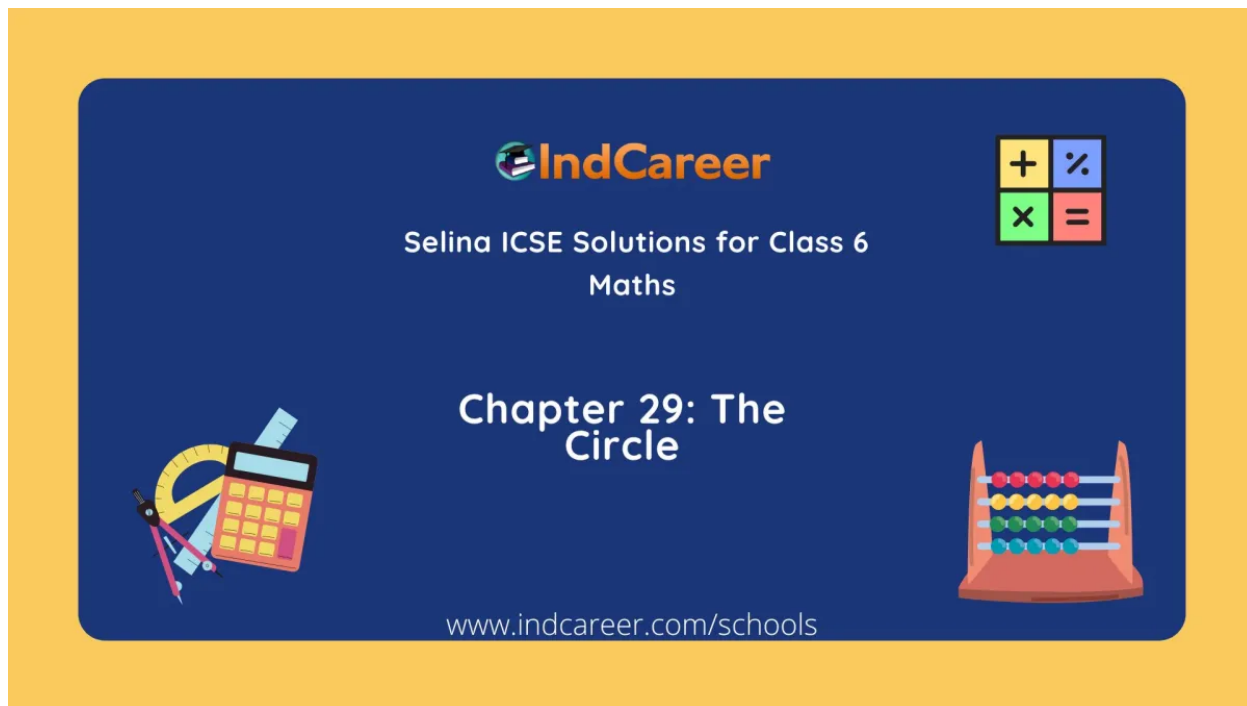


Selina Class 6 ICSE Solutions Mathematics : Chapter 29- The Circle



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Selina Class 6 ICSE Solutions Mathematics : Chapter 29- The Circle

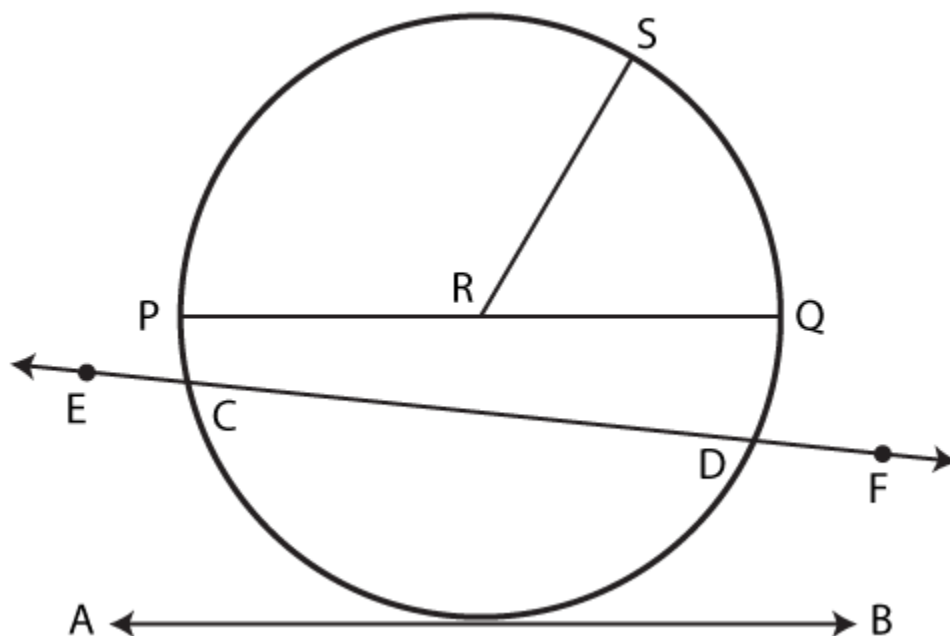
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Exercise 29(A)

