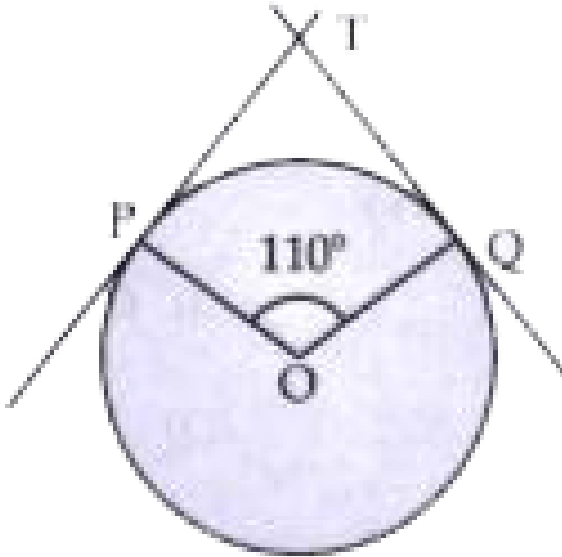# MATHS

BOOKS - OSWAL PUBLICATION

CIRCLES

Stand Alone Mcqs

1. In the given figure ,if TP and TQ are tangents to a circle with centre O, so that $\angle POQ = 110°$

,then ∠PTQ is

A. 110°

B. 90°

C. 80°

D. 70°

Answer: D

3. In the given figure , if $\angle AOB = 125°$,then
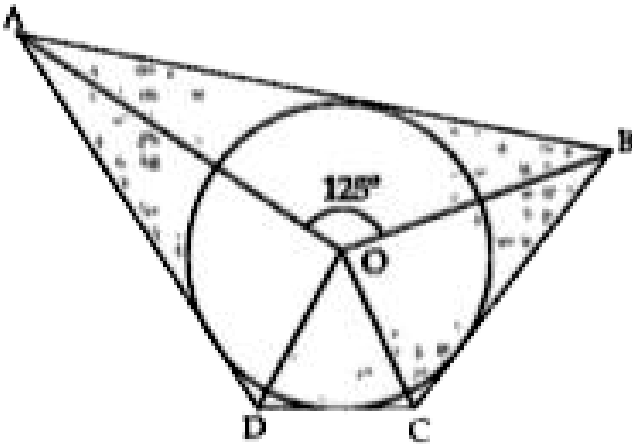
$\angle COD$ is equal to :

A. $62.5°$

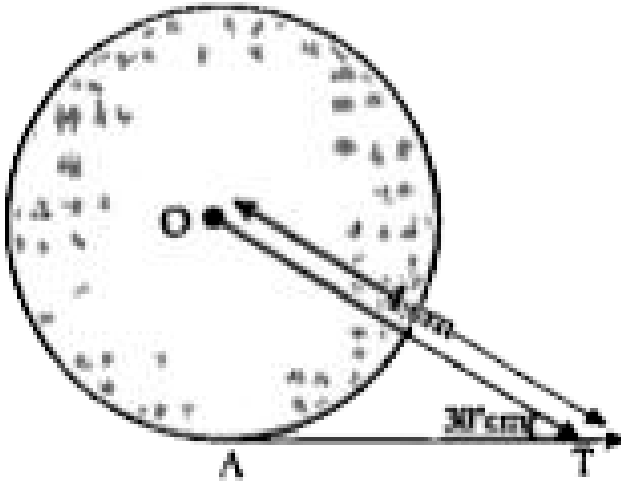B. $45°$

C. $35°$

D. $55°$

Answer: D

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4. In the given figure ,AT is a tangent to the circle with centre O such that OT =4 cm and
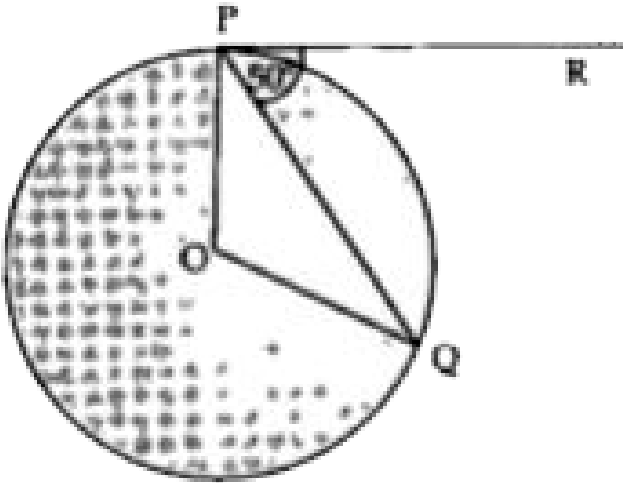
$\angle OTA = 30°$ .Then AT is equal to :

A. 4 cm

B. 2 cm

C. $2\sqrt{3}$ cm

D. $4\sqrt{3}$ cm

Answer: C

5. In the given figure ,'O is the centre of circle ,PQ is a chord and the tangent PR at P makes an angle of $50°$ with PQ ,then $\angle POQ$ is equal to :
