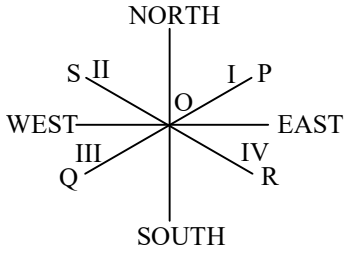
DIRECTION SENSE

6
CHAPTER

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.

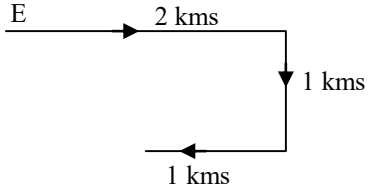
Note : The candidate must distinguish between the regions and directions, i.e., between North-East region and north-East direction. If you move with your face East-wards, your left hand is towards North and your right hand is towards South. Similarly the positions of the directions of the hands can be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

❖ EXAMPLES ❖

Ex.1 I go two kilometres towards East. I turn right and go one kilometre I turn right and go one kilometre again. In which direction am I know from my starting place.

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

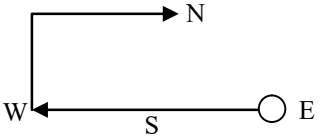
Sol. [C] The following diagram indicates my movement starting point.



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 ?

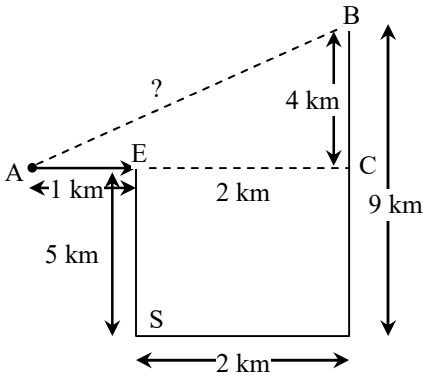
(A) North (B) South
(C) East (D) West

Sol. [D] The following diagrams clarifies my movements.



Ex.3 A man travels one km towards East from a specific point of place; there after 5 kms towards South, then 2 kms towards East and then finally 9 km towards North. How far is he from the starting point of place ?

Sol. See the figure.



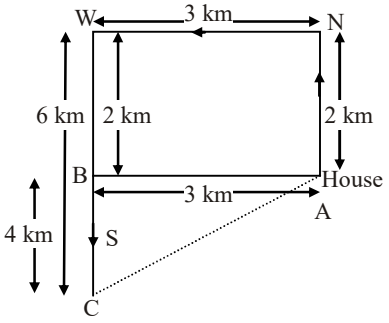
$(AB)^2 = (AC)^2 + (BC)^2$

$= 9 + 16 = 25$

AB = 5 km. **Ans.**

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.



$(AC)^2 = (AB)^2 + (BC)^2$

$= 9 + 16$

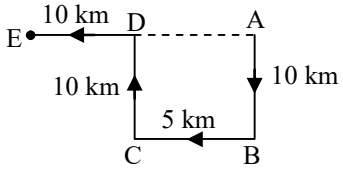
$= 5$ km. **Ans.**

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

$= AE = AD + DE$

$= BC + DE = (5 + 10)$ km $= 15$ km.

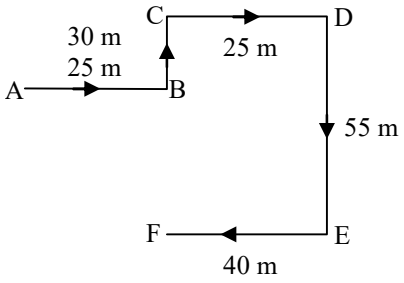
Hence, the answer is (B).

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]

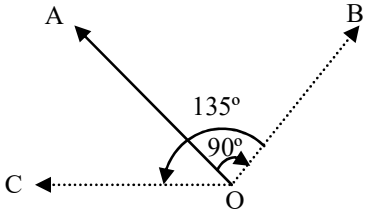


Amit turns towards right from North direction. So, he walks 25 m towards East upto B, turns left and moves 30 m upto C, turns right and moves 25 m upto D. At D he turns to right towards the South and walks 55 m upto E. Next, he again turns to right and walks 40 m upto F. Which is his final position. 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 A man is facing North-West. He turns 90º in the clockwise direction and then 135º in the anticlockwise direction. Which direction is he facing now ?

