MATHS

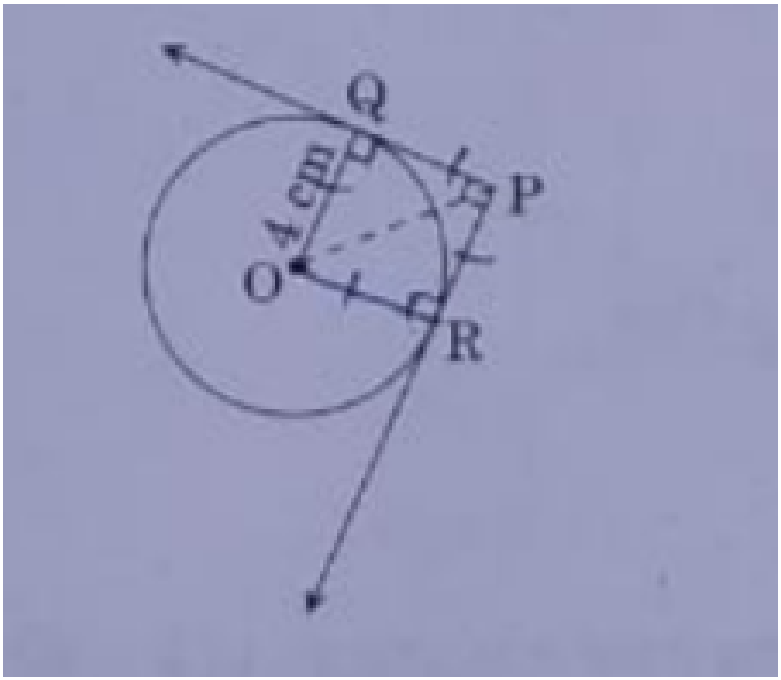
BOOKS - EDUCART PUBLICATION

CIRCLES

Objective Type Questions Multiple Choice Questions

1. In the figure-3, from an external point P, two tangents PQ and PR are drawn to a circle of

the radius 4 cm with centre O. If $\angle$ QPR = 90°, then length of PQ is



A. 3 cm

B. 4 cm

C. 2 cm

D. $2\sqrt{2}$ cm

Answer: B

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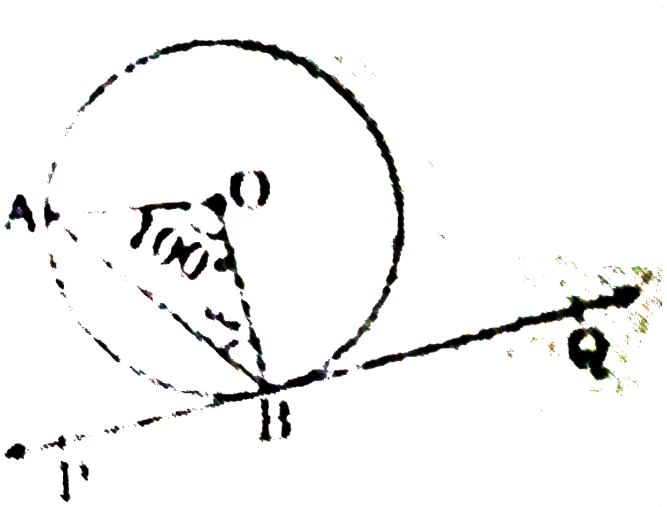
2. In figure PQ is tangent to the circle with centre at O at the point B , if $\angle AOB = 100^\circ$,

then $\angle ABP$ is equal to



A. 50°

B. 40°

C. 60°

D. 80°

Answer: A

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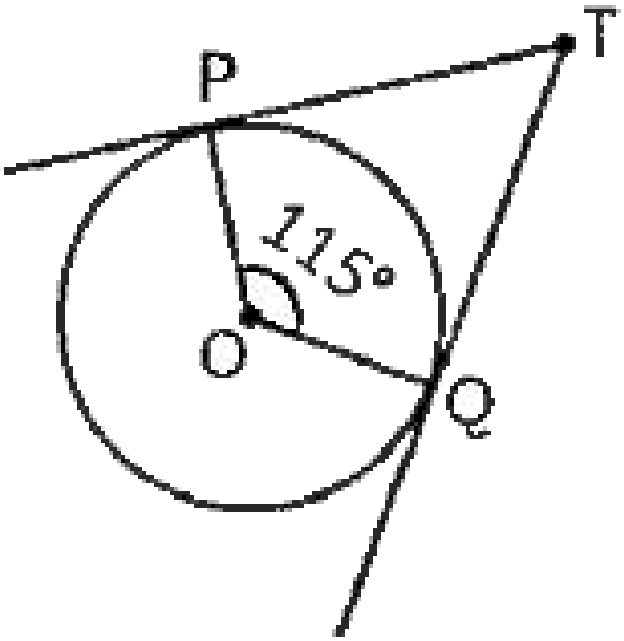
3. In the figure, TP and TQ are tangents drawn to the circle with centre at O. If $\angle POQ = 115^\circ$ then $\angle PTQ$ is:



A. 115°

B. 57.5°

C. 55°

D. 65°

Answer: D

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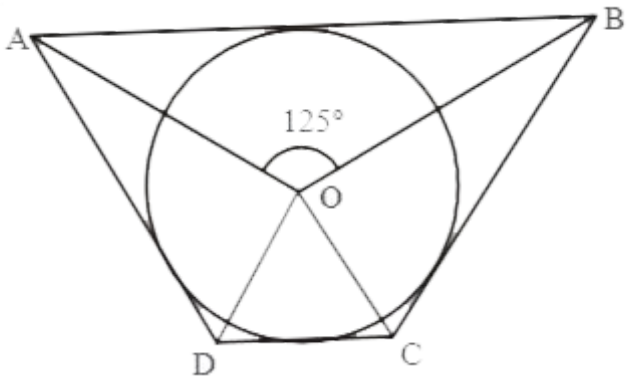
4. In the given figure, If $\angle AOB = 125^\circ$ then find $\angle COD$.



A. 62.5°

B. 45°

C. 35°

D. 55°

Answer: D

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5. From an external point Q, the length of the tangents to a circle is 5 cm and the distance of Q from the centre is 8 cm. The radius of the circle is:

A. 39 cm

B. 3 cm

C. $\sqrt{39}$ cm

D. 7 cm

Answer: C

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6. Tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that OQ = 12 cm. Find length of PQ

A. 12 cm

B. 13 cm

C. 8.5 cm

D. $\sqrt{119}$ cm

Answer: D

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7. 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. $60 \quad \mathrm{cm}^2$

B. $65 \quad \mathrm{cm}^2$

C. $30 \quad \mathrm{cm}^2$

D. $32.5 \quad \mathrm{cm}^2$

Answer: A

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8. The chord of a circle of radius $10cm$ subtends a right angle at its centre. The length of the chord (in cm) is

A. 10 cm

B. $10\sqrt{2}$ cm

C. 20 cm

D. 12 cm

Answer: B

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9. In a circle of radius 7 cm, tangent PT is drawn from a point P such tht PT= 24 cm. If O is the centre of circle, then find the length of OP.

A. 25 cm

B. $15\sqrt{2}$

C. 18 cm

D. 17 cm

Answer: A

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10. At one end A of a diameter AB of a circle of radius 5 cm, tangent xay is drawn to the circle. Find the length of the chord cd paralled to XY and at a distantce 8 cm from A .

