RD Sharma Solutions for Class 9 Maths Chapter 17 Construction

Question 1: Draw a line segment of length 8.6 cm. Bisect it and measure the length of each part.

Solution:
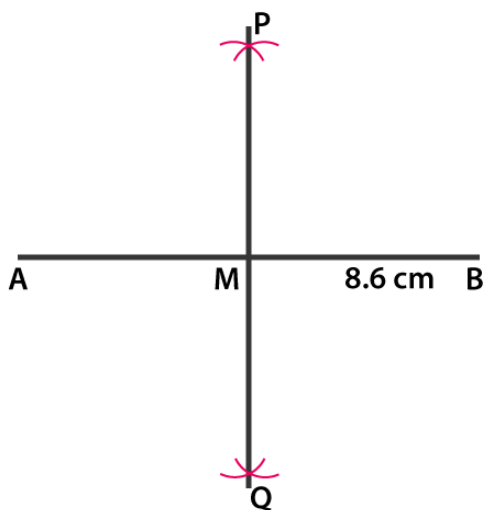Step 1: Draw a line segment AB = 8.6 cm.
Step 2: Draw arcs on each side of AB using A as a center at any radius more than half of 8.6.
Step 3: Repeat Step 2 using B as a center and make sure these arcs cut the previous arcs.
Step 4: Join the points P and Q which intersects AB at M.
Therefore AM= MB = 4.3 cm

Question 2: Draw a line segment AB of length 5.8cm. Draw the perpendicular bisector of this line segment.

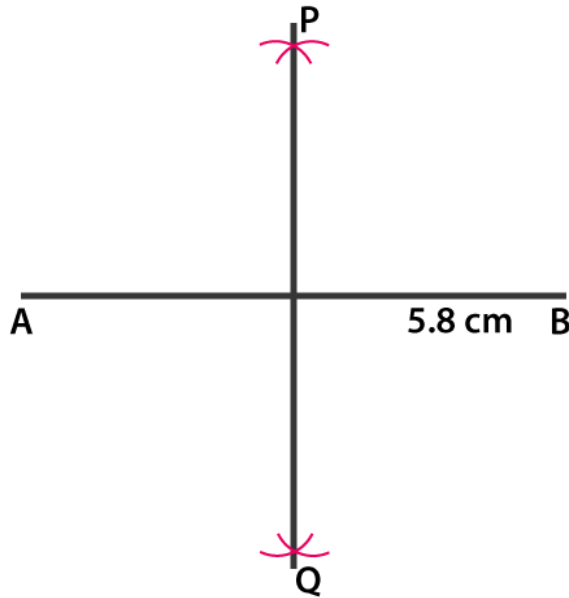**Solution:**
Step 1: Draw a line segment AB = 5.8 cm.
Step 2: Draw arcs on each side of AB using A as a center at any radius more than half of 5.8.
Step 3: Repeat Step 2 using B as a center and make sure these arcs cut the previous arcs.
Step 4: Join the points P and Q.

Here, PQ is the perpendicular bisector of AB.

Question 3: Draw a circle with center at point O and radius 5cm. Draw its chord AB, the perpendicular bisector of line segment AB. Does it pass through the center of the circle?
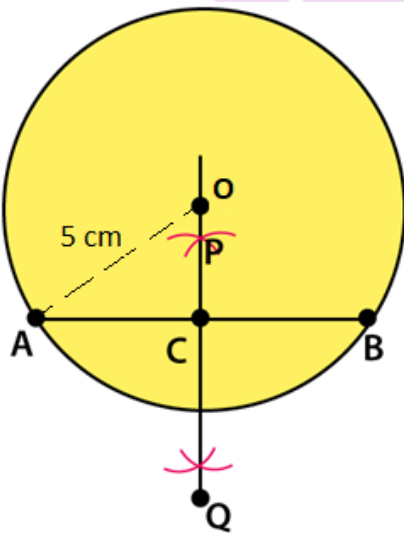
Solution:
Step 1: Draw a circle choosing radius 5 cm and point O as center.
Step 2: Draw a chord AB using scale.
Step 3: Draw arcs one on each side of chord chossing A as center and radius more than half of 5 cm.
Step 4: Repeat step 3 using B as a centre and make sure these arcs cut the previous arcs.
Step 5: Join P and Q.

Therefore PQ is a perpendicular bisector of chord AB passes through the center of the circle.

Exercise 17.2   Page No: 17.7

Question 1: Draw an angle and label it as ∠BAC. Construct another angle, equal to ∠BAC.

