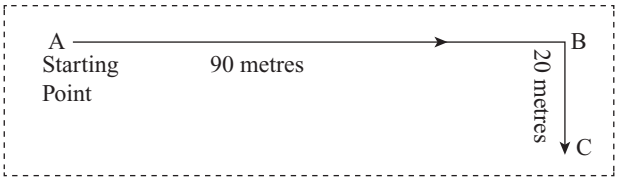
(c) 140 metres (d) 260 metres

Solution Let us see the diagram:

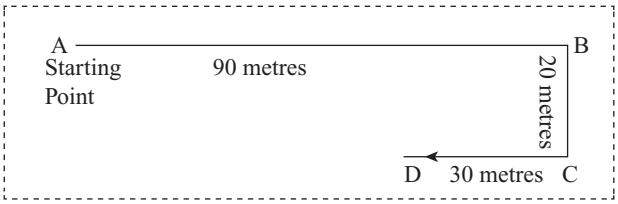
Step 1: Goki moves 90 m eastwards to B,



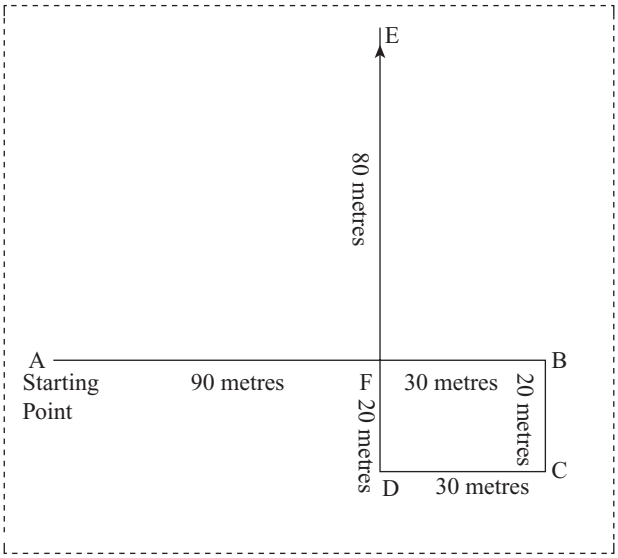
Step 2: He, then, turns right and moves 20 m to C. At this point we is facing towards B. So right would be downwards.



Step 3: He again turns right and moves 30 m up to D.



Step 4: Finally, he turns right and moves 100 m up to E.



Clearly, AB = 90 m, BF = CD = 30 m. So, AF = AB – BF = 60 m. Also DE = 100 m, DF = BC = 20 m.

So, EF = DE – DF = 80 m.

So, Goki found Vartika at a distance = AE = $\sqrt{AF^2+FE^2}$ = 100 m.

Hence, option (b) is the correct answer.

Example

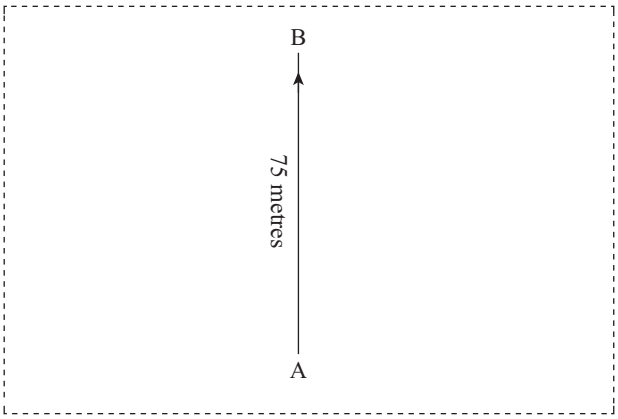
3. Neha Kavi moved a distance of 75 metres towards the north. She then turned to her left and walked for 25 metres, turned left again and walked 80 metres. Finally, she turned to the right at an angle of 45º. In which direction was she moving finally?

