CIRCLES

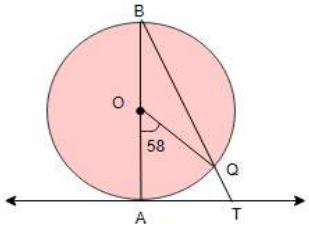
CLASS X (2025-26)

SUJITHKUMAR KP 15-08-25

SECTION -A

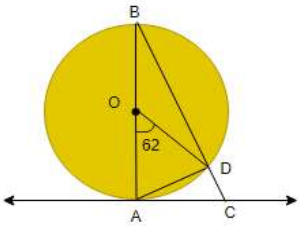
1 In figure, AB is the diameter of a circle with centre O and AT is a tangent. If ∠ AOQ = 58°, find ∠ ATQ.

A) 51° B) 58° C) 71° D) 61°



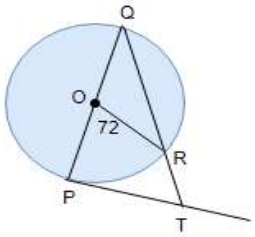
2 In the figure, AB is the diameter of a circle with centre O and AC is a tangent. If ∠ AOD = 62°, find ∠ ACD.

(A) 51° (B) 60°
(C) 59° (D) 61°



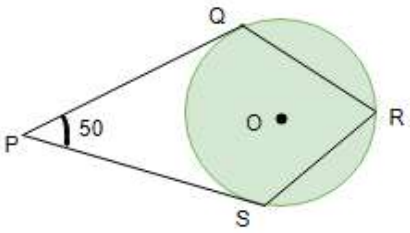
3 In the given figure, PQ is a diameter of a circle with centre O and PT is a tangent at P, QT meets the circle at R. If ∠POR = 72° then ∠PTR= ____

A) 52° (B) 60°
(C) 54° (D) 64°



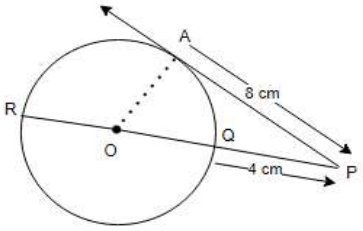
4 In the figure , O is the centre of the circle and PQ and PS are tangents to the circle at points Q and S respectively. $\angle QRS =$ ____

A) 65 ° B) 130 ° C) 55 ° D) 100 °



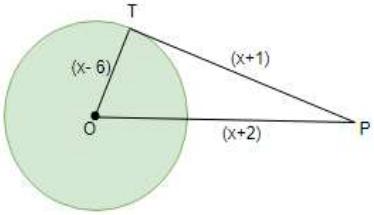
5 In the figure, O is the centre of the circle and PA is tangent to the circle from the point P. PQR passes through the centre of the circle O. If PA = 8 cm, PQ = 4 cm, find the radius of the circle.

A) 3 cm B) 6 cm C) 12 cm D) 10 cm

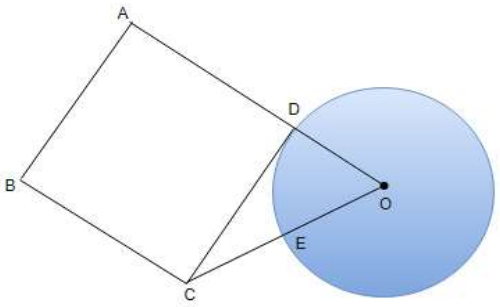


6 In the below figure, find the area of Δ OTP.

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 , the 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) $\frac{\pi}{3}$

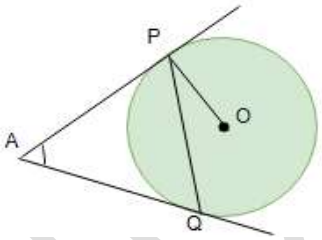
8 Tangents AP and AQ are drawn to a circle with centre O from external point A then _____

A) $\angle PAQ = 2\angle OPQ$

B) $\angle PAQ = \angle OPQ$

C) $\angle PQA = \angle OPA$

D) $\angle PQA = 2\angle OPA$

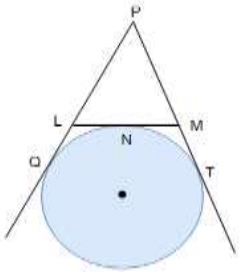


9 The distance between two parallel tangents of a circle of radius 10 cm is ____

A) 20 cm B) 10 cm C) 15 cm D) 5 cm

10 In the figure, If $PQ = 30\ cm$, then find the perimeter of $\Delta\ PLM$.

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

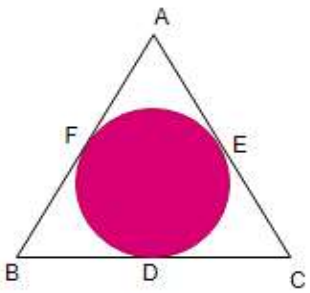


11 The two tangents from an external point P to a circle with centre O are PA and PB. If ∠ APB = x°, what is the value of ∠ AOB?