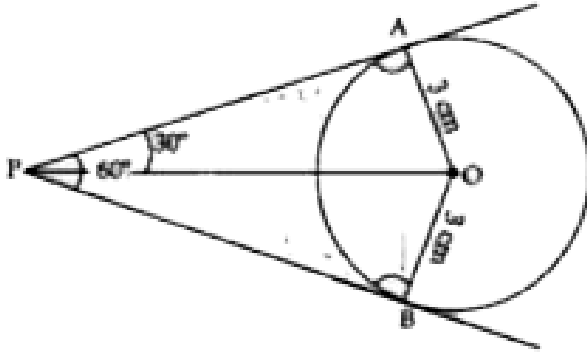

A. $100°$

B. $80°$

C. $90°$

D. $75°$

Answer: A

6. If two tangents inlined at an angle $60°$ are drawn to a circle of radius 3 cm , then the length

of each tangent is equal to :

A. $\dfrac{3}{2}\sqrt{3}$cm

B. 6 cm

C. 3 cm

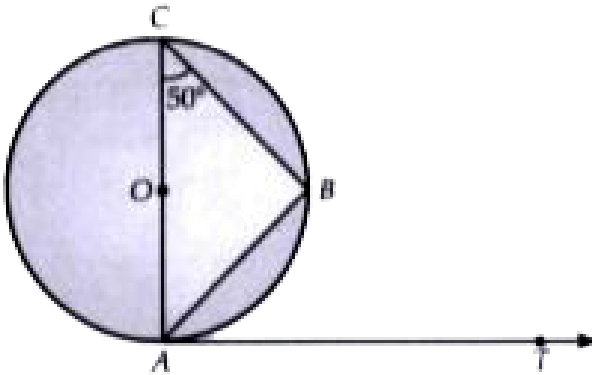D. $3\sqrt{3}$ cm

Answer: D

7. In the given figure A,B is a chord of the circle and AOC is its diameter ,such that $\angle ACB = 50°$ .If AT is the tangent to the circle at the point A, then $\angle BAT$ is equal to :

A. $65°$

B. $60°$

C. $50°$

D. $40°$

Answer: C
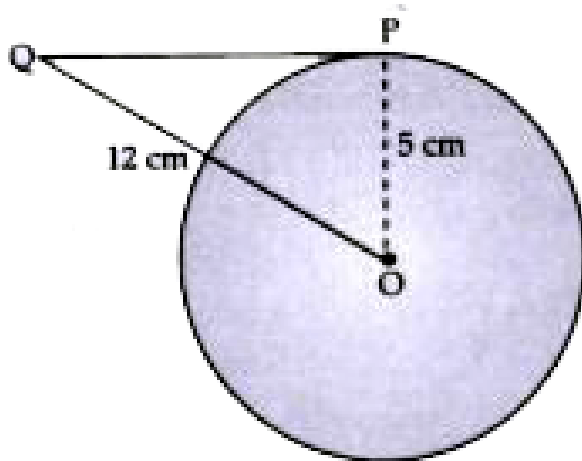
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8. A tangent PQ at a point P of a circle of radius 5

cm meets a line through the centre O at a point

Q so that OQ =12 cm . Length PQ is :

