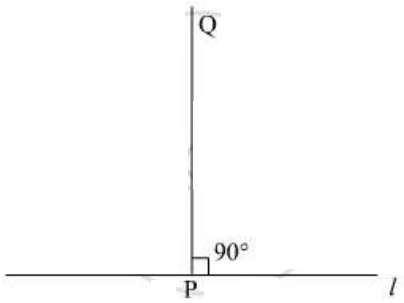
# Chapter 17: Geometrical Constructions

## PRACTICE SET 39 [PAGE 89]

### Practice Set 39 | Q 1 | Page 89

Draw line l. Take any point P on the line. Using a set square, draw a line perpendicular to line l at the point P.

*SOLUTION*



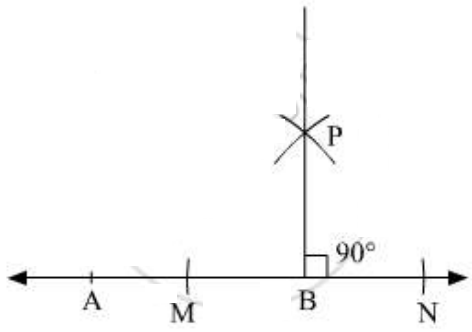

**Steps of constructions:**

1. Draw line l. Take point P anywhere on the line.
2. Place the set square on the line in such a way that the vertex of its right angle is at point P and one arm of the right angle falls on the line l.
3. Draw a line PQ along the other arm of the right angle of the set square.
4. The line PQ is perpendicular to the line l at P.

### Practice Set 39 | Q 2 | Page 89

Draw a line AB. Using a compass, draw a line perpendicular to AB at the point B.

*SOLUTION*




**Steps of construction:**

1. Draw line AB.

2. Place the compass point on point B. Draw two arcs on either side of point B to cut the line AB at equal distances from B. Name the points of intersection M and N respectively.

3. Place the compass point at M and, taking a convenient distance greater than half the length of MN, draw an arc on one side of the line.

4. Place the compass point at N and using the same distance, draw another arc to intersect the first one at P.

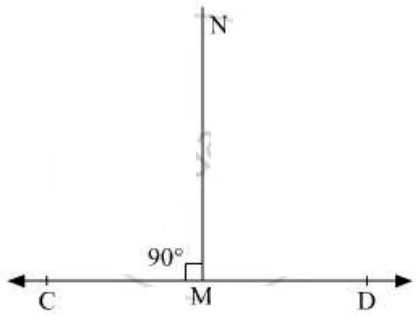
5. Draw a line passing through points B and P.

6. The line BP is perpendicular to line AB at B.

**Practice Set 39 | Q 3 | Page 89**

Draw line CD. Take any point M on the line. Using a protractor, draw a line perpendicular to line CD at the point M.

*SOLUTION*




**Steps of construction:**

1. Draw line CD. Take point M anywhere on the line.

2. In order to draw a perpendicular through M, place the center of the protractor on point M.

3. Mark a point N at the 90° mark on the protractor.

4. Draw a line passing through points M and N.

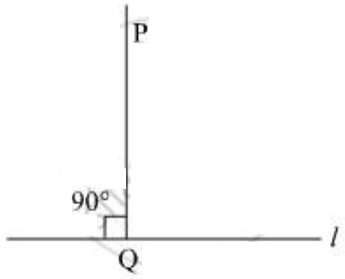
5. The line MN is perpendicular to line CD at M.

## PRACTICE SET 40 [PAGE 92]

**Practice Set 40 | Q 1 | Page 92**

Draw line l. Take point P anywhere outside the line. Using a set square, draw a line PQ perpendicular to line l.

*SOLUTION*




**Steps of construction:**

1. Draw line l. Take point Q anywhere outside l.

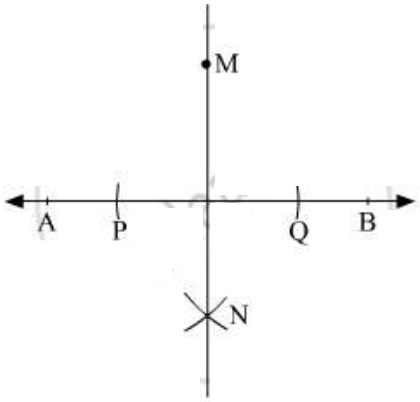
2. Place one of the arms of the right angle of a set square along the line l.

3. Slide the set square along the line in such a way that the other arm of its right angle touches point P.

**Practice Set 40 | Q 2 | Page 92**

Draw line AB. Take point M anywhere outside the line. Using a compass and ruler, draw a line MN perpendicular to line AB.

*SOLUTION*




**Steps of construction:**

1. Draw line AB. Take any point M outside the line.

2. Placing the compass point at point M and using any convenient distance, draw arcs to cut the line AB at two points P and Q.

3. Place the compass point at P and taking a distance greater than half of PQ, draw an arc on the lower side of line AB.

4. Place the compass point at Q and using the same distance, draw an arc to cut the previous arc at N.

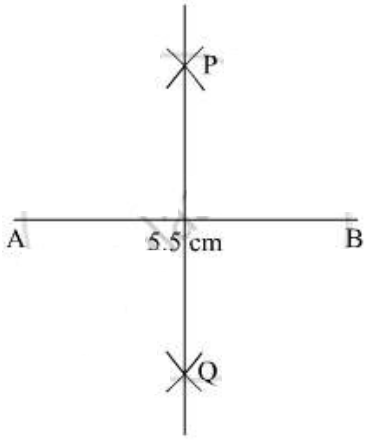
5. Draw the line MN.

6. Line MN is perpendicular to line PQ.

**Practice Set 40 | Q 3 | Page 92**

Draw a line segment AB of length 5.5 cm. Bisect it using a compass and ruler.

*SOLUTION*




**Steps of constructions:**

1. Draw seg AB of 5.5 cm.

2. Place the compass point at A and taking a distance greater than half the length of seg AB, draw two arcs, one below and one above seg AB.

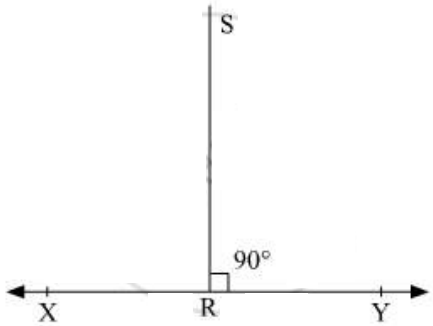
3. Place the compass point at B and using the same distance draw arcs to intersect the previous arcs at P and Q.

4. Draw line PQ.

**Practice Set 40 | Q 4 | Page 92**

Take a point R on line XY. Draw a line perpendicular to XY at R, using a set square.

*SOLUTION*




**Steps of constructions:**

1. Draw line XY. Take point R anywhere on the line.

2. Place the set square on the line in such a way that the vertex of its right angle is at point R and one arm of the right angle falls on line XY.

3. Draw a line PQ along the other arm of the right angle of the set square.

4. The line RS is perpendicular to the line XY at R.