

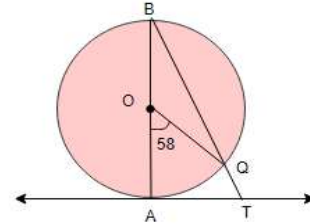
CIRCLES

CLASS X (2025-26)

SUJITHKUMAR KP 22 -09-25

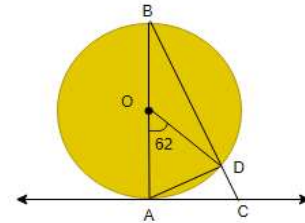
SECTION -A

- 1 In figure, AB is the diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58^\circ$, find $\angle ATQ$.
A) 51° B) 58° C) 71° D) 61°

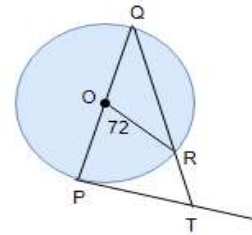


- 2 In the figure, AB is the diameter of a circle with centre O and AC is a tangent. If $\angle AOD = 62^\circ$, find $\angle ACD$.

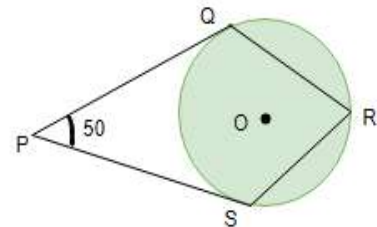
(A) 51° (B) 60°
(C) 59° (D) 61°



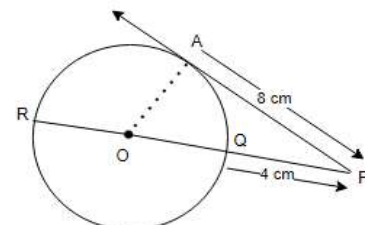
- 3 In the given figure, PQ is a diameter of a circle with centre O and PT is a tangent at P, QT meets the circle at R. If $\angle POR = 72^\circ$ then $\angle PTR =$ ____
A) 52° (B) 60°
(C) 54° (D) 64°



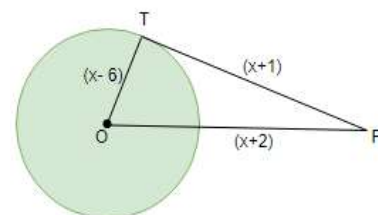
- 4 In the figure, O is the centre of the circle and PQ and PS are tangents to the circle at points Q and S respectively. $\angle QRS =$ ____
A) 65° B) 130° C) 55° D) 100°



- 5 In the figure, O is the centre of the circle and PA is tangent to the circle from the point P. PQR passes through the centre of the circle O. If $PA = 8$ cm, $PQ = 4$ cm, find the radius of the circle.
A) 3 cm B) 6 cm C) 12 cm D) 10 cm

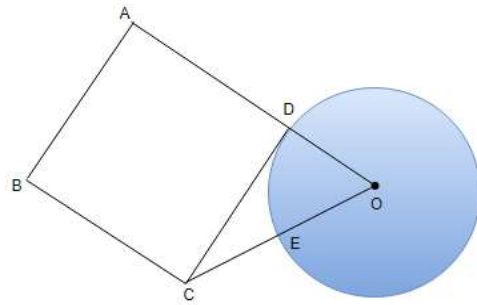


- 6 In the below figure, find the area of $\triangle OTP$.
A) 30 cm^2 (B) 60 cm^2
(C) 15 cm^2 (D) 40 cm^2



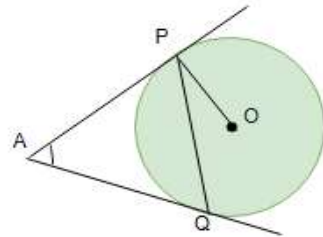
- 7 ABCD is a square, CD is a tangent to the circle with centre O. if $OD = CE$, then find the ratio of the area of circle to that of square.

A) $\frac{2\pi}{3}$ B) $\frac{3}{\pi}$ C) $\frac{\pi}{9}$ D) $\frac{\pi}{3}$



- 8 Tangents AP and AQ are drawn to a circle with centre O from external point A then _____

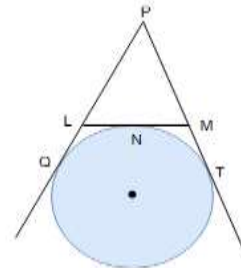
A) $\angle PAQ = 2 \angle OPQ$
 B) $\angle PAQ = \angle OPQ$
 C) $\angle PQA = \angle OPA$
 D) $\angle PQA = 2 \angle OPA$



- 9 The distance between two parallel tangents of a circle of radius 10 cm is _____
 A) 20 cm B) 10 cm C) 15 cm D) 5 cm

- 10 In the figure, If $PQ = 30 \text{ cm}$, then find the perimeter of $\triangle PLM$.

A) 30 cm B) 60 cm C) 40 cm D) 35 cm

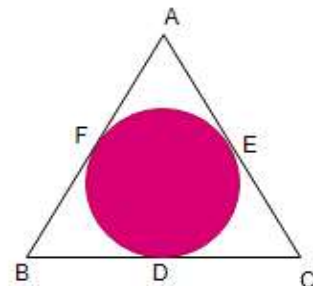


- 11 The two tangents from an external point P to a circle with centre O are PA and PB. If $\angle APB = x^\circ$, what is the value of $\angle AOB$?

