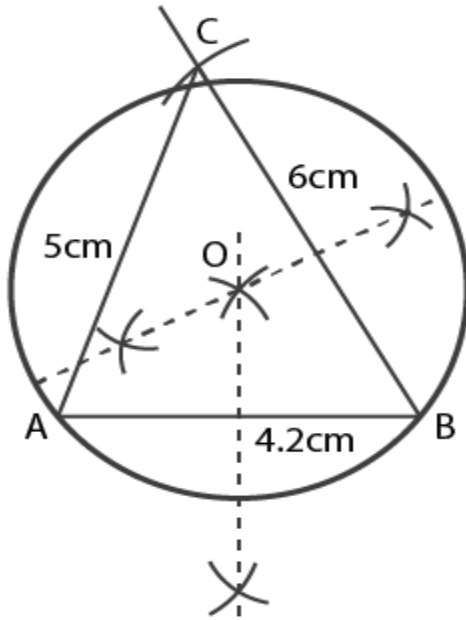


**EXERCISE 29(B)**

**1. Construct a triangle ABC with  $AB = 4.2$  cm,  $BC = 6$  cm and  $AC = 5$  cm. Construct the circumcircle of the triangle drawn.**

**Solution:**

Steps of Construction:



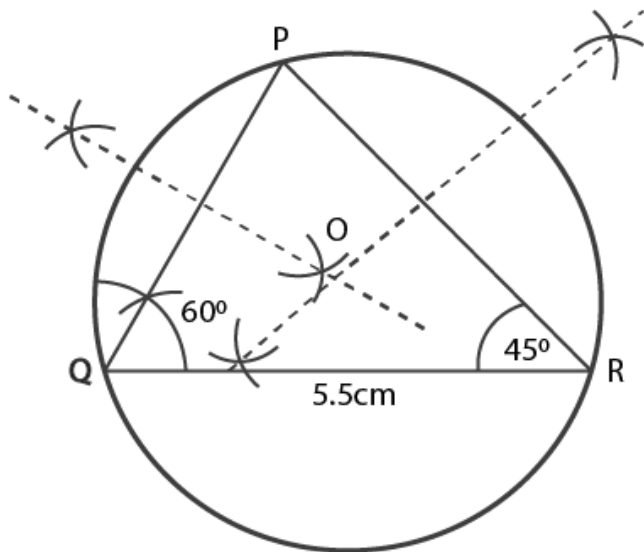
- (i) Draw a line segment  $AB = 4.2$  cm
- (ii) Now, taking B as centre, draw an arc of length 6 cm from B using compass
- (iii) Again taking A as centre, draw another arc bisecting the previous arc marked by B at point C such that  $AC = 5$  cm
- (iv) Join C to points A and B. The required triangle ABC is obtained
- (v) Draw the perpendicular bisector of any two sides of the triangle. Let these intersect at point O.
- (vi) Taking O as centre and OA or OB or OC as radius, draw a circle with the help of compass

This circle will pass through the vertices A, B and C

**2. Construct a triangle PQR with  $QR = 5.5$  cm,  $\angle Q = 60^\circ$  and angle R =  $45^\circ$ . Construct the circumcircle of the triangle PQR.**

**Solution:**

Steps of Construction:

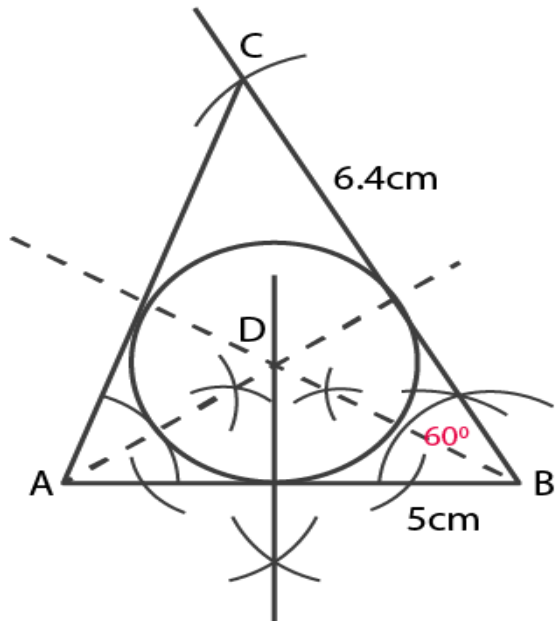


- (i) Draw a  $\triangle PQR$  in which  $QR = 5.5$  cm.
- (ii) With the help of compass, draw  $\angle Q = 60^\circ$  and  $\angle R = 45^\circ$
- (iii) Both  $\angle Q$  and  $\angle R$  intersect at point P, thus forming a  $\triangle PQR$
- (iv) Using compass, draw a perpendicular bisector of PR and QR which intersects at point O
- (v) Now, taking O as centre and OP or OQ or OR as radius draw a circle with the help of compass
- (vi) This circle will pass through the vertices P, Q and R

**3. Construct a triangle ABC with  $AB = 5$  cm,  $\angle B = 60^\circ$  and  $BC = 6.4$  cm. Draw the incircle of the triangle ABC.**