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

Sol. [B]



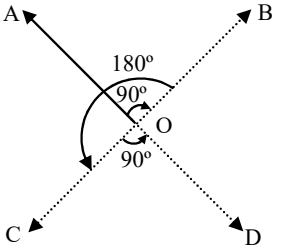
As shown in the figure, the man faces in the direction OA. After moving 90º clockwise, the man faces in the direction OB. On moving to 135º anticlockwise, he faces in the direction OC, which is West.

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

(A) South (B) South-West

(C) West (D) South-East

Sol. [D]



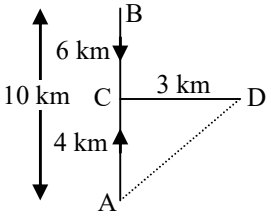
As shown in figure the man initially faces in the direction OA. On moving 90º clockwise, he faces in the direction OB. On further moving 180º anticlockwise, he faces in the direction OC. Finally on moving 90º anti-clockwise, he faces in the direction OD, which is South-East.

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) km = 4 km.
Clearly, D is to the North-East of A.

∴ Kishen's distance from starting point A

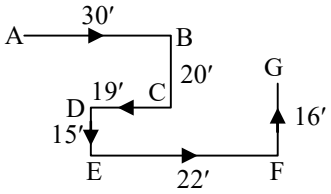
$= AD = \sqrt{AC^2 + CD^2}$

$= \sqrt{4^2 + 3^2} = \sqrt{25} = 5$ km

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

Ex.10 A rabbit run 30′ 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

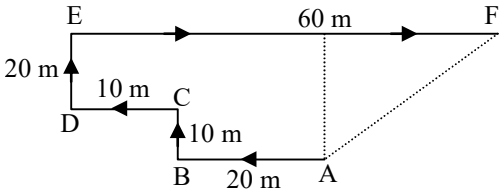
Sol.[C]



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.

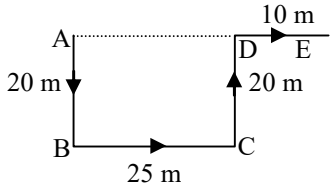
Ex.11 I am facing South. I turn right and walk 20 m. Then I turn right again and walk 10 m. Then I turn left and walk 10 m and then turning right walk 20 m. Then I turn right again and walk 60 m. In which direction am I from the starting point ?
(A) North (B) North-west
(C) East (D) North-East

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 North-East of the starting point A.



Ex.12 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]

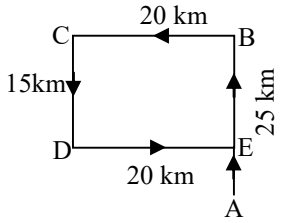


The movements of Raj are as shown in figure

∴ Raj's distance from starting point A
= AE = (AD + DE)
= (BC + DE) = (25 + 10) m = 35 m
So, E is to the East of A

Ex.13 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

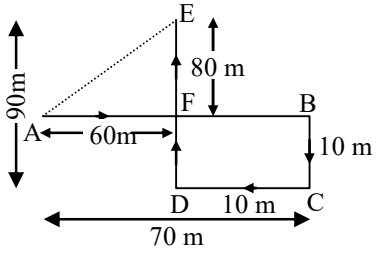
Sol.[C] The movements of Rajan are as shown in figure. (A to B, B to C, C to D and D to E)
Clearly, his final position is E which is to the



North of his house at A.

Ex.14 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) m = 60 m
EF = (DE – DF) = (DE – BC)
= (90 – 10) m = 80 m.

Required distance = AE = $\sqrt{AF^2 + EF^2}$

$= \sqrt{(60)^2 + (80)^2} = 100$ m

EXERCISE

Q.1 Mohan travels 5 kms West wards, then he turns left and travels 3 kms and further turns left again and travels 9 kms. How far is he from the starting point ?

(A) 15 kms (B) 5 kms

(C) 4 kms (D) 21 kms

Q.2 Ram and Shyam start walking from the same point. Ram goes South and covers 5 kms, then turns left and covers 6 kms. Shyam goes West and covers 2 kms, then turns left and covers 5 kms. How far apart are they from each other ?