A) x° B) $(180 - x)^\circ$ C) 90° D) $(90 - x)^\circ$

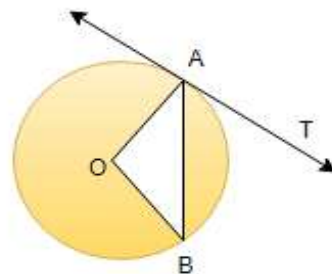
- 12 A triangle ABC is drawn to circumscribe a circle. If $AB = 13 \text{ cm}$, $BC = 14 \text{ cm}$ and $AE = 7 \text{ cm}$, then AC is equal to _____

(A) 12 cm (B) 15 cm (C) 11 cm (D) 16 cm



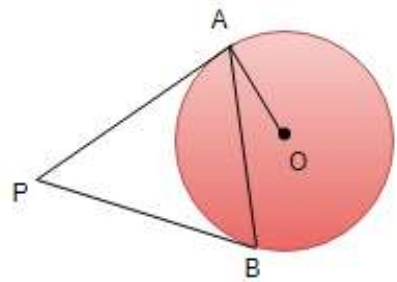
- 13 In given figure, O is the centre of the circle, AB is a chord and AT is the tangent at A. If $\angle AOB = 100^\circ$ then find $\angle BAT$.

A) 100° B) 40° C) 50° D) 90°



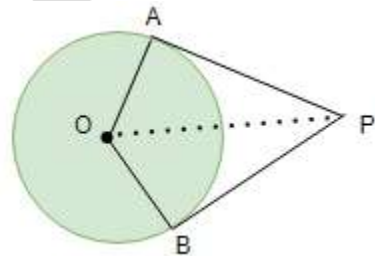
- 14 In the figure PA and PB are tangents to the circle with centre O. If $\angle APB = 70^\circ$, then $\angle OAB$ is ____

A) 35° B) 70° C) 30° D) 15°



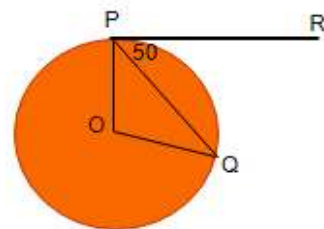
- 15 If angle between two tangents drawn from a point to a circle of radius a and centre O is 60° . then $OP =$ ____

A) $\sqrt{3}a$ B) $\frac{a}{\sqrt{3}}$ C) $2a$ D) $\frac{a}{2}$



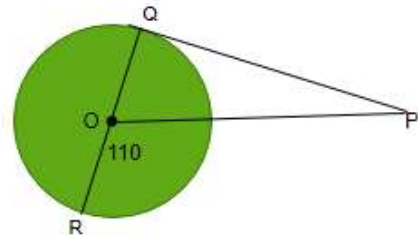
- 16 In figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then $\angle POQ$ is equal ____

A) 100° B) 80° C) 90° D) 75°



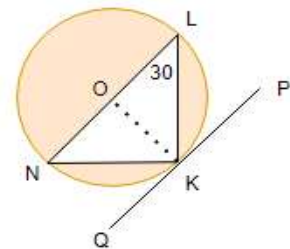
- 17 PQ is a tangent drawn from a point P to a circle with centre O and QOR is a diameter of the circle such that $\angle POR = 110^\circ$. Find $\angle OPQ$.

A) 10° B) 20° C) 30° D) 25°



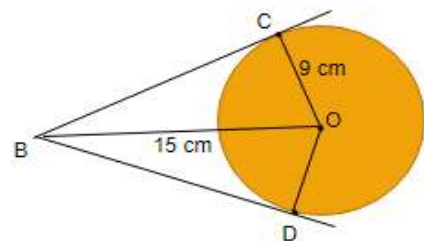
- 18 In Figure, O is the centre of the circle and LN is a diameter. If PQ is a tangent to the circle at K and $\angle KLN = 30^\circ$, find $\angle PKL$.

A) 30° B) 20° C) 60° D) 25°

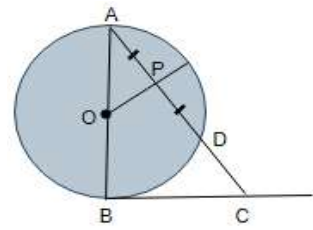


- 19 In the figure, BC and BD are tangents to the circle with centre O and radius 9 cm. If $OP = 15$ cm, then the length of $(BC + BD) =$ ____ cm

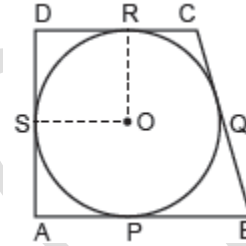
(A) 18 (B) 12
(C) 24 (D) 21



- 20 In the figure, O is the centre of the circle. BC is a tangent to the circle at B. If OP bisects the chord AD and $\angle AOP = 60^\circ$, Then find $\angle C$.
 A) 60° B) 30° C) 45° D) 25°

