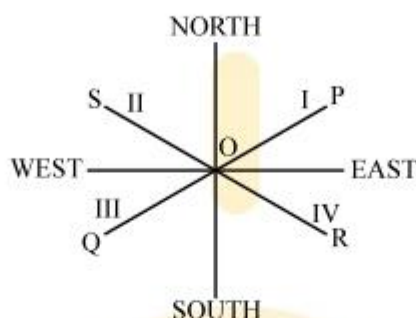


## DIRECTION SENSE

There are four directions such as North, South, East and West. The word NEWS came from North, East, West and South. There are four regions : North-East (i); North-West (ii); South-East (iii); South-West (iv).



The directions OP, OS, OQ and OR are -

North-East direction; North-West direction; South-West direction; and South-East direction respectively.

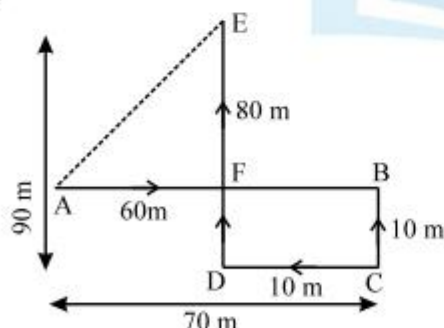
**Note :** The candidate must distinguish between the regions and directions, i.e., between North-East region and north-East direction. If you move with your face East-wards, your left hand is towards North and your right hand is towards South. Similarly the positions of the directions of the hands can be fixed when you move in any of the other three directions.

### ◆ EXAMPLES ◆

**Ex.1** Sanjay went 70 metres in the East before turning to his right. He went 10 metres before turning to his right again and went 10 metres from this point. From here he went 90 metres to the North. How far was he from the starting point ?

- (A) 80 metres      (B) 100 metres  
(C) 140 metres    (D) 260 metres

**Sol.(B)**



The movement of Sanjay from A to E are as shown in figure.

Now,  $AF = (AB - FB)$

$$= (AB - DC) = (70 - 10) \text{ m} = 60 \text{ m}$$

$$EF = (DE - DF) = (DE - BC)$$

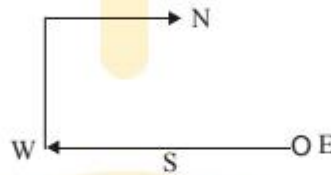
$$= (90 - 10) \text{ m} = 80 \text{ m}.$$

$$\begin{aligned}\text{Required distance} &= AE = \sqrt{AF^2 + EF^2} \\ &= \sqrt{(60)^2 + (80)^2} = 100 \text{ m}\end{aligned}$$

**Ex.2** I start from my home and go two kilometres straight. Then I turn towards my right and go one kilometre. I turn again towards my right and go one kilometre again. If I am North-west from my house then in which direction did I go in the beginning ?

- (A) North (B) South  
(C) East (D) West

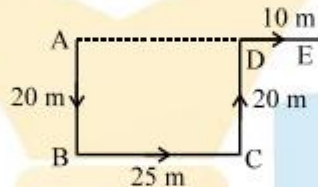
**Sol.** (D) The following diagrams clarifies my movements.



**Ex.3** Raj walked 20 metres towards South. Then he turned to his left and walked 25 metres. He then turned to his left and walked 20 metres. He again turned to his right and walked 10 metres. At what distance is he from the starting point and in which direction ?

- (A) 35 metres, East (B) 35 metres, North  
(C) 40 metres, East (D) 60 metres, East

**Sol.(A)**



The movements of Raj are as shown in figure

∴ Raj's distance from starting point A

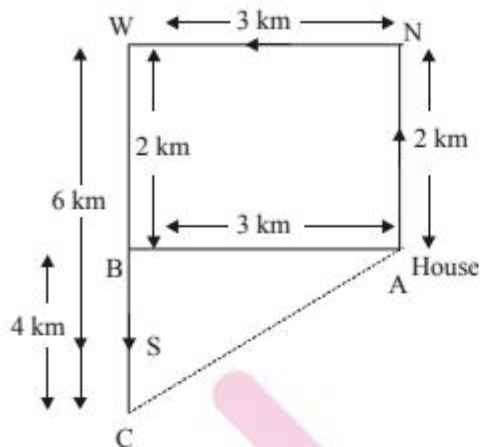
$$= AE = (AD + DE)$$

$$= (BC + DE) = (25 + 10) \text{ m} = 35 \text{ m}$$

So, E is to the East of A

**Ex.4** Mohan started from his house, walked 2 km North, then 3 km West, then 6 km South. How faraway from his house was he then ?

