REASONING
DIRECTION

Direction

BEST APPROACH TO SOLVE THE QUESTIONS

Sometimes a topic can help you to score good marks in that particular section. So, you should not miss any of them. The topic of direction may also play an important role for you to score good marks. These days the questions asked from this topic are quiet tricky but if you have practiced enough and your concepts are clear then it can be a game changer for you.

Example-1:

Directions: In the following questions, the symbols #, &, @ and $ are used with the following meanings as illustrated below. Study the following information and answer the given questions:

Note: The directions which are given indicate exact directions.

P#Q: - Q is in the south direction of P.

P@Q:- Q is in the north direction of P

P&Q: - Q is in the east direction of P at distance of either 12m or 6m

P$Q: - Q is in the west direction of P at distance of either 15m or 3m.

P#&Q: - Q or P is in the southeast direction of P or Q.

P@&Q:- P or Q is in the northeast direction of Q or P.

1. If A&B#&C$D&E@F are related to each other such that F is placed exactly between A and B on line AB. Similarly D and A are vertically inline then what is the possible shortest distance between F and B when DE (length of segment DE) < DC/2 and EC < 10m?

(a) 12m

(b) 5 m

(c) 4 m

(d) 6m

(e) None of these

2. If A&B#&C$D&E@F are related to each other such that D, A are inline, DE=6 m and a perpendicular drawn from E on AB divides AB in two equal parts and D@&B then what is the probable direction of A with respect to F?

(a) North-west

(b) West

(c) South-west

(d) East

(e) Can't be determined

3. K#&T$M#&S&K&Z are related to each other such that K is in north of M then what is the probable direction of Z with respect to M?

(a) North-east

(b) West

(c) South-west

(d) East

(e) Can't be determined

4. K#&T$M#&S&K&Z are related to each other such that K is in north of M. M and K are inline vertically when MT>SK then what is the distance between S and Z When KZ=12 m?

(a) 24m

(b) 18m

(c) 15m

(d) Either (a) or (b)

(e) None of these

5. K#&T$M#&S&K&Z are related to each other such that K is in north of M. M and K are inline vertically when MT>SK then what is the sum of SK and MT?

(a) 27m

(b) 21m

(c) 15m

(d) Either (a) or (b)

(e) Either (b) or (c)

Explanations (The Approach):

1. (d); It is given that DE < DC/2 so the value of DC = 15m and AB= 12m or 6m

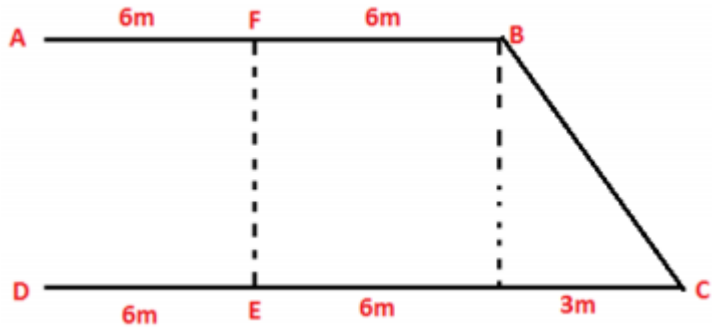
D and A are inline so DE=AF,

If DE = 6m, EC = 15-6 = 9m

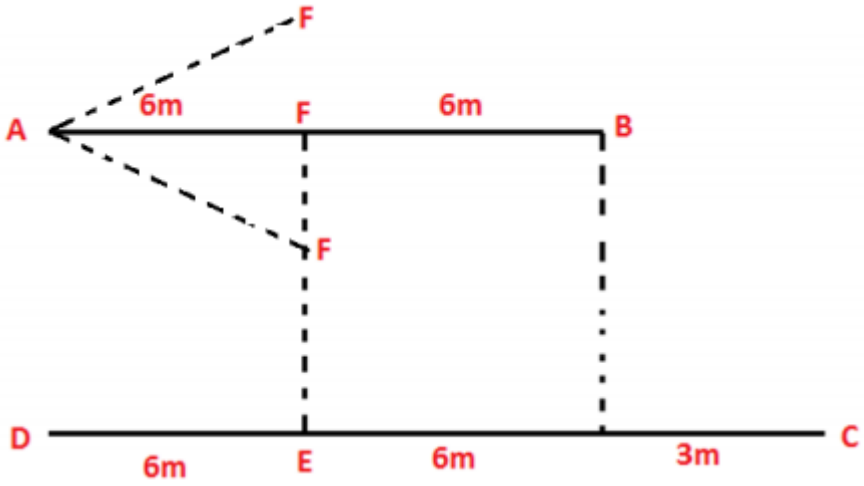
If DE= 3M, EC= 15-3 = 12m

It is given that EC<10 so DE= 6m and AB = 12m

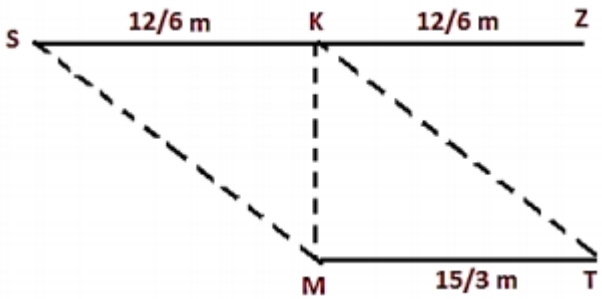
Hence FB =6m



2. (e); The direction of F with respect to E is given but the exact distance from E is not given so we can't find out the exact position of F hence the direction of F with respect to A can't be determined.