(a) North-east (b) North-west

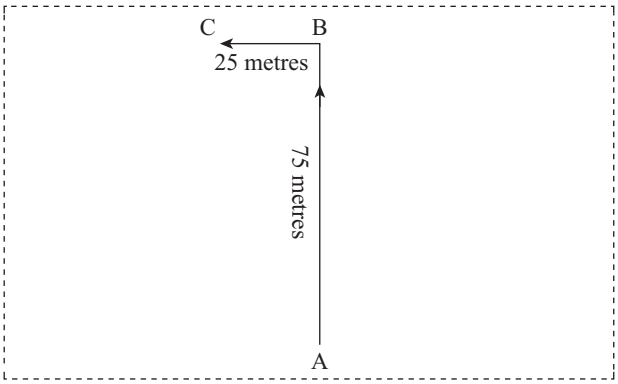
(c) South (d) South-west

Solution Let us see the diagram:

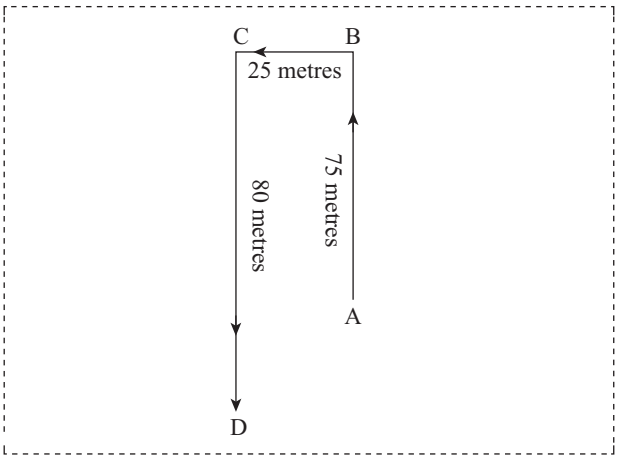
Step 1: Neha Kavi moved a distance of 75 metres towards north to reach point B.



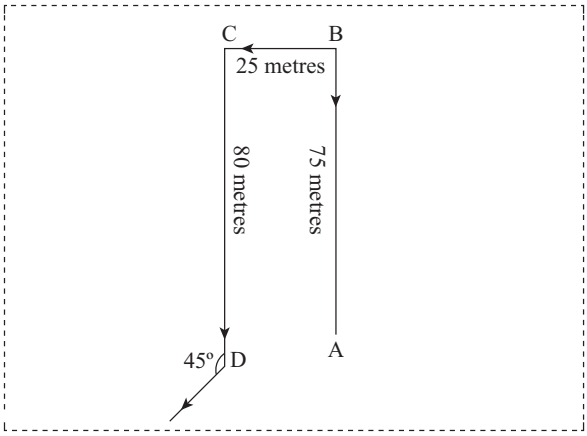
Step 2: She turned left and walked 25 m to reach point C.



Step 3: She then turned left again and moved 80 m to D.



Step 4: Turning to the right at an angle of 45º.



It can be seen through the diagram that she is finally moving in the South-west direction.

Hence, option (d) is the correct answer.

Example

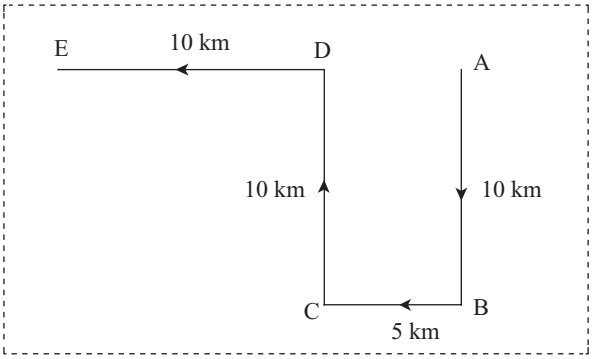
4. One day, Dileep left his home and walked 10 km southwards, turned right and walked 5 km, turned right and walked 10 km, walked left and then walked 10 km. How many kilometres will he have to walk to reach his home straight?

