Geometrical Constructions Ex 19.2 Q1

Answer :

(i) Explanation:
Perpendicular line from a given point to a given line is the shortest distance between them.
Only one shortest distance is possible. Thus, only one perpendicular line is possible from the given point (outside the line) to a given line.

(ii) Explanation:
At any point on the line, we can draw only one perpendicular line.
Thus, on the given line on a point, we can draw only one perpendicular line.

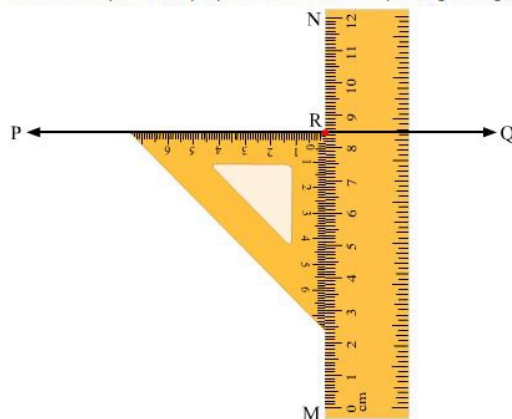## Geometrical Constructions Ex 19.2 Q2

Answer :

(i) Draw a line PQ and take a point R on it.
Place a set-square, such that its one arm of the right angle is along the line PQ .
Without disturbing the position of the set-square, place a ruler along its edge.
Now, without disturbing the position of the ruler, remove the set-square and draw a line MN through point R.
MN is the required line perpendicular to line PQ passing through R.

(ii) Draw a line PQ and take a point R on it.
With R as centre and taking a convenient radius, construct an arc touching the line PQ at two points A and B. Now, with A and B as centres and radius greater than AR, construct two arcs cutting each other at S.
Join RS and extend it in both directions.
This is the required line, which is perpendicular to PQ and passes through R.
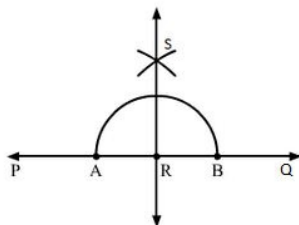
Geometrical Constructions Ex 19.2 Q3

Answer:

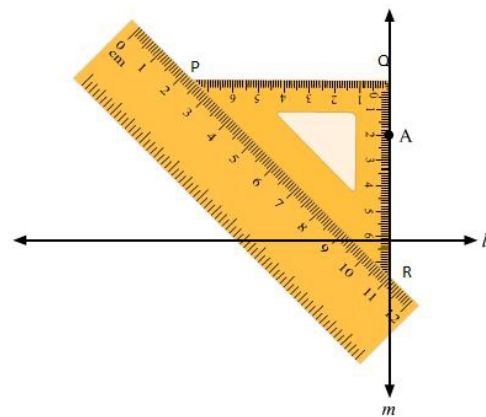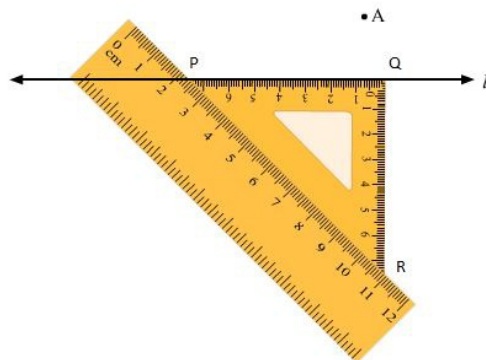**(i)** We draw a line *l* and take a point A outside it.

Place a set square PQR such that its one arm PQ of the right angle is along the line *l*.

Without disturbing the position of set-square, place a ruler along its edge PR.

Now, without disturbing the position of the ruler, slide the set-square along the ruler until its arm QR reaches point A.

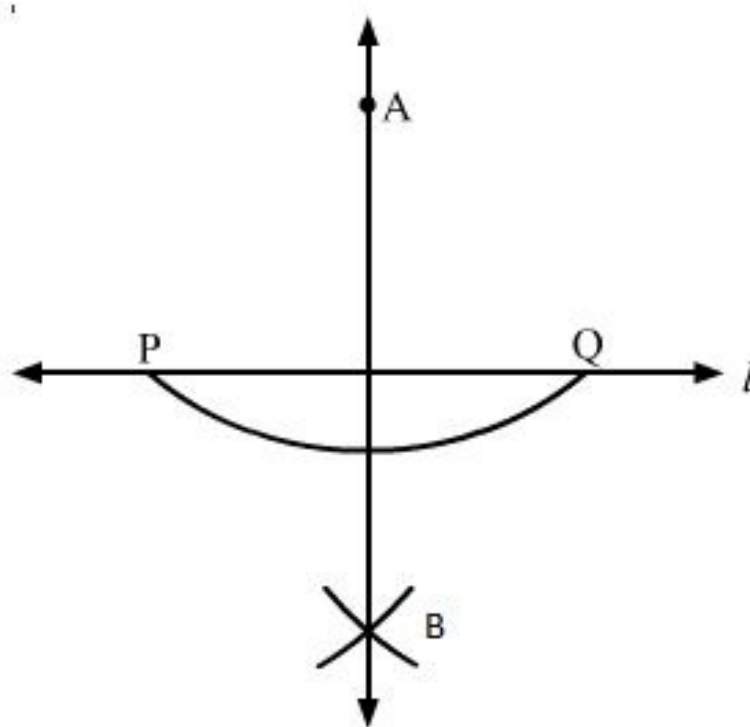Without disturbing the position of the set-square, draw a line *m*.