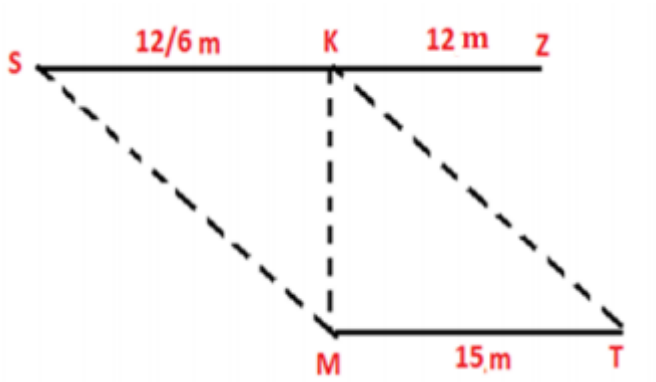
3. (a); There are four possible possibilities but two will cancel out by the condition that K is in east of S and K is in north of M so the final figure is given below. It is clear that Z is in north east from M.



4. (d); It is given that MT>SK so MT=15m KZ= 12m and SK =12m or 6m

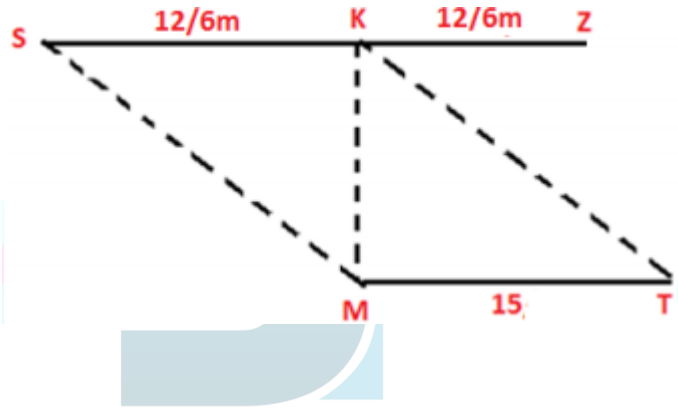
So the value of SZ

= (12+12) or (12+6) = 24m or 18 m



5. (d); It is given that MT>SK so MT=15m and SK =12m or 6m

SK + MT = (12+15) or (15+6) =27m or 21m



Example-2:

Directions: Study the following information and answer the questions given below:

There are AB axes in such a way that A is in north and B is in south direction. There is XY axis in such a way that X is in west direction and Y is in east direction. AB axis and XY axis intersect at a point Q in such a way that AQ is 15m, QB is 17m, QX is 12m, QY is 24 m. Mehul starts from point X and walks 20m in south direction and then he turns his left and walks 32m. Arun starts from point A and walks 20m in east direction. Raju starts from point Y and walks 5m in north direction and then he turns his left and walk 4m and again he turns his left and walks 22m.

1. Point B is in which direction with respect to Arun's current position?

(a) south

(b) south-east

(c) South-west

(d) West

(e) North-west

2. Point Y is in which direction with respect to Mehul's current position?

(a) north

(b) East

(c) north-east

(d) North-west

(e) South

3. What is distance between Raju's current position and Mehul's current position?

(a) 3m

(b) 5m

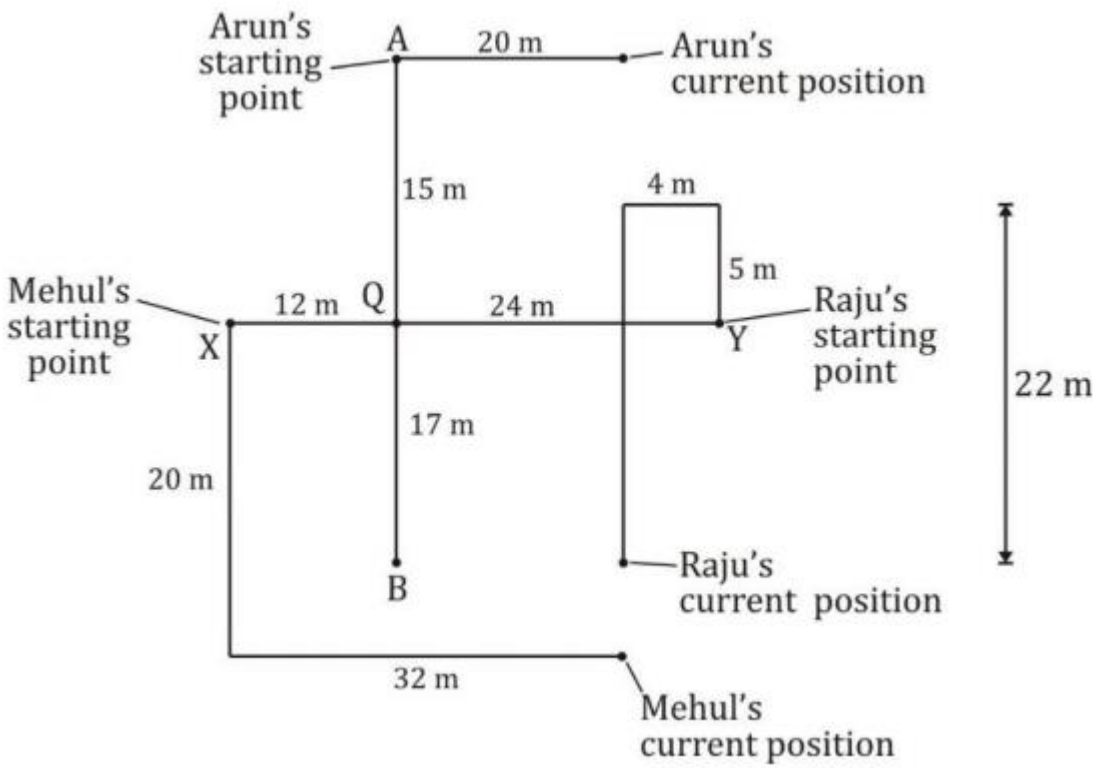
(c) 13m

(d) 22m

(e) 27m

Explanation (The Approach):