(a) 10 km (b) 15 km
(c) 20 km (d) 25 km

Solution Now we will draw the whole situation in one unified diagram.

Dileep starts from his home at A, walks 10 km southwards till B, turns right and moves 5 km till C, turns right again and walks 10 km till D and finally turns left and walks 10 km till E.

It can be seen that his distance from initial position A = AE = AD + DE = BC + DE = (5 + 10) km = 15 km. Hence option (b) is the answer.



Example

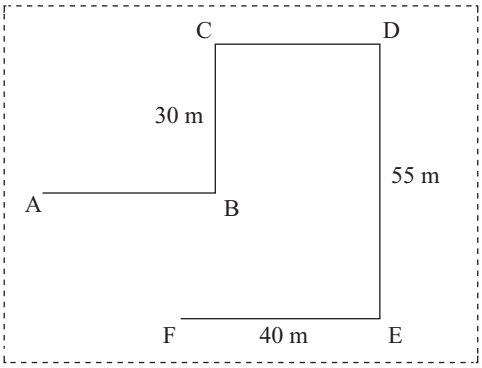
5. Tanay is standing facing north. Turning to his right, he walks 25 metres. He then turns to his left and walks

30 metres. He, further, walks 25 metres to his right. He then walks to his right again and walks 55 metres. Finally, he turns to the right and walks 40 metres. In which direction is he now from his starting point?

(a) South-west (b) South

(c) North-west (d) South-east

Solution



Tanay moves towards right from north direction. Therefore, he walks 25 m towards east to B, turns left, and moves 30 m to C, turns right and goes 25 m to D.

At D, he turns to right towards south and walks 55 m to E.

Next, he again turns to right and walks 40 m to F, which is his final position.

F is to the south-east of A. Therefore, he is to the south-east from his starting point.

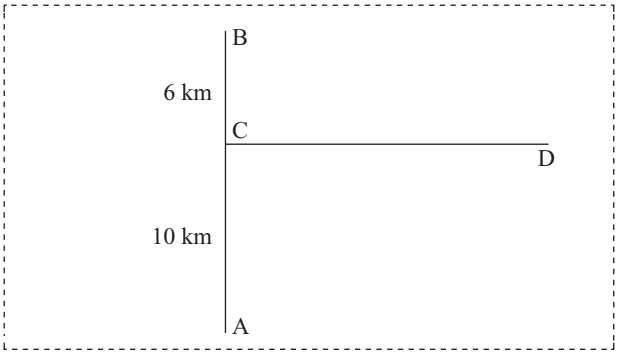
Hence, option (d) is the correct answer.

Example

6. Kaveri walks 10 km towards North. From there she walks 6 km towards South. Then, she walks 3 km towards East. How far and in which direction is she with reference to her starting point?

Solution

Let us first draw the diagram:



Clearly, Kaveri moves from A 10 km northwards to reach point B, then moves 6 km southwards to reach point C, turns towards East and walks 3 km to reach point D.

Then, AC = (AB – BC) = (10 – 6) = 4 km and CD = 3 km.

So, Kaveri's distance from starting point A = AD = $\sqrt{AC^2+CD^2} = \sqrt{4^2+3^2}$ = 5 km.

Also, D is to the North-east of A.

Hence, option (d) is the correct answer.

