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:

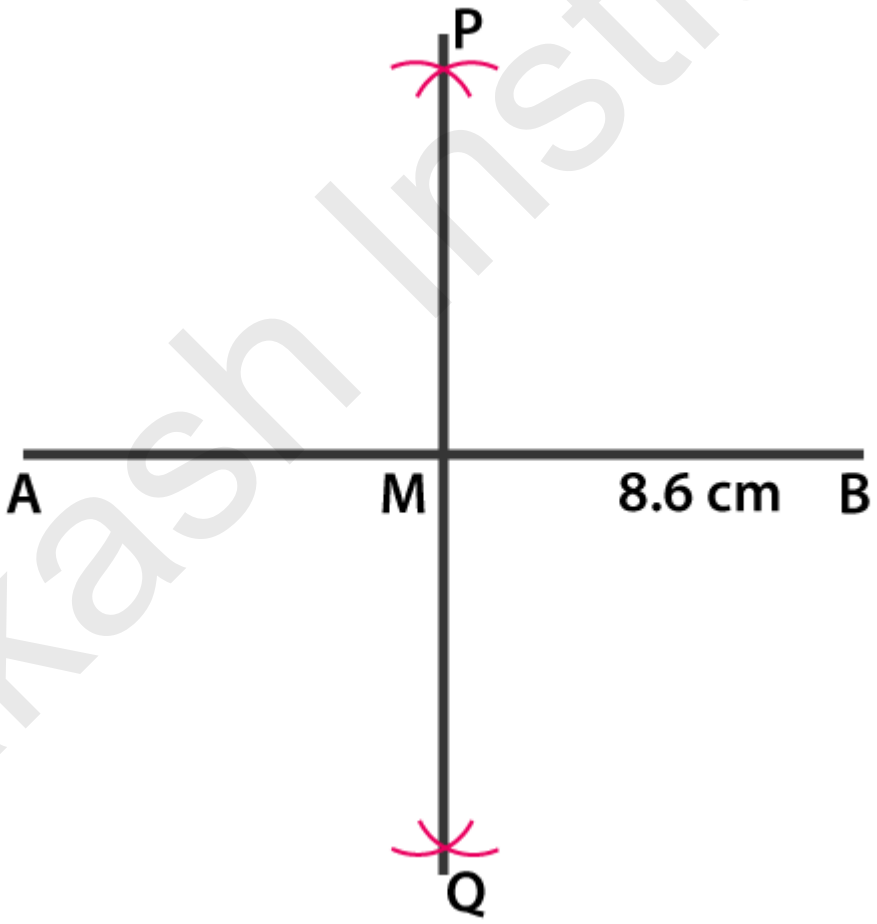
Step 1: Draw a line segment AB = 8.6 cm.

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:

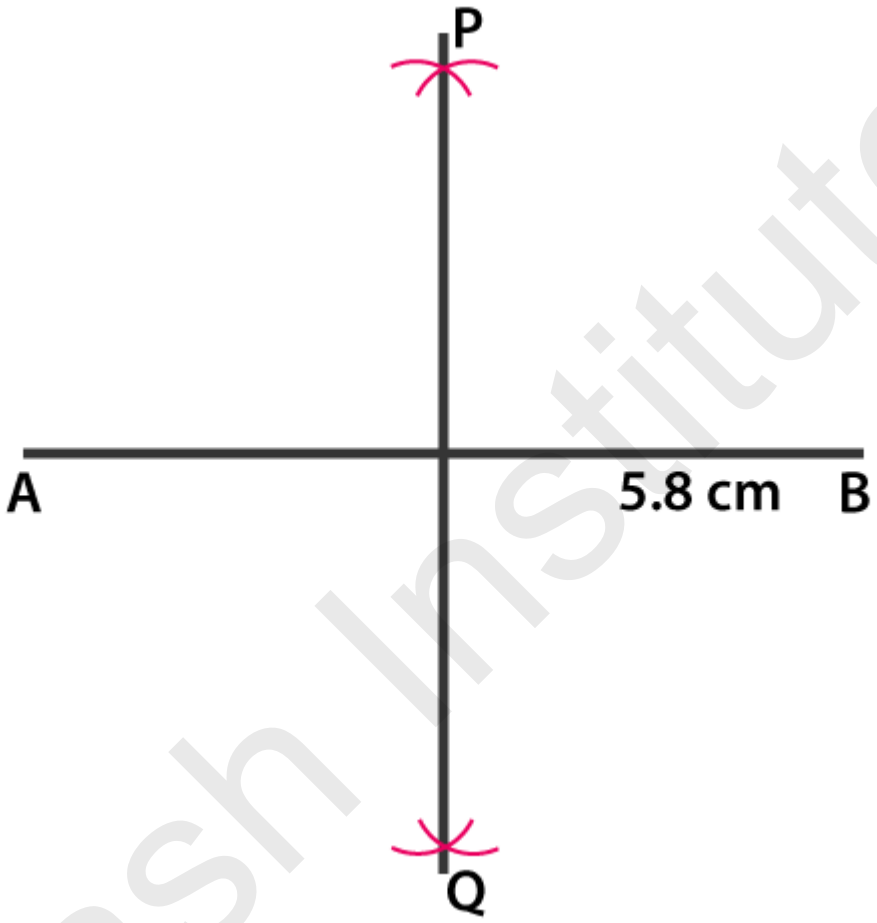
Step 1: Draw a line segment AB = 5.8 cm.