1. Use the figure given below to fill in the blanks:

- (i) R is the of the circle.
- (ii) Diameter of a circle is
- (iii) Tangent to a circle is
- (iv) EF is a of the circle
- (v) is a chord of the circle.
- (vi) Diameter = 2 ×.....
- (vii) is a radius of the circle.
- (viii) If the length of RS is 5 cm, the length of PQ =
- (ix) If PQ is 8 cm long, the length of RS =
- (x) AB is a of the circle

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**Solution:**

- (i) R is the **centre** of the circle
- (ii) Diameter of a circle is **PQ**
- (iii) Tangent to a circle is **AB**
- (iv) EF is a **secant** of the circle
- (v) **CD** is a chord of the circle
- (vi) Diameter = $2 \times$ **radius**
- (vii) **RS** is a radius of the circle
- (viii) If the length of RS is 5 cm, the length of PQ = **10 cm**
- (ix) If PQ is 8 cm long, the length of RS = **4 cm**
- (x) AB is a **tangent** of the circle

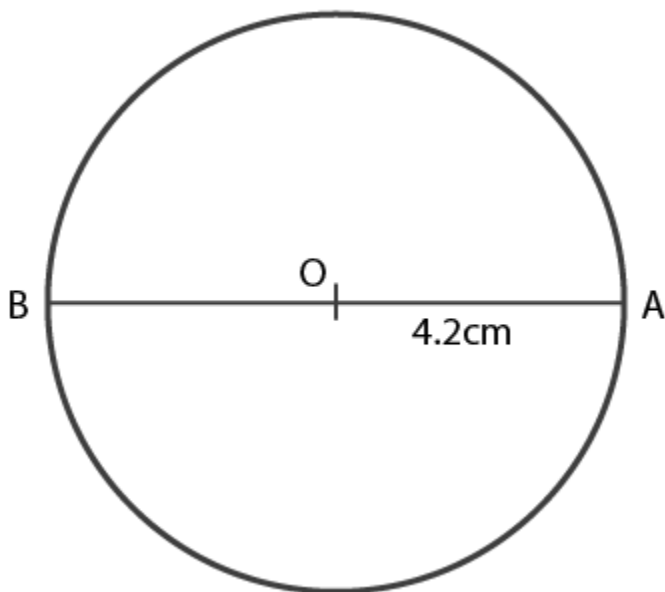
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2. Draw a circle of radius 4.2 cm. Mark its centre as O. Take a point A on the circumference of the circle. Join AO and extend it till it meets point B on the circumference of the circle,

(i) Measure the length of AB.

(ii) Assign a special name to AB.

Solution:



(i) By measurement the length of AB = 8.4 cm

(ii) AB is diameter of the circle

3. Draw circle with diameter:

(i) 6 cm

(ii) 8.4 cm

In each case, measure the length of the radius of the circle drawn.