 Solution:
Steps of construction:

Step 1: Draw any angle ABC.
Now will construct an angle equal to ∠BAC
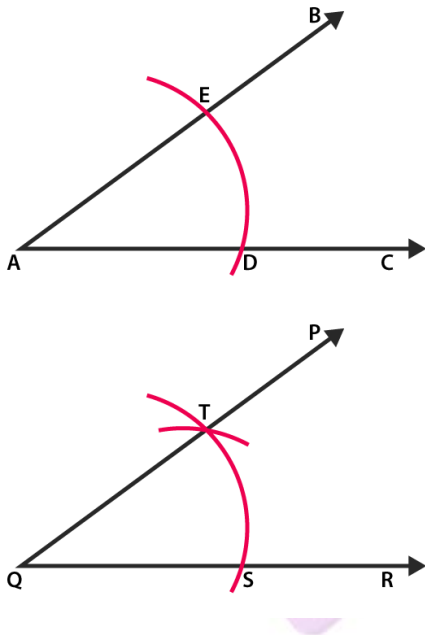Step 2: Draw a line segment QR.
Step 3: Draw an arc which intersects ∠BAC at E and D using A as center and choose any radius.
Step 4: With same measurements (set in step 2), Draw an arc from point Q.
Step 5: With S as center and radius equal to DE, draw an arc which intersects the previous arc at T.
Step 6: Join Q and T.

Therefore ∠PQR= ∠BAC

 Question 2: Draw an obtuse angle. Bisect it. Measure each of the angles so formed.
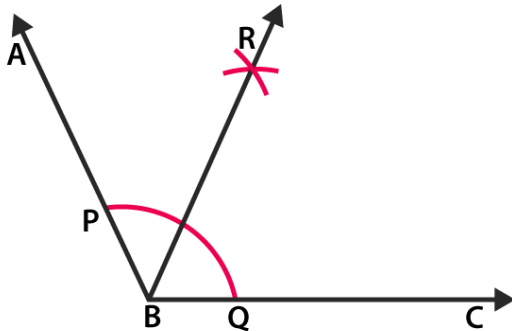
 Solution:
Steps of construction:
Step 1: Draw an obtuse angle. We choose ∠ABC = 120^0.
Step 2: Draw an arc which intersects AB at P and BC at Q, from center B and choose any radius.
Step 3: Draw an arc from point P by setting radius more than half of PQ.
Step 4: Repeat step 3 using Q as center and cut the previous arc at R.

Step 5: Join BR.

Therefore ∠ABR= ∠RBC = 60^0

Question 3: Using your protractor, draw an angle of 108^0. With this given angle as given, draw an angle of 54^0.

Solution:
Steps of construction:
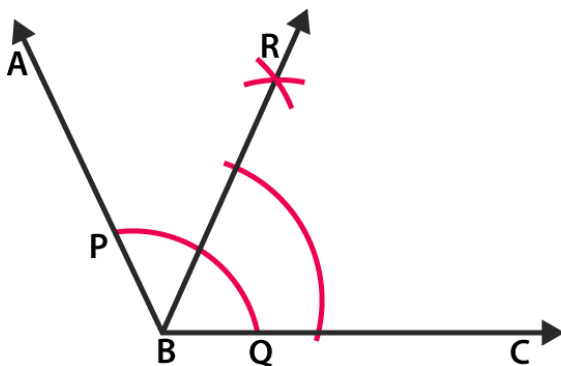Step 1: Draw ∠ABC = 108^0.
Step 2: Draw an arc which intersects AB at P and BC at Q from point B. (Choose any radius)
Step 3: Draw an arc from point P by setting radius more than half of PQ.
Step 4: Repeat Step 3 using Q as the centre and intersect the previous arc at R.
Step 5: Join BR.
Therefore ∠RBC = 54^0

Question 4: Using the protractor, draw a right angle. Bisect it to get an angle of measure 45⁰.

 Solution:
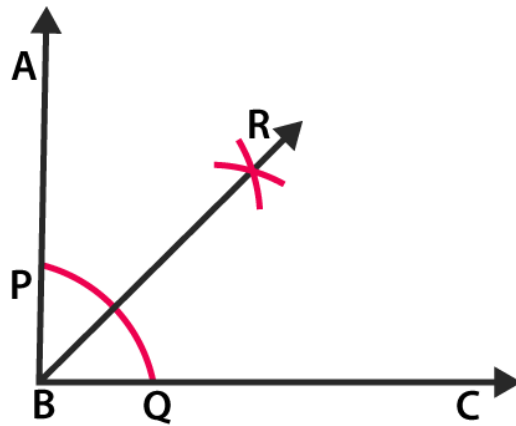Steps of construction:
Step 1: Draw ∠ABC = 90⁰.
Step 2: Draw an arc which intersects AB at P and BC at Q from point B. (Choose any radius)
Step 3: Draw an arc from point P by setting radius more than half of PQ.
Step 4: Repeat step 3 using Q as a centre and intersect the previous arc at R.
Step 5: Join RB.
Therefore ∠RBC= 45⁰