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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.

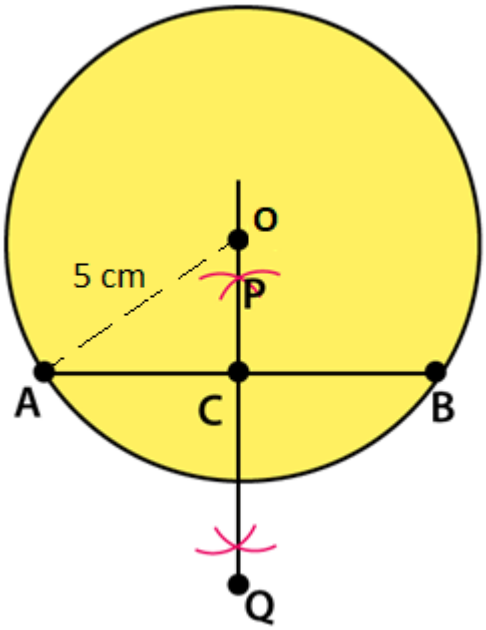
Step 2: Draw a chord AB using scale.

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.

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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.

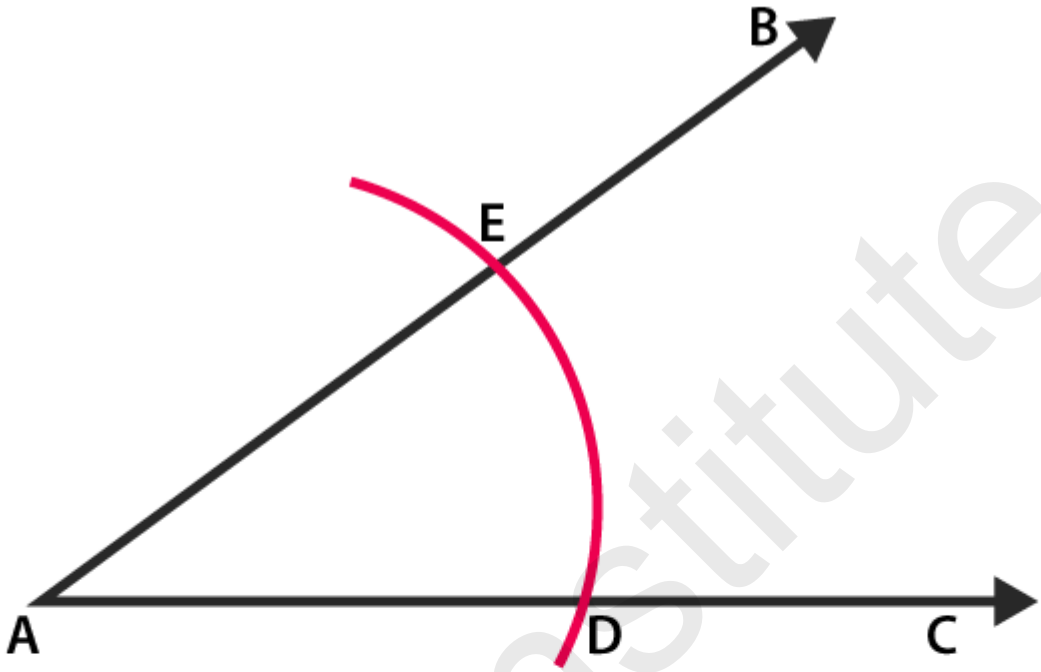
Step 3: Draw an arc which intersects ∠BAC at E and D using A as center and choose any radius.

