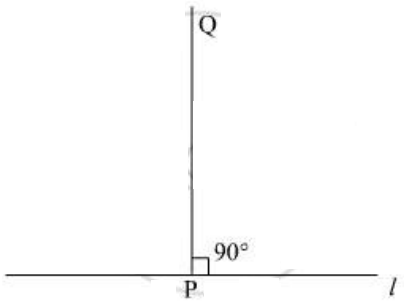
Chapter 17: Geometrical Constructions

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



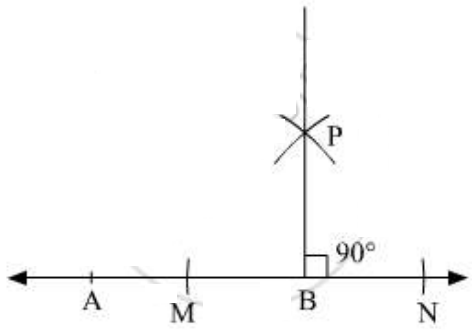
Steps of constructions:

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.

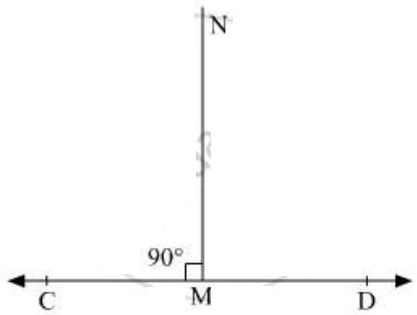
5. Draw a line passing through points B and P.

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.

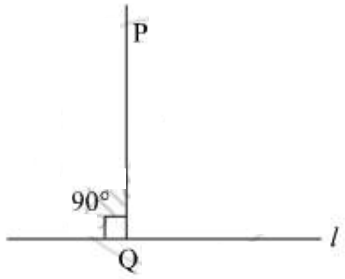
5. The line MN is perpendicular to line CD at M.

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.

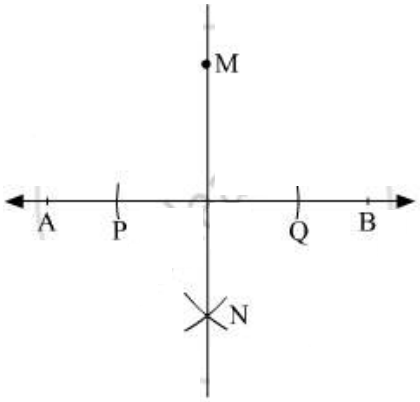
2. Place one of the arms of the right angle of a set square along the line l.

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.

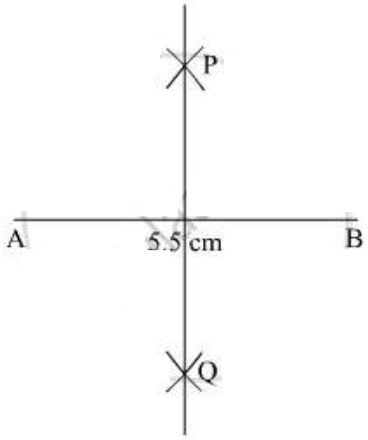
5. Draw the line MN.

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.

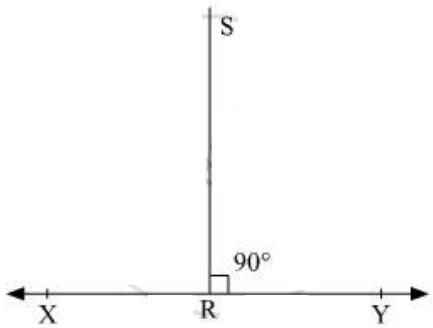
3. Place the compass point at B and using the same distance draw arcs to intersect the previous arcs at P and Q.

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.