(A) 8 kms (B) 6 kms

(C) 7 kms (D) 9 kms

Q.3 A and B start walking in opposite direction. A covers 3 kms and B covers 4 kms. Then A turns right and walks 4 kms and B turns right and walks 3kms. How far is each from the starting point ?

(A) 5 kms (B) 4 kms

(C) 3 kms (D) 9 kms

Q.4 X and Y start walking in opposite directions X walked 7 kms, Y walked 8 kms. There after both turned to their left and X walked 2 kms and Y walked 3 kms. They terned to left again and walked 4 kms. How much distant apart are they from each other ?

(A) 8 kms (B) 7 kms

(C) 6 kms (D) 9 kms

Q.5 A watch reads 7 : 30. If the minute hand points to west, in which direction does the hour hand point ?

(A) North-East (B) South-East

(C) North-West (D) North

Q.6 A man walked 2 mts towards North, turned West and walked 5 mts, then turned North again and walked 1 mts and then turned East and walked 9 kms. How far away is he from the starting point ?

(A) 1 mt (B) 2 mts

(C) 3 mts (D) 5 mts

Q.7 B is to North-East of A, C is to West of B and North-West of A and D is to the south of C in line with BA. In which direction of A is D located ?

(A) North (B) East

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

Q.8 My friend and I start simulataneously towards each other from two places 120 mts. apart. After walking 40 mts, my friend turns left and goes 10 mts and then turns right and goes 20 mts and then turns right again and comes back to the road on which he had started walking. If we walk with the same speed, what is the distance between us at this point of time ?

(A) 50 mts (B) 20 mts

(C) 30 mts (D) 40 mts

Q.9 I went 20 m to the south, then I turned North and covered 10 m and then West and covered 10 m. In which direction am I from my house?

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

(C) East (D) West

Q.10 If North-West become North, North-East become East and so on. What will South become ?

(A) North-East (B) South-East

(C) South (D) South-West

Q.11 A dog is taken out every evening by the owner whose house faces East. They walk 100 m West, then 250 m in the South. In which direction should they take to reach home ?

(A) North-East (B) North

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

Q.12 Sonu wants to go to the market. He starts from his house towards South, reaches at a crossing after 20 mts. He turns towards East goes 10 mts till the second crossing and turns again, moves towards North straight for 20 mts where a marketing complex exists. In which direction is the market from his house ?

(A) North (B) South

(C) East (D) West

Q.13 If North-East become south, South-East become West and so on. What will East become ?

(A) North-East (B) South-East

(C) North-West (D) South

Q.14 A man started walking towards South. After walking 20 m he turned right and walked 30 m. He then turned right and walked 20 m. He again turned right and walked 40 m. How far was he from his original position ?

(A) 50 m (B) 20 m

(C) 10 m (D) 15 m

Q.15 A man walks 10 kms. towards south. From there he walks 6 kms towards North. Then he walks 3 kms towards West. How far and in which direction is he with reference to his starting point ?

(A) 7 kms towards East

(B) 5 kms towards South-West

(C) 5 kms towards North-East

(D) 7 kms towards West

Q.16 A man is facing south. He turns 135º in the anticlockwise direction and then 180º in the clockwise direction. Which direction is he facing now ?

(A) North-east (B) North-west

(C) South-east (D) South-west

Q.17 A man is facing north-west. He turns 90º in the clockwise direction and then 135º in the anticlockwise direction. Which direction is he facing now ?

(A) East (B) West

(C) North (D) South

Q.18 A man is facing north-west. He turns 90º in the clockwise direction, then 180º in the anticlockwise direction and then another 90º in the same direction. Which direction is he facing now ?

(A) South (B) South west

(C) West (D) South-east

Q.19 I am facing east. I turn 100º in the clockwise direction and then 145º in the anticlockwise direction. Which direction am I facing now ?