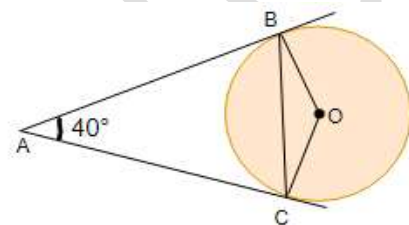


- 21 A quadrilateral ABCD is drawn so that $\angle D = 90^\circ$, $BC = 38$ cm and $CD = 25$ cm. A circle is inscribed in the quadrilateral and it touches the side AB, BC, CD and DA at P, Q, R and S respectively. If $BP = 27$ cm, find the radius of the inscribed circle.
 A) 100° B) 105° C) 130° D) 125°



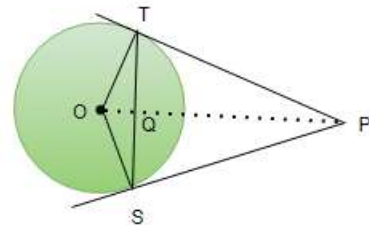
- 22 In the given figure, AB and AC are tangents to the circle with centre O such that $\angle BAC = 40^\circ$, then $\angle BOC$ is equal to ____.

A) 130° B) 120° C) 140° D) 150°

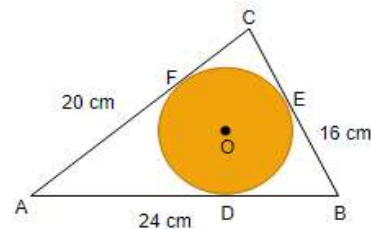


- 23 In figure, from an external point P, two tangents PT and PS are drawn to a circle with centre O and radius r . If $OP = 2r$ $\angle OTS = \angle OST =$ ____

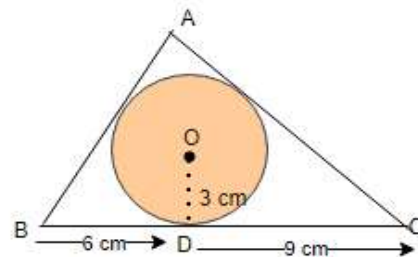
A) 20° B) 40° C) 30° D) 25°



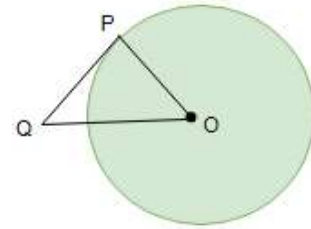
- 24 A circle is inscribed in a $\triangle ABC$ having sides 16 cm, 20 cm and 24 cm as shown in figure. Find AD, BE and CF



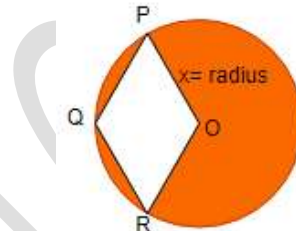
- 25 In figure, a triangle ABC is drawn to circumscribe a circle of radius 3 cm, such that the segments BD and DC are respectively of lengths 6 cm and 9 cm. If the area of $\triangle ABC$ is 54 cm^2 , then find the lengths of sides AB and AC.



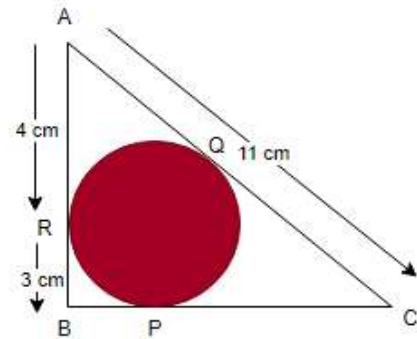
- 26 PQ is a tangent to a circle with centre O at point P. If ΔOPQ is isosceles triangle, then find $\angle OQP$.



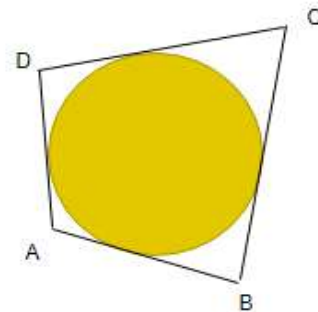
- 27 In the given figure, OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is $32\sqrt{3} \text{ cm}^2$, find the radius of the circle.



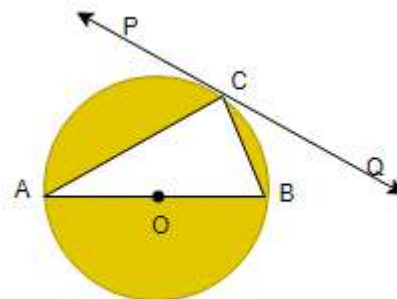
- 28 In figure, ΔABC is circumscribing a circle. Find the length of BC.



- 29 In figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are $AB = 6 \text{ cm}$, $BC = 9 \text{ cm}$ and $CD = 8 \text{ cm}$. Find the length of side AD.



- 30 In figure, PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and $\angle CAB = 30^\circ$, find $\angle PCA$.