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

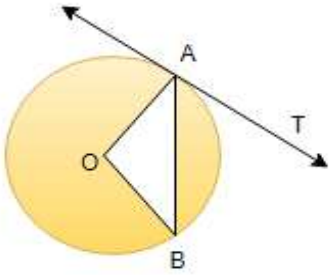
12 A triangle ABC is drawn to circumscribe a circle. If AB = 13 cm, BC = 14 cm and AE = 7 cm, then AC is equal to ____

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



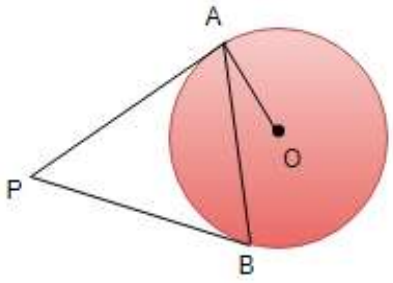
13 In given figure, O is the centre of the circle, AB is a chord and AT is the tangent at A. If ∠ AOB = 100° then find ∠ BAT .

A) 100° B) 40° C) 50° D) 90°



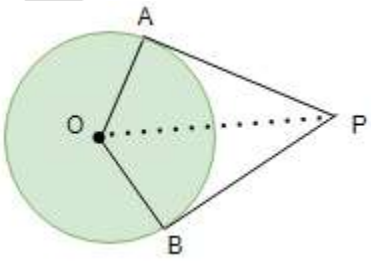
14 In the figure PA and PB are tangents to the circle with centre O. If ∠APB = 70°, then ∠OAB is ____

A) 35° B) 70° C) 30° D) 15°



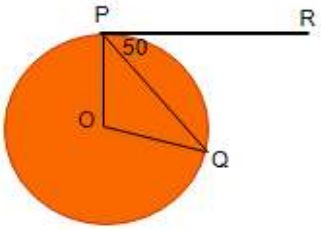
15 If angle between two tangents drawn from a point to a circle of radius a and centre O is 60° . then OP = _____

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



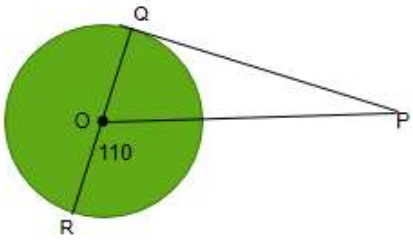
16 In figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then ∠POQ is equal ____

A) 100° B) 80° C) 90° D) 75°



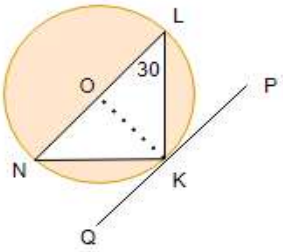
17 PQ is a tangent drawn from a point P to a circle with centre O and QOR is a diameter of the circle such that ∠ POR = 110°. Find ∠ OPQ.

A) 10° B) 20° C) 30° D) 25°



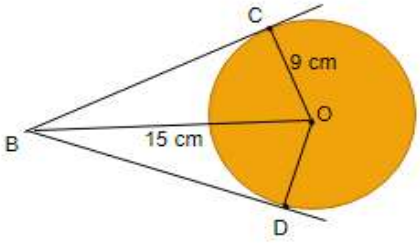
18 In Figure, O is the centre of the circle and LN is a diameter. If PQ is a tangent to the circle at K and ∠ KLN = 30°, find ∠ PKL.

A) 30° B) 20° C) 60° D) 25°



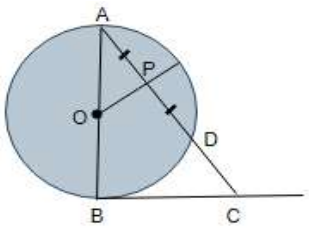
19 In the figure, BC and BD are tangents to the circle with centre O and radius 9 cm. If OP = 15 cm , then the length of (BC + BD) = _____ cm

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



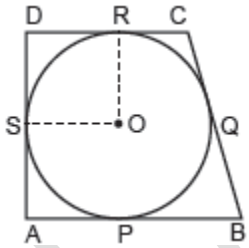
20 In the figure, O is the centre of the circle. BC is a tangent to the circle at B. If OP bisects the chord AD and $\angle AOP = 60°$, Then find $\angle C$.