Solutions (1-3):



1. (c);

2. (c);

3. (a);

Example-3:

Directions: Study the following information carefully and answer the questions given below. Six cars C, D, P, Q, R, S are parked in a row facing north at a distance which is successive multiple of 4m in an increasing order from the left end from each other. Car S is second to the right of car P. The total distance between car R and Q is 52m. Only one car is parked in between car D and R. Car S and car Q are parked next to each other. Car C and car S are not parked next to D. Now Car D starts moving towards north direction after moving 10m its takes a right turn and stops at point T after moving 28m. Car C starts moving in east direction and after going 12m it turns right and move 20m and then again turn right and move 72m and stops there at point H. Car P starts moving in south direction and after moving 10m it takes a left turn and moves 20m then it again takes a left turn and moves 5m. From there it takes a right turn and moves 24m and stops at point V. (SBI Clerk Mains 2018)

1. How many cars are parked there in between cars 'D' and 'Q'?

(a) Two

(b) None

(c) More than three

(d) One

(e) Three

2. What is the distance between point 'V' and point 'H'?

(a) 25 m

(b) 15 m

(c) They don't align in the same straight line

(d) 20 m

(e) 10 m

3. What is the distance and direction of initial position of Car 'C' with respect to the initial position of Car 'P'?

(a) 100 m towards east

(b) 50 m towards west

(c) 104 m towards east

(d) 72 m towards south-east

(e) None of these

4. Which car will be met first, if 'car D' moves through the shortest distance from point 'T'?

(a) R

(b) S

(c) Q

(d) P

(e) None of these

5. What is the current position of car 'R' with respect to initial position of car 'C'?

(a) Immediate right

(b) Second to the left

(c) Third to the left

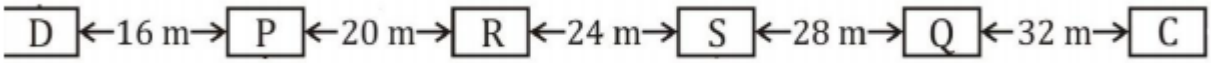
(d) Second to the right

(e) None of the above

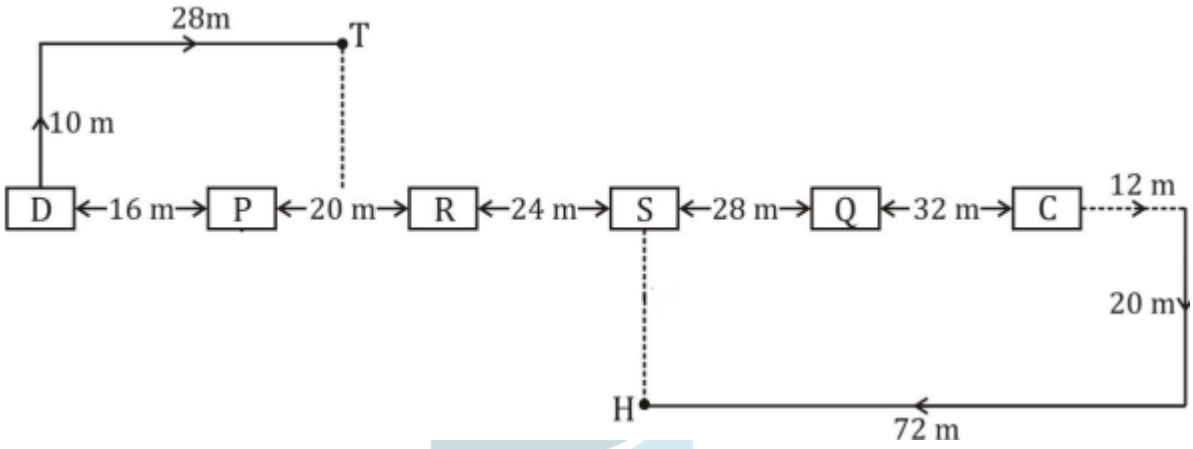
Explanations (The Approach):

Solutions (1-5):

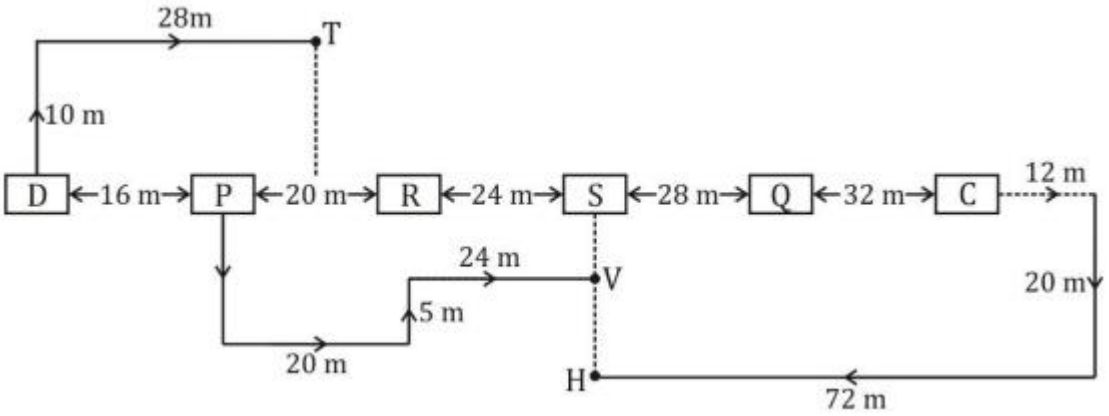
Car S is second to the right of car P. The total distance between car R and Q is 52m. Only one car is parked in between car D and R. Car S and car Q are parked next to each other. Car C and car S are not parked next to D.