- 31 Tangents PA and PB are drawn from an external point P to two concentric circles with centre O and radius 8 cm and 5 cm respectively, as shown in the figure. If AP = 15 cm, then BP = _____

A) $2\sqrt{66}$ B) $4\sqrt{66}$ C) $2\sqrt{33}$ D) $\sqrt{66}$

- 32 In figure, there are two concentric circles with centre of radii 5 cm and 3 cm. Tangents PA and PB are drawn from an external point P to these circles with centre O as shown in the figure. If AP = 12 cm, then BP = _____

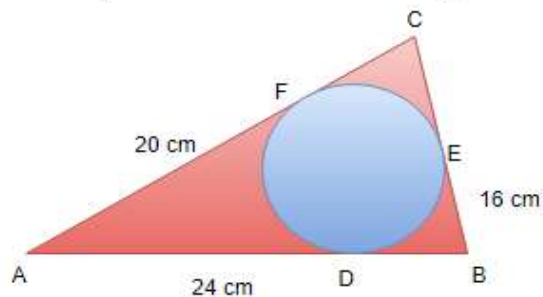
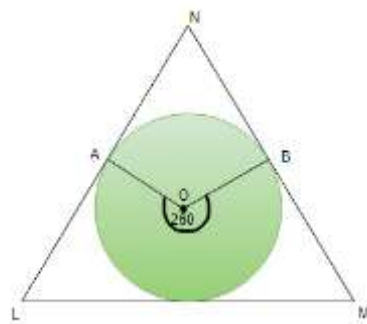
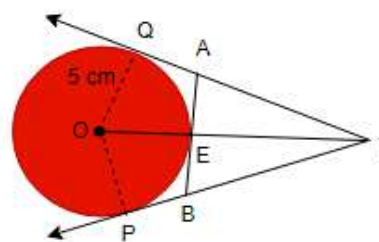
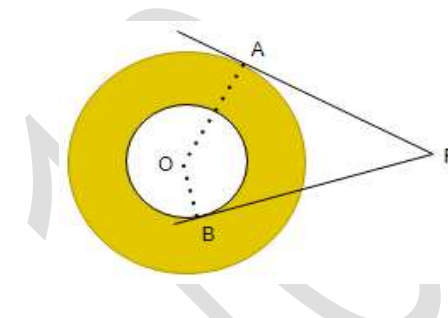
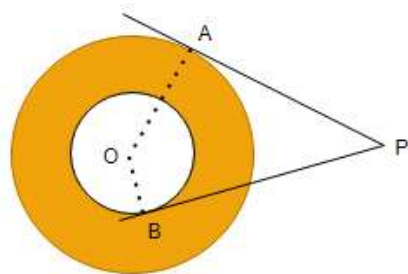
A) $\sqrt{160}$ B) $\sqrt{150}$ C) 10 D) $2\sqrt{10}$

- 33 In figure, O is the centre of a circle of radius 5 cm. T is a point such that OT = 13 cm and OT intersects circle at E. If AB is a tangent to the circle at E, find the length of AB, where TP and TQ are tangents to the circle.

- 34 A circle with centre O is inscribed in a triangle LMN. A and B are points of tangency. Reflex $\angle AOB = 260^\circ$, find $\angle ANB$.

A) 50° B) 100° C) 80° D) 130°

- 35 A circle is inscribed in a $\triangle ABC$ having sides 16 cm, 20 cm and 24 cm as shown in figure. Find AD, BE and CF.



SECTION -B

- 1 Two parallel lines touch the circle at points A and B respectively. If area of the circle is $25\pi \text{ cm}^2$, then AB is equal to _____
 (A) 5 cm (B) 8 cm (C) 10 cm (D) 25 cm

- 2 In figure, PQ and PR are tangents to a circle with centre A. If $\angle QPA = 27^\circ$, then $\angle QAR$ equals to__

(A) 63° (B) 153° (C) 126° (D) 117°

- 3 In figure, AP, AQ and BC are tangents to the circle. If $AB = 5$ cm, $AC = 6$ cm and $BC = 4$ cm, then the length of AP (in cm) is _____

(A) 7.5 (B) 15 (C) 10 (D) 9

- 4 In the given figure, TP and TQ are two tangents to a circle with centre O, such that $\angle POQ = 110^\circ$. Then $\angle PTQ$ is equal to _____

(A) 55° (B) 70° (C) 110° (D) 90°

- 5 In the figure PA and PB are tangents to the circle with centre O. If $\angle APB = 60^\circ$, then $\angle OAB$ is_____

(A) 30° (B) 60° (C) 90° (D) 15°

- 6 In figure, O is the centre of a circle, AB is a chord and AT is the tangent at A. If $\angle AOB = 100^\circ$, then $\angle BAT$ is equal to _____

(A) 100° (B) 40° (C) 50° (D) 90°

- 7 In figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then $\angle POQ$ is equal to_____