A) 60° B) 30° C) 45° D) 25°



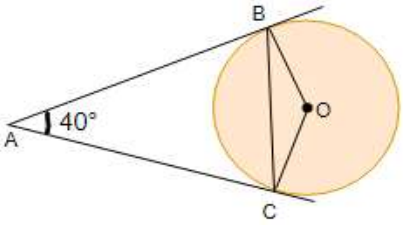
21 A quadrilateral ABCD is drawn so that ∠ D = 90°, BC = 38 cm and CD = 25 cm. A circle is inscribed in the quadrilateral and it touches the side AB, BC, CD and DA at P, Q, R and S respectively. If BP = 27 cm, find the radius of the inscribed circle.

A) 100° B) 105° C) 130° D)1 25°



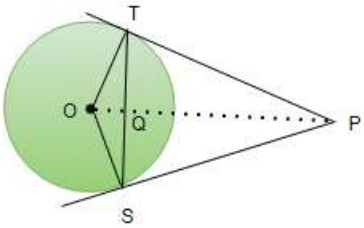
22 In the given figure, AB and AC are tangents to the circle with centre O such that ∠ BAC = 40°, then ∠ BOC is equal to ____.

A) 130° B) 120° C) 140° D) 150°

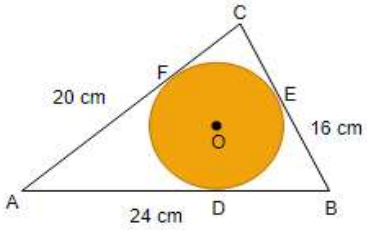


23 In figure, from an external point P, two tangents PT and PS are drawn to a circle with centre O and radius r . If OP = $2r$ ∠ OTS = ∠ OST = _____

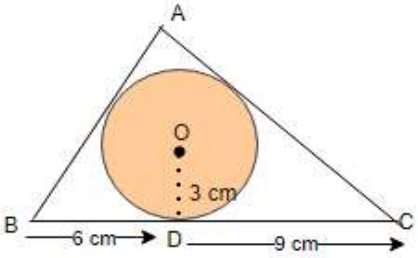
A) 20° B) 40° C) 30° D) 25°



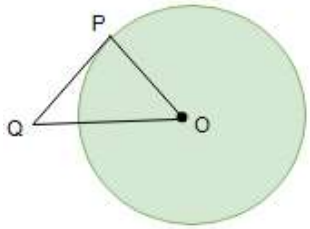
24 A circle is inscribed in a ΔABC having sides 16 cm, 20 cm and 24 cm as shown in figure. Find AD, BE and CF



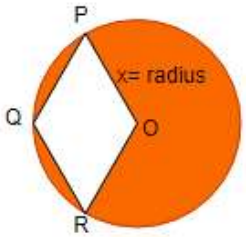
25 In figure, a triangle ABC is drawn to circumscribe a circle of radius 3 cm, such that the segments BD and DC are respectively of lengths 6 cm and 9 cm. If the area of Δ ABC is 54 cm^2, then find the lengths of sides AB and AC.



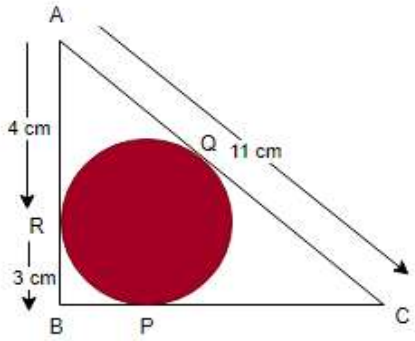
26 PQ is a tangent to a circle with centre O at point P. If $\Delta\, OPQ$ is isosceles triangle, then find $\angle\, OQP$.



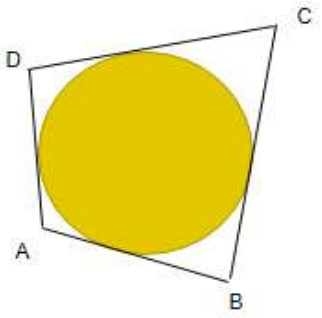
27 In the given figure, OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is $32\sqrt{3}$ cm^2, find the radius of the circle.



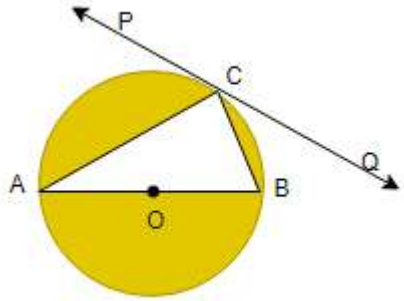
28 In figure, Δ ABC is circumscribing a circle. Find the length of BC.