A. 12 cm

B. 13 cm

C. 8.5 cm

D. $\sqrt{119}$ cm.

Answer: D

9. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of $80°$, then find $\angle POA$.
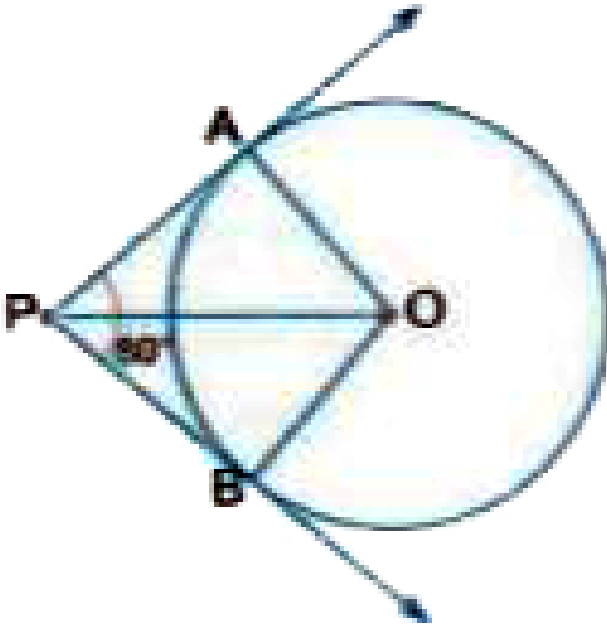
A. $15°$
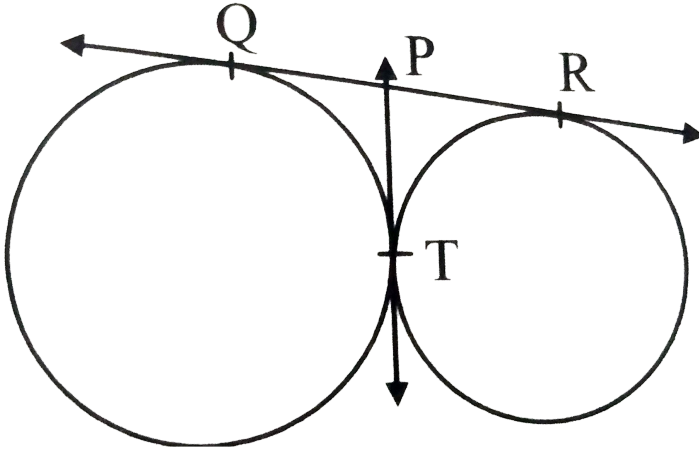
B. $60°$

C. $70°$

D. $80°$

Answer: A

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10. In figure, QR is a common tangent to the given circles, touching externally at the point T. The tangent at T meets QR at P.

If PT=3.8cm, then the length of QR(in cm) is

A. 3.8 cm

B. 7.6 cm

C. 5.7 cm

D. 1.9cm

Answer: B

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11. 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

