

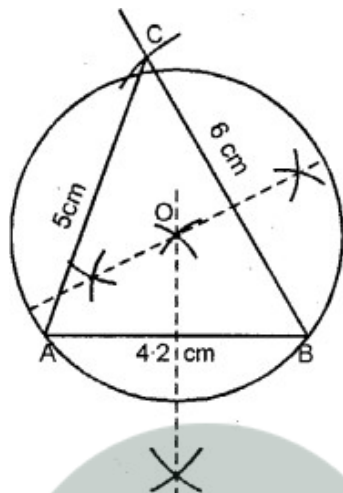
EXERCISE 29 (B)

Question 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 :



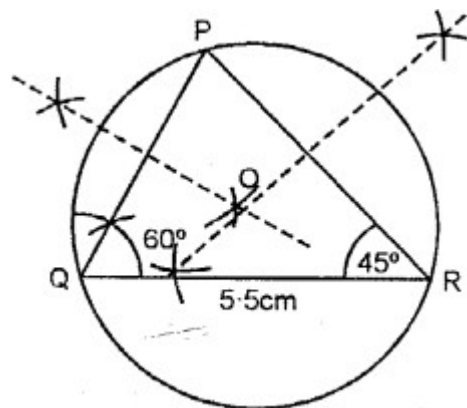
- (i) Draw $\triangle ABC$ in which $AB = 4.2$ cm, $BC = 6$ cm, and $AC = 5$ cm.
- (ii) Draw the perpendicular bisectors of any two sides of the triangle. Let these intersect at O.
- (iii) Taking O as centre and OA or OB or OC as radius draw a circle. This circle will pass through vertices A, B and C.

Question 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, $\angle Q = 60^\circ$ and $\angle R = 45^\circ$.
- (ii) Draw the arc bisector of PQ and PR which intersect at O.

(iii) Taking O as centre and radius OP or OQ or OR draw a circle.
This circle will pass through vertices P, Q and R.

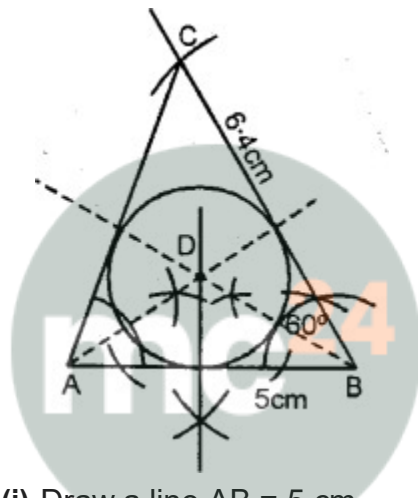
Question 3.

Construct a triangle ABC with $AB = 5 \text{ cm}$, $\angle B = 60^\circ$ and $BC = 6.4 \text{ cm}$.

Draw the incircle of the triangle ABC. Sol. Steps of Construction :

Solution:

Steps of Construction:



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

(ii) B as a centre draw an angle with the help of compass $\angle B = 60^\circ$. Cut the line with an arc $BC = 6.4 \text{ cm}$.

(iii) Join AC.

(iv) Now, from A and B cut the bisector of $\angle A$ and $\angle B$, which intersect each other at point D.

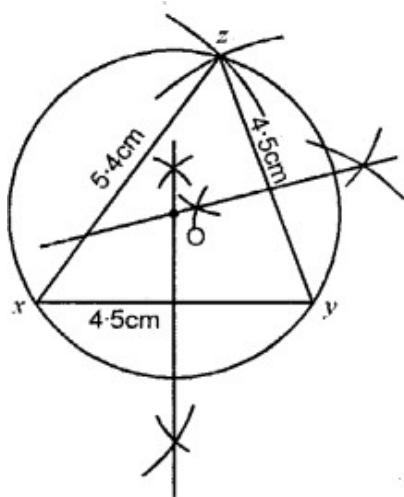
(v) With D as a centre draw an in circle which touches all the three sides of AABC.

Question 4.

Construct a triangle XYZ in which $XY = YZ = 4.5 \text{ cm}$ and $ZX = 5.4 \text{ cm}$. Draw the circumcircle of the triangle and measure its circumradius.

Solution:

Steps of Construction :



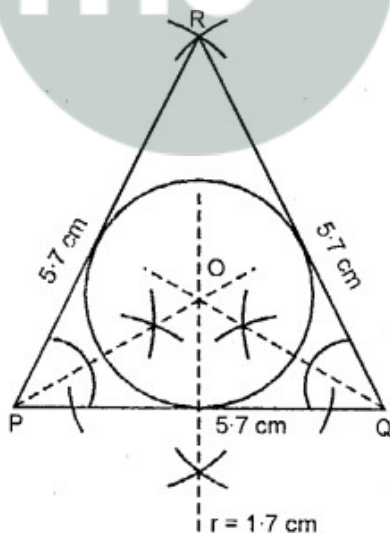
- (i) Draw a triangle XYZ in which $XY = YZ = 4.5$ cm and $ZX = 5.4$ cm.
- (ii) Draw the bisectors of XZ and YZ which meet at O.
- (iii) With O as centre and radius OX or OY or OZ draw a circle. This circle will pass through X, Y and Z.