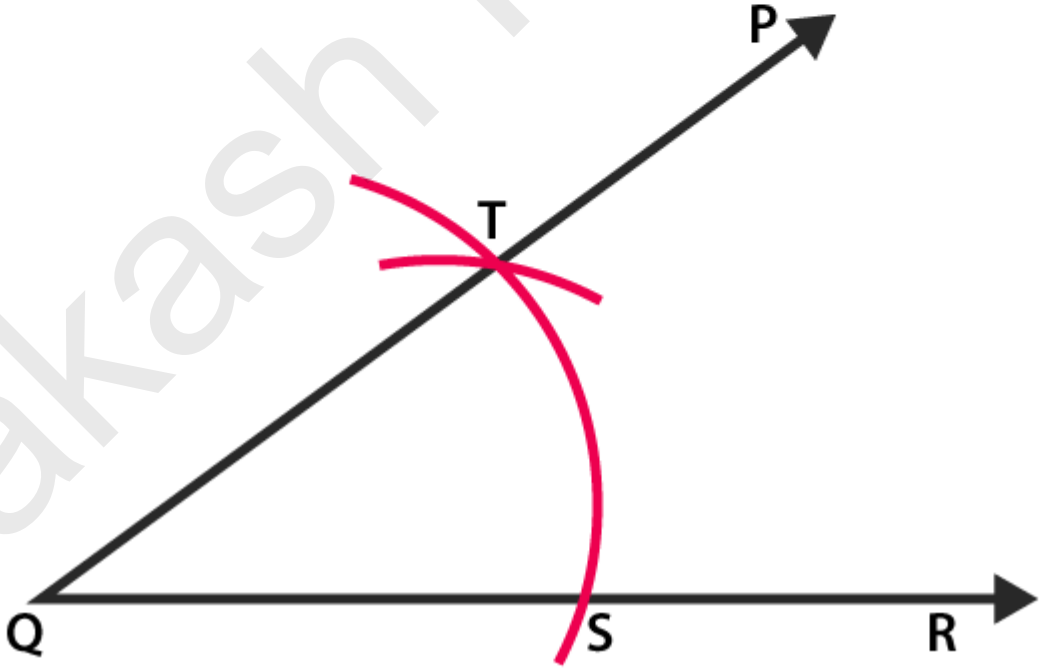
Step 4: With same measurements (set in step 2), Draw an arc from point Q.

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.

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Therefore ∠PQR= ∠BAC

Question 2: Draw an obtuse angle. Bisect it. Measure each of the angles so formed.

Solution:

Steps of construction:

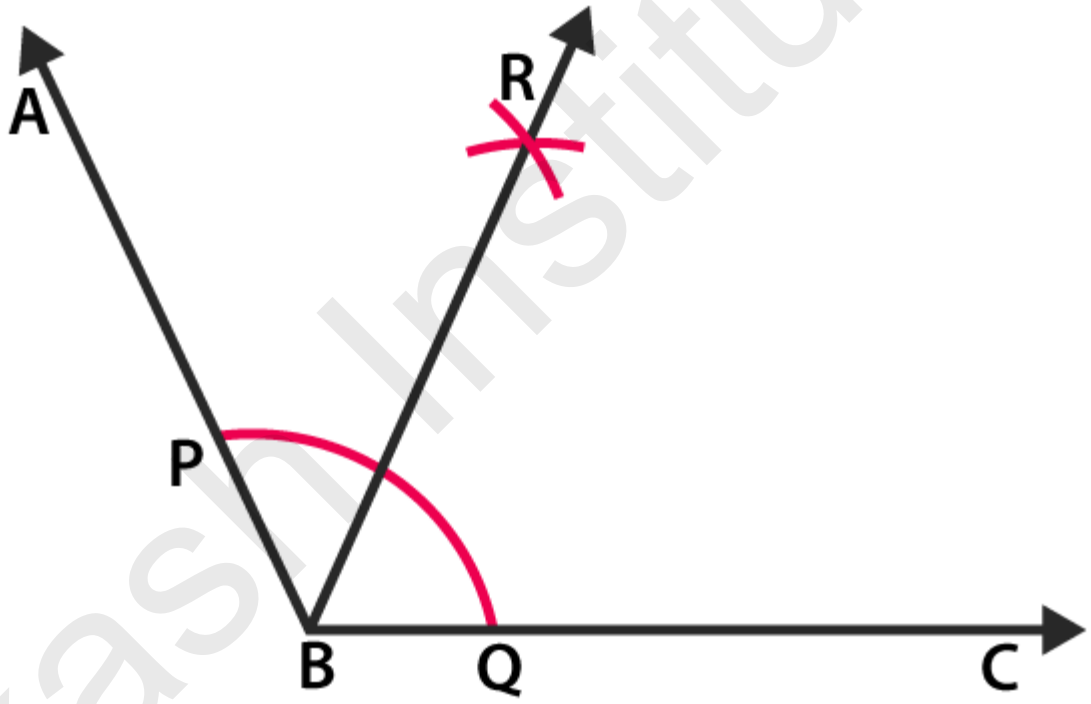
Step 1: Draw an obtuse angle. We choose $\angle ABC = 120^0$.

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 $\angle ABR = \angle RBC = 60^0$

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 $\angle ABC = 108^0$.

Step 2: Draw an arc which intersects AB at P and BC at Q from point B. (Choose any radius)

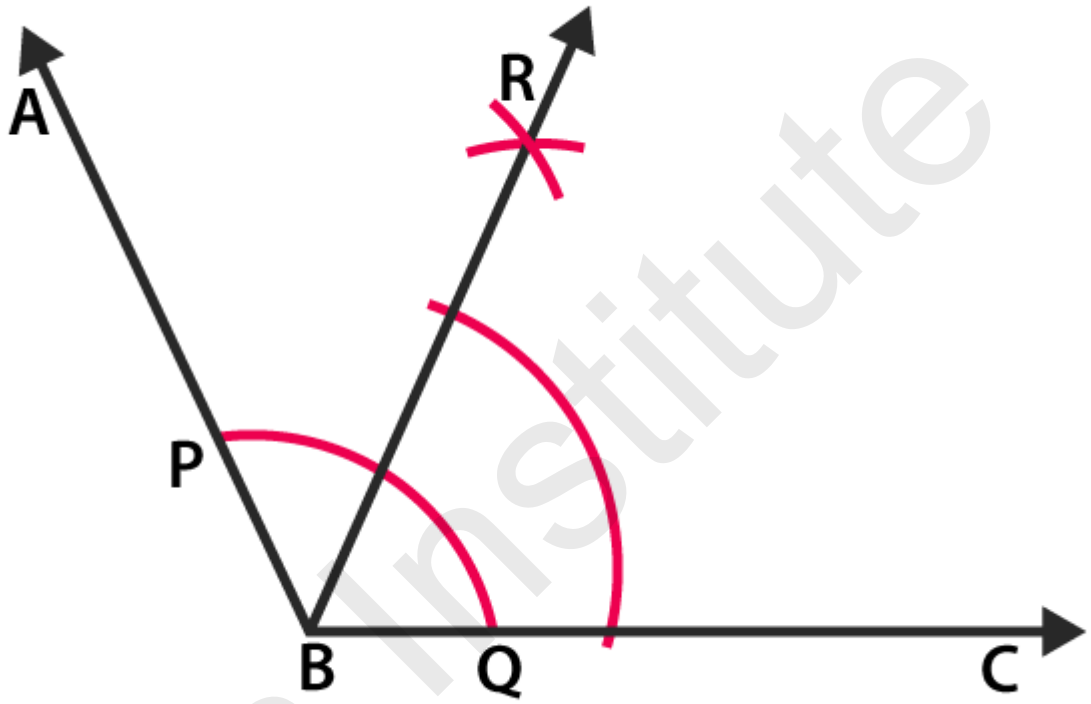
Step 3: Draw an arc from point P by setting radius more than half of PQ.

Step 4: Repeat Step 3 using Q as the centre and intersect the previous arc at R.