A. 4 cm

B. 5 cm

C. 6 cm

D. 8 cm

Answer: D

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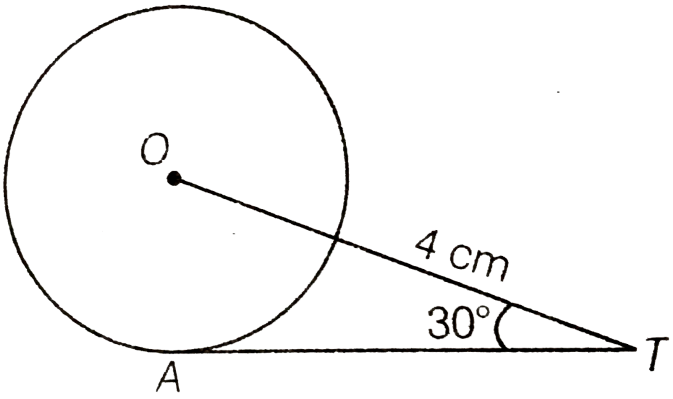
11. In figure, AT is a tangent to the circle with centre 0 such that OT = 4 cm and

$\angle OTA = 30^\circ$. Then, AT is equal to



A. 4 cm

B. 2 cm

C. $2\sqrt{3}$ cm

D. $4\sqrt{3}$ cm

Answer:

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12. If radii of two concentric circles are 4 cm and 5 cm, then length of each chord of one circle which is tangent to the other circle, is

A. 8 cm

B. 6 cm

C. 10 cm

D. 12 cm

Answer: B

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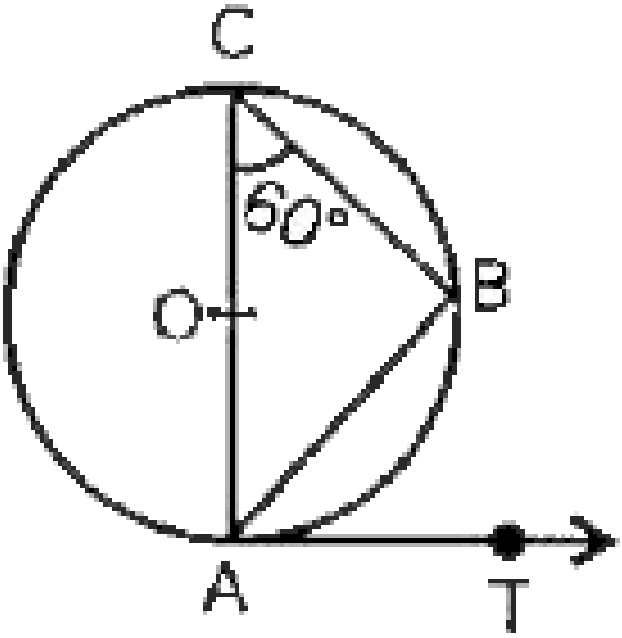
13. In the figure, O is the centre of a circle and AT is a tangent at point A. The measure of $\angle BAT$ is:



A. 30°

B. 60°

C. 75°

D. 105°

Answer: B

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Objective Type Questions Fill In The Blanks

1. All concentric circles are..... to each other.

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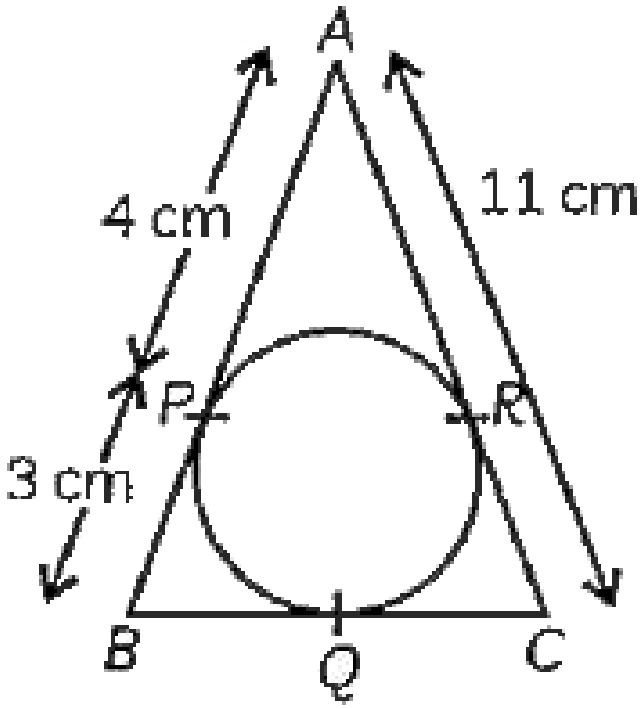
2. In the figure, ΔABC is circumscribing a circle, the length of BC is _____ cm.



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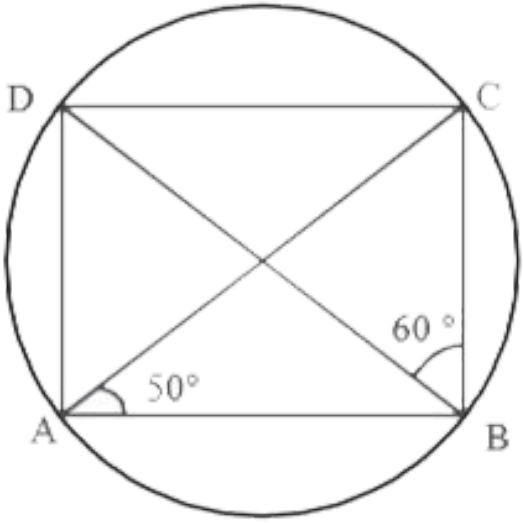
3. In fig., ABCD is a cyclic quadrilatreral. If $\angle BAC = 50^\circ$ and $\angle DBC = 60^\circ$, then find

$\angle BCD$.



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4. From the external point P tangents PA and PB are drawn to a circle with centre O. If $\angle PAB = 50^\circ$, then find $\angle AOB$.

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5. 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 $\angle POR = 120o$, then $\angle OPQ$ is $60o$ (b) $45o$ (c) $30o$ (d) $90o$

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6. The length of the tangent to a circle from a point P, which is 25 cm away from the centre, is 24 cm. What is the radius of the circle.

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7. A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that $OQ = 13cm$. Find the length of PQ .

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8. A line which intersects a circle at two distinct point is called a _____ of the circle.

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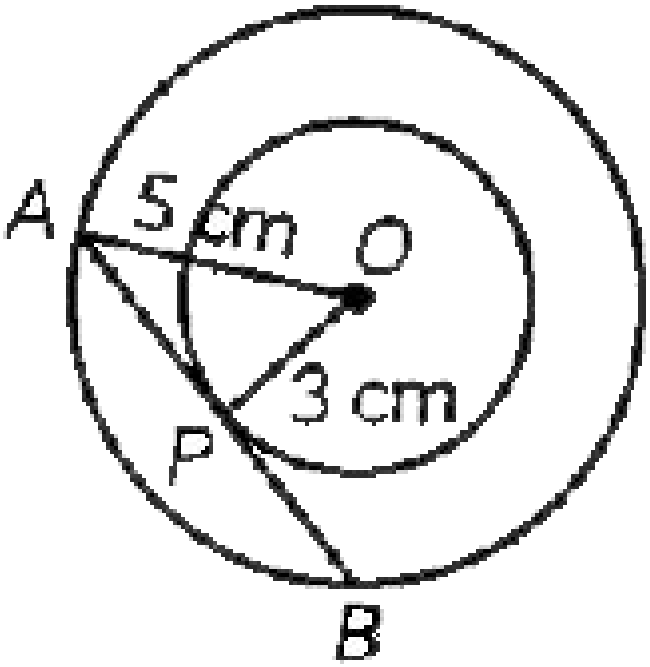
9. In the given figure the length PB = _____ cm.