**Solution:**

**Steps of Construction:**

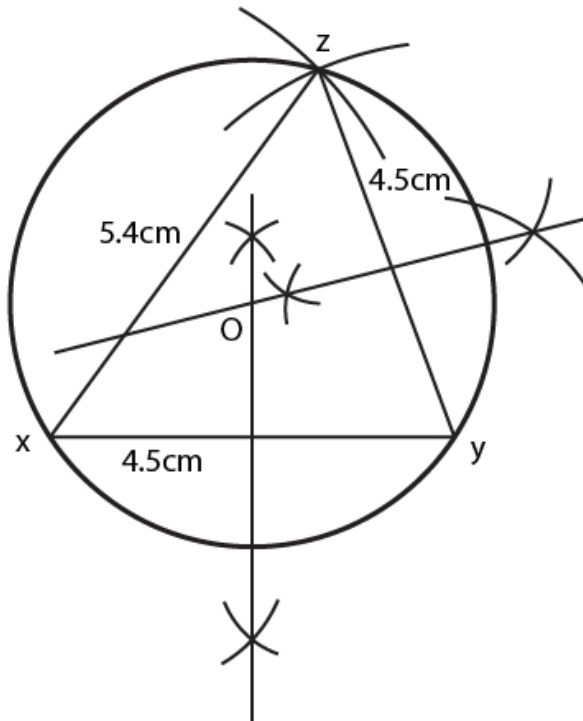


- (i) Draw a line AB of length 5 cm
- (ii) Taking B as centre, draw an angle  $B = 60^\circ$  using compass.
- (iii) With the help of compass, draw an arc  $BC = 6.4$  cm from point B as centre
- (iv) Join the points A and C such that it forms a  $\triangle ABC$
- (v) Now, from A and B cut the bisector of  $\angle A$  and  $\angle B$  which intersects each other at point D.
- (vi) Taking D as centre, draw an incircle with the help of compass which touches all the three sides of  $\triangle ABC$

**4. Construct a triangle XYZ in which  $XY = YZ = 4.5$  cm and  $ZX = 5.4$  cm. Draw the circumcircle of the triangle and measure its circumradius.**

**Solution:**

**Steps of Construction:**

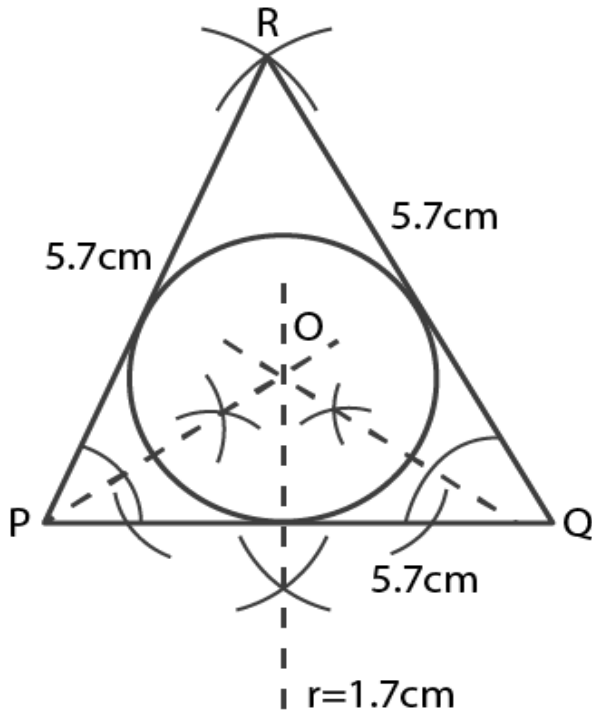


- (i) Draw a line  $XY = 4.5$  cm
- (ii) With the help of compass, draw an arc of 4.5 cm from Y as centre
- (iii) Again with the help of compass, draw another arc of 5.4 cm from X as centre which intersects the previous arc made by Y
- (iv) Now, mark the intersection as point Z and join it to both X and Y. The required triangle XYZ is obtained.
- (v) Draw the bisectors of  $XZ$  and  $YZ$  which meet at point O
- (vi) Taking O as centre and radius OX or OY or OZ draw a circle using compass
- (vii) This circle will pass through the vertices X, Y and Z

**5. Construct a triangle PQR in which,  $PQ = QR = RP = 5.7$  cm. Draw the incircle of the triangle and measure its radius.**

**Solution:**

**Steps of Construction:**



- (i) Draw a line segment  $PQ = 5.7$  cm
- (ii) Taking  $Q$  as centre, draw an arc  $5.7$  cm from  $Q$  with the help of compass
- (iii) Again with the help of compass, draw another arc of  $5.7$  cm from  $P$  as centre which intersects the previous arc made by  $Q$
- (iv) Mark the intersection point as  $R$  and joint it to both  $P$  and  $Q$  respectively
- (v) Thus the required triangle  $RPQ$  is obtained
- (vi) Now, from  $P$  and  $Q$  cut the bisector of  $\angle P$  and  $\angle Q$ , which intersect each other at point  $O$
- (vii) Taking  $P$  as centre, draw an incircle which touches all the three sides of  $\triangle RPQ$