(A) East (B) North-east

(C) North (D) South-west

Q.20 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.21 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.22 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

Q.23 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.24 Radha moves towards South-East a distance of 7 km, then she moves twoards 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.25 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.26 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.27 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

Q.28 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

Q.29 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.30 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) none of these

Q.31 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.32 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.33 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

Q.34 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.35 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.36 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.37 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

Q.38 Rasik walks 20 m North. Then the 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.39 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

Q.40 The town of Paranda is located on Green lake. The town of Akram is West of Paranda. Tokhada is East of Akram but West of Paranda. Kakran is East of Bopri but West of Tokhada and Akram. If they are all in the same district, which town is the farthest in West ?

(A) Paranda (B) Kakran

(C) Akram (D) Bopri

Q.41 There are four towns P, Q, R and T. Q is to the South-west of P, R is to the east of Q and south-east of P, and T is to the north of R in line with QP. In which direction of P is T located ?

(A) South-east (B) North

(C) North-east (D) East

Direction : Read the following statements and answer the questions.

Six friends A, B, C, D, E and F are sitting in a closed circle facing the centre. E is to the left of D. C is between A and B. F is between E and A.

Q.42 Who is to the left of B ?

(A) A (B) D

(C) E (D) C

Q.43 Who is to the right of C ?

(A) E (B) F

(C) B (D) A

Direction : Read the following information carefully and answer the questions given below it :

(i) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.

(ii) Q gets a North facing flat and is not next to S.

(iii) S and U get diagonally opposite flats.

(iv) R, next to U, gets a South facing flat and T gets a North facing flat.

Q.44 Which of the following combinations get South facing flats ?

(A) QTS (B) UPT

(C) URP (D) Data inadequate

Q.45 Whose flat is between Q and S ?

(A) T (B) U

(C) R (D) P

Q.46 If the flats of T and P are interchanged, whose flat will be next to that of U ?

(A) P (B) Q

(C) R (D) T

Q.47 The flats of which of the other pairs than SU, is diagonally opposite to each other ?

(A) QP (B) QR

(C) PT (D) TS

Q.48 To arrive at the answers to the above questions, which of the following statements can be dispensed with ?

(A) None (B) (i) only

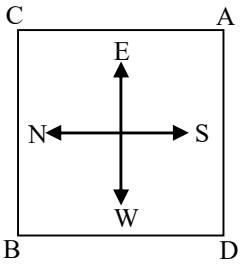
(C) (ii) only (D) (iii) only

Q.49 Vandana drove her car for 30 kms due North. Then she turned left and drove for 40 kms. She then turned left again and drove yet another 30 kms. Again she turned left and drove ther car 50 kms. How far do you think she actually drove her car from the initial position ?

(A) 10 kms (B) 50 kms

(C) 30 kms (D) None of these

Direction : The following questions are based on the diagram given below showing four persons stationed at the four corners of a square piece of plot as shown.



Q.50 A starts crossing the field diagonally. After walking half the distance, he turns right, walks some distance and turns left. Which direction is A facing now ?

(A) North-East (B) North-West

(C) North (D) South-East

Q.51 From the original position given in the above figure, A and B move one arm length clockwise and then cross over to the corner diagonally opposite; C and D move one arm length anti-clockwise and cross over the corner diagonally opposite. The original configuration ADBC has now changed to :

(A) CBDA (B) BDAC

(C) DACB (D) ACBD

Q.52 From the original position, B and D move one and a half length of sides clockwise and anticlockwise respectively. Which one of the following statement is true ?

(A) B and D are both at the midpoint between A and C

(B) D is at the midpoint between A and C, and B at the corner originally occupied by C

(C) B is at the midpoint between A and C, and D at the corner originally occupied by A

(D) B and D are both at the midpoint between A and D.

Q.53 From the positions in original fiugre, C and A move diagonally to opposite corners and then one side each clockwise and anticlockwise respectively. B and D move two each clockwise and anticlockwise respectively. Where is A now ?

(A) At the north-west corner

(B) At the north-east corner

(C) At the south-east corner

(D) At the south-west corner

Q.54 After the movements given in Q.53 above, who is at the north-west corner ?

