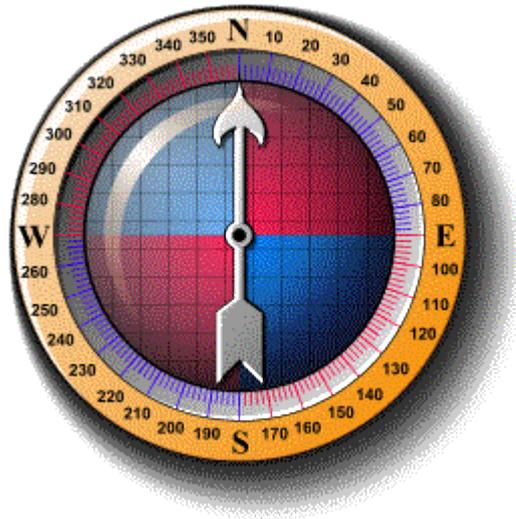


Bearings

A directional compass is shown below. It is used to find a direction or bearing .

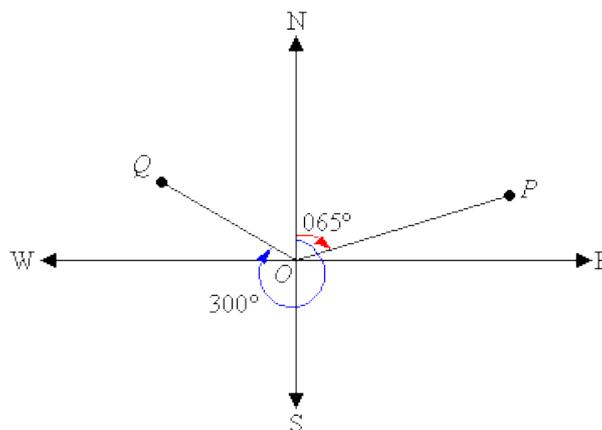


The four main directions of a compass are known as **cardinal points**. They are north (N), east (E), south (S) and west (W). Sometimes, the half-cardinal points of north-east (NE), north-west (NW), south-east (SE) and south-west (SW) are shown on the compass. The above compass shows degree measurements from 0° to 360° in 10° intervals with:

- north representing 0° or 360°
- east representing 90°
- south representing 180°
- west representing 270°

When using a directional compass, hold the compass so that the point marked north points directly away from you. Note that the magnetic needle always points to the north.

The true bearing to a point is the angle measured in degrees in a clockwise direction from the north line. We will refer to the true bearing simply as the bearing.



For example, the bearing of point P is 065° which is the number of degrees in the angle measured in a clockwise direction from the north line to the line joining the centre of the compass at O with the point P (i.e. OP).

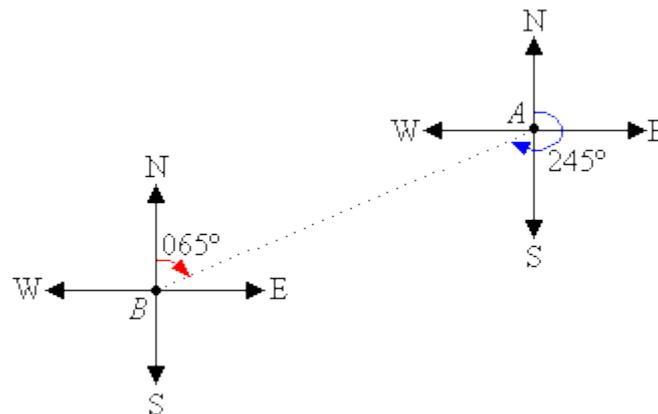
The bearing of point Q is 300° which is the number of degrees in the angle measured in a clockwise direction from the north line to the line joining the centre of the compass at O with the point Q (i.e. OQ).

Note:

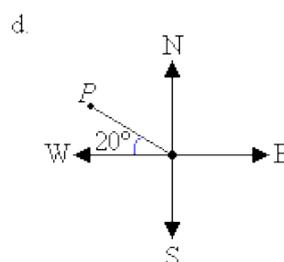
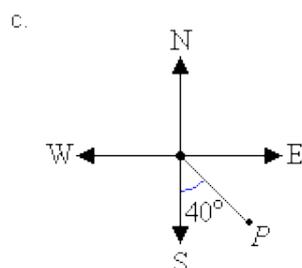
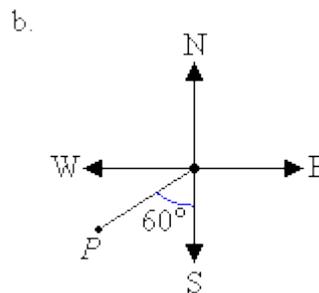
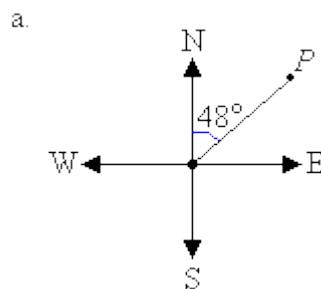
The bearing of a point is the number of degrees in the angle measured in a clockwise direction from the north line to the line joining the centre of the compass with the point.

A bearing is used to represent the direction of one point relative to another point.

For example, the bearing of A from B is 065° . The bearing of B from A is 245° .

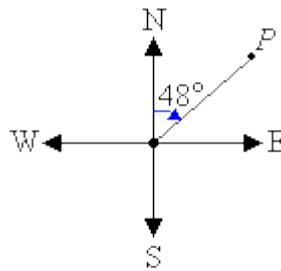


State the bearing of the point P in each of the following diagrams:



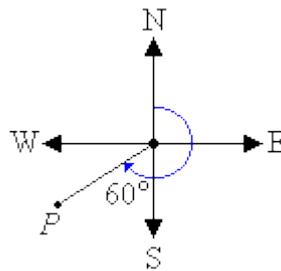
Solution:

Mark the angle in a clockwise direction by indicating the turn between the north line and the line joining the centre of the compass to the point P .