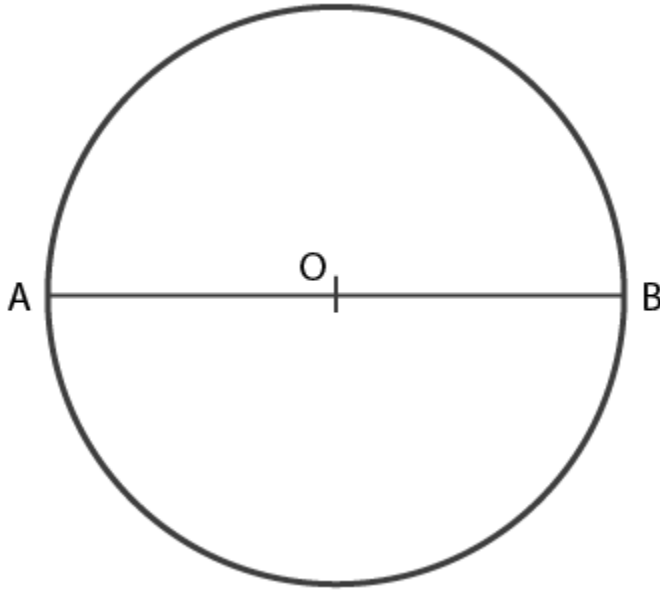
Solution:

(i) AB is the diameter of circle

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$AB = 6$ cm and

OA is the radius of the circle



The radius of the circle is,

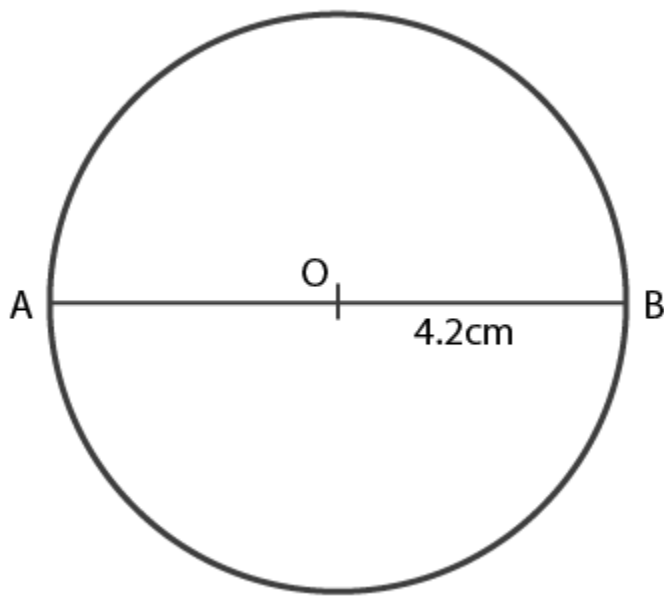
$$\frac{1}{2} \times 6 = 3 \text{ cm}$$

Therefore, $OA = OB = 3$ cm

(ii) AB is the diameter of circle

$$AB = 8.4 \text{ cm}$$

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OA is the radius of circle

The radius of circle is,

$$1/2 \times 8.4 = 4.2 \text{ cm}$$

Therefore, $OA = OB = 4.2 \text{ cm}$

4. Draw a circle of radius 6 cm. In the circle, draw a chord $AB = 6 \text{ cm}$.

(i) If O is the centre of the circle, join OA and OB.

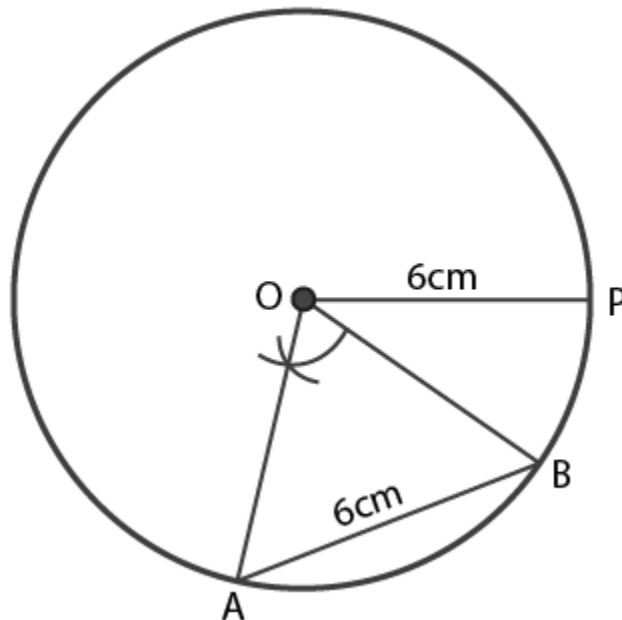
(ii) Assign a special name to $\triangle AOB$

(iii) Write the measure of angle AOB.