Now Car D starts moving towards north direction after moving 10m its takes a right turn and stops at point T after moving 28m. Car C starts moving in east direction and after going 12m it turns right and move 20m and then again turn right and move 72m and stops there at point H.



Car P starts moving in south direction and after moving 10m it takes a left turn and moves 20m then it again takes a left turn and moves 5m. From there it takes a right turn and moves 24m and stops at point V.



1. (e);

2. (b);

3. (c);

4. (a);

5. (c);

Practice Exercise Based on new Pattern

Directions (1-2): Read the given information carefully to answer the following questions. Tom starts walking in a certain direction to catch Jerry. After walking 5m in the same direction he turned left and walks 4m. From there he turns towards his right and walk 3m. Then he takes another right turn and walked 6m. Now Jerry and Tom are facing each other as they are inline 6m apart from each other at point B and A respectively. From point B, Jerry immediately takes a left turn and after walking a certain distance, he stopped. Now the shortest distance between Tom and Jerry is 10m and Tom who is still at point A, is to the north-west of Jerry.

1. In which direction did Tom started walking?

(a) North

(b) West

(c) South

(d) East

(e) None of these

2. What is the distance between the points at Jerry stopped from the point he starts walking?

(a) 7m

(b) 5m

(c) 10m

(d) 8m

(e) None of these

Direction (3-4): In the following questions, the symbols #, *, @ and $ are used with the following meanings as illustrated below. Study the following information and answer the given questions:

Note: The directions which are given indicated exact directions.

P*Q: – Q or P is in the south direction of P or Q at distance of 6m.

P@Q:– Q or P is in the north direction of P or Q at distance of 3m

P#Q: – Q or P is in the east direction of P or Q at distance of 5m

P$Q: – Q or P is in the west direction of P or Q at distance of 4m.

P*#Q: – Q or P is in the southeast direction of P or Q.

P*$Q: – Q or P is in the southwest direction of P or Q

P@#Q:– Q or P is in the northeast direction of P or Q.

P@$Q:– Q or P is in the northwest direction of P or Q.

3. If B@$C#D*A is related to each other, point A, D and B are inline and Point B is the midpoint of AD and C is not in the northwest of A then find out the probable distance between point B and C?

(a) √35 m

(b) √39 m

(c) 5√2 m

(d) √34 m

(e) None of these

4. If B@#C#D*A is related to each other, point B is to the east of point A and the distance between them is 8m and B is to the northeast of D then find out the how far and in which direction is B with respect to C?

(a) 2√5 m, South

(b) 3√5 m, North-east

(c) √35 m, West

(d) 5 m, Southeast

(e) None of these

DID YOU KNOW?

The direction-based puzzle is also newly introduced in the exam, in this there are certain symbol used to define the directions with the distance. Sometimes the distance and direction is given by combining it with either/or so start solving it by drawing both the conditions simultaneously.

Directions (5-6): Study the following information carefully and answer the questions given below. Six persons i.e. A, B, C, D, E and F are sitting in a open ground such that they are at certain distance with their immediate neighbors. F sits 4m northeast direction to B. B is in the east of E, who is 4m in the east of person A. C is 4m in the north of E. The distance between B and E is same as the distance between D and A. D is 3m south of A.

5. In which direction and what distance is D with respect to E?

(a) North 5m

(b) South 4m

(c) Southwest, 5m

(d) Southeast, 5m

(e) None of these

6. What is the shortest distance between B and A?

(a) 6m

(b) 7m

(c) 4m

(d) 3m

(e) None of these

DID YOU KNOW?

Solving questions of direction requires blindly following the path as you have to draw as per the directions given in the question.

Directions (7-9): Study the following information carefully to answer the questions given below:

Six cars P, Q, R, S, U, and V are parked in the parking and each of them is of different lengths. Four cars are parked in a rectangular formation such that the car which is just longer than Q is in north east of it and the car which is just longer than V is in North West of it. Both Q and V are 8km apart and are horizontally inline. Only two cars are shorter than R. Car S is longer than P and car V is longer than Q. Two cars are in north of car U. Car R and U are not in line. The longest car is in north-west of P. U is not the second longest car. Longest car is not in the west of the third shortest car. The distance between the second shortest and second longest car is 6km.

7. What is the shortest distance between car R and Q?

(a) 6km

(b) 7km

(c) 10km

(d) 14km

(e) None of these

8. If the shortest distance between car U and V is 10km then what is the distance between car P and U?

(a) 16km

(b) 17km

(c) 20km

(d) 12km

(e) None of these

9. The longest car is in which direction with respect to the shortest car?

(a) North

(b) South

(c) Northwest

(d) Southeast

(e) None of these

DID YOU KNOW?

After examining from the recent exam, you may get to know that each and every question is different from the other one. And a separate diagram is required to be made from it.

Directions (10-12): Study the following information carefully and answer the questions given below:

A man was initially walking along the diagonal of a rectangular playground such that the longer side was in horizontal axis and the shorter on the vertical axis. He walked only along the perimeter of the rectangle, diagonal or along the median of the rectangle. He started from the midpoint of the ground towards southwest and walked 6.5km, then took a turn and walked for 6km along the perimeter and 2.5 km along the median to reach the starting point. He then turn towards right and walked 4km and finally took a left turn and walked 1 km. Finally, he is 2km away from the shorter side and 1.5 km away from the longer side.