Example

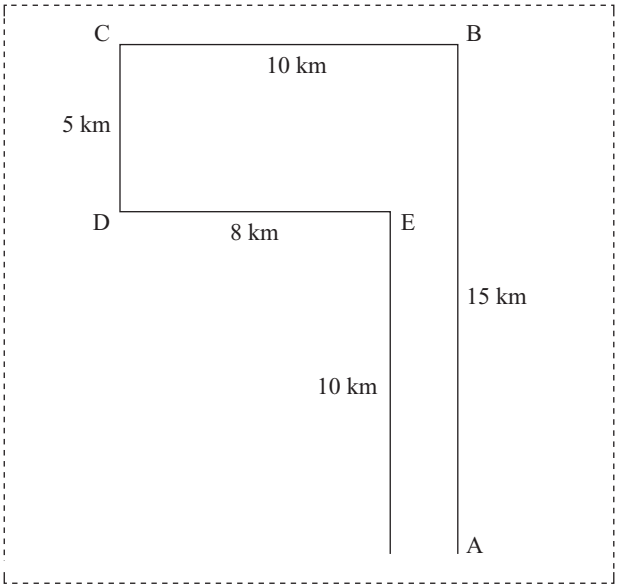
7. Gyan Prakash left for his college in his car. He drove 15 km towards north and then 10 km towards west. He then turned to the south and covered 5 km. Further, he turned to the east and moved 8 km. Finally, he turned right and drove 10 km. how far and in which direction is he from his starting point?

(a) 2 km West (b) 5 km East

(c) 3 km North (d) 6 km South

Solution

Let us see the diagram:



Gyan Prakash drove 15 km from A to B northwards and then 10 km from B to C towards west.

He then moves 5 km southwards from C to D and 8 km eastwards up to E.

Finally, he turned right and moved 10 km up to F.

So we can conclude that A and F lie in the same straight line and F lies to the west of A.

Hence Gyan Prakash's distance from the starting point A = AT = (BC – DE) = (10 – 8) km = 2 km.

Hence, option (a) is the correct answer.

PRACTICE EXERCISES

Q.1 I am facing east; I turn 100º in the clockwise direction and then 145º in the anti-clockwise direction. Which direction am I facing now?
(a) East (b) North-east
(c) North (d) South-west

Q.2 Amit walks 10 kilometers towards South. From there, he walks 6 kilometers towards North, then, he walks 3 kilometers towards his left. How far and in which direction is he with reference to his starting point?
(a) 5 kilometers South-west
(b) 5 kilometers North-east
(c) 7 kilometers east
(d) 7 kilometers West

Q.3 Mudit walks 20 metres towards North. He then turns left and walks 40 metres. He again turns left and walks 20 metres. Further, he moves 20 metres after turning to the right. How far is he from his starting point?
(a) 20 metres (b) 30 metres
(c) 50 metres (d) 60 metres

Q.4 Rajat starts from his home towards West. After walking for 30 metres, he turned right and walked 20 metres. Then he turned left and after walking a distance of 10 metres, turned to his left again and walked 40 metres. He now turns to the left and walks 5 metres. Finally, he turns to his left. In which direction is he walking now?
(a) North (b) South
(c) East (d) South-west

Q.5 Priyanka leaves from her home. She first walks 30 metres in North-west direction and then 30 metres in South-west direction. Next, she walks 30 metres in Southeast direction. Finally, she turns towards her house. In which direction is she moving?
(a) North-east (b) North-west
(c) south-east (d) South-west

Q.6 Surender goes 30 metres north, then turns right and walks 40 metres, then again turns right and walks 20 metres, then again turns right and walks 40 metres. How many metres is he from his starting point?
(a) 0 (b) 10
(c) 20 (d) 40

Q.7 Vineet walks 30 metres towards South. Then, turning to his right, he walks 30 metres. Then, turning to his left, he walks 20 metres, again, he turns to his left and walks 30 metres. How far is he from his starting point?
(a) 20 metres (b) 30 metres
(c) 60 metres (d) 50 metres

Q.8 Starting from a point P, Sumit walked 20 metres towards South, he turned left and walked 30 metres. He then turned left and walked 20 metres. He again turned left, walked 40 metres, and reached a point Q. How far and in which direction is the point Q from the point?
(a) 20 metres West (b) 10 metres East
(c) 10 metres West (d) 10 metres North