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Step 5: Join BR.

Therefore $\angle RBC = 54^0$



Question 4: Using the protractor, draw a right angle. Bisect it to get an angle of measure 45^0.

Solution:

Steps of construction:

Step 1: Draw $\angle ABC = 90^0$.

Step 2: Draw an arc which intersects AB at P and BC at Q from point B. (Choose any radius)

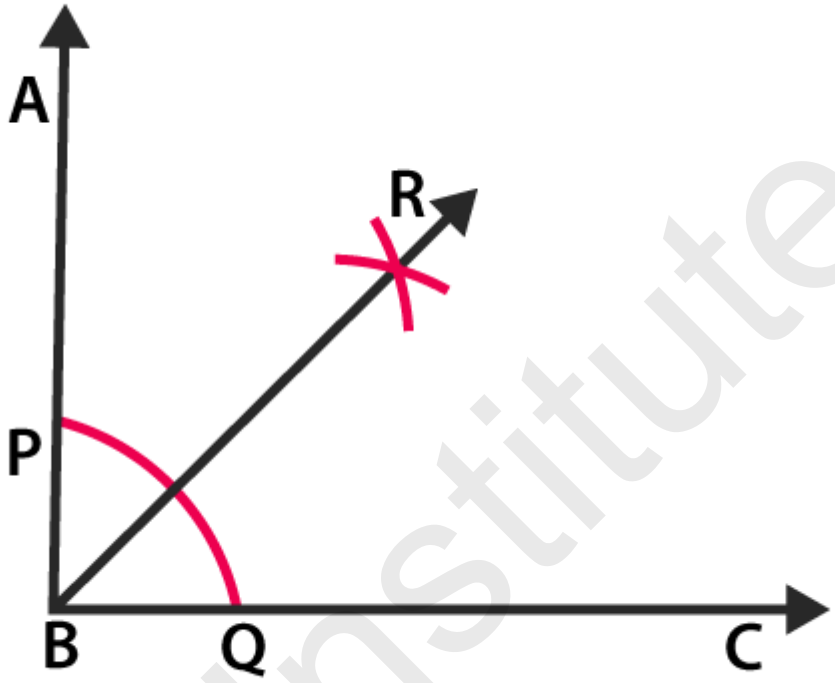
Step 3: Draw an arc from point P by setting radius more than half of PQ.

Step 4: Repeat step 3 using Q as a centre and intersect the previous arc at R.

Step 5: Join RB.

Therefore $\angle RBC = 45^0$

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Exercise 17.3 Page No: 17.15

Question 1: Construct a △ABC in which BC = 3.6 cm, AB + AC = 4.8 cm and ∠B = 60°.

Solution:

Steps of Construction:

Step 1: Draw a line segment BC = 3.6 cm.

Step 2: At the point B, draw ∠XBC = 60°.