10. In which direction is he finally walking?

(a) North

(b) South

(c) Northeast

(d) Southeast

(e) None of these

11. What is the total length of the shorter side of the rectangle?

(a) 10km

(b) 4km

(c) 8km

(d) 5km

(e) None of these

12. In which direction is A is in with respect to its starting position?

(a) Southeast

(b) South

(c) Northeast

(d) Southwest

(e) None of these

DID YOU KNOW?

A new kind of questions that has been seen in the recent exam comprises Axes with the direction information. In this we require to draw the diagram on the axes XY.

Direction (13-14): Study the following information carefully and answer the question given below-

Point F is to the north of E. Point A is to the west of B. Point B is to the south of point C. Point F is to the north east of point C which is in-line with point E. Point D is exactly in between point C and E. Point J is to the north of point D. Point K is 5m away from point J and is exactly horizontally in line with point J. Point B is 8m in the south of Point K. The distance between point F and E is 4m.

13. If the distance between point K and F is 8m and both points are inline, then what will the shortest distance between point J and E?

(a) 6 m

(b) 5 m

(c) 7 m

(d) 8 m

(e) None of these

14. Point F is in which direction from point A?

(a) North East

(b) North West

(c) South West

(d) South East

(e) None of these

DID YOU KNOW?

A puzzle form of direction question comprising of a linear row having different elements placed in it as it is also a new pattern question. In this the type of question first the elements should be arranged and then their movement in different direction should be consider.

Direction (15-17): Study the following information carefully and answer the question below-

Point A is 5km in north of point B. Point B is 6km in west point C. Point C is exactly between point E and F. Point E is horizontally in line with point A. Point F is as far as from point D (horizontally inline) as Point A from point E. Point D is vertically not in line with point B.

15. If point G is 6km east of point E then point G is how far and in which direction from point D?

(a) 6km, North

(b) 5km, North-east

(c) 10km, North

(d) 14km, South

(e) None of these

16. Point A is in which direction from point F?

(a) North

(b) South

(c) Northwest

(d) Southeast

(e) None of these

17. How far is point E from point B?

(a) 6 km

(b) √87 km

(c) √61 km

(d) 8 km

(e) None of these

Directions (18-20): Read the following information carefully and answer the questions that follows:

Six persons i.e. A, B, D, E, G and H are standing in a ground at seven different points.

(i) B is standing 3m to the west of A.

(ii) E is standing 7m west of person D who is standing 3m east of G.

(iii) H is standing 4m south of D.

(iv) A is standing in 5m south east direction of point E.

18. What is the shortest distance between G and H?

(a) 4m

(b) 5m

(c) 2m

(d) 3m

(e) Cannot be determined

19. How many persons are standing in the south west direction of G if E is perpendicular to B?

(a) Three

(b) More than three

(c) Two

(d) None of these

(e) Cannot be determined

20. How many Persons are standing to the west of G?

(a) None

(b) Two

(c) Four

(d) Three

(e) None of these

Directions (21-22): Read the following information carefully to answer the questions that follow. The questions are based on following coding formats:

P1Q means – P is in North of Q

P2Q – P is in South of Q

P3Q – P is in East of Q

P4Q – P is in West of Q

@ Means – Either 2 or 7 m

 # – Either 5 or 10 m

& – Either 8 or 13 m

Conditions given are as:

I. A @1 B

II. A &3 D

III. F #3 E

IV. G @4 F

V. E #1 D

21. What could be the shortest distance between E and B considering the smallest among the given two-possible distances?

(a) √113

(b) √111

(c) √115

(d) √117

(e) None of these

22. In which direction is point G with respect to D?

(a) South west

(b) North west

(c) North

(d) North east

(e) Can't be determined

Directions (23-24): Following questions are based on the information given below. Ajay start driving from his house to his friend Jeet's house. He starts driving in the west direction from his house by a car. After going 15m he takes a right turn from point N and continues driving for 20m and reaches the point P. From point P he takes a right turn and after driving 30m, reaches the point Q. from point Q he takes a left turn and continue moving 20 m to reach Jeet's house. In the way Ajay stop a Shop at point O which is exactly between P and Q.

23. Find the shortest distance between jeet's house and point O?

(a) 35m

(b) 30m

(c) 25m

(d) 10√13

(e) None of these

24. Jeet's house is in which direction from Ajay's house?

(a) North

(b) North East

(c) North West

(d) South West

(e) South

Directions (25-27): These questions are based on the information given below:

Eight persons A, B, C, D, E, F, G and H are standing in such a way that C is 20 m apart from B towards West, B is 30 m South with respect to A. A is 40 m towards West with respect to E. D is 50 m towards South with respect to E. F is 15 m apart from G towards North. H is 20 m towards East with respect to G. F is 40 m towards West with respect to D.

25. In which direction is B standing with respect to F?

(a) North-West

(b) North

(c) North-East

(d) Cannot be determined

(e) None of these

26. If one more person I is standing towards South-West with respect to D, then in which direction is H, standing with respect to I?

(a) South-West

(b) North-East

(c) North-West

(d) Cannot be determined

(e) None of these

27. What is the direction of C with respect to H?

(a) North-West

(b) North

(c) West

(d) Cannot be determined

(e) None of these

28. Mohan starts walking in the west direction and walks for 8 km, then he takes a right turn and walks for 5 km again he takes a right turn and walks for 2.5 km and at last he takes a right turn walks for 5 km, then in which direction and at what distance is Mohan from his initial position?