(A) A (B) B

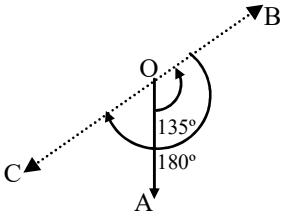
(C) C (D) D

ANSWER KEY

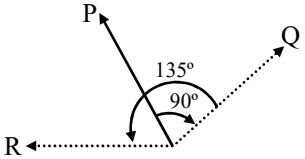
Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	B	A	A	B	C	D	C	B	B	D	A	C	C	C	B	D	B	D	B	D
Ques.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	B	B	D	C	A	A	B	B	D	D	D	C	A	B	C	A	A	D	B	D
Ques.	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
Ans.	C	B	D	C	A	C	A	A	A	B	A	A	D	C						

HINTS & SOLUTION

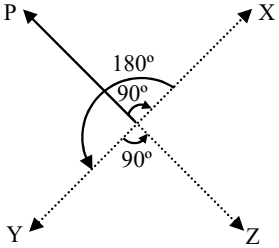
16. As shown in figure, the man initially faces in the direction OA. On moving 135º anticlockwise, he faces in the direction OB. On further moving 180º clockwise, he faces in the direction OC, which is South-west.



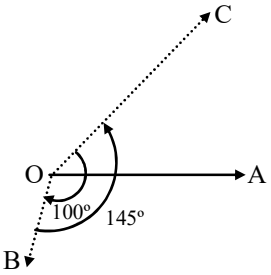
17. As shown in figure, the man initially faces in the direction OP. On moving 90º clockwise, the man faces in the direction OQ. On further moving 135º anticlockwise, he faces in the direction OR, which is West.



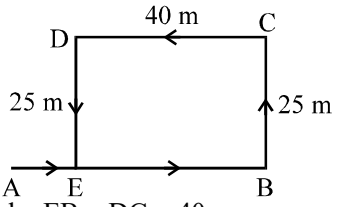
18. As shown in figure, the man initially faces in the direction OP. On moving 90º clockwise, he faces in the direction OX. On further moving 180º anticlockwise, he faces in the direction OY. Finally, on moving 90º anticlockwise, he faces in the direction OZ, which is South-East.



19. As shown in figure, the man initially faces towards east i.e., in the direction OA. On moving 100º clockwise, he faces in the direction OB. On further moving 145º clockwise , he faces in the direction OC. Clearly, OC makes an angle of (145º – 100º) i.e, 45º with OA and as such points in the direction North-east.



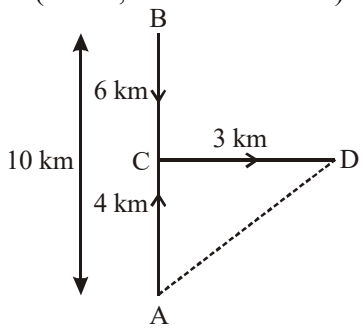
20. The movements of Deepak are as shown in figure.



Clearly, EB = DC = 40 m.

∴ Deepak's distance from the starting point A = (AB – EB) = (75 – 40) m = 35 m

21. The movement of Kishenkant are as shown in figure (A to B, B to C and C to D).



AC = (AB – BC) = (10 – 6) km = 4 km.

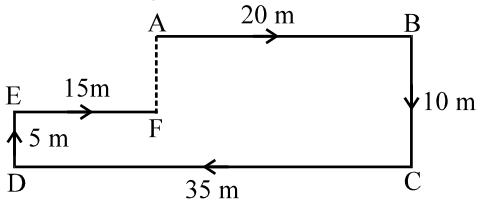
Clearly, D is to the North-east of A.

∴ Kishenkant's distance from starting point A = AD = $\sqrt{AC^2 + CD^2}$

$= \sqrt{4^2 + 3^2} = \sqrt{25} = 5$ km.

So, Kishenkant is 5 km to the North-east of his starting point.

22. The movements of the man from A to F are as shown in figure.



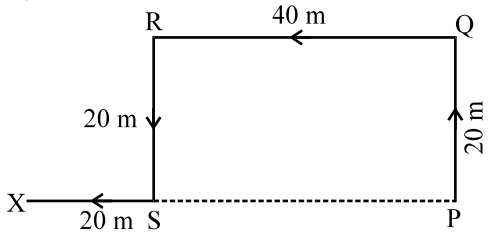
Clearly, DC = AB + EF

∴ F is in line with A

Also, AF = (BC – DE) = 5 m

So, the man is 5 metres away from his initial position.