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Objective Type Questions Write True Or False

1. If a chord AB subtends and angle of 60° at the centre of a circle, then the angle between the tangents to the circle drawn from A and B is

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2. The length of tangent from an external point on a circle is always greater than the radius of the circle.

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3. The length of tangent from an external point P on a circlewith centre 0 is always less than OP.

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4. The angle between two tangents to a circle may be 0°.

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5. The tangent to the circumcircle of an isosceles ΔABC at A, in which AB= AC, is parallel to BC.

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6. If a number of circles touch line segment PQ at a point A then , their centres lie on the perpendicular bisector of PQ. State True or False

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7. If a number of circles pass through the end points P and Q of a line segment PQ, then their centres lie on the perpendicular bisector of PQ.

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8. AB is a diameter of a circle and AC is its chord such that $\angle BAC = 30^\circ$. If the tengent at C intersects AB extended at D, then BC=BD.

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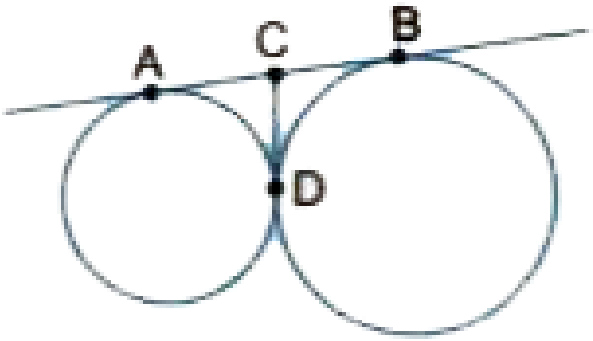
Objective Type Questions Very Short Questions

1. AB and CD are common tangents to two circles which intersect each other at C as

shown in the figure IF AB = 6cm , find CD.



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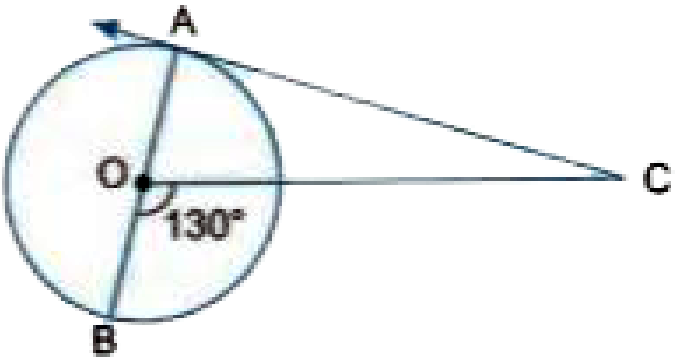
2. If Fig , AOB is diameter of a circle with centre O and AC is a tangent to the circle at A . If

$\angle BOC = 130^\circ$, then find $\angle ACO$.



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3. What is the maximum number of parallel tangents a circle can have on a diameter?

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4. In Figure 1, O is the centre of a circle, PQ is a chord and PT is the tangent at P. If angle POQ = 70^{o}, then angleTPQ is equal to

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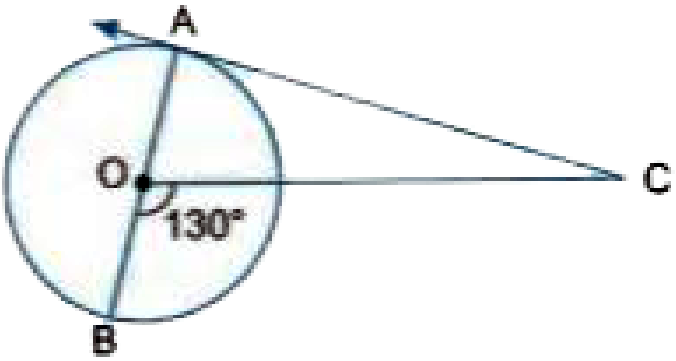
5. If Fig , AOB is diameter of a circle with centre O and AC is a tangent to the circle at A . If

$\angle BOC = 130^\circ$, then find $\angle ACO$.



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6. If the angle between two tangents drawn from an external point P to a circle of radius 'a' and center O , is 60°, then find the length of OP.

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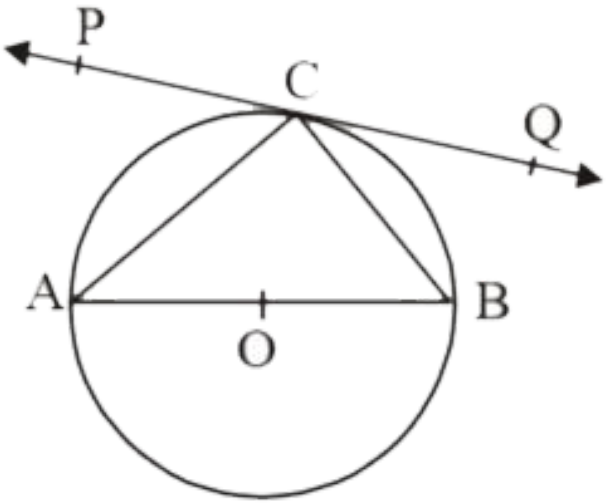
7. In figure PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and $\angle CAB = 30^\circ$, find $\angle PCA$



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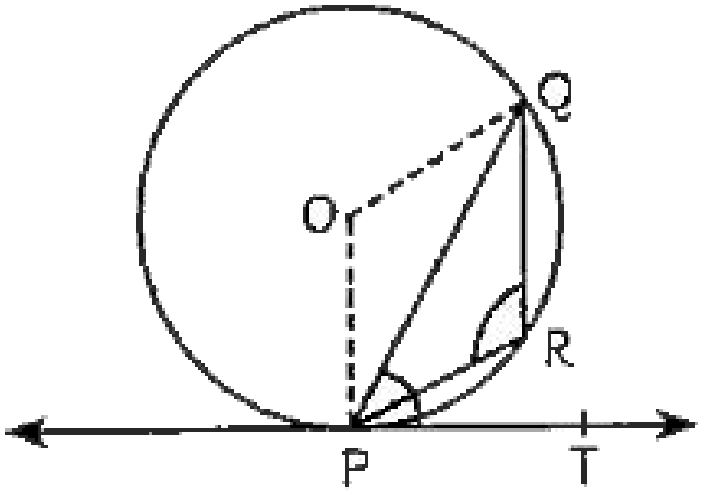
8. In Figure PQ is a chord of a circle with centre O and PT is a tangent. If $QPT = 60^\circ$ so, find PRQ.



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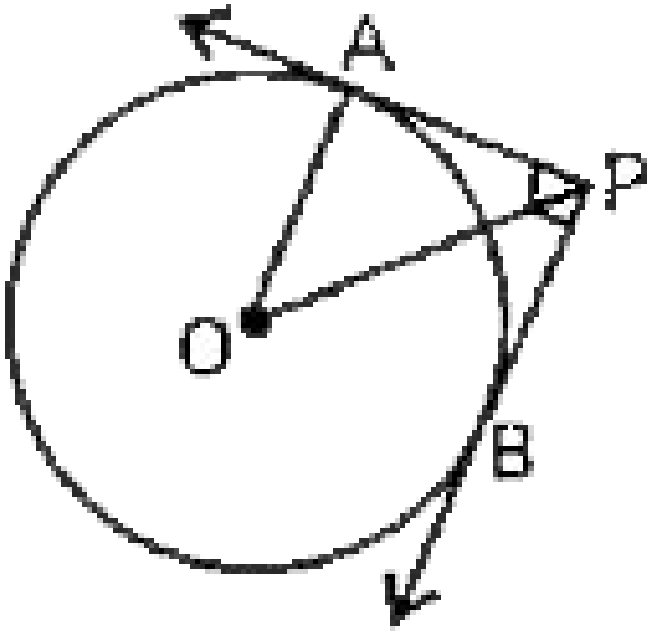
9. In the figure, $\angle APB = 90^\circ$



Find the length of OP if $AP = 2cm$.