(a) 5 km west

(b) 5.5 km East

(c) 5 Km East

(d) None of these

(e) 5.5 km west

Direction (29-30): Two friends Silva and Jones started walking from two different points. Silva, who started from point A moved along a circular track and after walking 11km he reached point B, from where he turned left and walked 5km to reach point C after which he stopped. Jones started from point F and after walking 5km, he reached point E. From point E he turned 45 degree towards his left and walked √8 km to reach point D. After reaching point D, he turned 45 degrees in clockwise direction. Then, he moved ahead 5km to reach point C which is towards the west of point D. Point B, C and D are in straight line.

29. In which direction was Silva facing at instant he travelled three-fourth of his total journey?

(a) East

(b) West

(c) North East

(d) South East

(e) Cannot be determined

30. If Silva keeps on walking ahead from point C and reached point G after walking 12 km, Point F is to the north of point G then what is the shortest distance between point F and G?

(a) 7km

(b) 4km

(c) 2km

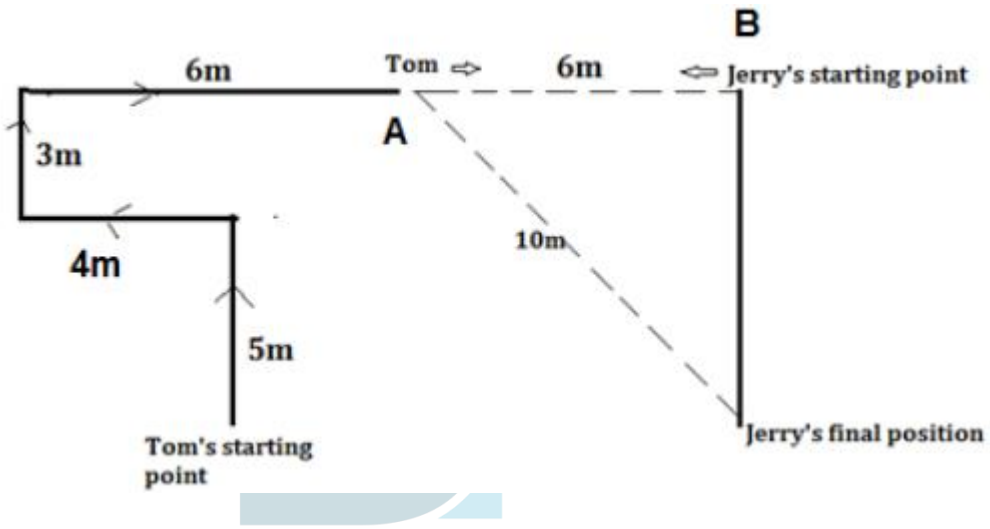
(d) More than 7km

(e) None of these

Solutions

Solutions (1-2):

As from the given conditions we get that only possible condition is that Tom start walking in North direction.



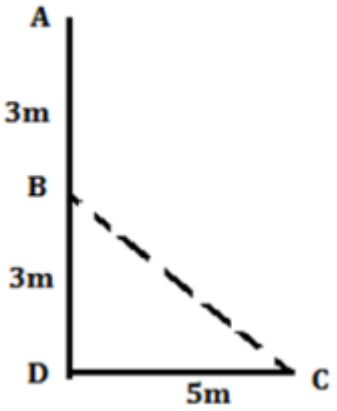
1. (a);

2. (d); distance between the points at Jerry stopped from the point he

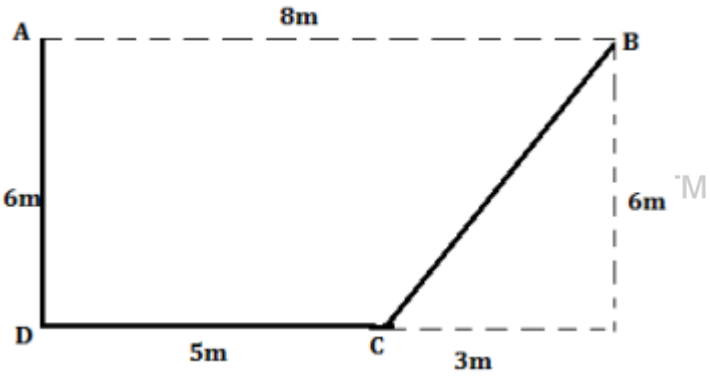
Starts walking= $\sqrt{10^2 - 6^2}\ m = 8m$

Solutions (3-4):

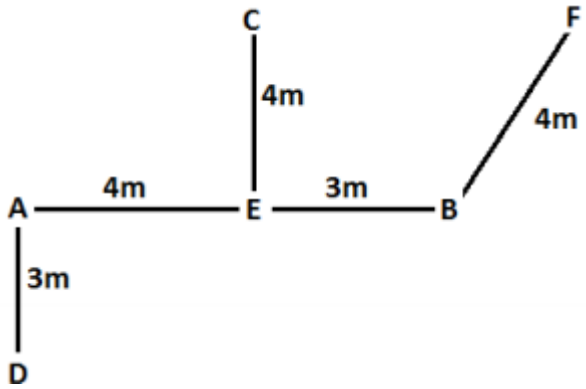
3. (d); The distance between point B and C= $\sqrt{3^2 + 5^2} = \sqrt{34}$



4. (b); The distance between B and C =$\sqrt{6^2+3^2}=\sqrt{45}\,m$



Solutions (5-6):

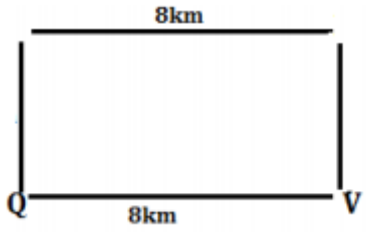


5. (c);

6. (b);