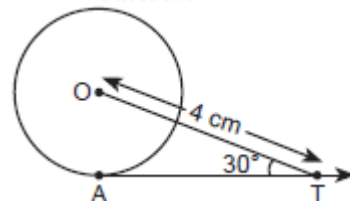
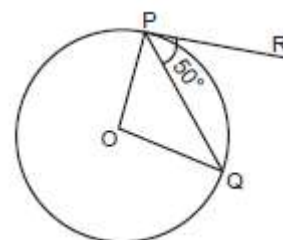
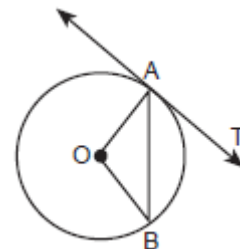
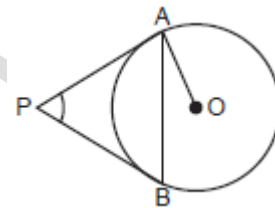
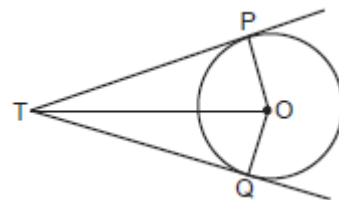
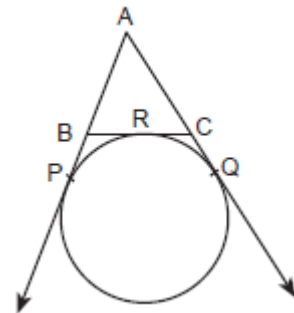
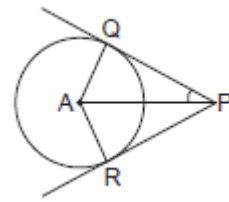
(A) 100° (B) 80° (C) 90° (D) 75°

- 8 In figure AT is a tangent to the circle with centre O such that $OT = 4$ cm and $\angle OTA = 30^\circ$. Then AT is equal to _____

(A) 4 cm (B) 2 cm (C) $2\sqrt{3}$ cm (D) $4\sqrt{3}$ cm

- 9 From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is _____

(A) 60 cm^2 (B) 65 cm^2 (C) 30 cm^2 (D) 32.5 cm^2



- 10 In the given figure, point P is 26 cm away from the centre O of a circle and the length PT of the tangent drawn from P to the circle is 24 cm. Then the radius of the circle is ____

(A) 25 cm (B) 26 cm (C) 24 cm (D) 10 cm

- 11 In the given figure, AB and AC are tangents to the circle with centre O such that $\angle BAC = 40^\circ$, then $\angle BOC$ is equal to ____

(A) 40° (B) 50° (C) 140° (D) 150°

- 12 In figure, O is the centre of the circle and TP is the tangent to the circle from an external point T. If $\angle PBT = 30^\circ$, prove that $BA : AT = 2 : 1$.

- 13 A circle is inscribed in a ΔABC having sides 16 cm, 20 cm and 24 cm as shown in figure. Find AD, BE and CF

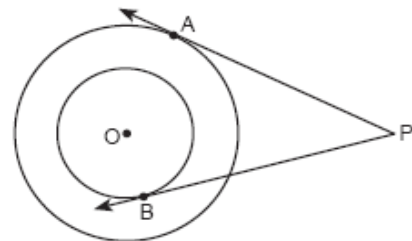
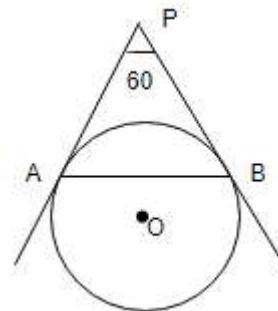
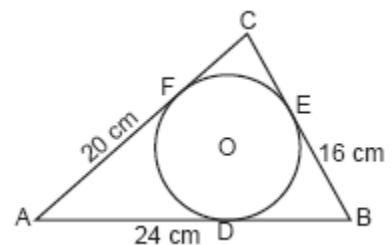
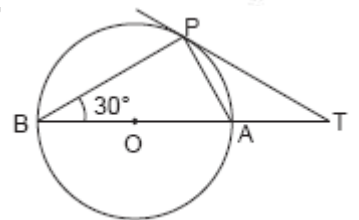
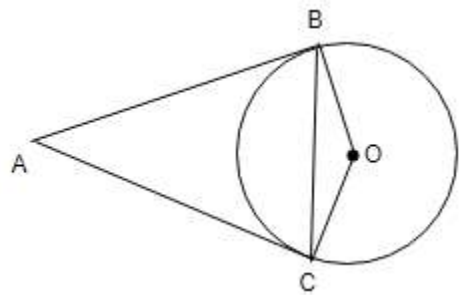
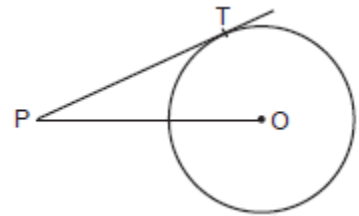
- 14 A circle touches x-axis at A and y-axis at B. If O is origin and $OA = 5$ units, then diameter of the circle is ____

(A) 8 units (B) 10 units (C) $10\sqrt{2}$ units (D) $8\sqrt{2}$ units

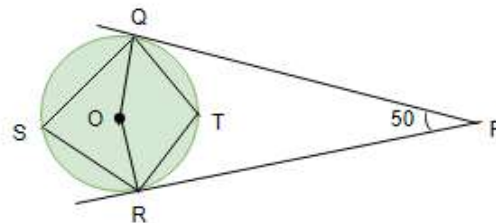
- 15 In figure, AP and BP are tangents to a circle with centre O, such that $AP = 5$ cm and $\angle APB = 60^\circ$. Find the length of chord AB.

- 16 In figure, there are two concentric circles, with centre O and of radii 5 cm and 3 cm. From an external point P, tangents PA and PB are drawn to these circles. If $AP = 12$ cm, find the length of BP.