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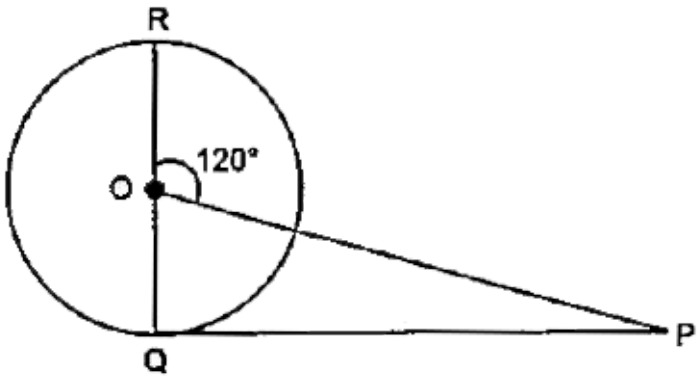
10. PQ is a tangent drawn from an external point P to a circle with center O, $\angle QOR$ is the diameter of the circle. If $\angle POR = 120^\circ$. What is the measure of $\angle OPQ$?



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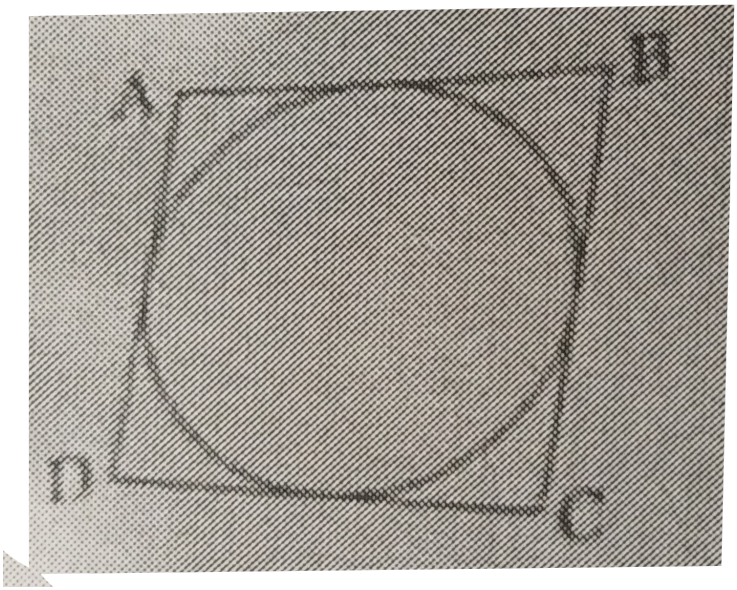
Short Answer Sa I Type Questions

1. In Figure, a quadrilateral ABCD is drawn to circumscribe a circle .

Prove that

$AB + CD = BC + AD$



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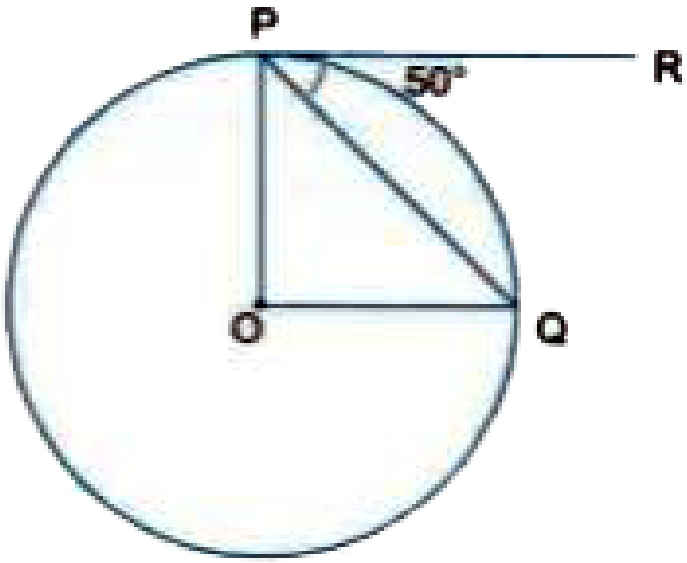
2. In Fig , O is the centre of a circle , PQ is a chord and the tangent PR at P makes an angle of 50° with PQ. Find $\angle POQ$.



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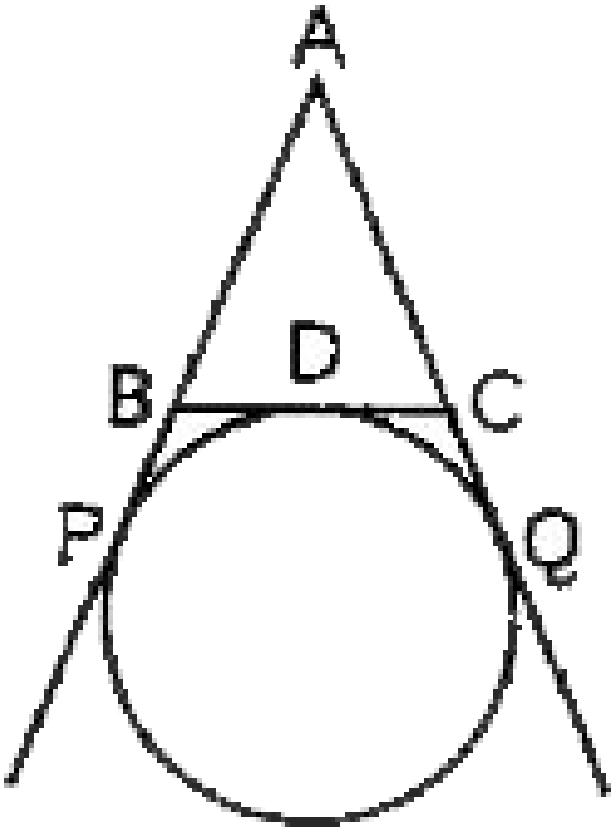
3. In the figure, find the perimeter of ΔABC, if

AP $= 12$ cm.



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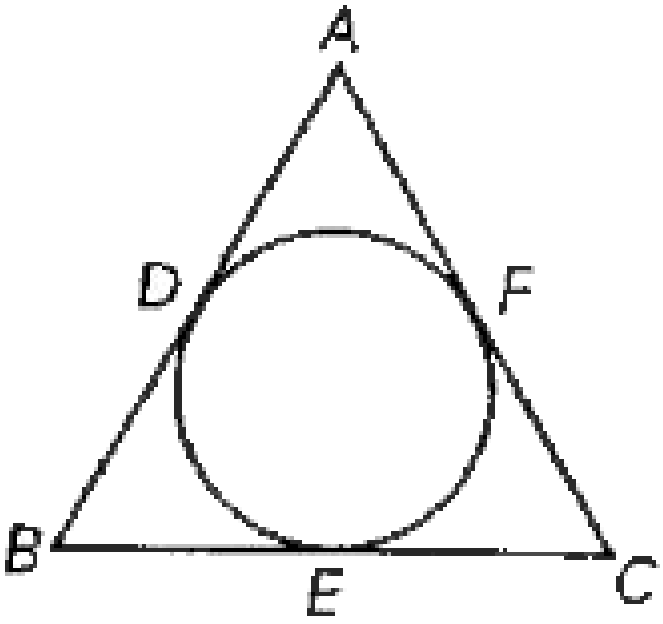
4. In the given, if AB = AC. prove the BE = EC.