Solution:

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(i)



(ii) $\triangle AOB$ is an equilateral triangle

(iii) Since, $\triangle AOB$ is equilateral triangle

Hence, $\angle AOB = 60^\circ$

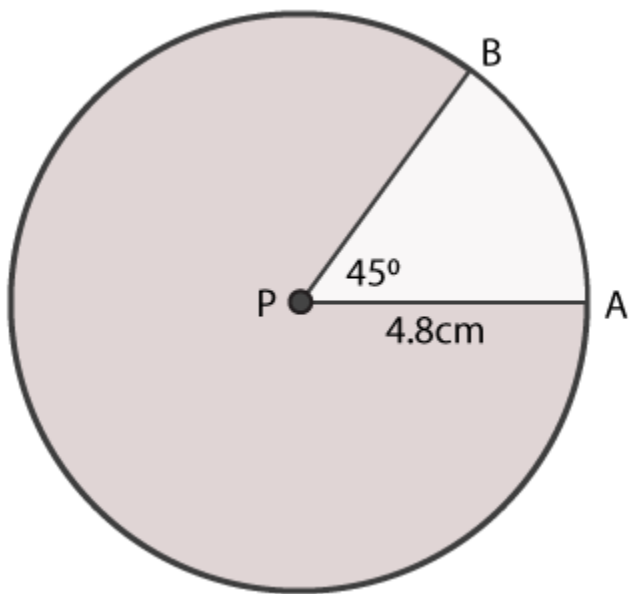
5. Draw a circle of radius 4.8 cm and mark its centre as P.

(i) Draw radii PA and PB such that $\angle APB = 45^\circ$

(ii) Shade the major sector of the circle

Solution:

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(i) PA is the radius of circle

PA = 4.8 cm

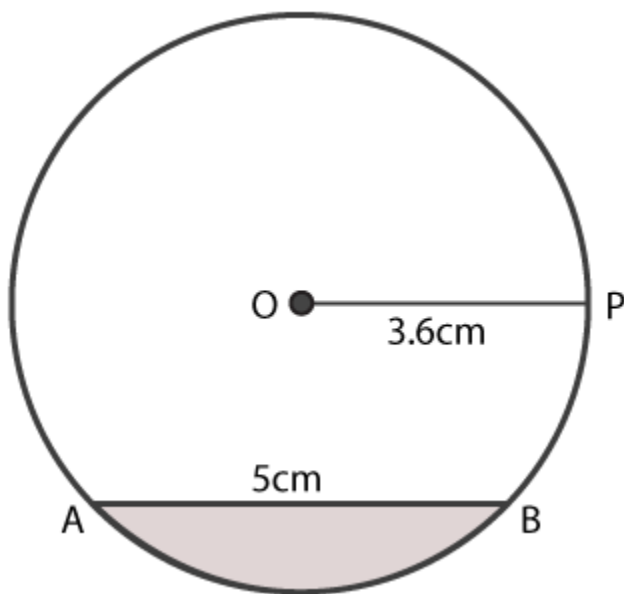
(ii) $\angle APB = 45^\circ$. P is the centre of the circle and PA and PB are radii of circle

(iii) Major sector of circle is shaded in the given figure

6. Draw a circle of radius 3.6 cm. In the circle, draw a chord AB = 5 cm. Now shade the minor segment of the circle.

Solution:

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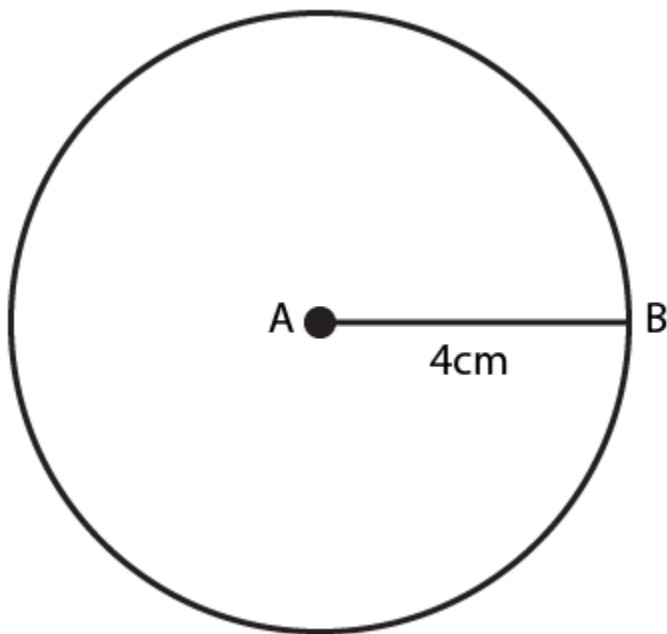
(i) OP is the radius of the circle i.e $OP = 3.6 \text{ cm}$

