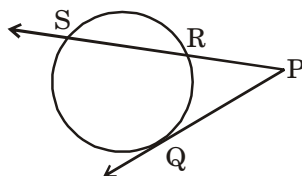


- (iii) In the following figure, ray PQ touches the circle at point Q, PQ = 12, PR = 9. Find PS.



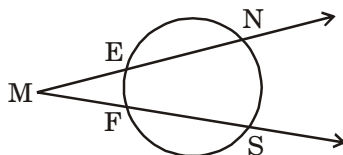
- (iv) Angle made by the line with the positive direction of X-axis is 30° . Find slope of the line.

2. (A) Complete the following activities and rewrite it (any two) :

4

- (i) In the following figure, chord EN and chord FS intersect each other at point M in the exterior of the circle.

If $m(\text{arc NS}) = 125^\circ$, $m(\text{arc EF}) = 37^\circ$, then complete the following activity to find $\angle \text{NMS}$.



Activity : Chord EN and chord FS intersect each other at point M in the exterior of the circle.

$$\begin{aligned} m \angle \text{NMS} &= \frac{1}{2} [\square - m(\text{arc EF})] \\ &= \frac{1}{2} [\square - 37] \\ &= \frac{1}{2} \times \square \end{aligned}$$

$$\therefore m \angle \text{NMS} = \square$$

- (ii) If $\sin \theta = \frac{20}{29}$, then complete the following activity to find $\cos \theta$.

Activity : $\sin^2 \theta + \cos^2 \theta = 1$

$$(\square)^2 + \cos^2 \theta = 1$$

$$\frac{400}{841} + \cos^2 \theta = 1$$

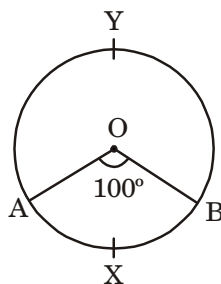
$$\therefore \cos^2 \theta = 1 - \square$$

$$\cos^2 \theta = \square$$

Taking square roots of both sides

$$\therefore \cos \theta = \square$$

- (iii) In the following figure, point O is the centre of the circle, $\angle AOB = 100^\circ$. Complete the following activity with the help of given figure.



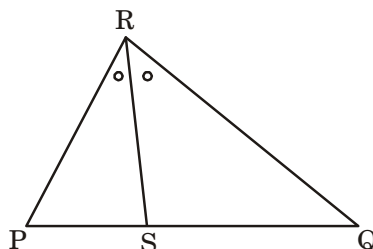
Activity :

Type of arc	Name of the arc	Measure of the arc
Minor arc		
Major arc		

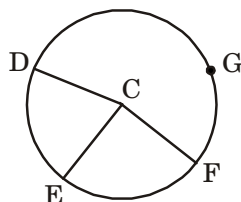
(B) Solve the following sub-questions (any four) :

8

- (i) In the following figure, in $\triangle PQR$, seg RS bisects $\angle R$. If $PR = 15$, $QR = 20$, $PS = 12$, then find QS.



- (ii) Find the length of diagonal of a rectangle whose length is 35 cm and breadth is 12 cm.
- (iii) In the following figure, point G, D, E, F are concyclic points of a circle with centre C. $\angle ECF = 70^\circ$, $m(\text{arc DGF}) = 200^\circ$. Find $m(\text{arc DE})$.

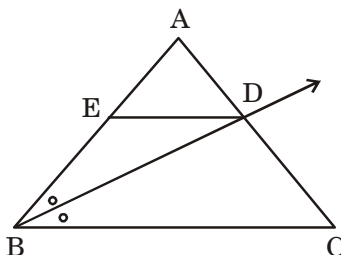


- (iv) Find the distance between the points $P(-1, 1)$ and $Q(5, -7)$.
- (v) A person is standing at a distance of 80 m from a Church looking at its top. The angle of elevation is of 45° . Find the height of the Church.

3. (A) Complete the following activities and rewrite it (any one) :

3

- (i) In the following figure, in $\triangle ABC$ ray BD bisects $\angle ABC$, $A - D - C$,
seg $ED \parallel$ side BC , $A - E - B$, then to prove that $\frac{AB}{BC} = \frac{AE}{EB}$, complete the
following activity.