**Sol.** See the figure.



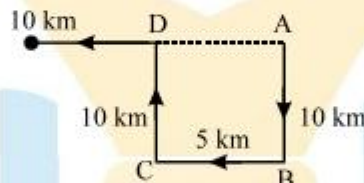
$$\begin{aligned}(AC)^2 &= (AB)^2 + (BC)^2 \\ &= 9 + 16 \\ &= 25 \\ AC &= 5 \text{ km.}\end{aligned}$$

**Ans.**

**Ex.5** Anil left home and cycled 10 km Southwards, turned right and cycled 5 km & turned right and cycled 10 km and turned left and cycled 10 km. How many kilometres will he have to cycle to reach his home straight ?

- (A) 10 km (B) 15 km  
(C) 20 km (D) 25 km

**Sol.(B)**



Clearly, Anil starts from home at A, moves 10 km Southwards upto B, turns right and moves 5 km upto C, turns right again and moves 10 km upto D and finally turns left and moves 10 km upto E. Thus, his distance from initial position A

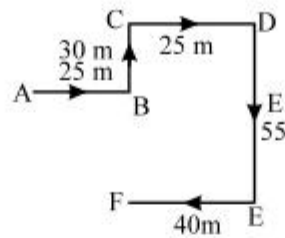
$$\begin{aligned}&= AE = AD + DE \\ &= BC + DE = (5 + 10) \text{ km} = 15 \text{ km.}\end{aligned}$$

Hence, the answer is (B).

**Ex.6** Amit faces towards North. Turning to his right he walks 25 metres. He then turns to his left and walks 30 metres. Next, he moves 25 metres to his right. He then turns to his right again and walks 55 metres. Finally, he turns to the right and moves 40 metres. In which direction is he now from his starting point ?

- (A) South-West (B) South  
(C) North-West (D) South-East

Sol.(D)



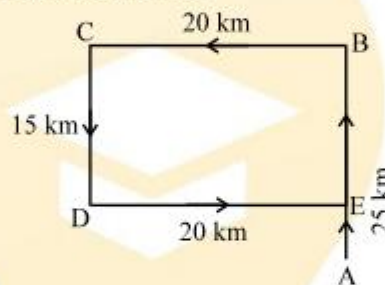
Amit turns towards right from North direction. So, he walks 25 m towards East upto B, turns left and moves 30 m upto C, turns right and moves 25 m upto D. At D he turns to right towards the South and walks 55 m upto E. Next, he again turns to right and walks 40 m upto F. Which is his final position. F is to the South-East of A. So, he is to the South-East from his starting point. Hence, the answer is (D).

**Ex.7** From his house, Rajan went 25 kms to the North. Then he turned West and covered 20 kms. Then he turned South and covered 15 Kms/ Finally, turning to East, he covered 20 kms. In which direction was he from his house ?

(A) East (B) West (C) North (D) South

**Sol.(C)** The movements of Rajan are as shown in figure. (A to B, B to C, C to D and D to E)

Clearly, his final position is E which is to the

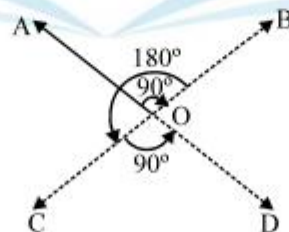


North of his house at A.

**Ex.8** A man is facing North-West. He turns  $90^\circ$  in the clockwise direction, then  $180^\circ$  in the anticlockwise direction and then another  $90^\circ$  in the same direction. Which direction is he facing now ?