23. The movements of Gaurav are as shown in figure.

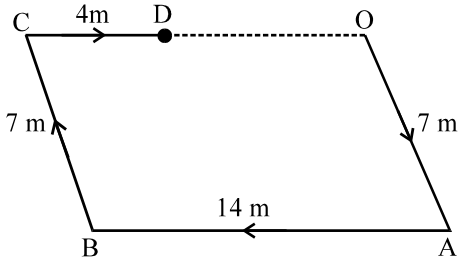


Clearly, Gaurav's distance from his initial position

P = PX = (PS + SX) = (QR + SX)

= (40 + 20) m = 60 m

24. The movements of Radha are as shown in figure.

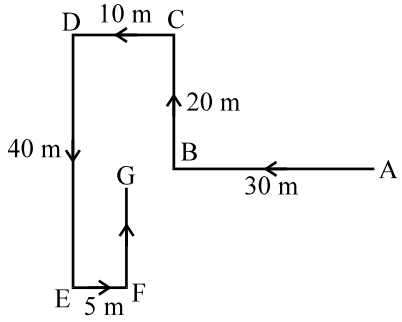


Clearly, Radha's distance from the starting point

O = OD = (OC – CD)

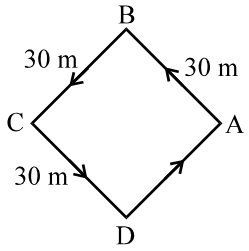
= (AB – CD) = (14 – 4) m = 10 m

25. The movements of Gopal are as shown in figure 10 from A to G.



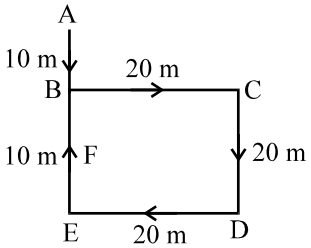
Clearly, Gopal is finally walking in the direction FG i.e. North.

26.[The movements of the girl are as shown in figure. (A to B, B to C, C to D, D to A).



Clearly, she is finally moving in the direction DA i.e. North-east

27. The movements of Sanjeev from A to F are as shown in figure.



Clearly, Sanjeev's distance from starting point A

= AF = (AB + BF)

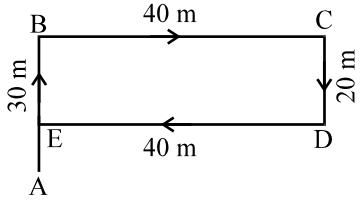
= AB + (BE – EF) = AB + (CD – EF)

= [10 + (20 – 10)] = (10 + 10) m = 20 m

Also, F lies to the South of A.

So, Sanjeev is 20 metres to the south of his starting point.

28. The movements of Kashish are as shown in figure.



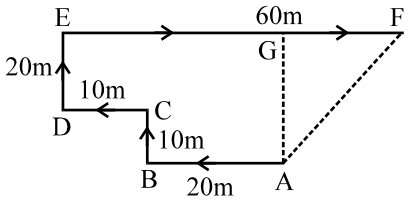
(A to B, B to C, C to D, D to E)

∴ Kashish's distance from his original position

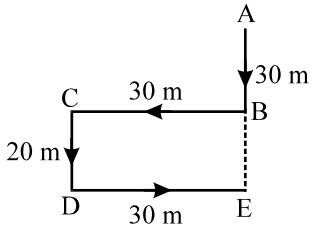
A = AE = (AB – BE) = (AB – CD)

= (30 – 20) m = 10 m

29. The movements of the person are from A to F, as shown in figure. Clearly, the final position is F which is to the North-east of the starting point A.