Line *m* is the required line perpendicular to line *l*.

(ii) With A as centre, draw an arc PQ, which intersects line *l* at points P and Q.

Without disturbing the compass and taking P and Q as centres, we construct two arcs such that they intersect each other. The point where both arcs intersect is B.

Join points A and B and extend it in both directions. This is the required line.

Geometrical Constructions Ex 19.2 Q4

Answer :

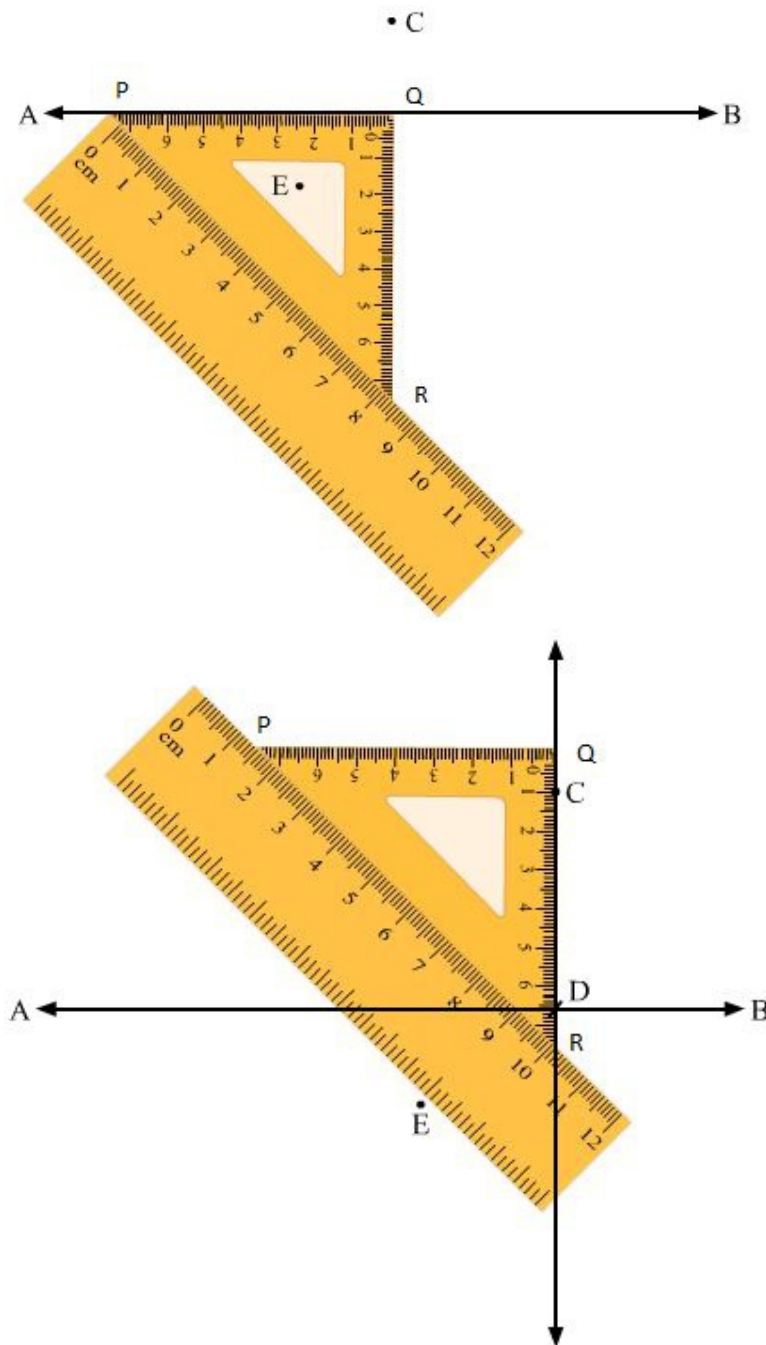**(i)** Draw a line AB and take two points C and E on the opposite sides of the line AB.

On the side of E, place a set-square PQR, such that its one arm PQ of the right angle is along the line AB.

Without disturbing the position of the set-square, place a ruler along its edge PR.

Now, without disturbing the position of the ruler, slide the set square along the ruler until the arm QR reaches point C.