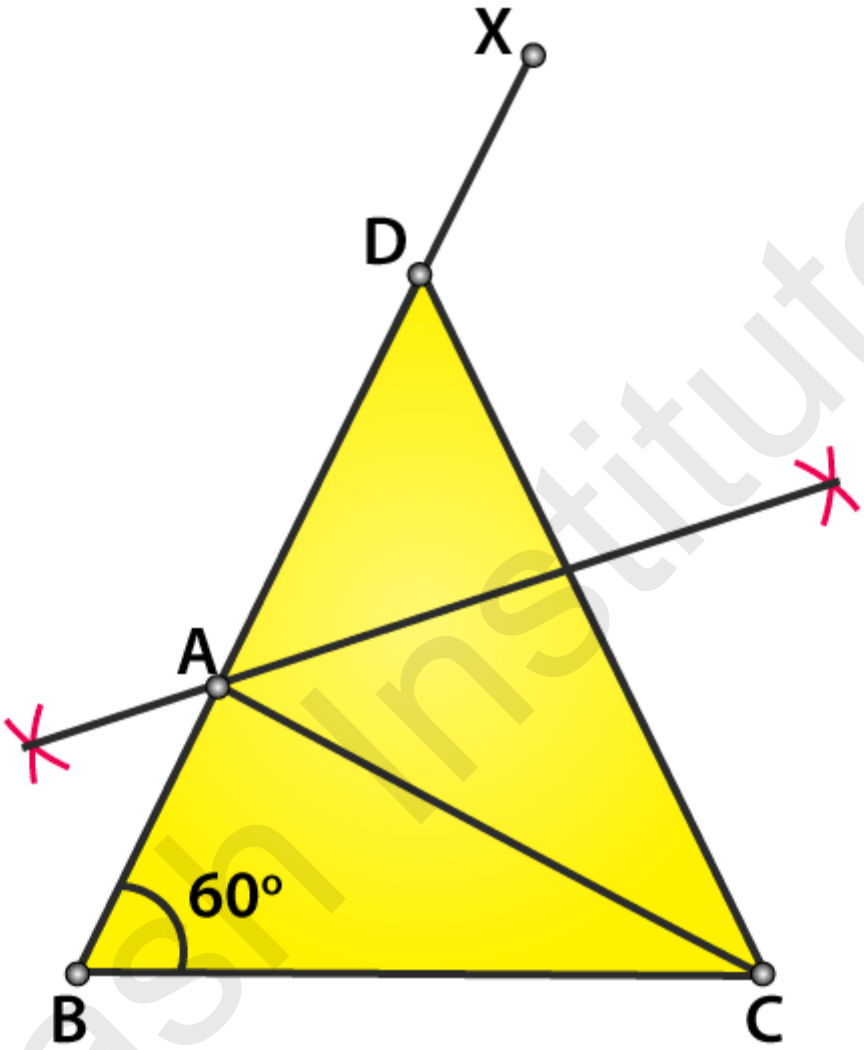
Step 3: Draw an arc which intersects XB at point D form point B and with radius 4.8 cm

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=45°.

Solution:

Steps of Construction:

Step 1: Draw a line segment BC = 4.5 cm.

Step 2: At the point B, draw ∠XBC = 45°.

Step 3: Draw an arc which intersects XB at point D form point B and with radius 5.6 cm

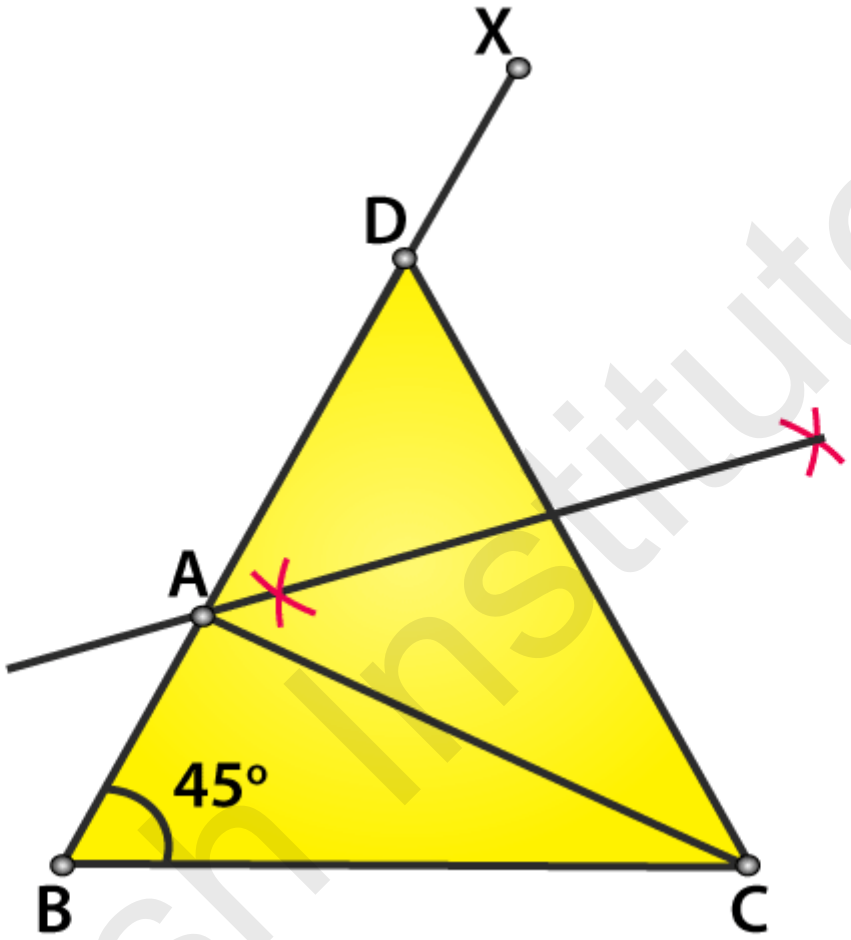
Step 4: Join DC.