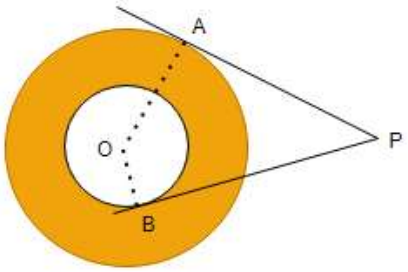
29 In figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are AB = 6 cm, BC = 9 cm and CD = 8 cm. Find the length of side AD.



30 In figure, PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and ∠ CAB = 30°, find ∠ PCA.

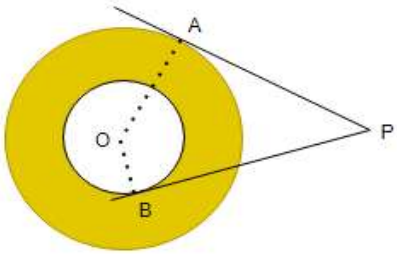


31 Tangents PA and PB are drawn from an external point P to two concentric circles with centre O and radius 8 cm and 5 cm respectively, as shown in the figure. If AP = 15 cm, then BP = _____



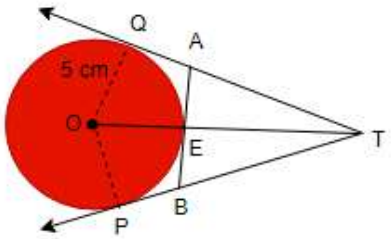
A) $2\sqrt{66}$ B) $4\sqrt{66}$ C) $2\sqrt{33}$ D) $\sqrt{66}$

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 = _____



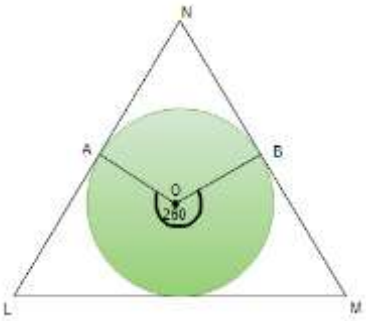
A) $\sqrt{160}$ B) $\sqrt{150}$ C) 10 D) $2\sqrt{10}$

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.

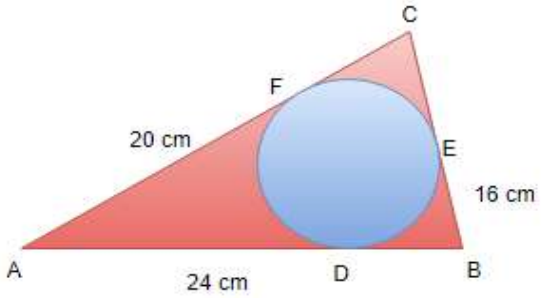


34 A circle with centre O is inscribed in a triangle LMN . A and B are points of tangency. Reflex $\angle AOB = 260°$, find ANB.

A) 50° B) 100° C) 80° D) 130°



35 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.

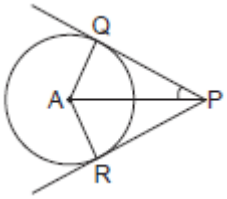


SECTION -B

1 Two parallel lines touch the circle at points A and B respectively. If area of the circle is 25 π cm^2, then AB is equal to _____

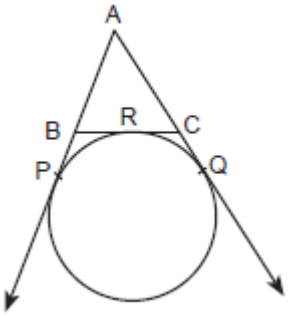
(A) 5 cm (B) 8 cm (C) 10 cm (D) 25 cm

2 In figure, PQ and PR are tangents to a circle with centre A. If ∠ QPA = 27°, then ∠ QAR equals to__



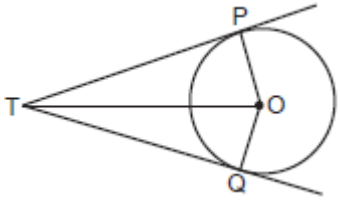
(A) 63° (B) 153° (C) 126° (D) 117°

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 _____



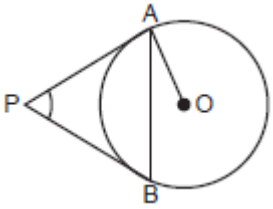
(A) 7.5 (B) 15 (C) 10 (D) 9

4 In the given figure, TP and TQ are two tangents to a circle with centre O, such that ∠ POQ = 110°. Then ∠ PTQ is equal to _____