Q.9 Vijayendra walks 1 km towards East and then he turns to South and walks 5 km. Again, he turns to East and walks 2 km, after this he turns to North and walks 9 km now, how far is he from his starting point?
(a) 3 km (b) 4 km
(c) 5 km (d) 7 km

Q.10 Munu went 15 km to the west from his house, then turned left and walked 20 km. She then turned East and walked 25 km and finally turning left covered 20 km. How far was she from her house?
(a) 5 km (b) 10 km
(c) 40 km (d) 80 km

Q.11 Going 50 m to the South of her house, Ruchi turns left and goes another 20 m. Then, turning to North, she goes 30 m and then starts walking to her house. In which direction is she walking now?
(a) North-west (b) North
(c) South-east (d) East

Q.12 Maulik walks 20 m North, then he turns right and walks 30 m. Then he turns right and walks 35 m. then he turns left and walks 15 m. Further, he again turns left and walks 15 m. In which direction and how many metres away is he from his starting point?
(a) 15 metres West (b) 30 metres East
(c) 30 metres West (d) 45 metres East

Q.13 Front of Anjali's house faces the East. From the backside of her house, she walks straight 50 metres, then turns to the right and walks 50 metres again. Finally, she turns towards left and stops after walking 25 metres. Anjali is in which direction from the starting point?
(a) South-east (b) North-east
(c) South-west (d) North-west

Q.14 Vikash walked 15 m towards north from his home. Then he turned west and walked 10 m. Then he turned south and walked 5 m. Lastly, turning to east, he walked 10 m. In which direction is he from his house?
(a) East (b) North
(c) South (d) West

Q.15 I am facing South now. I take two right turns walking, walk 20 m and 10 m respectively. Then I turn left and walk 10 m and then turning right walk 20 m. Then I turn right again and walk 60 m. In which direction am I from the starting point?
(a) North (b) North-west
(c) east (d) North-east

Q.16 Arun walks 10 metres in front and 10 metres to his right. Then every time turning to his left, he walks 5 m, 15 m and 15 m respectively. How far is he from his starting point?
(a) 5 m (b) 10 m
(c) 15 m (d) 20 m

Q.17 A man walks 1 mile towards East and then he turns to South and walks 5 miles. After that, he turns to East and walks 2 miles further. Finally, he turns to his North and walks 9 miles. How far is he from his starting point (in miles)?
(a) 2 (b) 3
(c) 4 (d) 5

Q.18 Laxman went 15 km to the west from his house, then turned left and walked 20 km. He then turned East and walked 25 km and finally turning left covered 20 kms. How far was he from his house?
(a) 5 km (b) 10 km
(c) 40 km (d) 80 km

Q.19 Ramesh goes 50 m to the South of his house. Then he turns left and goes another 20 m. Then, turning to the North, he goes 30 m and then starts walking to his house. In which direction is he walking now?
(a) North-west (b) North
(c) South-east (d) East

Q.20 Door of Chumu's house faces the East. From the backside of his house, he walks 50 metres straight, then turns to the right and walks 50 metres again. Finally, he turns towards left and stops after walking 25 metres. Now, Chumu is in which direction from the starting point?
(a) South-east (b) North-east
(c) South-west (d) North-west

Q.21 There was a 4-direction pole situated at a crossroad—with arrows pointing towards four directions East, West, South and North. Due to an accident that damaged the pole, east pointer is now towards South. Unfortunately, a man who wanted to go actually northwards took the help of this direction pole and started moving towards north as per the pole. Which direction is this man actually moving towards?
(a) West (b) North
(c) South (d) East

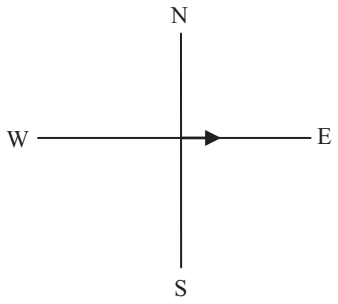
Q.22 In the above question, if the north direction pointer starts showing south direction, then how many direction pointers are still showing the right direction?
(a) 0 (b) 1
(c) 2 (d) 3