    A. $30°$

    B. $45°$

    C. $60°$
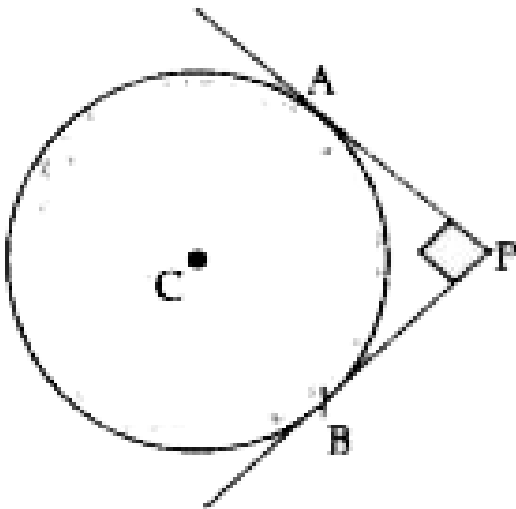
    D. $90°$

Answer: D

12. In figure ,PA and PB are two tangents drawn from an external point P to a circle with centre C and radius 4 cm .If $Pa \perp PB$,then the length of each tangent is :

A. 3 cm

B. 4 cm

C. 5 cm

D. 6 cm

Answer: B

13. In the given figure, if AB=xcm ,BC =7 cm ,CR =3 cm and AS =5 cm , find x:
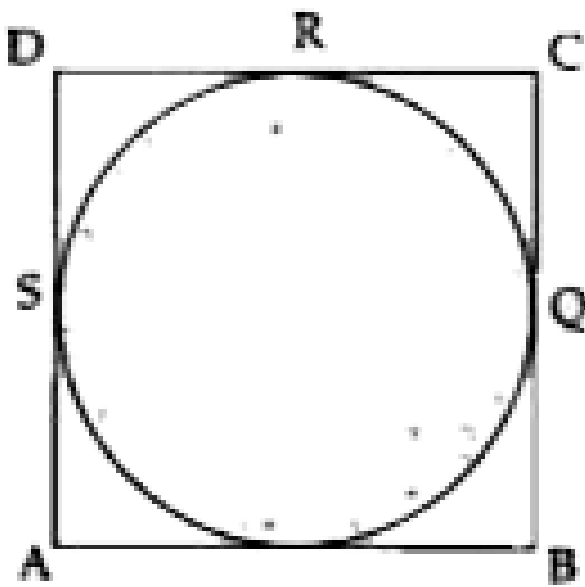
A. 10 cm

B. 9 cm

C. 8 cm

D. 7 cm

Answer: B
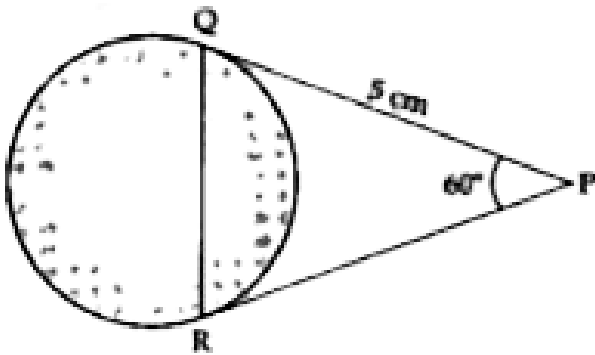
14. In the give figure ,PQ and PR are tangents to the given circle such that PQ =5 cm and $\angle QPR = 60°$. The length of chord QR is

A. $5\sqrt{2}$

B. 7.5cm

C. $5\sqrt{3}$

D. 5 cm

Answer: D

---

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

A. $10\sqrt{2}$

B. $5\sqrt{2}$

C. $\dfrac{5}{\sqrt{2}}$

D. $10\sqrt{3}$

Answer: A

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Assertion And Reason Based Mcqs

1. The distance of point A from the centre of the circle is 5 cm. The length of the tangent is 4 cm. The radius of the circle is :

A. Both A and R are true and R is the correct

explanation for A.

B. Both A and R are true and R is not correct

explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: A

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2. Assertion (A) : If in a cyclic quadrilateral ,one angle is $40°$,then the opposite angle is $140°$.

Reason (R) : Sum of opposite angle in a cyclic quadrilateral is equal to $360°$.

    A. Both A and R are true and R is the correct

       explanation for A.

    B. Both A and R are true and R is not correct

       explanation for A.