(A) South (B) South-West  
(C) West (D) South-East

**Sol.**

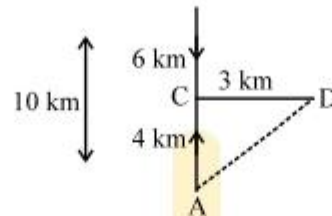


As shown in figure the man initially faces in the direction OA. On moving  $90^\circ$  clockwise, he faces in the direction OB. On further moving  $180^\circ$  anticlockwise, he faces in the direction OC. Finally on moving  $90^\circ$  anti-clockwise, he faces in the direction OD, which is South-East.

**Ex.9** Kishen walks 10 km towards North. From there, he walks 6 km towards South. Then, he walks 3 km towards East. How far and in which direction is he with reference to his starting point ?

- (A) 5 km, North (B) 5 km, North-East  
(C) 7 km, East (D) 7 km, West

**Sol.**



The movements of kishen are as shown in figure (A to B, B to C and C to D).  $AC = (AB - BC) = (10 - 6) \text{ km} = 4 \text{ km}$ . Clearly, D is to the North-East of A.

$\therefore$  Kishen's distance from starting point A

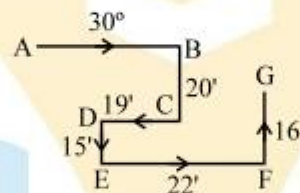
$$= AD = \sqrt{AC^2 + CD^2} = \sqrt{4^2 + 3^2} = \sqrt{25} = 5 \text{ km}$$

So, kishen is 5km to the North-East of his starting point.

**Ex.10** A rabbit run  $30^\circ$  towards East and turns to right, runs  $20'$  and turns to right; runs  $19'$  and again turns to left, runs  $15'$  and then turns to left, runs  $22'$  and finally turns to left and runs  $16'$ . Now, which direction is the rabbit facing ?

- (A) East (B) West (C) North (D) South

**Sol.(C)**

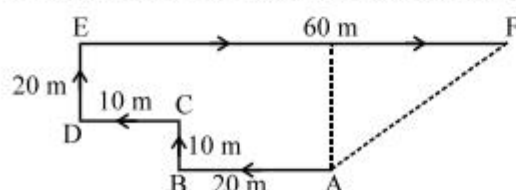


The movement of the rabbit from A to G are as show in figure. So, the rabbit's face is in North direction at the end of runs.

**Ex.11** I am facing South. I turn right and walk 20 m. Then I turn right again and walk 10 m. 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

**Sol.(D)** The movement of the person are from A to F, as shown in figure. Clearly, the final position is F which is to the Noth-East of the starting point A.



## EXERCISE

- Q.1** A man is facing south. He turns  $135^\circ$  in the anticlockwise direction and then  $180^\circ$  in the clockwise direction. Which direction is he facing now ?  
(A) North-east (B) North-west  
(C) South-east (D) South-west
- Q.2** A man is facing north-west. He turns  $90^\circ$  in the clockwise direction and then  $135^\circ$  in the anticlockwise direction. Which direction is he facing now ?  
(A) East (B) West  
(C) North (D) South
- Q.3** A man is facing north-west. He turns  $90^\circ$  in the clockwise direction, then  $180^\circ$  in the anticlockwise direction and then another  $90^\circ$  in the same direction. Which direction is he facing now ?  
(A) South (B) South west  
(C) West (D) South-east
- Q.4** I am facing east. I turn  $100^\circ$  in the clockwise direction and then  $145^\circ$  in the anticlockwise direction. Which direction am I facing now ?  
(A) East (B) North-east  
(C) North (D) South-west
- Q.5** Deepak starts walking straight towards east. After walking 75 metres, he turns to the left and walks 25 metres straight. Again he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point ?  
(A) 25 metres (B) 50 metres  
(C) 140 metres (D) None of these
- Q.6** Kishenkant walks 10 kilometres towards North. From there, he walks 6 kilometres towards South. then, he walks 3 kilometres towards East. How far and in which direction is he with reference to his starting point ?  
(A) 5 kilometres West  
(B) 5 kilometres North-east  
(C) 7 kilometres East  
(D) 7 kilometres West
- Q.7** A man leaves for his office from his house. He walks towards East. After moving a distance of 20 m, he turns towards South and walks 10 m. Then he walks 35 m towards the West and further 5 m towards the North. He then turns towards East and walks 15 m. What is the straight distance in metres between his initial and final positions ?  
(A) 0 (B) 5  
(C) 10 (D) cannot be determined  
(E) None of these