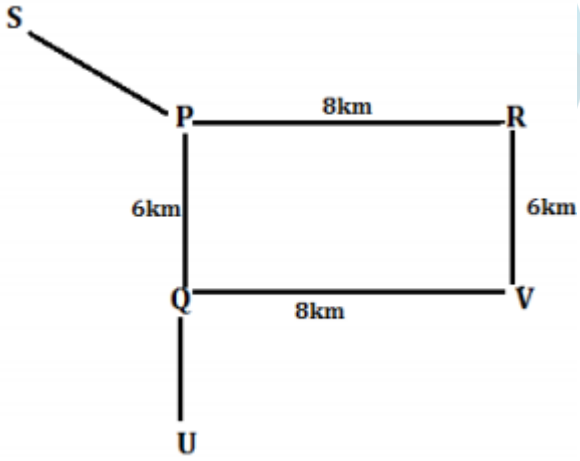
Solutions (7-9):

Four cars are parked in a rectangular formation such that the car which is just longer than Q is in north east of it and the car which is just longer than V is in North West of it. Both Q and V are 8km apart and are horizontally inline. Only two cars are shorter than R. So, from this we get that----



> > > R > >

Car S is longer than P and car V is longer than Q. So, from this we know that either S or U is the longest Car. Two cars are in north of car U. Car R and U are not in line. The longest car is in north-west of P. U is not the second longest car. Longest car is not in the west of the third shortest car. The distance between the second shortest and second longest car is 6km. So, Q can be either shortest or second shortest. Consider case-1, Q is the shortest, so S or U can be longest but we know that Two cars are in north of car U and the longest car is in north-west of P which is not possible so it will get eliminated. Further if S is the longest car, the longest car is in north-west of P and longest car is not in the west of the third shortest car, so this will also get eliminated. In case-2, Q is the second shortest car then R will be just longer than it and will be in north of car V. And U can't be the longest car as already seen from the given conditions, so clearly S will be the longest car and U will be the shortest car. So, the final arrangement is----------



S > P > V > R > Q > U

7. (c); Distance between car R and Q = $\sqrt{8^2 + 6^2} = 10km$

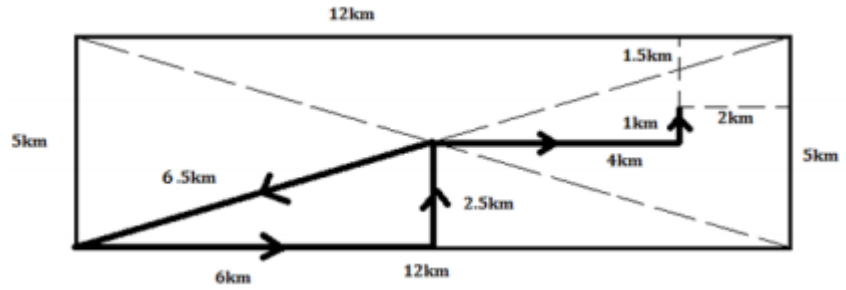
8. (d); shortest distance between car U and V is 10km

Then distance between Q and U is = $\sqrt{10^2 - 8^2} = 6km$

Distance between car P and U = 6 + 6 = 12km

9. (c);

Solutions (10-12):

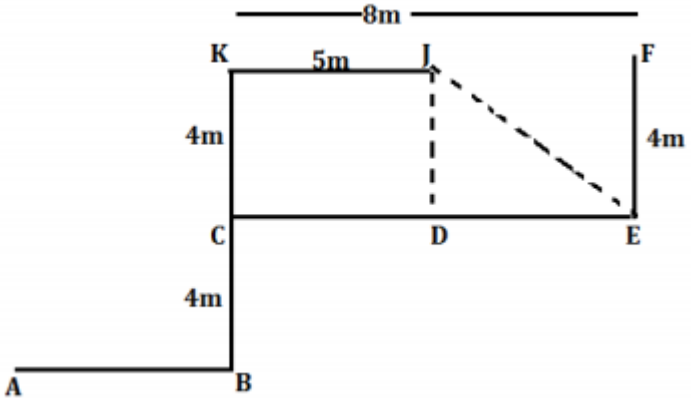


10. (a);

11. (d);

12. (c);

Solutions (13-14):



13. (b); DE = JF = KF – KJ

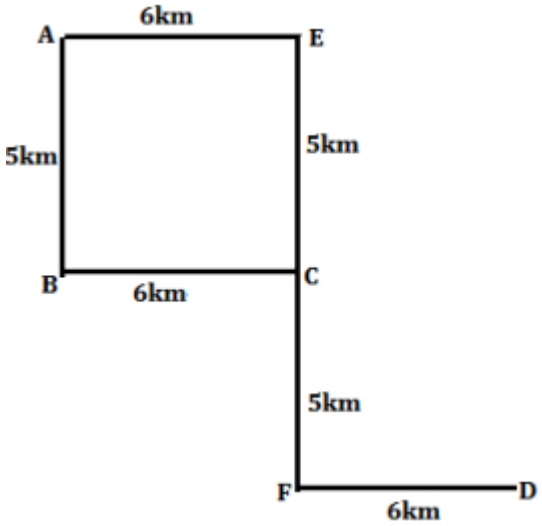
DE = JF = 8 – 5 = 3m

JD = FE=4m

JE = $\sqrt{3^2 + 4^2}$=5m

14. (a);

Solutions (15-17):

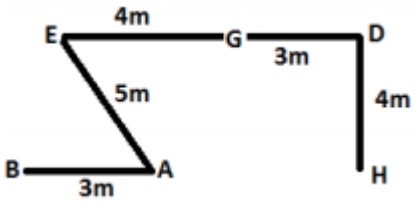


15. (c);

16. (c);

17. (c);

Solutions (18-20):