    C. A is true but R is false.

    D. A is false but R is true.

Answer: C

3. Assertion (A) : PA and PB are triangles to a circle with centre O such that $\angle AOB = 110°$, then $\angle APB = 90°$

Reason (R) : The length of two tangents drawn from an external point are equal .

    A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct

explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: D

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4. In figure, PQ and PR are two tangents to a circle

with centre O. IF $\angle QPR = 46°$, then $\angle QOR$

equals

A. Both A and R are true and R is the correct

   explanation for A.

B. Both A and R are true and R is not correct

   explanation for A.

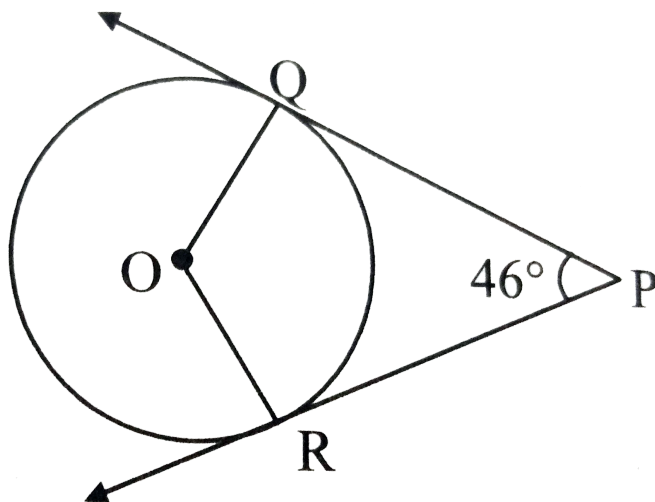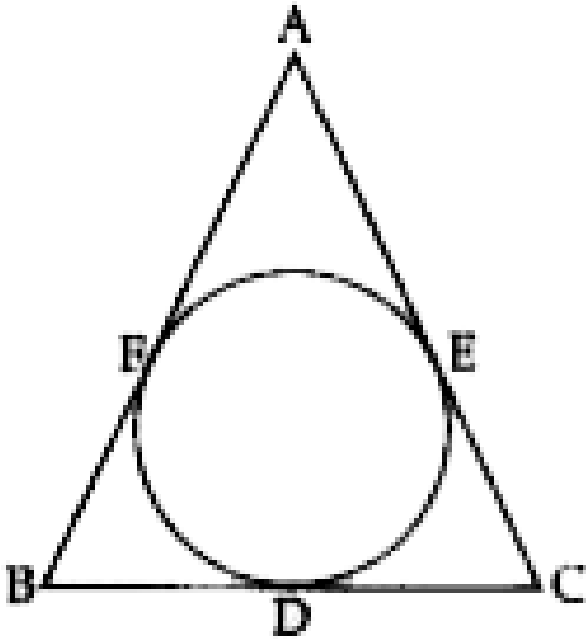C. A is true but R is false.

D. A is false but R is true.

Answer: B

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Case Based Mcqs

1. Read the following text and answer the following question on the basis of the same :

A farmer has a field in the shape of triangle with AB=13 cm, BC=14 cm and AE =7 cm .He wants to leave a space in the form of a circular field for

growing wheat and the remaining for growing

vegetables.

The measure of AF is :

A. 6 cm

B. 8 cm

C. 7 cm

D. 5 cm

Answer: C

2. Read the following text and answer the following question on the basis of the same :

A farmer has a field in the shape of triangle with AB=13 cm, BC=14 cm and AE =7 cm .He wants to leave a space in the form of a circular field for growing wheat and the remaining for growing vegetables.