ANSWER KEYS

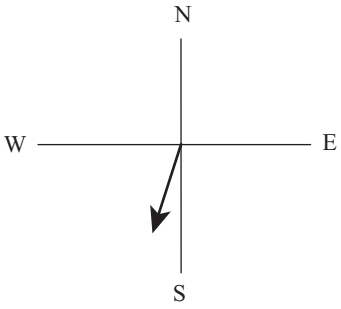
1. (b)	**2.** (a)	**3.** (d)	**4.** (a)	**5.** (a)	**6.** (b)	**7.** (d)	**8.** (c)	**9.** (c)	**10.** (b)
11. (a)	**12.** (d)	**13.** (d)	**14.** (b)	**15.** (d)	**16.** (a)	**17.** (d)	**18.** (b)	**19.** (a)	**20.** (d)
21. (d)	**22.** (a)								

HINTS AND SOLUTIONS

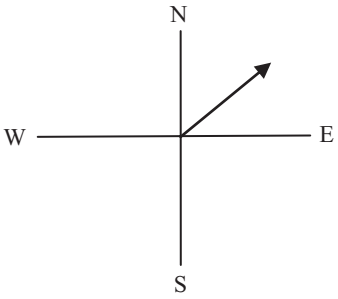
1. Step 1: facing east



Step 2: turns 100° in clockwise direction.



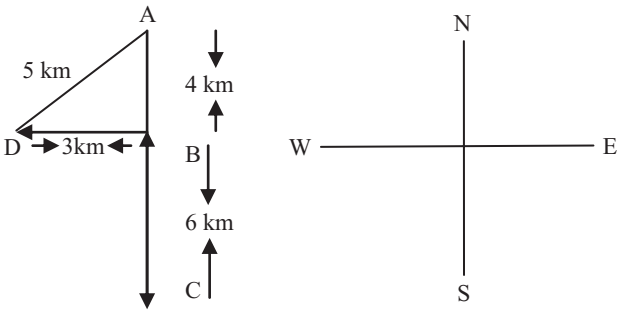
Step 3: then turns 145° in anticlockwise direction.



As can be seen from the diagram, I am facing North-East direction.

Hence, option (b) is the correct answer.

2.



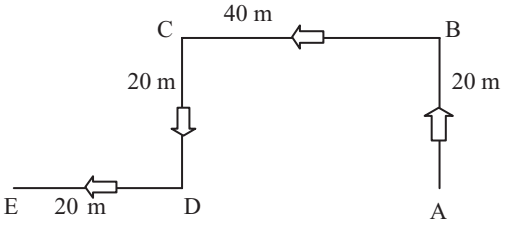
$AD^2 = AB^2 + BD^2 = 3^2 + 4^2$

Or, AD = 5 km

Thus, Amit is 5 km in north-west direction with reference to his starting point.

Hence, option (a) is the correct answer.

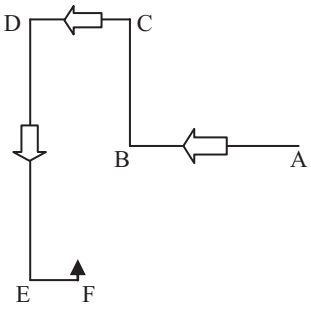
3.



Thus, Mudit is 60m away from starting point.

Hence, option (d) is the correct answer.

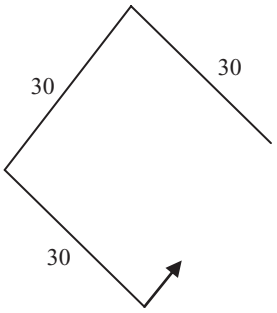
4.



Thus, Rajat is walking in north direction.