AB is the chord of the circle i.e $AB = 5 \text{ cm}$

(ii) Minor segment of the circle is shaded in the given circle

7. Mark two points A and B, 4 cm apart. Draw a circle passing through B and with A as a centre

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Solution:

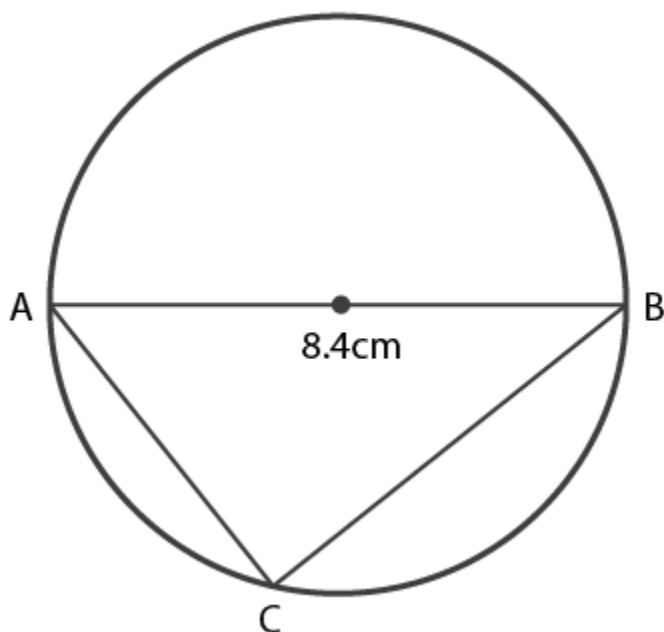
In the given figure A is the centre of the circle and

AB is the radius of the circle i.e $AB = 4 \text{ cm}$

8. Draw a line $AB = 8.4 \text{ cm}$. Now draw a circle with AB as diameter. Mark a point C on the circumference of the circle. Measure angle ACB.

Solution:

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By measurement we get,

$$\angle ACB = 90^\circ$$

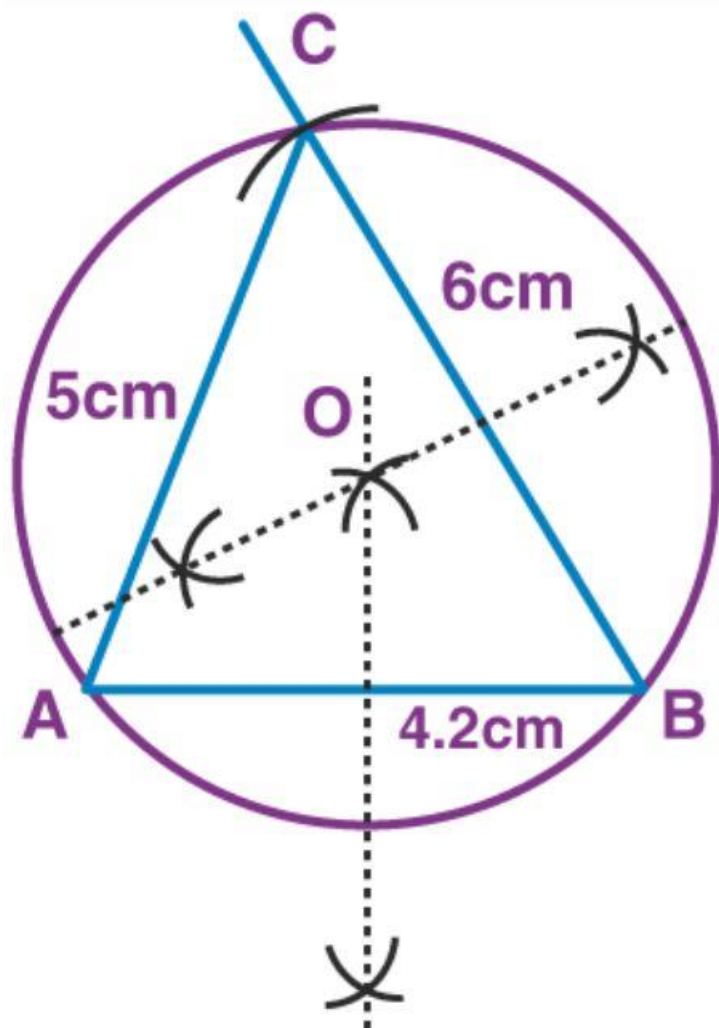
Exercise 29(B)