- Q.8** Gaurav 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 original position ?  
(A) 20 metres (B) 30 metres  
(C) 60 metres (D) None of these
- Q.9** Radha moves towards South-East a distance of 7 km, then she moves towards West and travels a distance of 14 m. From here, she moves towards North-west a distance of 7 m and finally she moves a distance of 4 m towards East and stood at that point. How far is the starting point from where she stood ?  
(A) 3 m (B) 4 m (C) 10 m (D) 11 m
- Q.10** Gopal starts from his house towards West. After walking distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving 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) West
- Q.11** A girl 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 South-east direction. Finally, she turns towards her house. In which direction is she moving ?  
(A) North-east (B) North-west  
(C) South-west (D) None of these
- Q.12** Sanjeev walks 10 metres towards the South. Turning to the left, he walks 20 metres and then moves to his right. After moving a distance of 20 metres, he turns to the right and walks 20 metres. Finally, he turns to the right and moves a distance of 10 metres. How far and in which direction is he from the starting point ?  
(A) 10 metres North (B) 20 metres South  
(C) 20 metres North (D) 10 metres South  
(E) None of these
- Q.13** Kashish 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 original position ?  
(A) 0 (B) 10  
(C) 20 (D) 40  
(E) None of these
- Q.14** I am facing South, I turn right again and walk 10 m. 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.15** A man walks 30 metres towards South. Then, turning to his right, he walks 30 metres. Then, tuning to his left, he walks 20 metres. Again, he turns to his left and walks 30 metres. How far is he from his initial position ?  
 (A) 20 metres (B) 30 metres  
 (C) 60 metres (D) 80 metres  
 (D) None of these
- Q.16** Ramakant walks northwards. After a while, he turns to his right and a little further to his left. Finally, after walking a distance of one kilometre, he turns to his left again. In which direction is he moving now ?  
 (A) North (B) South  
 (C) East (D) West
- Q.17** A man 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 his starting point ?  
 (A) 3 km (B) 4 km (C) 5 km (D) 7 km
- Q.18** Raj travelled from a point X straight to Y at a distance of 80 metres. He turned right and walked 50 metres, then again turned right and walked 70 metres. Finally, he turned right and walked 50 metres. How far is he from the starting point ?  
 (A) 10 metres (B) 20 metres  
 (C) 50 metres (D) 70 metres  
 (E) None of these
- Q.19** Laxman went 15 kms to the west from my house, then turned left and walked 20 kms. He then turned East and walked 25 kms finally turning left covered 20 kms. How far was he from his house ?  
 (A) 5 kms (B) 10 kms  
 (C) 40 kms (D) 80 kms
- Q.20** From his house, Lokesh went 15 kms to the North. Then he turned West and covered 10 kms. Then, he turned South and covered 5 kms. Finally, turning to East, he covered 10 kms. In which direction is he from his house ?  
 (A) East (B) West  
 (C) North (D) South
- Q.21** Going 50 m to the South of her house, Radhika turns left and goes another 20 m. Then, turning to the 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-west (D) East

- Q.22** A walks 10 metres in front and 10 metres to the right. Then every time turning to his left, he walks 5, 15 and 15 metres respectively. How far is he now from his starting point ?
- (A) 5 metres      (B) 10 metres  
(C) 15 metres      (D) 20 metres  
(E) 23 metres
- Q.23** Rasik 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. Then he again turns left and walks 15 m. In which direction and how many metres away is he from his original position ?
- (A) 15 metres West      (B) 30 metres East  
(C) 30 metres West      (D) 45 metres East
- Q.24** A child is looking for his father. He went 90 metres in the East before turning to his right. He went 20 metres before turning to his right again to look for his father at his uncle's place 30 metres from this point. His father was not there. From here he went 100 metres to the North before meeting his father in a street. How far did the son meet his father from the starting point ?
- (A) 80 metres      (B) 100 metres  
(C) 140 metres      (D) 260 metres



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	B	D	B	E	B	B	D	C	A	A	B	B	D	E
Ques.	16	17	18	19	20	21	22	23	24						
Ans.	D	C	A	B	C	A	A	D	B						