Question 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 an equilateral $\triangle RPQ$ in which $PQ = QR = RP = 5.7$ cm each.
- (ii) From P and Q cut the bisector of $\angle P$ and $\angle Q$, which intersect each other at point O.
- (iii) With P as a centre draw an in circle which touches all the three sides of $\triangle RPQ$.

REVISION EXERCISE

Question 1.

The centre of a circle is at point O and its radius is 8 cm. State the position of a point P (point P may lie inside the circle, on the circumference of the circle, or outside the circle), when:

(a) $OP = 10.6$ cm

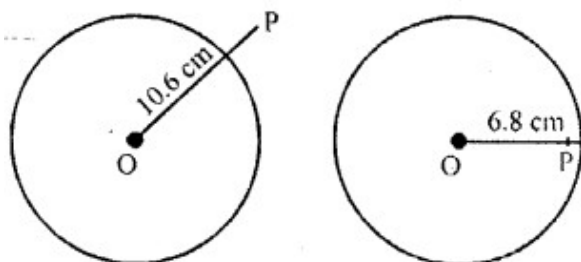
(b) $OP = 6.8$ cm

(c) $OP = 8$ cm

Solution:

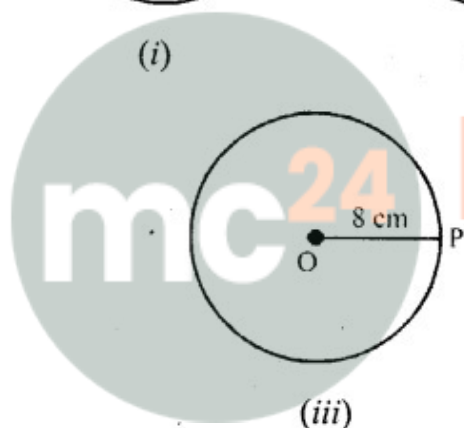
(a) Draw circle each of radius 8 cm. With centre O

In figure (i) draw $OP = 10.6$ cm



(i)

(ii)



(iii)

We see that point P lies outside the circle as $OP >$ radius of the circle

(b) In figure (ii) $OP = 6.8$ cm. We see that P lies inside the circle as $OP <$ radius of the circle.

(c) In figure, $OP = 8$ cm. We see that P lies on the circle as $OP =$ radius of the circle.

Question 2.

The diameter of a circle is 12.6 cm. State, the length of its radius.

Solution:

Diameter of the circle = 12.6 cm

\therefore Radius = $\frac{1}{2}$ diameter = $\frac{1}{2} \times 12.6$ cm

= 6.3 cm

Question 3.

Can the length of a chord of a circle be greater than its diameter? Explain.

Solution:

No, the length of chord cannot be greater than the diameter of the circle as the diameter of a circle is the greatest chord of that circle.

Question 4.

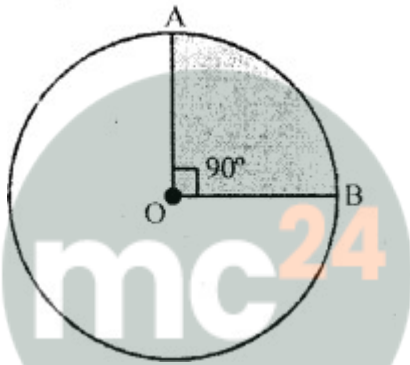
Draw a circle of diameter 7 cm. Draw two radii of this circle such that the angle between these radii is 90° . Shade the minor sector obtained. Write a special name for this sector.

Solution:

Draw a circle with diameter = 7 cm

OA and OB are the radii of the circle such that $\angle AOB = 90^\circ$

Now shade the minor sector AOB This is the quadrant of the circle



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Question 5.

State, which of following statements are true and which are false :

- (i) If the end points A and B of the line segment lie on the circumference of a circle, AB is a diameter.
- (ii) The longest chord of a circle is its diameter.
- (iii) Every diameter bisects a circle and each part of the circle so obtained is a semi-circle.
- (iv) The diameters of a circle always pass through the same point in the circle.

Solution:

- (i) False, as AB may be diameter or may not be, it can be chord.
- (ii) True, diameter of a circle is the longest chord.
- (iii) True.
- (iv) True, all the diameter of a circle pass through the same point i.e., centre, of the circle.