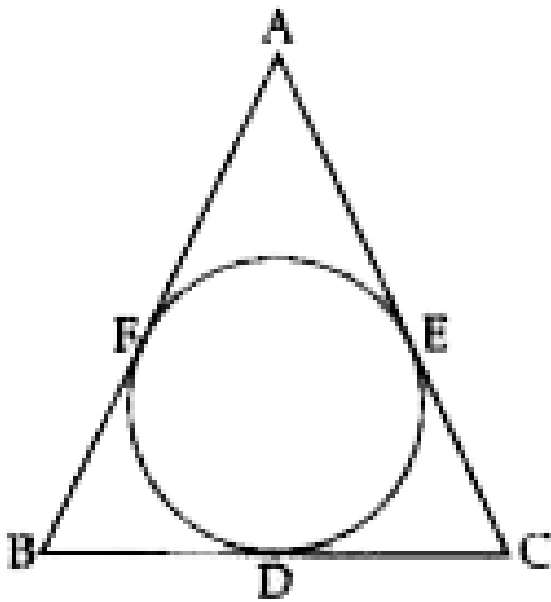The measure of BF is :
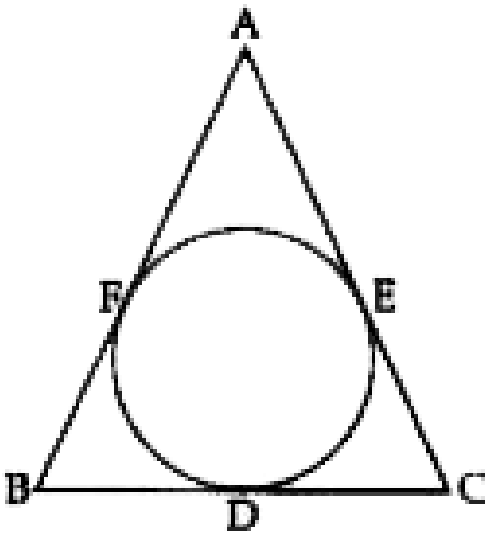
A. 4 cm

B. 6 cm

C. 3 cm

D. 10 cm

Answer: B

3. Read the following text and answer the following question on the basis of the same :

A farmer has a field in the shape of triangle with AB=13 cm, BC=14 cm and AE =7 cm .He wants to leave a space in the form of a circular field for growing wheat and the remaining for growing vegetables.

The measure of BD is :

A. 2.5 cm

B. 4 cm

C. 5 cm

D. 6 cm

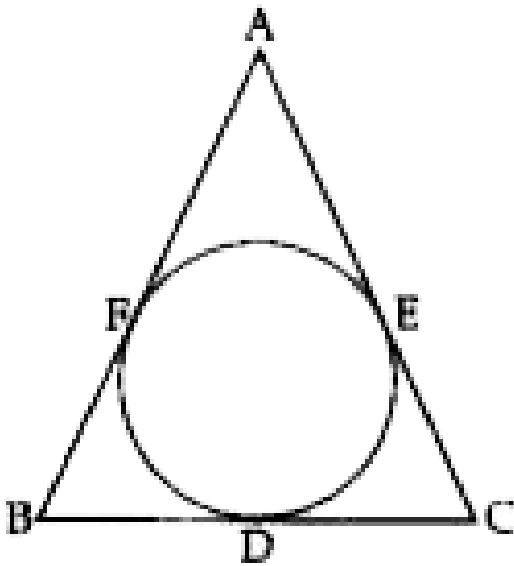Answer: D

4. Read the following text and answer the following question on the basis of the same :

A farmer has a field in the shape of triangle with AB=13 cm, BC=14 cm and AE =7 cm .He wants to leave a space in the form of a circular field for growing wheat and the remaining for growing vegetables.