Hence, option (a) is the correct answer.

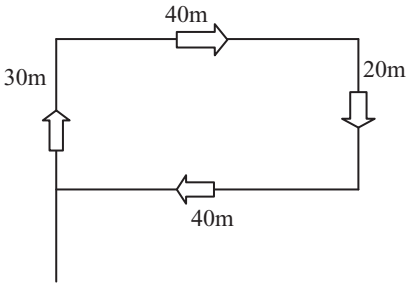
5.



Thus, Priyanka is moving in north-east direction.

Hence, option (a) is the correct answer.

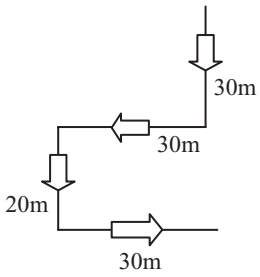
6.



Thus, Surendra is 10m away from starting point.

Hence, option (b) is the correct answer.

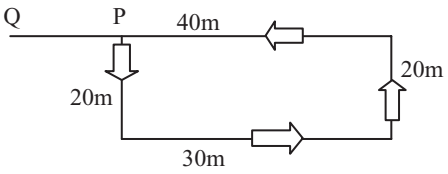
7.



Thus, Vineet is 50 m away from starting point.

Hence, option (d) is the correct answer.

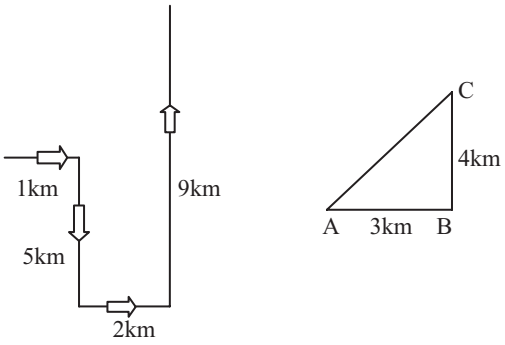
8.



Thus, Q is 10m in west direction.

Hence, option (c) is the correct answer.

9.



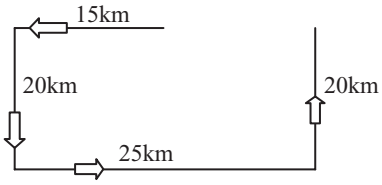
$AC^2 = AB^2 + BC^2 = 3^2 + 4^2$

Or, AC= 5 km.

Thus, Vijendra is 5km away from starting point.

Hence, option (c) is the correct answer.

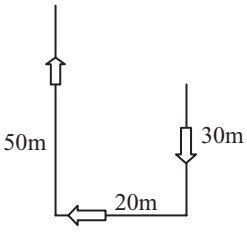
10.



Thus, Munu is 10km away from her home.

Hence, option (b) is the correct answer.

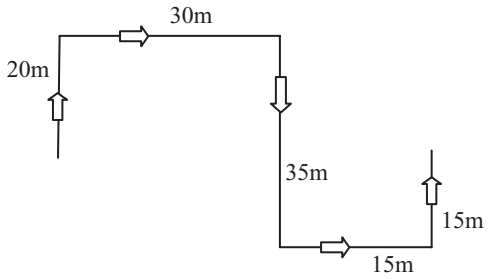
11.



Thus, Ruchi is walking in north-west direction.

Hence, option (a) is the correct answer.

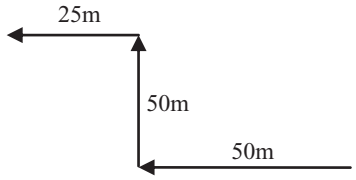
12.



Thus, Maulik is 45m towards east from starting point.

Hence, option (d) is the correct answer.

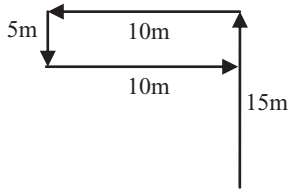
13.