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5. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

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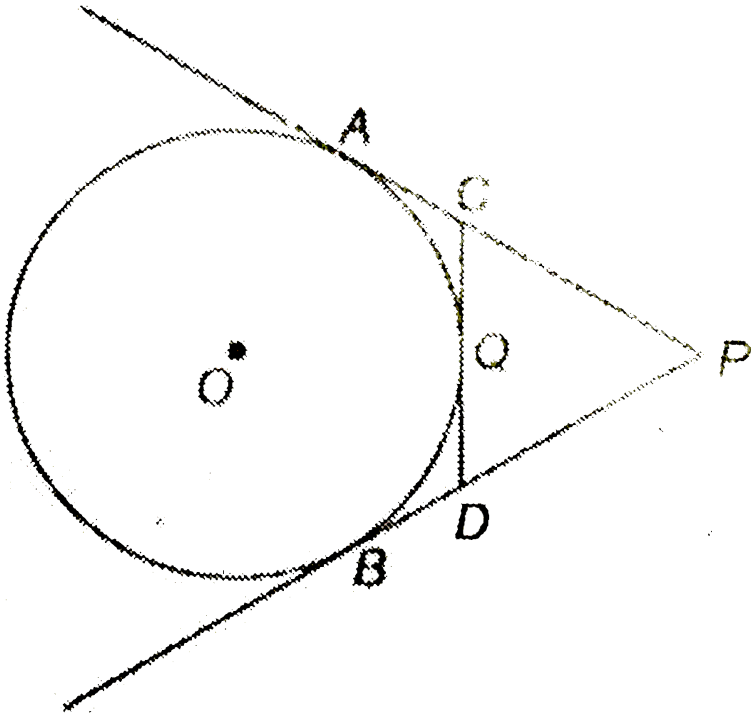
6. In the given figure, PA and PB are tangents to the circle from an external point P. CD is another tangent touching the circle at Q. If PA

=12 cm, QC=3cm, then find PC+PD.



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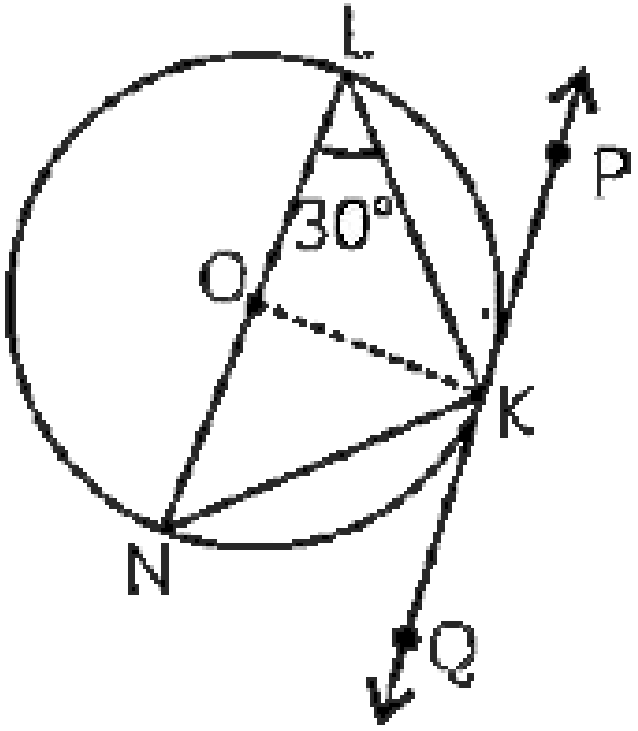
7. In the figure, O is the centre of the circle and LN is a diameter. If PQ is a tangent to the circle at K and $\angle KLN = 30^\circ$, find $\angle PKL$.



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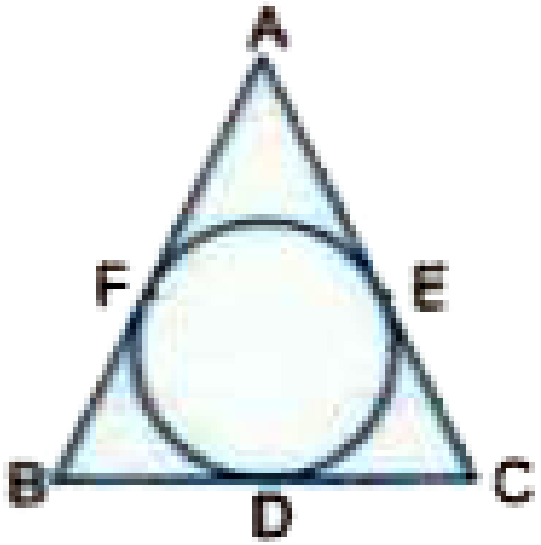
8. The incircle of an isosceles triangle ABC, in which AB = AC, touches the sides BC, CA and AB at D, E and F respectively . Prove that BD = DC.



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9. From a point P, two tangents PT and PS are drawn to a circle with center O.Such that $\angle SPT = 120^\circ$. Prove that OP=2PS.

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10. In the given figure, a circle inscribed in a triangle ABC, touches the sides AB, BC and AC at points D, E and F respectively. If AB= 12 cm, BC= 8 cm and AC = 10 cm, find the lengths of AD, BE and CF.

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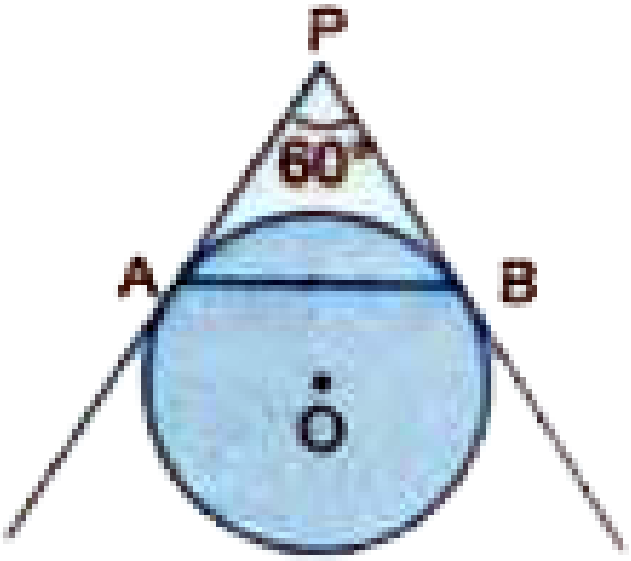
11. In Fig AP and BP are tangents to a circle with centre O, such that AP = 5 cm , and $\angle APB = 60^\circ$. Find the length of chord AB.



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12. Prove that the rectangle circumscribing a circle is a square

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13. In Fig.2, a quadrilateral ABCD is drawn to circumscribe a circle, with centre O, in such a way that the sides AB, BC, CD and DA touch the circle at the points P, Q, R and S respectively. Prove that AB + CD = BC + DA.