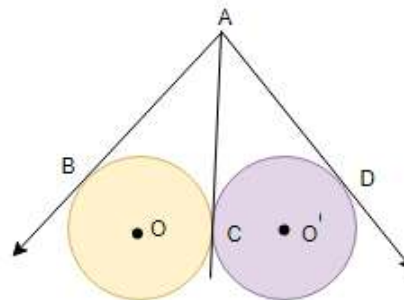
- 17 Find the length of the tangent drawn from a point whose distance from the centre of a circle is 25 cm. Given that radius of the circle is 7 cm.



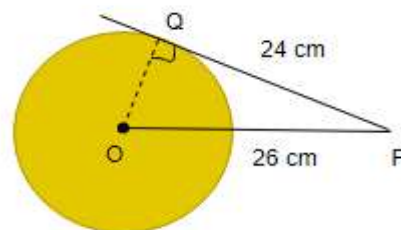
- 18 What is the angle between a tangent to a circle and the radius through the point of contact? Justify your answer.
- 19 What is the distance between two parallel tangents of a circle of radius 7 cm?
- 20 In the given figure, O is the centre . find $\angle QSR$



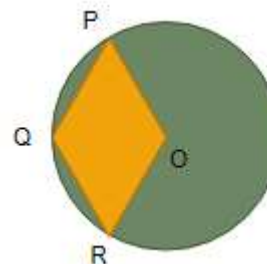
- 21 In the given figure, AB, AC and AD are tangents. If $AB = 5$ cm, find AD



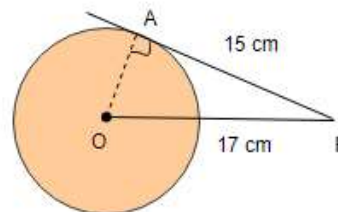
- 22 A point P is 26 cm from the centre of the circle. The length of the tangent drawn from P to the circle is 24 cm. Find the radius of the circle.



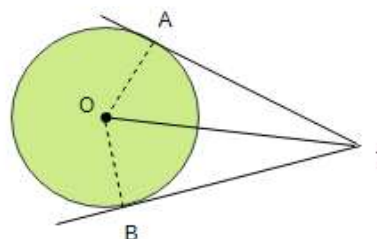
- 23 In the given figure, OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is $32\sqrt{3}$ cm², find the radius of the circle.



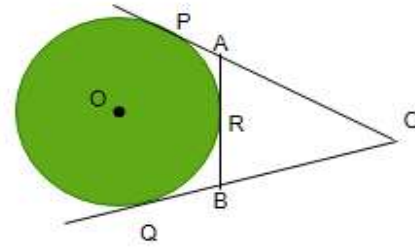
- 24 From a point P, the length of the tangent to a circle is 15 cm and distance of P from the centre of the circle is 17 cm. Then what is the radius of the circle?



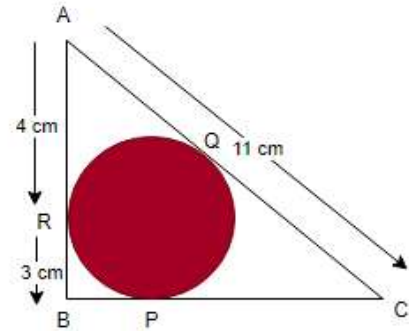
- 25 In figure , O is the centre of the circle , if $\angle ATO = 40^\circ$, find $\angle AOB$.



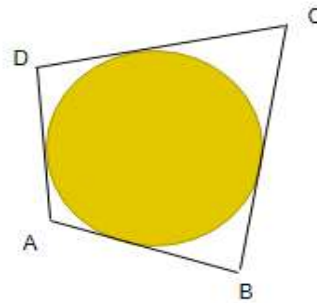
- 26 In figure, CP and CQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If $CP = 11$ cm, and $BC = 7$ cm, then find the length of BR.



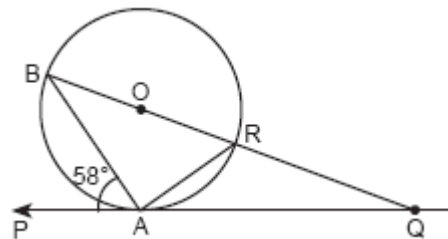
- 27 In figure, $\triangle ABC$ is circumscribing a circle. Find the length of BC.



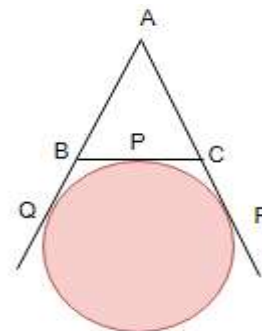
- 28 In figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are $AB = 6$ cm, $BC = 9$ cm and $CD = 8$ cm. Find the length of side AD.



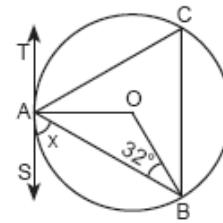
- 29 In figure, O is the centre of the circle, PQ is a tangent to the circle at A. If $\angle PAB = 58^\circ$, find $\angle ABQ$ and $\angle AQB$.