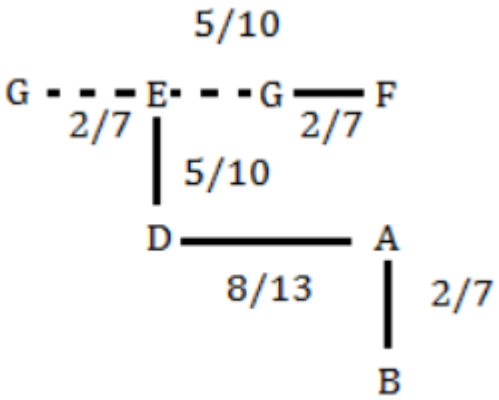


18. (b);

19. (c);

20. (e);

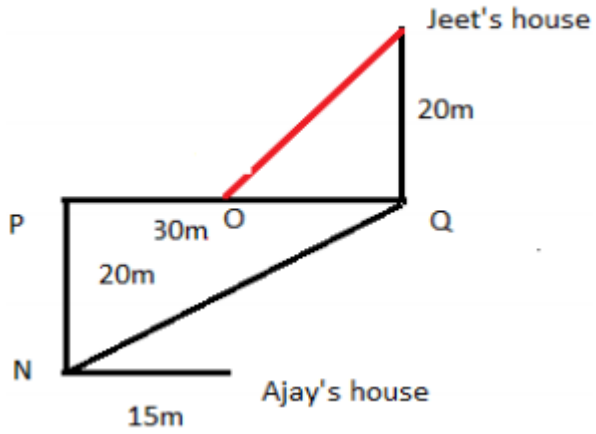
Solutions (21-22):



21. (a);

22. (e);

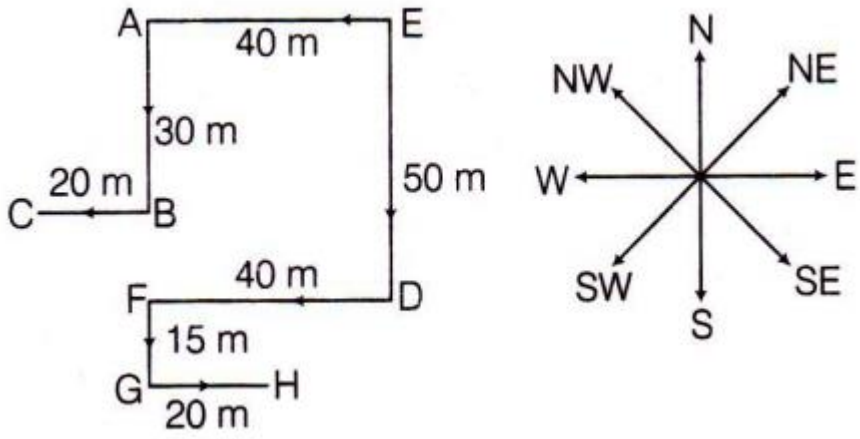
Solutions (23-24):



23. (c);

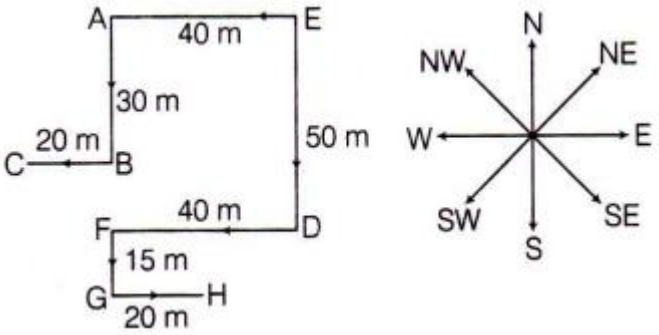
24. (b);

25. (b);



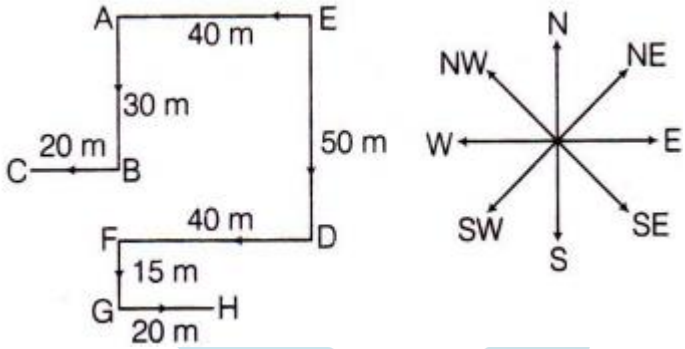
B is standing in North direction with respect to F.

26. (d);



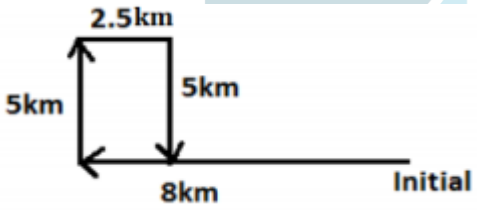
As total distance between I and D is not given, so the position of H with respect of I cannot be determined.

27. (a);

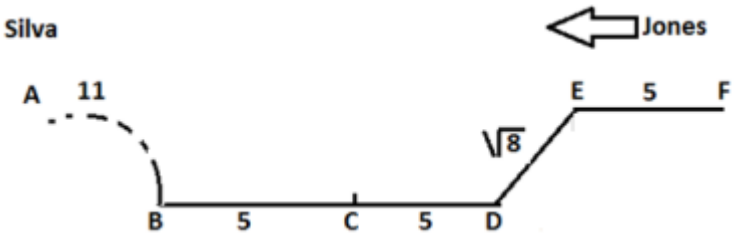


C is in the North-West direction from H.

28. (e);



29. (a);



30. (c);