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14. In Figure 1, O is the centre of a circle, PQ is a chord and PT is the tangent at P. If angle POQ = 70°, then angleTPQ is equal to

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15. 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 $\angle POR = 120o$, then $\angle OPQ$ is $60o$ (b) $45o$ (c) $30o$ (d) $90o$

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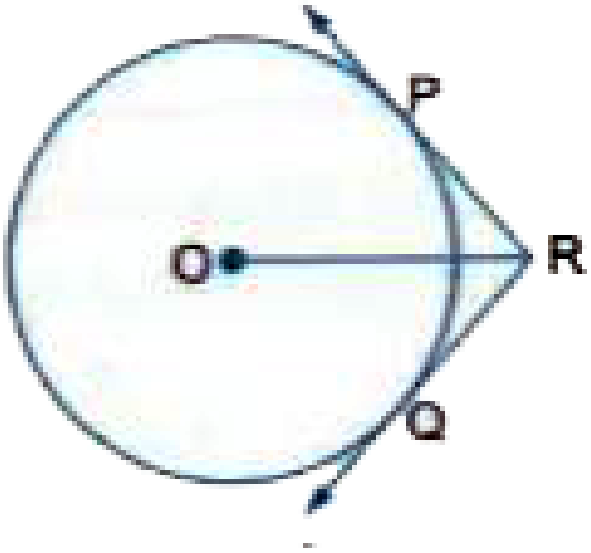
16. In Fig. two tangents RQ and RP are drawn from an external point R to the circle with centre O. If $\angle PRQ = 120^\circ$, then prove that OR = PR + RQ .



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17. Prove that the tangents drawn at the end points of a chord of a circle make equal angles with the chord.

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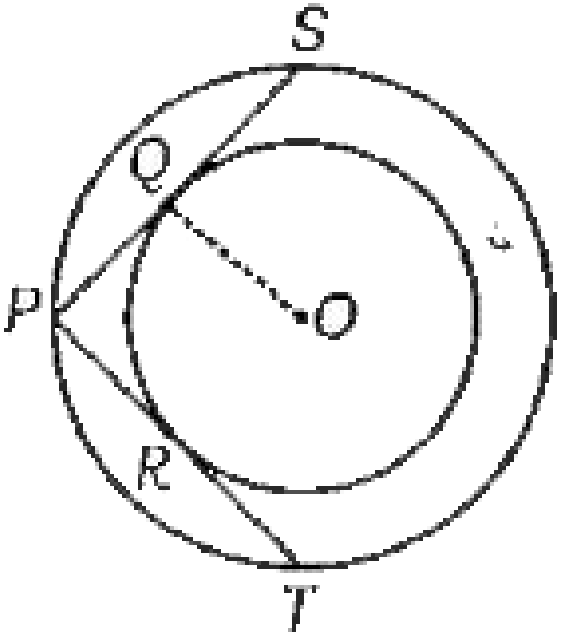
18. There are two concentric circles with centre O. PRT and PQS are tangents to the inner

circle. If PR = 5 cm, find the length of PS.



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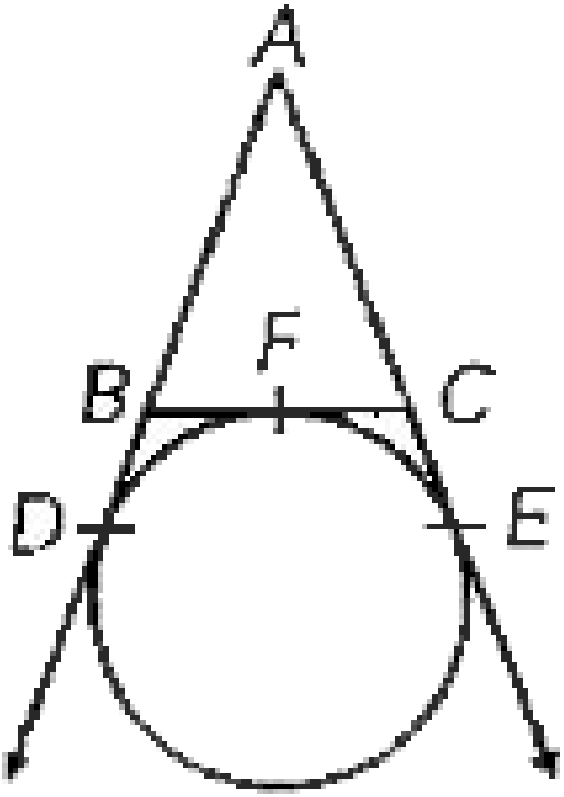
19. A circle touches the side BC of ΔABC at F and touches AB and AC at D and E,

respectively. If AD = 8 cm, then find the perimeter of ΔABC.



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20. From the external point P tangents PA and PB are drawn to a circle with centre O. If $\angle PAB = 50^\circ$, then find $\angle AOB$.

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21. If the angle between two tangents drawn from an external point P to a circle of radius 'a' and center O , is 60°, then find the length of OP.

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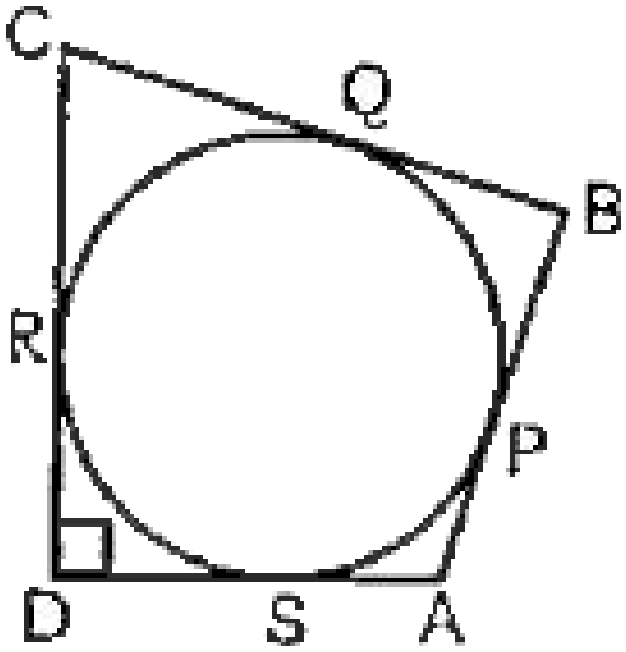
22. In the figure, $\angle ADC = 90^\circ$,



$BC = 38 \text{ cm}, CD = 28 \text{ cm}$ and $BP = 25 \text{ m}$

. Find the radius of the circle.

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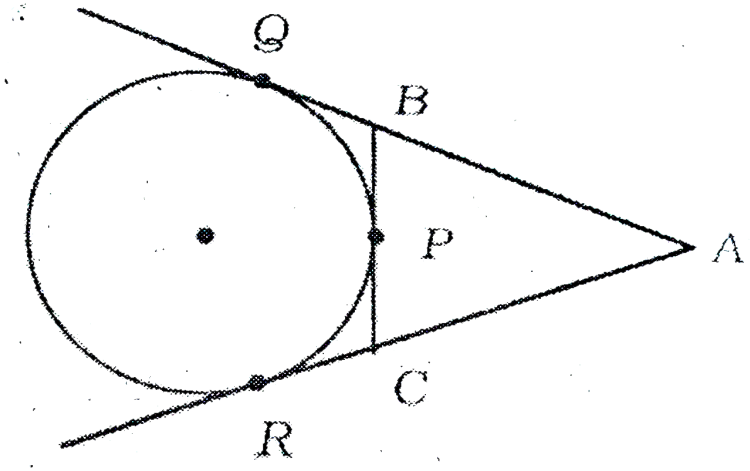
23. चित्र में एक वृत्त त्रिभुज ABC की भुजा BC को P पर स्पर्श करता है | तथा AB व AC को बढ़ाये जाने पर क्रमश : Q व R पर स्पर्श |

सिद्ध कीजिए $AQ = \frac{1}{2}(\Delta ABC$ का परिमाप)



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24. Out of the 2 concentric circle the radius of the outer circle is 5 cm and the chord AC of the length 8 cm is a tangent to the inner circle find the radius of the inner circle

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25. In Fig. 10.21, two circles touch each other at the point C . Prove that the common tangent to the circles at C , bisects the common tangent at P and Q . (FIGURE)

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26. Prove that the parallelogram circumscribing a circle is a rhombus.