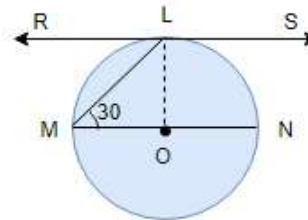
- 30 In figure, a circle touches the side BC of $\triangle ABC$ at P and touches AB and AC produced at Q and R respectively. If $AQ = 5$ cm, find the perimeter of $\triangle ABC$.



- 31 In the given figure, TAS is a tangent to the circle, with centre O, at the point A. If $\angle OBA = 32^\circ$, find the value of x .

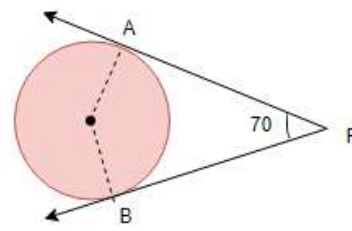


- 32 In the given figure, RS is the tangent to the circle at L and MN is a diameter. If $\angle NML = 30^\circ$, determine $\angle RLM$.

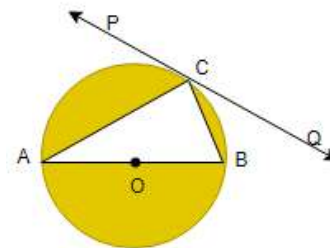


- 33 Two tangents PA and PB are drawn to the circle with centre O, such that $\angle APB = 120^\circ$. Prove that $OP = 2AP$.

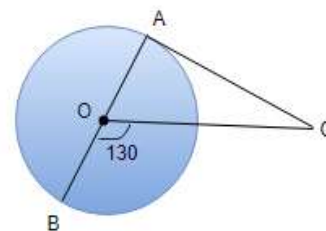
- 34 The two tangents from an external point P to a circle with centre O are PA and PB. If $\angle APB = 70^\circ$, what is the value of $\angle AOB$?



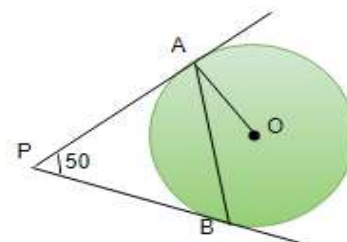
- 35 In figure, PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and $\angle CAB = 30^\circ$, find $\angle PCA$.



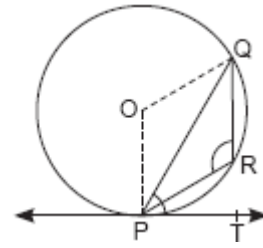
- 36 In figure, AOB is a diameter of a circle with centre O and AC is a tangent to the circle at A. If $\angle BOC = 130^\circ$, then find $\angle ACO$



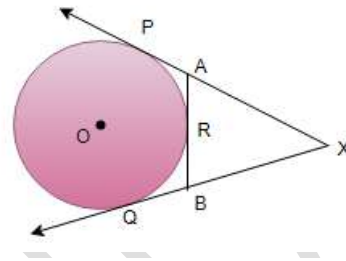
- 37 In figure, PA and PB are tangents to the circle with centre O such that $\angle APB = 50^\circ$. Write the measure of $\angle OAB$



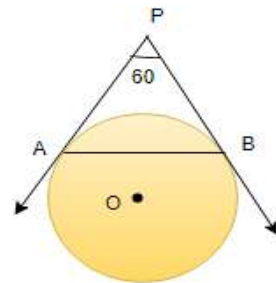
- 38 In figure, PQ is a chord of a circle with centre O and PT is a tangent. If $\angle QPT = 60^\circ$, find $\angle PRQ$



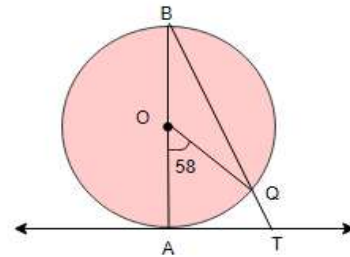
- 39 In figure, XP and XQ are two tangents to a circle with centre O from a point X outside the circle. ARB is tangent to circle at R. Prove that $XA + AR = XB + BR$.



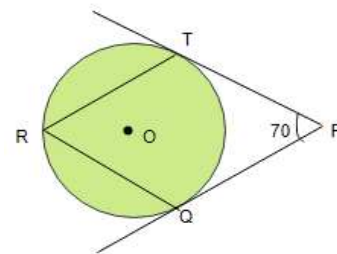
- 40 In figure, AP and BP are tangents to a circle with centre O, such that $AP = 5$ cm and $\angle APB = 60^\circ$. Find the length of chord AB.



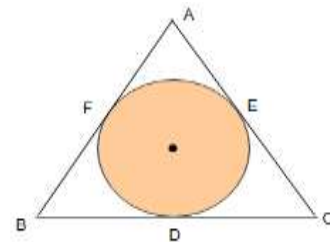
- 41 In figure, AB is the diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58^\circ$, find $\angle ATQ$.