Question 1: Construct a △ABC in which BC = 3.6 cm, AB + AC = 4.8 cm and ∠B = 60⁰.
Solution:

Steps of Construction:
Step 1: Draw a line segment BC = 3.6 cm.
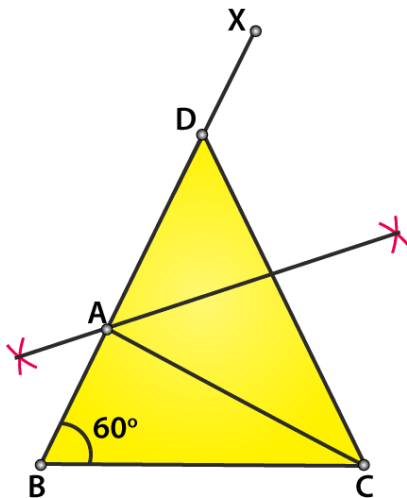Step 2: At the point B, draw ∠XBC = 60⁰.
Step 3: Draw an arc which intersects XB at point D form point B and with radius 4.8 cm
Step 4: Join DC.
Step 5: Draw a perpendicular bisector of DC which intersects DB at A.
Step 6: Join AC.
Hence, △ABC is the required triangle.

Question 2: Construct a △ABC in which AB + AC = 5.6 cm, BC = 4.5 cm and ∠B=45⁰.
Solution:
Steps of Construction:
Step 1: Draw a line segment BC = 4.5 cm.
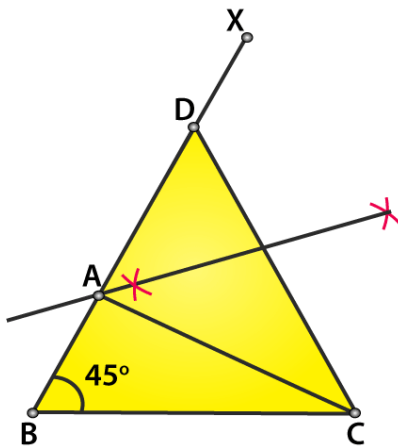Step 2: At the point B, draw ∠XBC = 45⁰.
Step 3: Draw an arc which intersects XB at point D form point B and with radius 5.6 cm
Step 4: Join DC.
Step 5: Draw a perpendicular bisector of DC which intersects DB at A.
Step 6: Join AC.
Hence, △ABC is the required triangle.

Question 3: Construct a △ABC in which BC = 3.4 cm, AB – AC = 1.5 cm and ∠B = 45⁰.

Solution:

Steps of Construction:

Step 1: Draw a line segment BC = 3.4 cm.

Step 2: Draw ∠XBC = 45^0.
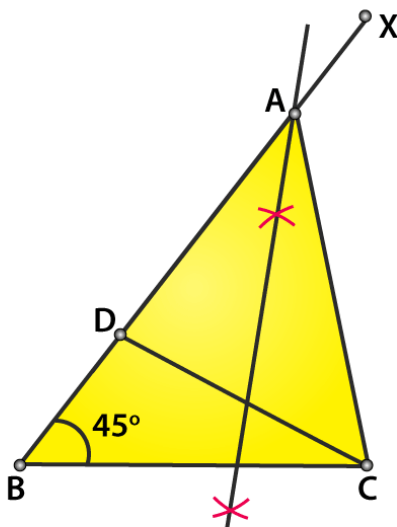
Step 3: Draw an arc which intersects XB at point D form point B and with radius 1.5 cm. So, BD = 1.5 cm.

Step 4: Join line segment DC.

Step 5: Draw a perpendicular bisector of DC which intersects BX at A.

Step 6: Join line segment AC.

Hence, △ABC is the required triangle.

Question 4: Using rulers and compasses only, construct a △ABC, given base BC = 7 cm, ∠ABC = 60⁰ and AB + AC = 12 cm.

Solution:
Step 1: Draw a line segment BC = 7 cm.
Step 2: Draw an arc from point B cutting BC at N. (Choose any radius.)
Step 3: Keep compass at point N with same radius selected in step 2, cut the previous arc at M.
Step 4: Join line segment BM.
Step 5: Produce BM to any point P
Step 6: Cut BR = 12 cm, from BP.
Step 7: Join CR.
Step 8: Draw a perpendicular bisector of RC which intersects BR at A.
Step 9: Join line segment AC.
Hence, △ABC is the required triangle.