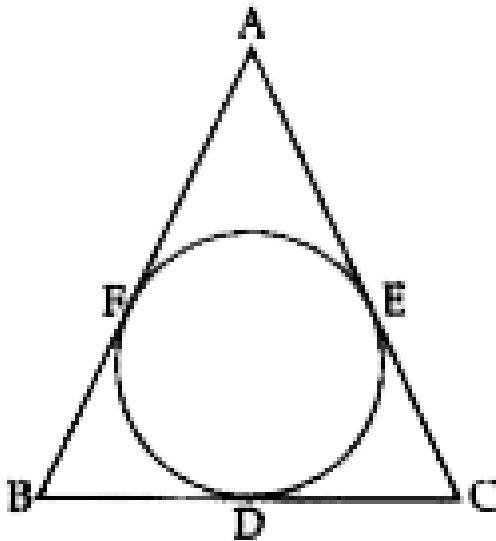The measure of CE +CD is :

A. 15 cm

B. 16 cm

C. 10 cm

D. 14 cm

Answer: B

5. In the figure, AB=13 cm, BC=14 cm and AE =7 cm

..

The measure of AC is :
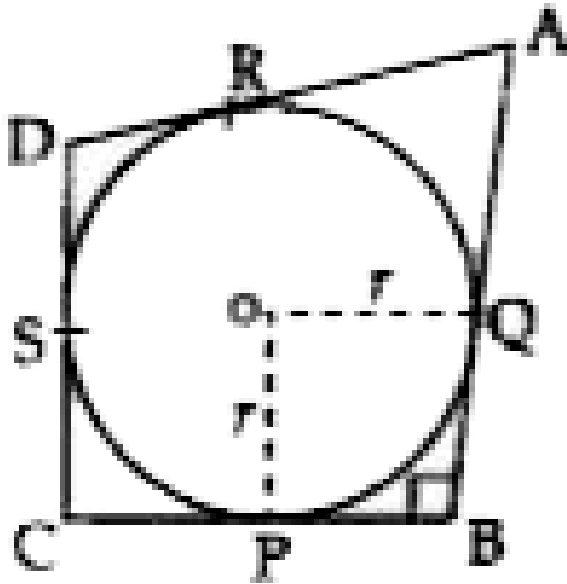
A. 15 cm

B. 17 cm

C. 12 cm

D. 13 cm

Answer: A

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6. In the following figure ,a circle with centre O is inscribed in a quadrilateral ABCD such that ,it touches the sides BC, AB, AD and CD at points P,Q

, R and S respectively .If AB =29 cm , AD =23 cm

$\angle B = 90°$ and $DS = 5$ cm.

Find the value of DR :

A. 6 cm

B. 5 cm

C. 7 cm

D. 8 cm

Answer: B

7. Both Assertion and Reason are true but Reason is not correct explanation of Assertion

In the following figure ,a circle with centre O is inscribed in a quadrilateral ABCD such that ,it touches the sides BC, AB, AD and CD at points P,Q , R and S respectively .If AB =29 cm , AD =23 cm $\angle B = 90°$ and $DS = 5$ cm.