- 42 In figure, O is the centre of a circle. PT and PQ are tangents to the circle from an external point P. If $\angle TPQ = 70^\circ$, find $\angle TRQ$

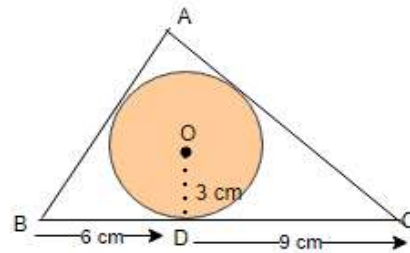


- 43 ABC is an isosceles triangle, in which $AB = AC$, circumscribed about a circle. Show that BC is bisected at the point of contact

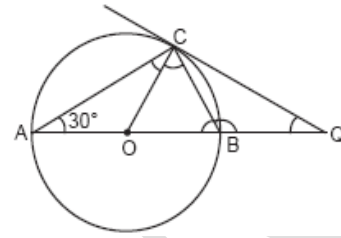


- 44 Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre

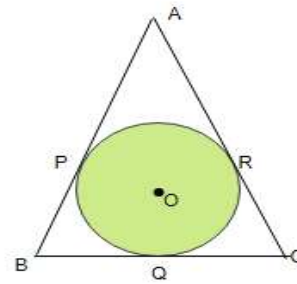
- 45 In figure, a triangle ABC is drawn to circumscribe a circle of radius 3 cm, such that the segments BD and DC are respectively of lengths 6 cm and 9 cm. If the area of ΔABC is 54 cm^2 , then find the lengths of sides AB and AC.



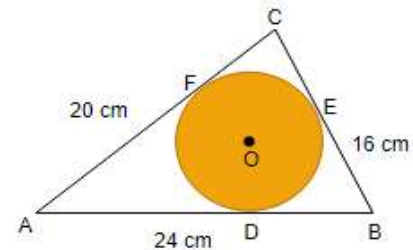
- 46 AB is diameter and AC is a chord of a circle such that $\angle BAC = 30^\circ$. If tangent at C intersects AB produced in D, prove that $BC = BD$.
- 47 In the figure, AB is diameter of a circle with centre O and QC is a tangent to the circle at C. If $\angle CAB = 30^\circ$, find $\angle CQA$ and $\angle CBA$.



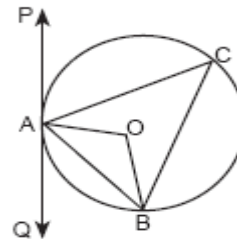
- 48 In figure, the sides AB, BC and CA of triangle ABC touch a circle with centre O and radius r at P, Q and R respectively. Prove that
- $AB + CQ = AC + BQ$
 - $\text{Area}(\Delta ABC) = \frac{1}{2} (\text{perimeter of } \Delta ABC) \times r$



- 49 PQR is a right angled triangle right angled at Q. $PQ = 5 \text{ cm}$, $QR = 12 \text{ cm}$. A circle with centre O is inscribed in ΔPQR , touching its all sides. Find the radius of the circle.
- 50 A circle is inscribed in a ΔABC having sides 16 cm, 20 cm and 24 cm as shown in figure. Find AD, BE and CF.

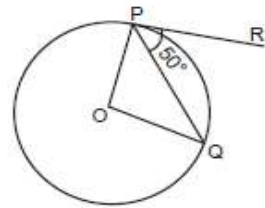


- 51 PAQ is a tangent to the circle with centre O at a point A as shown in figure. If $\angle OBA = 35^\circ$, find the value of $\angle BAQ$ and $\angle ACB$.



- 52 From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is
- (A) 60 cm^2 (B) 65 cm^2 (C) 30 cm^2 (D) 32.5 cm^2

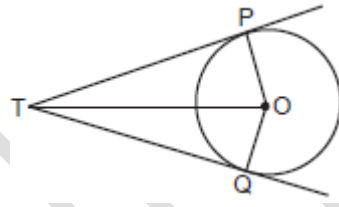
- 53 In figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then $\angle POQ$ is equal to
 (A) 100° (B) 80° (C) 90° (D) 75°



- 54 Two concentric circles are of radii 13 cm and 5 cm. The length of the chord of larger circle which touches the smaller circle is _____.

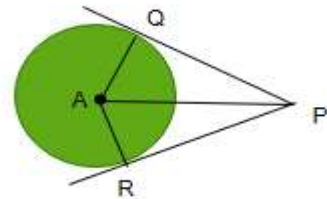
- 55 In the given figure, TP and TQ are two tangents to a circle with centre O, such that $\angle POQ = 110^\circ$. Then $\angle PTQ$ is equal to _____

(A) 55° (B) 70° (C) 110° (D) 90°

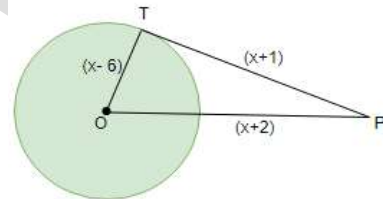


- 56 In figure, PQ and PR are tangents to a circle with centre A. If $\angle QPA = 27^\circ$, then $\angle QAR$ equals to _____

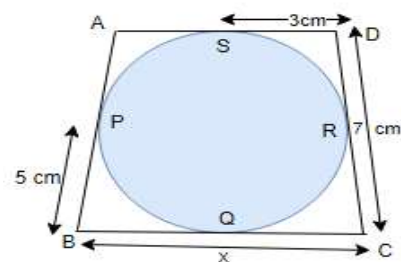
(A) 63° (B) 153° (C) 126° (D) 117°



- 57 In the below figure, find the actual length of sides of $\triangle OTP$.



- 58 In the figure, find the value of x.



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