The bearing of point P is 048° .

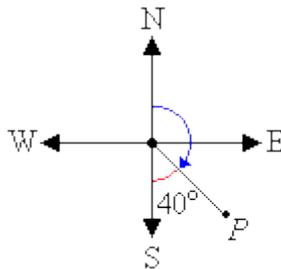
Mark the angle in a clockwise direction by indicating the turn between the north line and the line joining the centre of the compass to the point P .



The cardinal point S corresponds to 180° . It is clear from the diagram that the required angle is 60° larger than 180° . So, the angle measured in a clockwise direction from the north line to the line joining the centre of the compass to point P is $180^\circ + 60^\circ = 240^\circ$.

So, the bearing of point P is 240° .

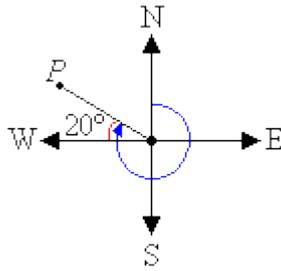
Mark the angle in a clockwise direction by indicating the turn between the north line and the line joining the centre of the compass to the point P .



The cardinal point S corresponds to 180° . It is clear from the diagram that the required angle is 40° less than 180° . So, the angle measured in a clockwise direction from the north line to the line joining the centre of the compass to point P is $180^\circ - 40^\circ = 140^\circ$.

So, the bearing of point P is 140° .

Mark the angle in a clockwise direction by indicating the turn between the north line and the line joining the centre of the compass to the point P .



The cardinal point W corresponds to 270° . It is clear from the diagram that the required angle is 20° larger than 270° . So, the angle measured in a clockwise direction from the north line to the line joining the centre of the compass to point P is $270^\circ + 20^\circ = 290^\circ$.

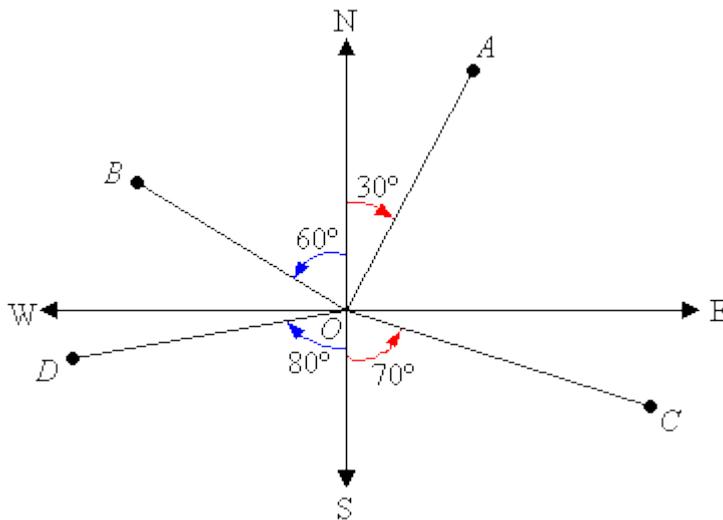
So, the bearing of point P is 290° .

Direction

The conventional bearing of a point is stated as the number of degrees east or west of the north-south line. We will refer to the conventional bearing simply as the direction.

To state the direction of a point, write:

- N or S which is determined by the angle being measured
- the angle between the north or south line and the point, measured in degrees
- E or W which is determined by the location of the point relative to the north-south line



In the diagram, the direction of:

- A from O is N 30° E.
- B from O is N 60° W.
- C from O is S 70° E.
- D from O is S 80° W.

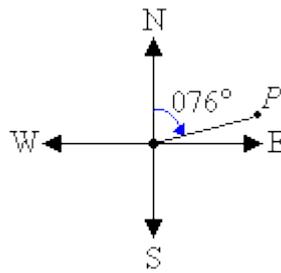
Note:

N 30° E means the direction is 30° east of north.

Describe each of the following bearings as directions.

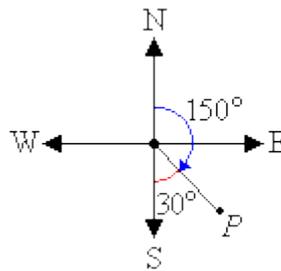
- 076°
- 150°
- 225°
- 290°

The position of a point P on a bearing of 076° is shown in the following diagram.



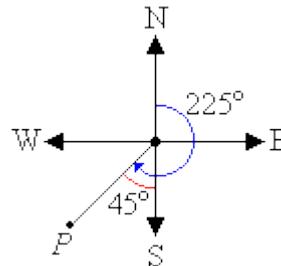
The position of the point P is 76° east of north. So, the direction is $N76^\circ E$.

The position of a point P on a bearing of 150° is shown in the following diagram.



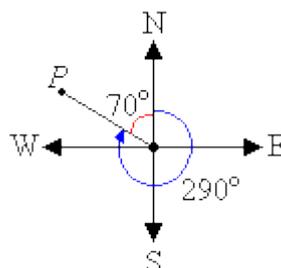
The position of the point P is $180^\circ - 150^\circ = 30^\circ$ east of south. So, the direction is $S30^\circ E$.

The position of a point P on a bearing of 225° is shown in the following diagram.



The position of the point P is $225^\circ - 180^\circ = 45^\circ$ west of south. So, the direction is $S45^\circ W$.

The position of a point P on a bearing of 290° is shown in the following diagram.



The position of the point P is $360^\circ - 290^\circ = 70^\circ$ west of north. So, the direction is $N70^\circ W$.