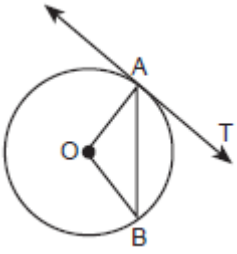
(A) 55° (B) 70° (C) 110° (D) 90°

5 In the figure PA and PB are tangents to the circle with centre O. If ∠ APB = 60°, then ∠ OAB is____



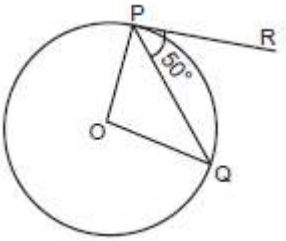
(A) 30° (B) 60° (C) 90° (D) 15°

6 In figure, O is the centre of a circle, AB is a chord and AT is the tangent at A. If ∠ AOB = 100°, then ∠ BAT is equal to _____



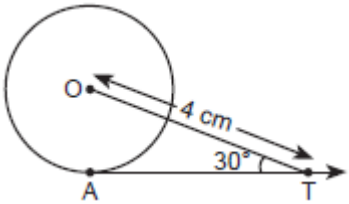
(A) 100° (B) 40° (C) 50° (D) 90°

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 ∠ 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 ∠ OTA = 30°. Then AT is equal to _____

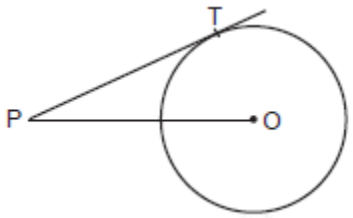


(A) 4 cm (B) 2 cm (C) $2\sqrt{3}$ cm (D) $4\sqrt{3}$ cm

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 _____

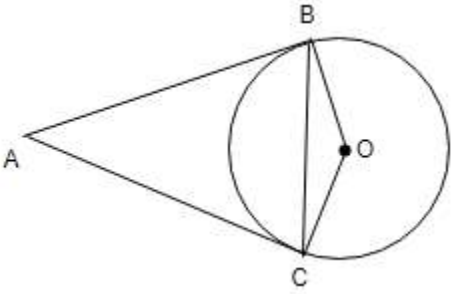
(A) 60 cm^2 (B) 65 cm^2 (C) 30 cm^2 (D) 32.5 cm^2

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 ____



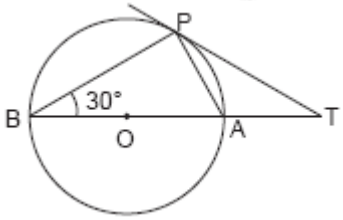
(A) 25 cm (B) 26 cm (C) 24 cm (D) 10 cm

11 In the given figure, AB and AC are tangents to the circle with centre O such that ∠ BAC = 40°, then ∠ BOC is equal to____

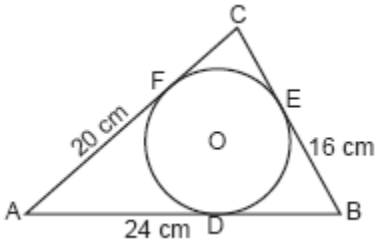


(A) 40° (B) 50° (C) 140° (D) 150°

12 In figure, O is the centre of the circle and TP is the tangent to the circle from an external point T. If ∠ PBT = 30°, prove that BA : AT = 2 : 1.



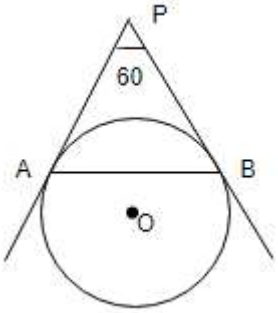
13 A circle is inscribed in a Δ ABC having sides 16 cm, 20 cm and 24 cm as shown in figure. Find AD, BE and CF



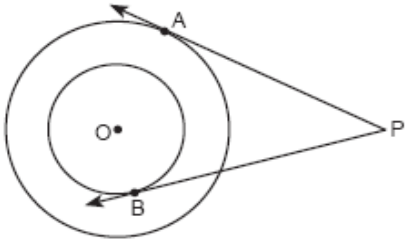
14 A circle touches x-axis at A and y-axis at B. If O is origin and OA = 5 units, then diameter of the circle is __

(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 ∠ APB = 60°. 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.

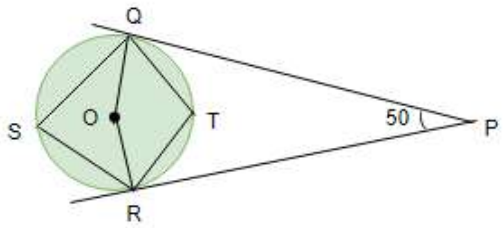


17 Find the length of the tangent drawn from a point whose distance from the centre of a circle is 25 cm. Given that radius of the circle is 7 cm.