Thus, Anjali is in south-west direction from starting point.

Hence, option (d) is the correct answer.

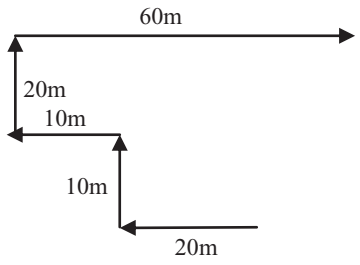
14.



Thus, Vikash is in North direction from his house.

Hence, option (b) is the correct answer.

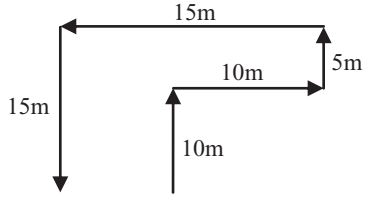
15.



Thus, I am in North-East direction from starting point.

Hence, option (d) is the correct answer.

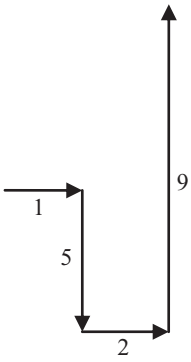
16.

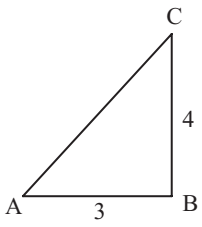


Thus, Arun is 5m from the starting point.

Hence, option (a) is the correct answer.

17.





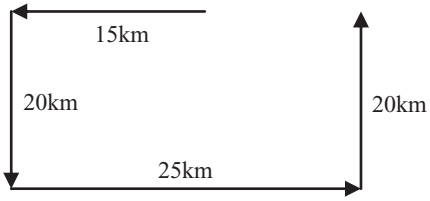
$AC^2 = AB^2 + BC^2 = 3^2 + 4^2$

Or, AC= 5miles.

Thus, the man is 5 miles from the starting point.

Hence, option (d) is the correct answer.

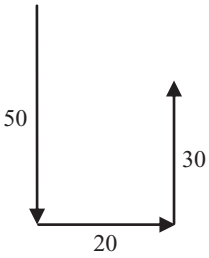
18.



Thus, Laxman is 10km away from his house.

Hence, option (b) is the correct answer.

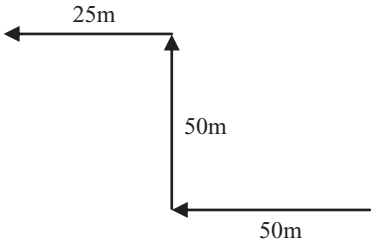
19.



Thus, to reach his house, Ramesh is walking in North-West direction.

Hence, option (a) is the correct answer.

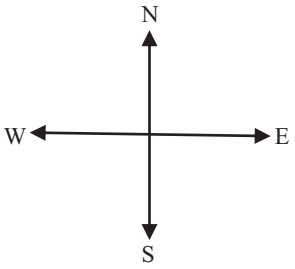
20.



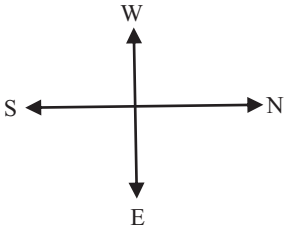
Thus, Chumu is in North-West direction from starting point.

Hence, option (d) is the correct answer.

21. Originally,



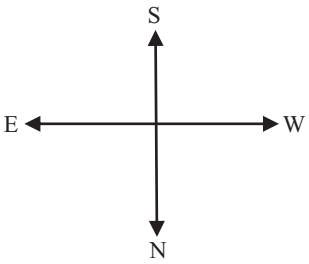
After Accident the position of pointers



Thus, the man is actually moving in East direction.

Hence, option (d) is the correct answer.

22. After accident, the position of pointers,



Thus, none of the pointer is showing the right direction after accident.

Hence, option (a) is the correct answer.