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:

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- (i) Draw a line segment $AB = 4.2 \text{ cm}$
- (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 $AC = 5 \text{ cm}$
- (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.

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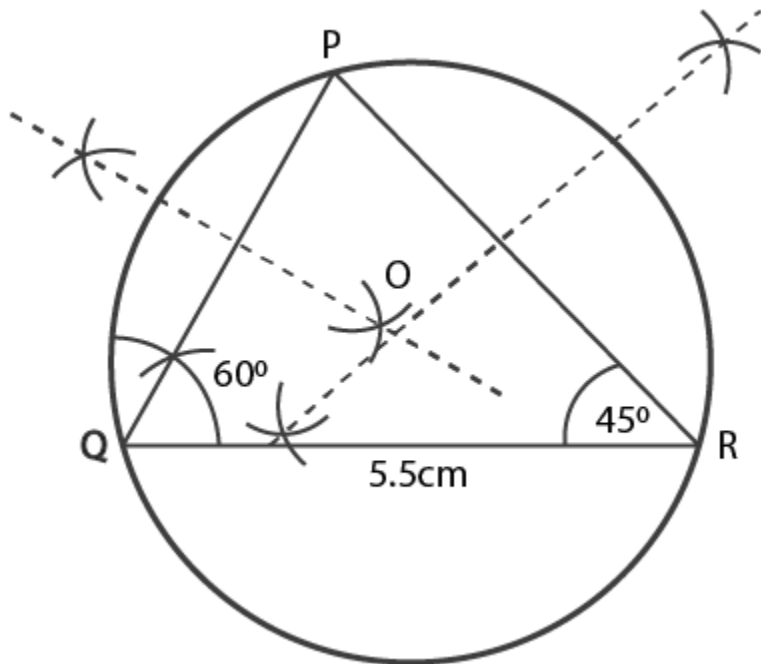
(vi) Taking O as centre and OA or OB or OC as radius, draw a circle with the help of compass

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

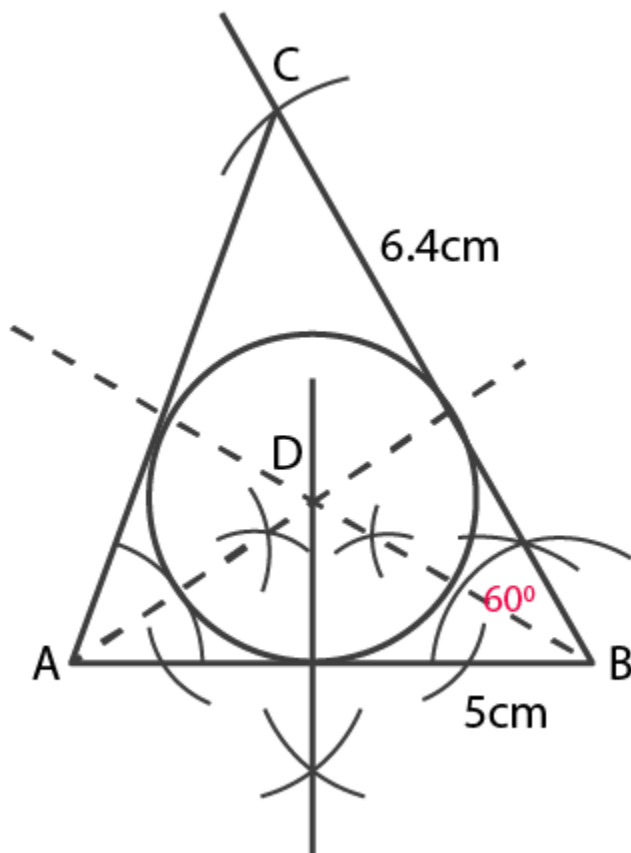
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(vi) This circle will pass through the vertices P, Q and R

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.

