# Direction Sense Test

**Objective**

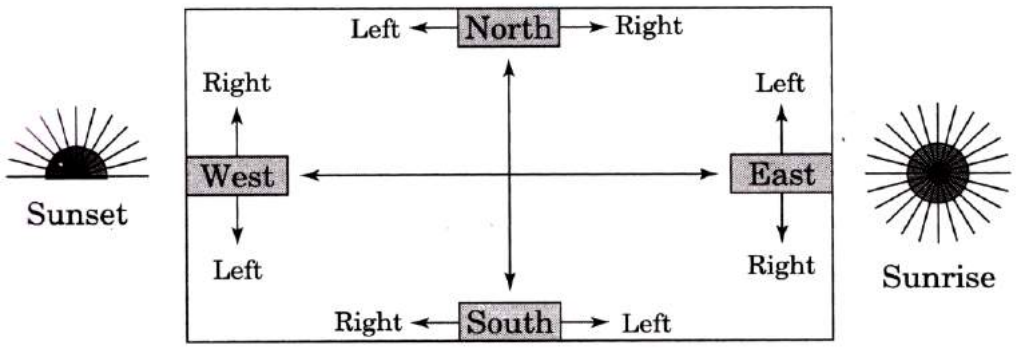
- Students will develop the ability to trace and follow the logical path correctly and sense of direction correctly as well.

## Introduction

Direction is a measurement of position of one thing with respect to another thing.
Displacement is the measurement of distance between initial and the final point. Direction and distance test mainly deal with two types of directions i.e. main. directions and cardinal directions.

**Main Directions**

There are four types of directions, viz, East, West, North and South as shown below. The word 'NEWS' stands for all the four directions, i.e. North, East, West and South.



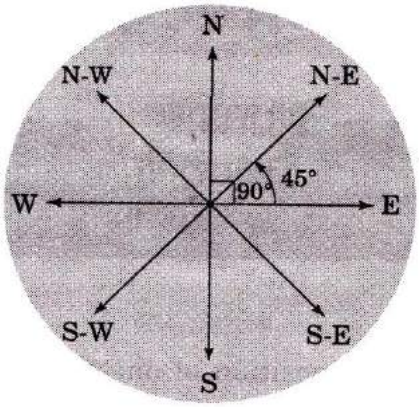

**Cardinal Directions**

A direction between two main directions is called cardinal direction. Clearly, there are four cardinal directions.
(i) N-E (North-East)

(ii) N-W (North-West)

(iii) S-E (South-East) and

(iv) S-W (South-West)

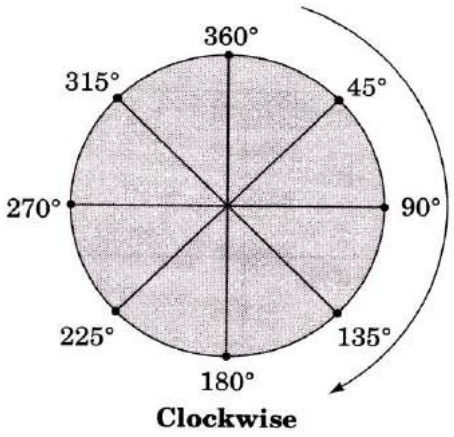



**Note**: Angle formed between two main directions is 90° and angle formed between a cardinal direction and main direction is 45° as shown in the above diagram.

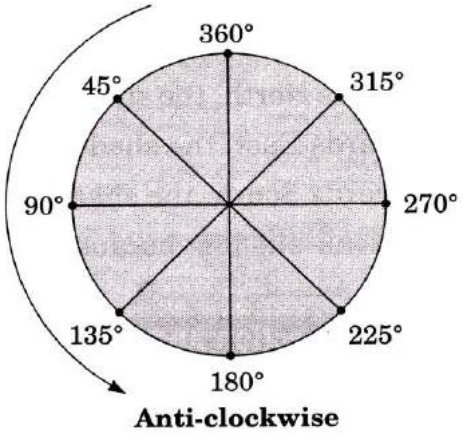
## Rotation of Angles

To solve angle movement questions, it is necessary to know about the rotations of angles which are given below.

(i) For right direction movement (Clockwise)




(ii) For left direction movement (Anti-clockwise)



**Left turn** Anti-clockwise direction

**Right turn** Clockwise direction

The change in direction when a person or vehicle takes a right or a left turn

| Direction before taking the turn | Direction in which the person or vehicle will be moving after taking turn | |
|---|---|---|
| | Right | Left |
| North | East | West |
| South | West | East |
| East | South | North |
| West | North | South |

## Shadow Case

**In Morning/Sunrise time**

(a) If a person is facing towards Sun, the shadow will be towards his back or in west.

(b) If a person is facing towards South, the shadow will be towards his right.

(c) If a person is facing towards West, the shadow will be towards his front.

(d) If a person is facing towards North, the shadow will be towards his left.

**In Evening/Sunset time**

(a) If a person is facing towards Sun, the shadow will be towards his back or in East.

(b) If a person is facing towards North, the shadow will be towards his right.

(c) If a person is facing towards East, the shadow will be towards his front.

(d) If a person is facing towards South, the shadow will be towards his left.