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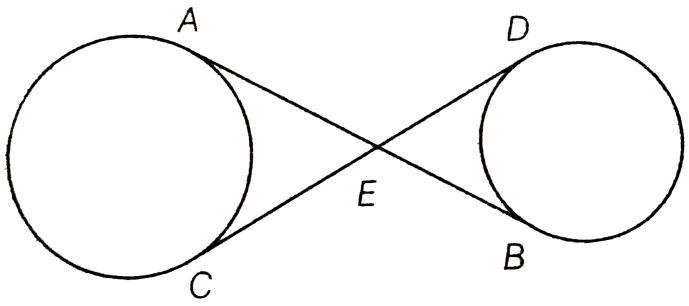
27. In figure, common tangents AB and CD to two circles intersect at E. Prove that AB=CD.



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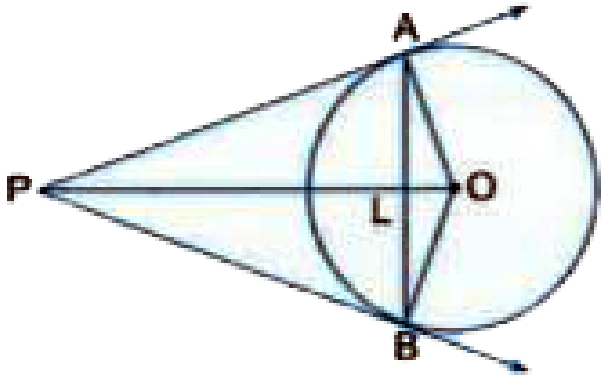
28. In Fig , AB is a chord of a circle , with centre O , such that AB = 16 cm and radius of circle is 10 cm. Tangents at A and B intersect each other at P . Find the length of PA.



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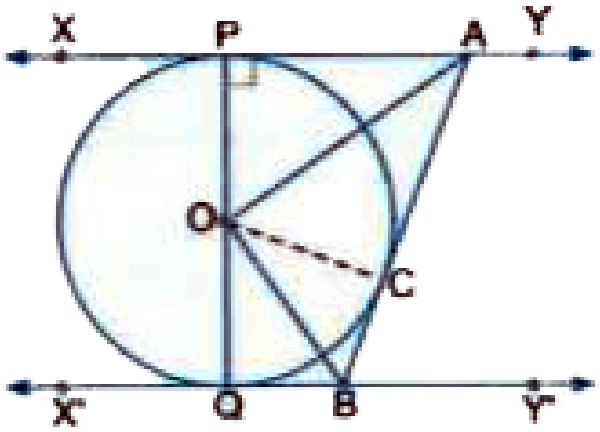
Short Answer Sa Ii Type Questions

1. In Fig XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY and X'Y' at B , prove that $\angle AOB = 90^\circ$



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2. Two tangents PQ and PR are drawn from an external point to a circle with centre 0. Prove that QORP is cyclic quadrileral.

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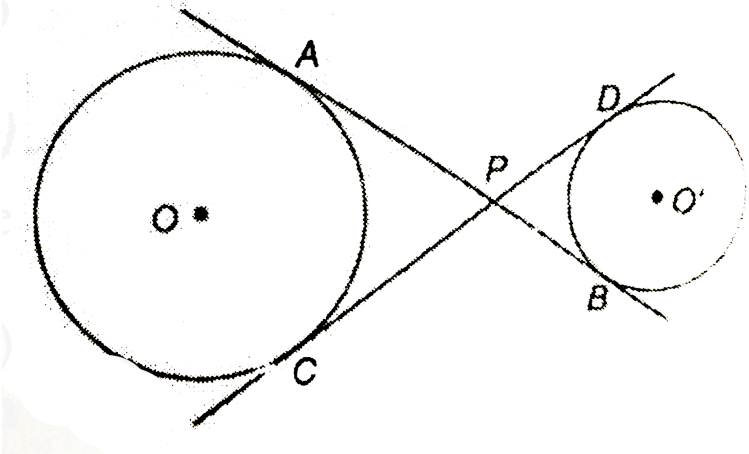
3. In the adjoining figure, common tangents AB and CD to two circles intersect at P.

Prove that AB=CD.



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4. ABC is a right triangle in which $\angle B = 90^\circ$. If $AB = 8$ cm and $BC = 6$ cm. find the diameter of the circle inscribed in the triangle.

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5. PQ and RS are two parallel tangents to a circle with centre O and another tangent AB wih point of contact C intersect PQ at A and RS at B. then find $\angle AOB$

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6. In Figure 4, PQ and PR are tangents drawn to a circle with centre O from an external

point P. If $\angle PRQ = 70^\circ$, then find $\angle QPR$ and $\angle OQR$

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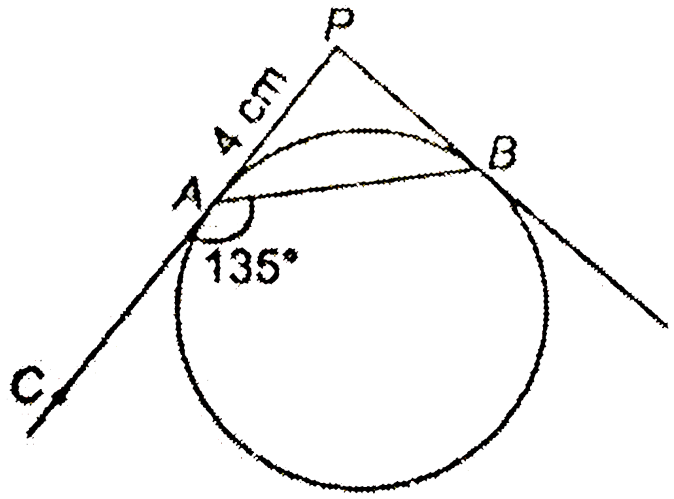
7. In the given figure, PA and PB are tangents to a circle from an external point P such that PA=4 cm and $\angle BAC = 135^\circ$. Find the length

of dhord AB.



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8. A chord PQ of a circle is parallel to the tangent drawn at a point R of the circle,Prove that R bisects the arc PRQ.

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9. Prove that a diameter AB of a circle bisects all those chords which are parllel to the tangent at the point A.

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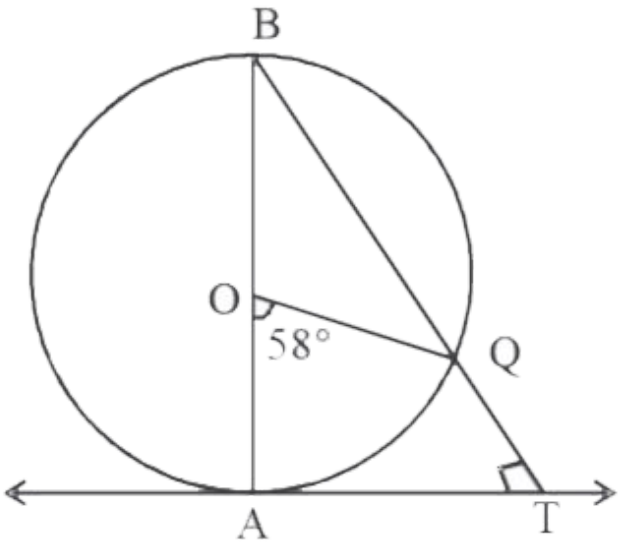
10. AB is a diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58^\circ$ find

$\angle ATQ$.