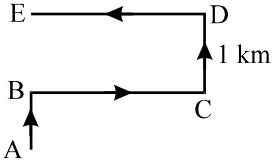


30. The movements of the man are as shown in figure.



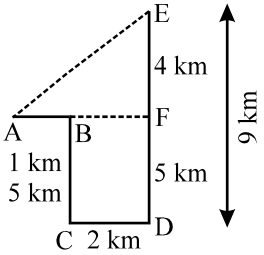
∴ Man's distance from initial position A
= AE = (AB + BE) = (AB + CD)
= (30 + 20) m = 50 m

31. The movements of Ramakant are as shown in figure.



Clearly, he is finally walking in the direction DE i.e., West

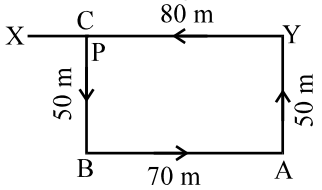
32. The movements of the man are as shown in figure.



(A to B, B to C, C to D, D to E)
Clearly, DF = BC = 5km.
EF = (DE – DF) = (9 – 5) km = 4 km
BF = CD = 2 km
AF = AB + BF
= AB + CD = (1 + 2) km
= 3km.

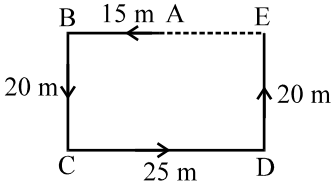
∴ Man's distance from starting point A
= AE = $\sqrt{AF^2 + EF^2}$
= $\sqrt{3^2 + 4^2}$
= $\sqrt{25}$
= 5 km

33. The movements of Raj are as shown in figure.



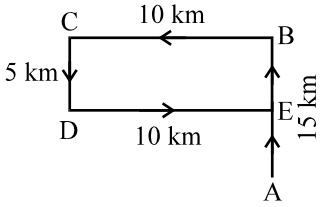
(X to Y, Y to A, A to B, B to C).
Raj's distance from the starting point X
= XC = (XY – YC)
= (XY – BA) = (80 – 70) m = 10 m.

34. The movements of Laxman are as shown in figure.



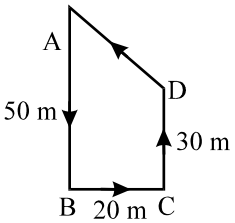
∴ Laxman's distance from his house at A
= AE = (BE – BA)
= (CD – BA) = (25 – 15) m = 10 m

35. The movements of Lokesh are as shown in figure.



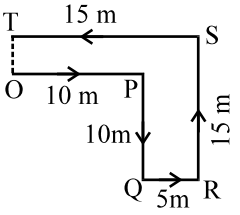
(A to B, B to C, C to D and D to E).
Clearly, his final position is E which is to the North of his house at A.

36. The movements of Radhika are as shown in figure.



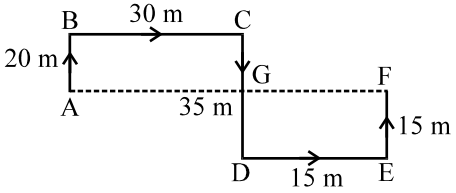
(A to B, B to C, C to D and D to A).
Clearly, she is finally moving in the direction DA i.e. North-west.

37. The movements of A are as shown in figure.



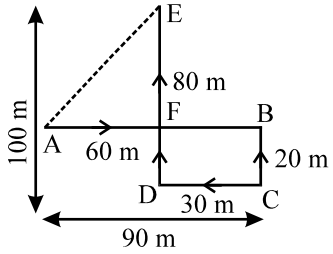
(O to P, P to Q, Q to R, R to S and S to T).
Since TS = OP + QR, so lies in line with O.
∴ A's distance from the starting point O
= OT = (RT – PQ) = (15 – 10) m = 5m.

38. The movements of Rasik from A to F are as shown in figure.



Since CD = AB + EF, so F lies in line with A.
∴ Rasik's distance from original position A
= AF = (AG + GF)
= (BC + DE) = (30 + 15) m = 45 m.
Also, F lies to the east of A.

39. The movements of the child from A to E are as shown in figure.



Clearly, the child meets his father at E.
Now, AF = (AB – FB)
= (AB – DC)
= (90 – 30) m = 60 m
EF = (DE – DF) = (DE – BC)
= (100 – 20) m = 80 m
∴ Required distance = AE
$= \sqrt{AF^2 + EF^2} = \sqrt{(60)^2 + (80)^2}$
$= \sqrt{3600 + 6400} = \sqrt{10000} = 100$ m