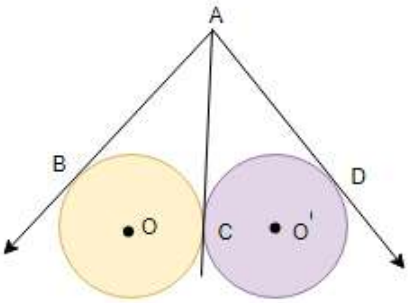
18 What is the angle between a tangent to a circle and the radius through the point of contact? Justify your answer.

19 What is the distance between two parallel tangents of a circle of radius 7 cm?

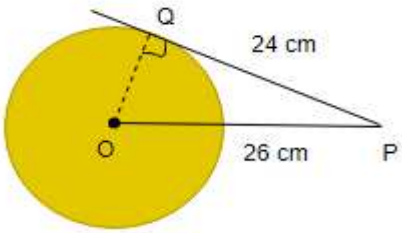
20 In the given figure, O is the centre . find ∠ QSR



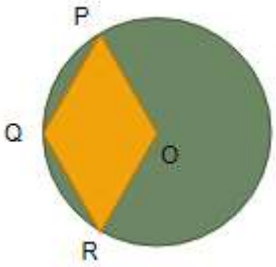
21 In the given figure, AB, AC and AD are tangents. If AB = 5 cm, find AD



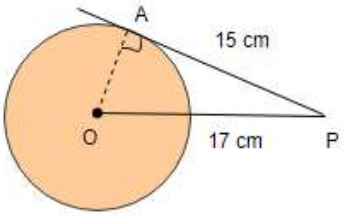
22 A point P is 26 cm from the centre of the circle. The length of the tangent drawn from P to the circle is 24 cm. Find the radius of the circle.



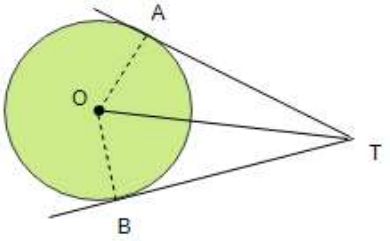
23 In the given figure, OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is $32\sqrt{3}$ cm^2, find the radius of the circle.



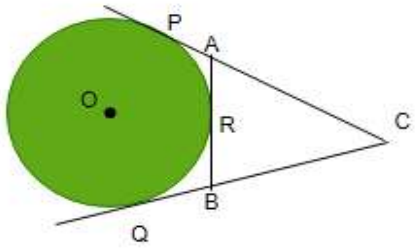
24 From a point P, the length of the tangent to a circle is 15 cm and distance of P from the centre of the circle is 17 cm. Then what is the radius of the circle?



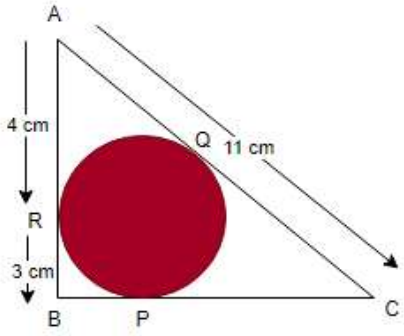
25 In figure , O is the centre of the circle , if ∠ ATO = 40°, find ∠ AOB.



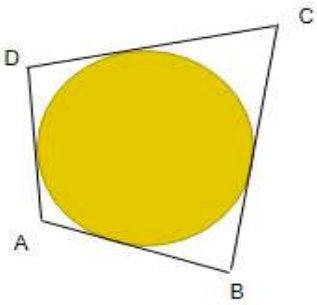
26 In figure, CP and CQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If CP = 11 cm, and BC = 7 cm, then find the length of BR.



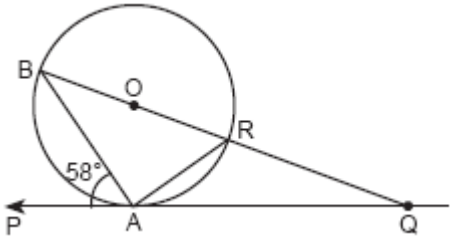
27 In figure, Δ ABC is circumscribing a circle. Find the length of BC.



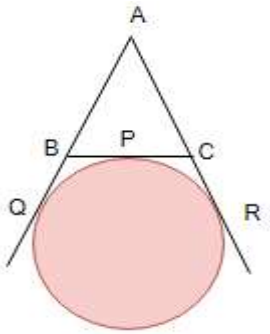
28 In figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are AB = 6 cm, BC = 9 cm and CD = 8 cm. Find the length of side AD.



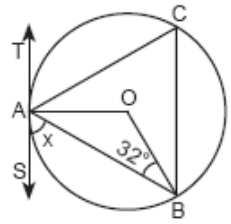
29 In figure, O is the centre of the circle, PQ is a tangent to the circle at A. If ∠ PAB = 58°, find ∠ ABQ and ∠ AQB.