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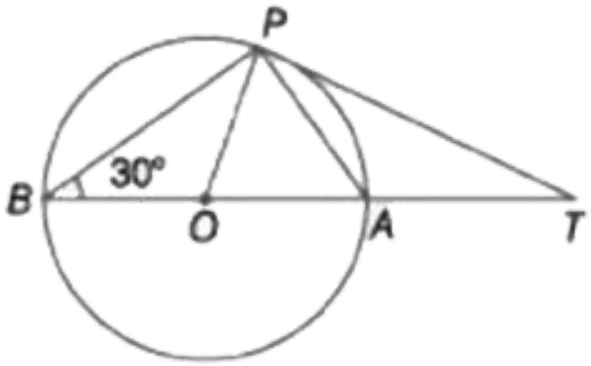
11. In the given figure, O is the centre of a circle, BOA is its diameter and the tangent at the point P meets BA extended at T. If

$\angle PBO = 30^\circ$,then $\angle PTA$ is equal to



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12. Prove that the length of the tangents drawn from an external point to a circle are equal.

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13. In Fig, PQ is a tangent from an external point P to a circle with centre O and OP cuts the circle at T and QOR is a diameter. If $\angle POR = 130^\circ$ and S is a point on the circle, find $\angle 1 + \angle 2$.

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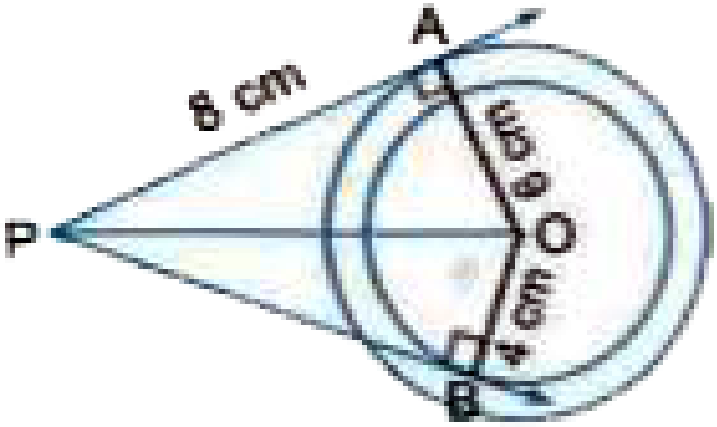
14. In Fig , are two concentric circles of radii 6 cm and 4 cm with centre O . If AP is a tangent to the larger circle and BP to the smaller circle

and length of AP is 8 cm, find the length of BP.



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15. From an external point P, two tangents PT and PS are drawn to a circle with centre O and radius r. if OP=2r, show that $\angle OTS = \angle OST = 30^\circ$

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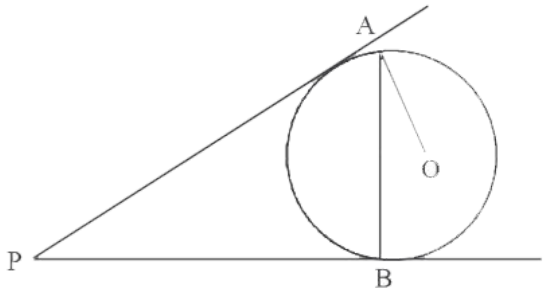
16. Two tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$



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17. Prove that the tangent at any point of circle is perpendicular to the radius through the point of contact.

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18. Prove that tangent drawn at the mid point of the are of a circle is pallelar to the chord joing the ends of point of the are

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Long Answer Type Questions

1. Two circles touch each other externally at P. AB is a common tangent to the circle touching them at A and B. The value of $\angle APB$ is $30o$ (b) $45o$ (c) $60o$ (d) $90o$

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2. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length TP.

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3. Let s denotes the semi-perimeter of a ΔABC in which BC=a, CA=b and AB=c. If a circle touches the sides BC, CA, AB, at D, E, F, respectively. Prove that BD=s-b.

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4. From an external point P, two tangents, PA and PB are drawn to a circle with centre 0. At

one point E on the circle tangent is drawn which intersects PA and PB at C and D, respectively. If PA=10 cm, find the preimeter of the trianlge PCD.

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5. O is the centre of a circle of radius $5cm.$ T is a point such that $OT = 13cmandOT$ intersects the circle at $E.$ If AB is the tangent to the circle at $E,$ find length of $AB.$

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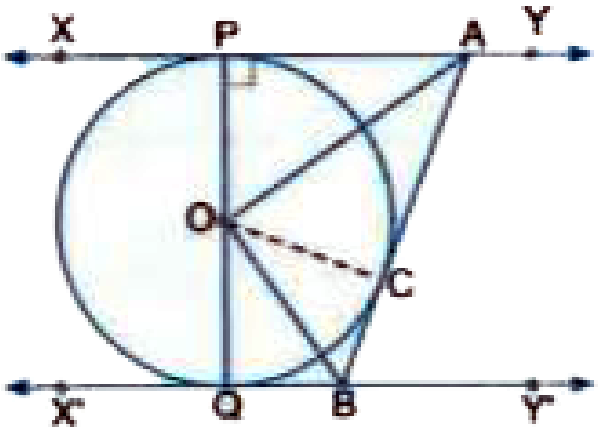
6. In Fig XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY and X'Y' at B , prove that $\angle AOB = 90^\circ$



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7. If an isosceles triangle ABC in which $AB = AC = 6cm$ is inscribed in a circle of radius $9cm$, find the area of the triangle.

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8. In a right angle triangle ΔABC is which $\angle B = 90^\circ$ a circle is drawn with AB diameter intersecting the hypotenuse AC at P.Prove that the tangent to the circle at PQ bisects BC.

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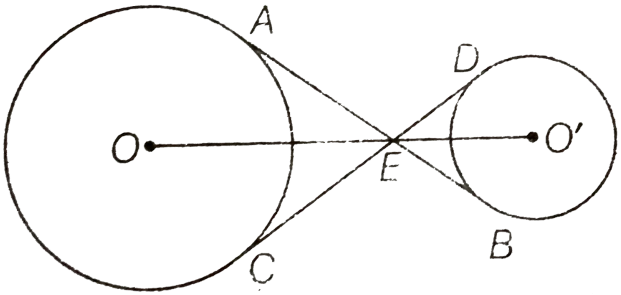
9. In a figure the common tangents, AB and CD to two circles with centers O and O' intersect at E. Prove that the points O, E and O' are collinear.



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10. A is a point at a distance 13 cm from the centre O of a circle of radius 5 cm. AP and AQ are the tangents to the circle at P and Q. If a tangent BC is drawn at a point R lying on the minor arc PQ to intersect AP at Band AQ at C, find the perimeter of the ΔABC

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11. . In the given figure, two equal circles, with centres O and O', touch each other at X. OO'

produced me the circle with centre O' at A. AC is tangent to the circle with centreO, at the point C. O'D is perpendicular to AC. Find the value of $\frac{DO'}{CO}$.

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12. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively. Find the sides AB and AC.

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13. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length TP.

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