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

Step 6: Join AC.

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Hence, △ABC is the required triangle.



Question 3: Construct a △ABC in which BC = 3.4 cm, AB – AC = 1.5 cm and ∠B = 45°.

Solution:

Steps of Construction:

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

Step 2: Draw ∠XBC = 45°.

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.

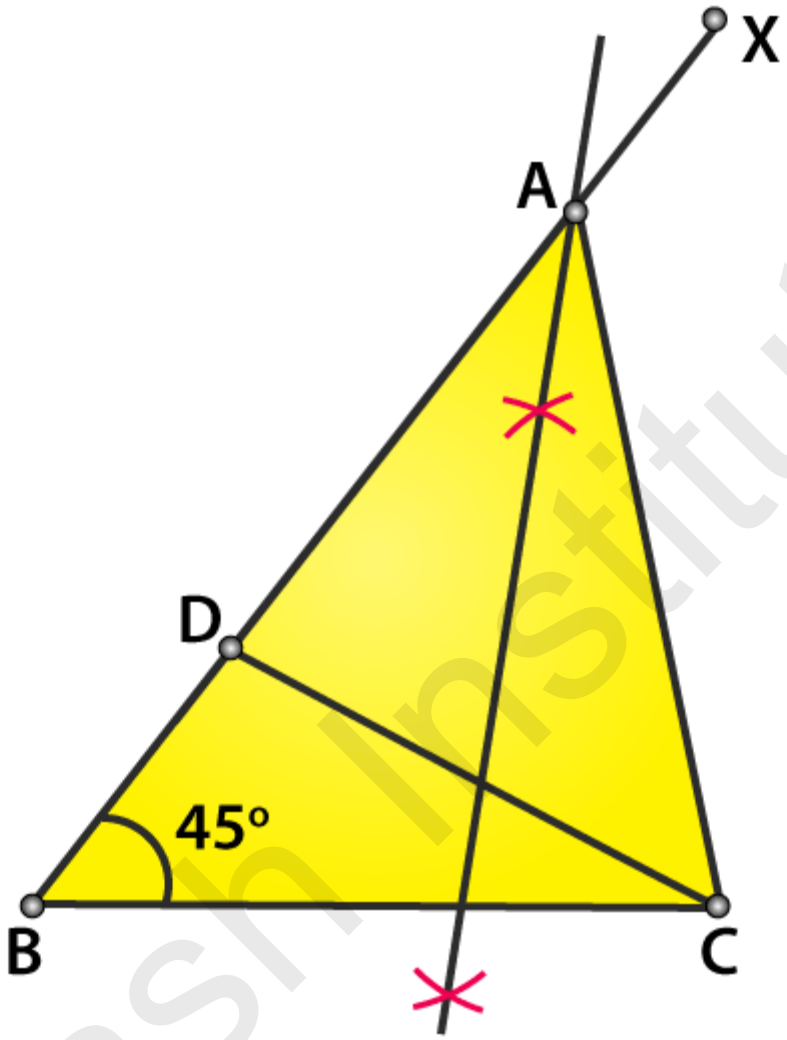
Step 4: Join line segment DC.

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.

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Question 4: Using rulers and compasses only, construct a △ABC, given base BC = 7 cm, ∠ABC = 60° 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.

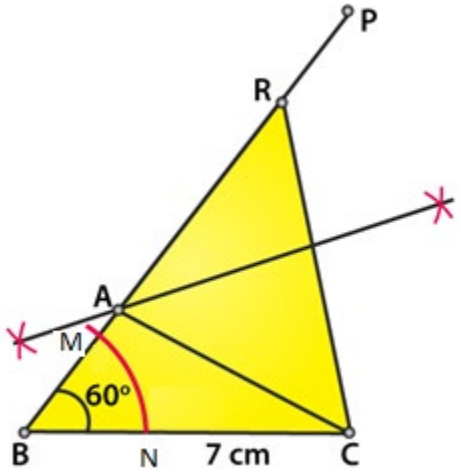
Step 7: Join CR.

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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.



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