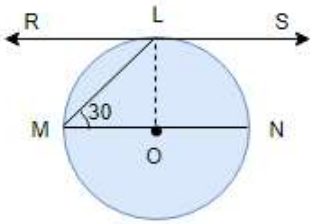
30 In figure, a circle touches the side BC of ΔABC at P and touches AB and AC produced at Q and R respectively. If AQ = 5 cm, find the perimeter of Δ ABC.



31 In the given figure, TAS is a tangent to the circle, with centre O, at the point A. If ∠ OBA = 32°, find the value of *x*.

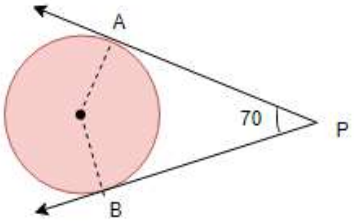


32 In the given figure, RS is the tangent to the circle at L and MN is a diameter. If ∠ NML = 30°, determine ∠ RLM.

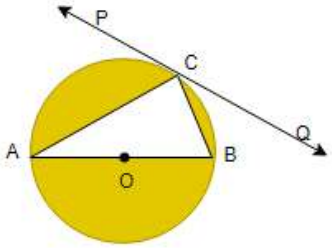


33 Two tangents PA and PB are drawn to the circle with centre O, such that APB = 120°. Prove that OP = 2AP.

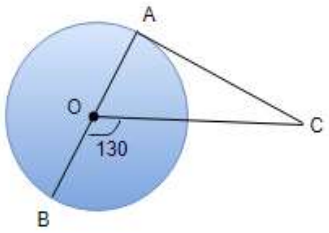
34 The two tangents from an external point P to a circle with centre O are PA and PB. If ∠ APB = 70°, what is the value of ∠ AOB?



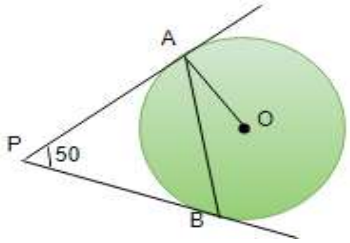
35 In figure, PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and ∠ CAB = 30°, find ∠ PCA.



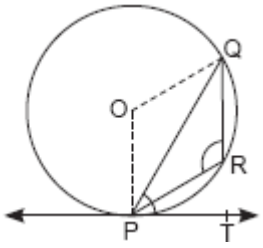
36 In figure, AOB is a diameter of a circle with centre O and AC is a tangent to the circle at A. If ∠ BOC = 130°, then find ∠ ACO



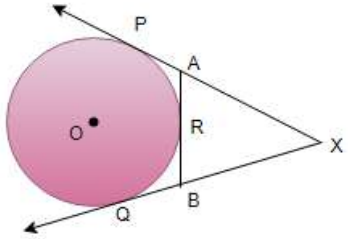
37 In figure, PA and PB are tangents to the circle with centre O such that ∠ APB = 50°. Write the measure of ∠ OAB



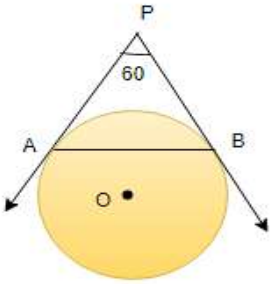
38 In figure, PQ is a chord of a circle with centre O and PT is a tangent. If ∠ QPT = 60°, find ∠ PRQ



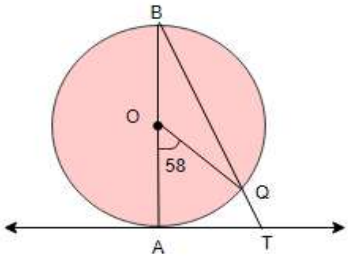
39 In figure, XP and XQ are two tangents to a circle with centre O from a point X outside the circle. ARB is tangent to circle at R. Prove that XA + AR = XB + BR.



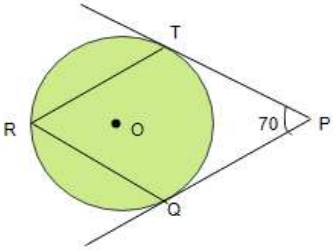
40 In figure, AP and BP are tangents to a circle with centre O, such that AP = 5 cm and ∠ APB = 60°. Find the length of chord AB.



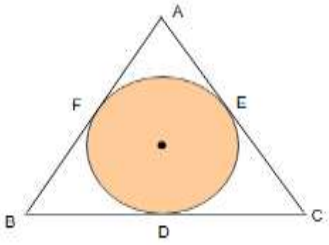
41 In figure, AB is the diameter of a circle with centre O and AT is a tangent. If ∠ AOQ = 58°, find ∠ ATQ.