Activity : In $\triangle ABC$, ray BD bisects $\angle B$.

$$\therefore \frac{AB}{BC} = \frac{\boxed{}}{\boxed{}} \dots\dots\dots \text{(I)} \quad (\text{Angle bisector theorem})$$

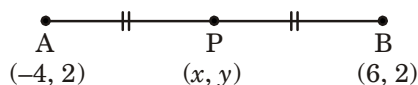
In $\triangle ABC$, seg $ED \parallel$ side BC .

$$\therefore \frac{AE}{EB} = \frac{\boxed{}}{\boxed{}} \dots\dots\dots \text{(II)} \quad \boxed{}$$

$$\therefore \frac{AB}{\boxed{}} = \frac{\boxed{}}{EB} \dots\dots\dots \text{from (I) and (II)}$$

- (ii) If P is the midpoint of segment joining the points A $(-4, 2)$ and B $(6, 2)$, then complete the following activity to find the co-ordinates of point P.

Activity : In the given example,
suppose



$$(x_1, y_1) = (-4, 2), (x_2, y_2) = (6, 2) \text{ and}$$

Let co-ordinates of P are (x, y) .

According to midpoint formula,

$$x = \frac{x_1 + x_2}{2} = \frac{\boxed{} + \boxed{}}{2} = \frac{2}{2}$$

$$x = \boxed{}$$

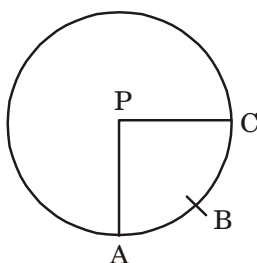
$$y = \frac{y_1 + y_2}{2} = \frac{\boxed{} + \boxed{}}{2} = \frac{4}{2}$$

$$y = \boxed{}$$

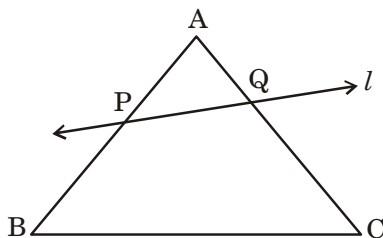
$\therefore$ Co-ordinates of midpoint are $(1, 2)$.

(B) Solve the following sub-questions (any two) :**6**

- (i) In ΔPQR , point S is the midpoint of side QR. If $PQ = 11$, $PR = 17$, $PS = 13$, find QR.
- (ii) Prove that, opposite angles of a cyclic quadrilateral are supplementary.
- (iii) Draw a circle of radius 3.3 cm. Draw a chord PQ of length 6.6 cm. Draw tangents to the circle at point P and Q. Write your observation about the tangents.
- (iv) In the following figure if $A(P - ABC) = 154 \text{ cm}^2$, radius of the circle is 14 cm, find : (a) $m \angle APC$, (b) $l(\text{arc } ABC)$.

**4. Solve the following sub-questions (any two) :****8**

- (i) In the following figure, line l intersects side AB and side AC of ΔABC in points P and Q respectively. Show that $\frac{A(\Delta APQ)}{A(\Delta ABC)} = \frac{AP \times AQ}{AB \times AC}$.



- (ii) Draw a circle having radius 3 cm. Draw chord $XY = 5$ cm. Draw tangents to a circle at point X and Y without using centre.
- (iii) Find the number of coins of 2.2 cm diameter and 0.2 cm thick, can be made by melting a metallic right circular cylinder of height 0.2 m and diameter 8.8 cm.

5. Solve the following sub-questions (any one) :

(i) AB is a chord of a circle with centre O. AC is a diameter of a circle. Line AT is a tangent at A. Write the answers of the following questions :

(a) Draw the figure using the given information.

(b) Find the measure of $\angle CAT$.

(c) Find the measure of $\angle ABC$.

(ii) α is acute angle. If $3\sin\alpha - 4\cos\alpha = 0$, then find the values of $\tan\alpha$ and $\sec\alpha$.