**Note**: At 12:00 noon there is no shadow because the rays of the Sun are vertically downward.
Type 1: Final Direction Based

## Types of Directions and Distance

**Type 1: Final Directions Based**

In these types of questions, we have to ascertain the final direction with respect to the initial point or the directional relations between two points/things.

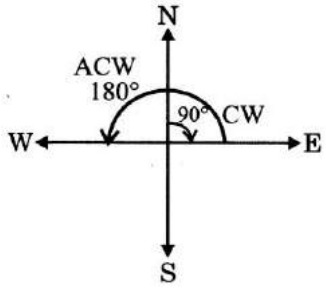
**Example 1**

Harish is facing North and turns through 90° clockwise, again 180° anticlockwise. In which direction is he facing now?

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

**Ans**. (c)

**Explanation**: The direction diagram of Harsh is as shown below:




So, he faces the West direction.

**Type 2: Distance (Displacement) Based**

In these types of questions, we deal with the final distance between starting and final point or between two points/persons/things. There are various formats/ patterns of displacement.

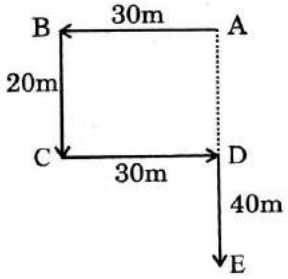
**Example 2**

Sidharth walks 30 m West. Then, he turns left and walks 20m. Now, he turns left and walks 30 m. Finally he turns right and walks 40 m. How far is he from his original position?

(a) 40 m (b) 30 m (c) 50 m (d) 60 m

**Ans**. (d)

**Explanation**: The direction diagram of Sidharth is as follows:




Here, required distance = AD = BC = 20 m and DE = 40m

Now, =AD+DE=20+40=60m.

**Type 3: Distance (Displacement) and Direction Based**

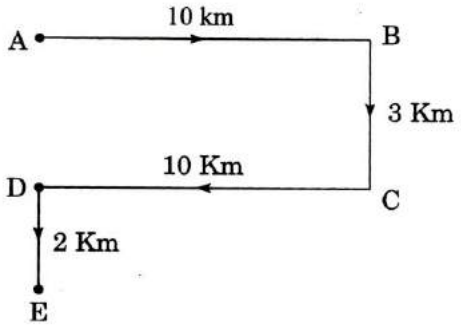
In these types of questions, we deal with the final distance between starting and final point of any person/object/thing. There are various formats/patterns of distance and direction.

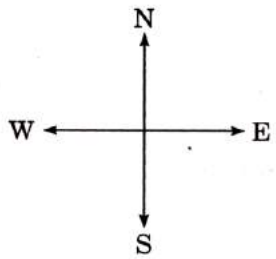
**Example 3:**

A tourist drives 10 Km towards East and turns to the right hand and drives 1 Km. Then, he drives towards West (turning to his right) 10 Km. He, then Tarns to his left and drives 2 Km. How far is he from his starting point and in which direction would he be?

(a) 10 Km, East (b) 5 Km, North (c) 8 Km, West (d) 5 Km, South

Ans. (d) Starting Point



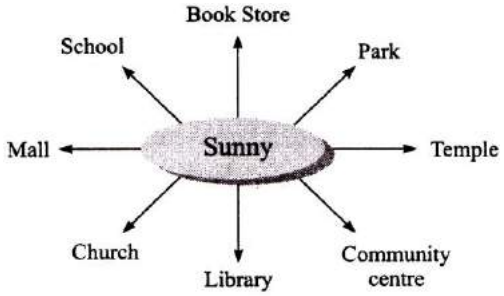

Here, AD = BC = 3 Km

∴ Required distance AE=AD+DE =3+2=5 Km

His final point is E which is in South direction from starting point A.

**Example 4**

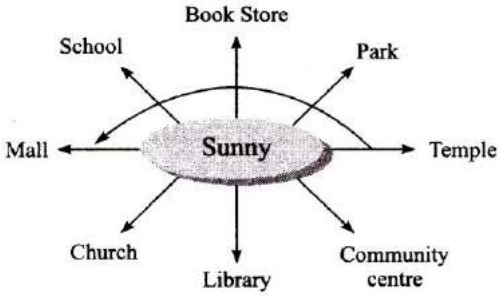
Sunny is facing the temple. If he turns to his left, he will face the Mall. He turns _____ to his left.




(a) $\frac{1}{4}$ turn (b) $\frac{1}{3}$ turn (c) $\frac{1}{2}$ turn (d) $\frac{3}{4}$ turn

**Ans**. (c)

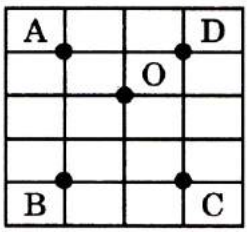
**Explanation**:




So, Sunny tums $\frac{1}{2}$ turn to his left.

**Example 5:**

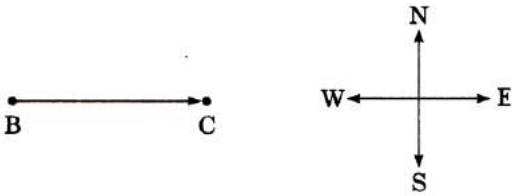
Which point is east of B?




(a) A (b) D (c) O (d) C

**Ans**. (d)

**Explanation**:




So, point C is east of B.