42 In figure, O is the centre of a circle. PT and PQ are tangents to the circle from an external point P. If ∠ TPQ = 70°, find ∠ TRQ

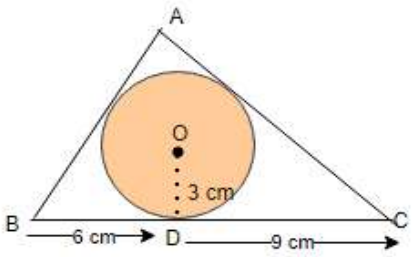


43 ABC is an isosceles triangle, in which AB = AC, circumscribed about a circle. Show that BC is bisected at the point of contact



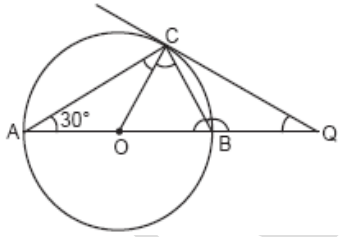
44 Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre

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 Δ ABC 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 BAC = 30°. If tangent at C intersects AB produced in D, prove that BC = BD.

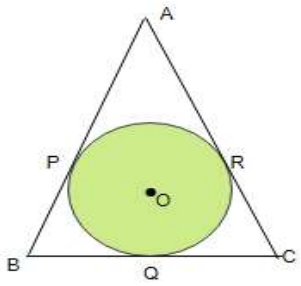
47 In the figure, AB is diameter of a circle with centre O and QC is a tangent to the circle at C. If ∠CAB = 30°, find ∠CQA and ∠ CBA.



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

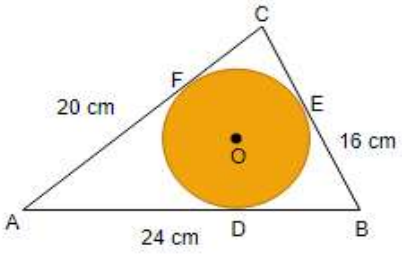
(i) AB + CQ = AC + BQ

(ii) Area (Δ ABC) = $\frac{1}{2}$ (perimeter of Δ ABC) × *r*

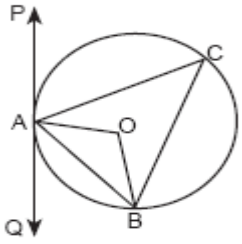


49 PQR is a right angled triangle right angled at Q. PQ = 5 cm, QR = 12 cm. A circle with centre O is inscribed in ΔPQR, touching its all sides. Find the radius of the circle.

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 ∠ OBA = 35°, find the value of ∠ BAQ and ∠ ACB.

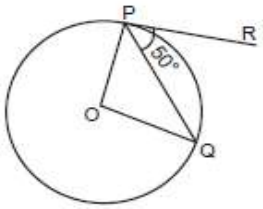


52 From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is

(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 ∠ POQ is equal to

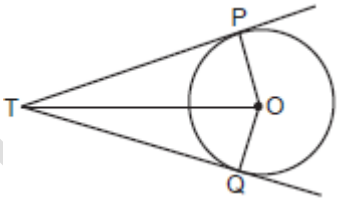
(A) 100° (B) 80° (C) 90° (D) 75°



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 _____.

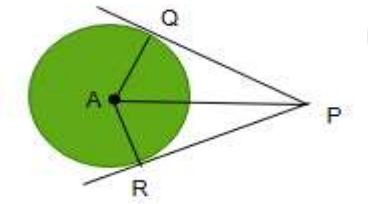
55 In the given figure, TP and TQ are two tangents to a circle with centre O, such that POQ = 110°. Then PTQ is equal to_____

(A) 55° (B) 70° (C) 110° (D) 90°

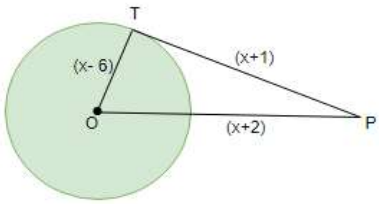


56 In figure, PQ and PR are tangents to a circle with centre A. If ∠ QPA = 27°, then ∠ QAR equals to _____

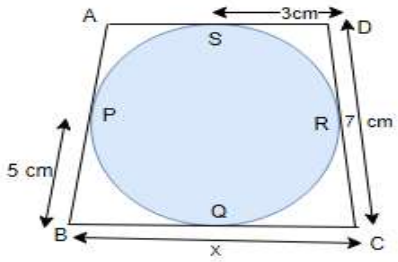
(A) 63° (B) 153° (C) 126° (D) 117°



57 In the below figure, find the actual length of sides of Δ OTP.



58 In the figure, find the value of x.



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