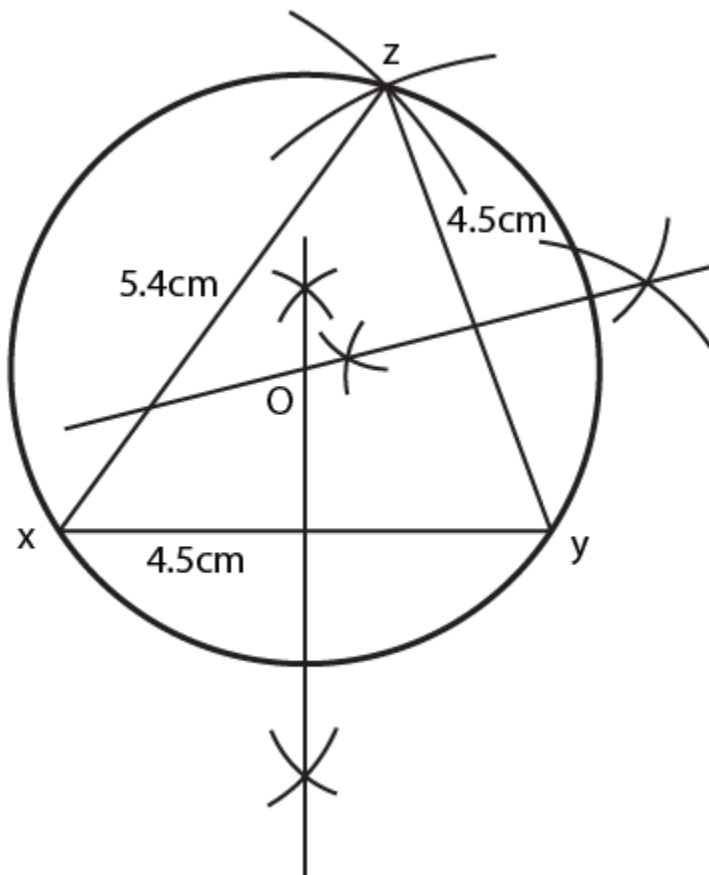
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(vi) Taking D as centre, draw an incircle with the help of compass which touches all the three sides of $\triangle ABC$

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

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(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

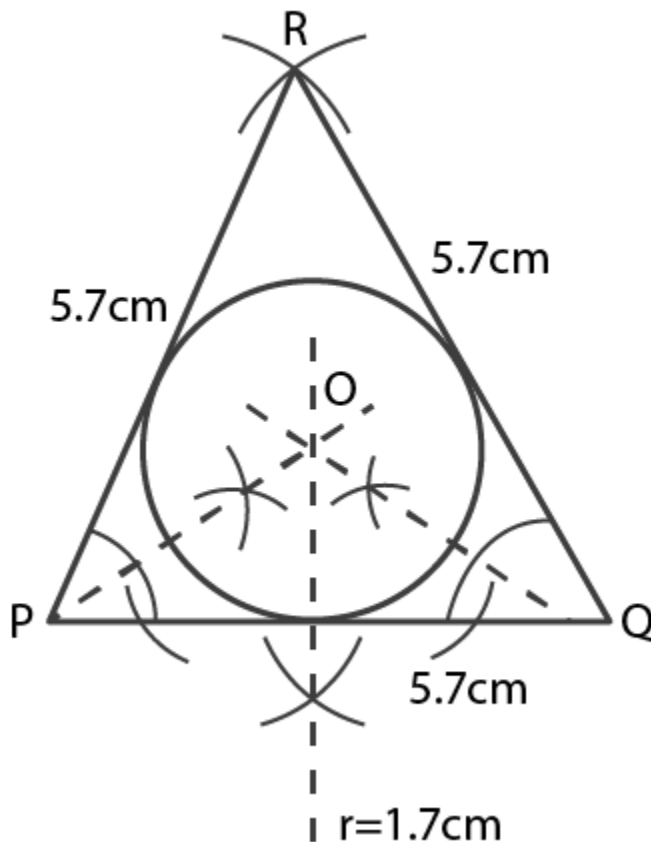
(vi) Taking O as centre and radius OX or OY or OZ draw a circle using compass

(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

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- (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 $\triangle RPQ$



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