Without disturbing the position of the set-square, draw a line CD, where D is a point on AB.
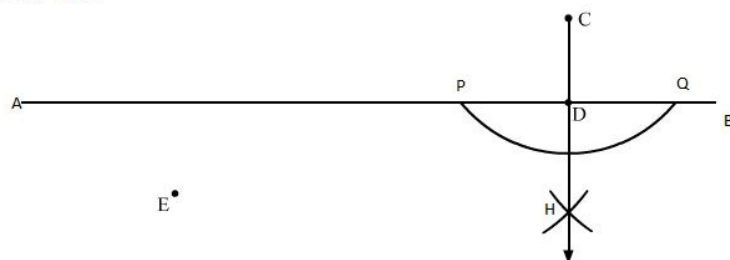
CD is the required line and CD ⊥ AB. We repeat the same process starting with taking set-square on the side of E, we draw a line EF ⊥ AB.
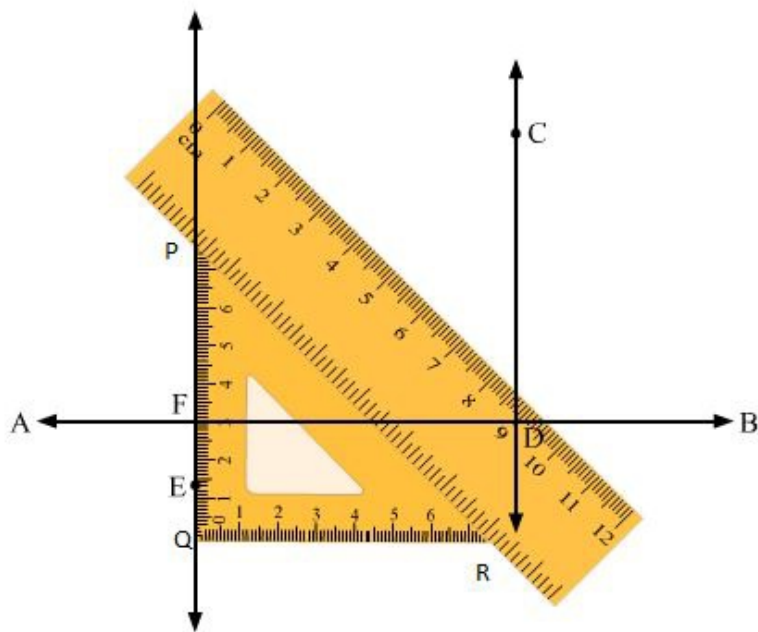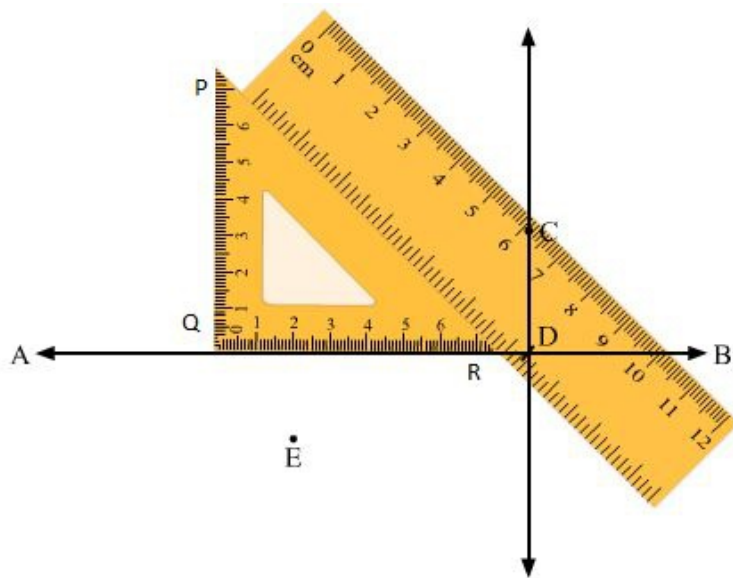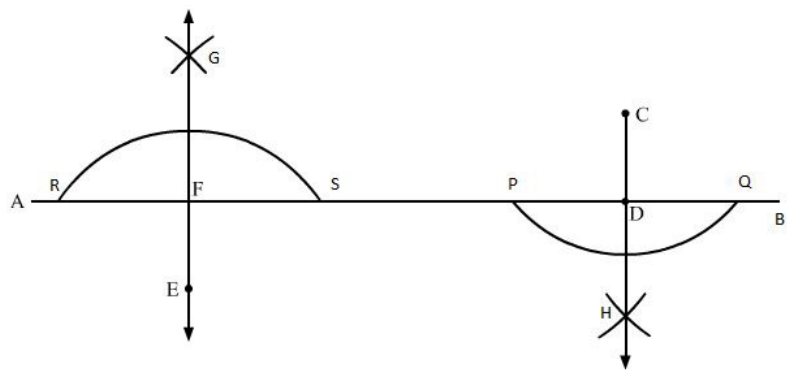
(ii) Draw a line AB and take two points C and E on its opposite sides.

With C as centre, draw an arc PQ, which intersects line AB at P and Q.

Taking P and Q as centres, construct two arcs, such that they intersect each other at H.

Join points H and C.

HC crosses AB at D.

We have CD ⊥ AB.

Similarly, take E as centre and draw an arc RS.

Taking R and S as centres, draw two arcs which intersect each other at G.

Join points G and E.

GE crosses AB at F.

We have EF ⊥ AB.

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