Find the value of AR :
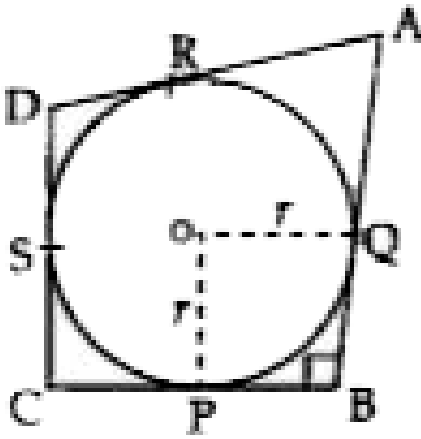
    A. 16 cm

    B. 17 cm

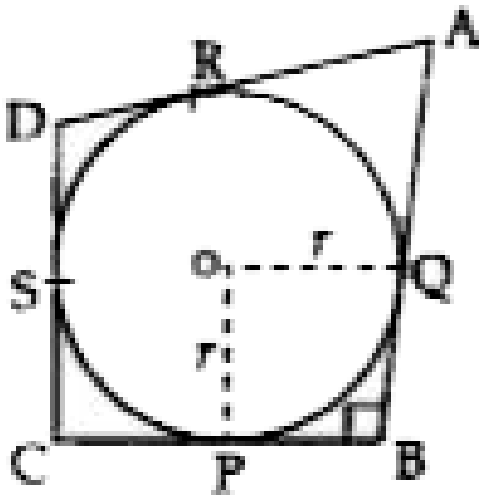   C. 18 cm

    D. 10 cm

Answer: C

8. Both Assertion and Reason are true but Reason is not correct explanation of Assertion

In the following figure ,a circle with centre O is inscribed in a quadrilateral ABCD such that ,it touches the sides BC, AB, AD and CD at points P,Q , R and S respectively .If AB =29 cm , AD =23 cm $\angle B = 90°$ and $DS = 5$ cm.

Find the value of QB :

A. 11 cm

B. 10 cm

C. 12 cm

D. 15 cm

Answer: A

9. In Figure, a circle with centre O is inscribed in a quadrilatal $ABCD such that, i ouches sides$ BC, AB, AD na CD AT POINTS P, Q, R and S respectively. If $AB = 29cm, AD = 23cm, \angle B = 90^0$ and $DS = 5cm,$ then the radius of the circle (in cm) is 11 (b) 18 (c) 6 (d) 15

A. 10 cm

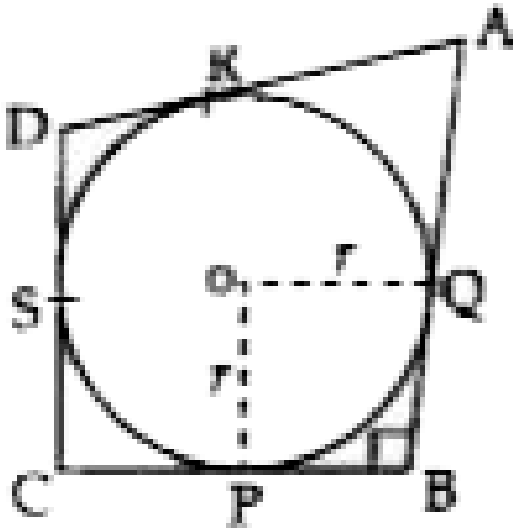B. 11 cm

C. 12 cm

D. 13 cm

Answer: B

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10. Both Assertion and Reason are true but

Reason is not correct explanation of Assertion

In the following figure ,a circle with centre O is

inscribed in a quadrilateral ABCD such that ,it

touches the sides BC, AB, AD and CD at points P,Q

, R and S respectively .If AB =29 cm , AD =23 cm

$\angle B = 90°$ and $DS = 5$ cm.

AR is equal to :

A. DR

B. DS

C. AQ

D. PB

Answer: C

11. A ferris wheel (Or a big wheel in the United Kingdom) is an amusement ride consisting of a rotating upright wheel with multiple passenger carrying components attached to the rim in such a wat that as the wheel turns ,they are kept upright , usually by gravity .

After taking a ride in Ferris wheel Aarti came out from the crowd and was observing her friends who were enjoying the ride .She was curios about

the different angles and measures that wheel will

form . She forms the figure as given below :

In the given figure ,Find $\angle ROQ$

A. $60°$

B. $100°$
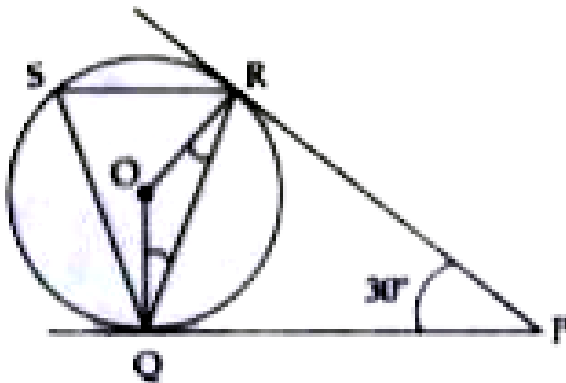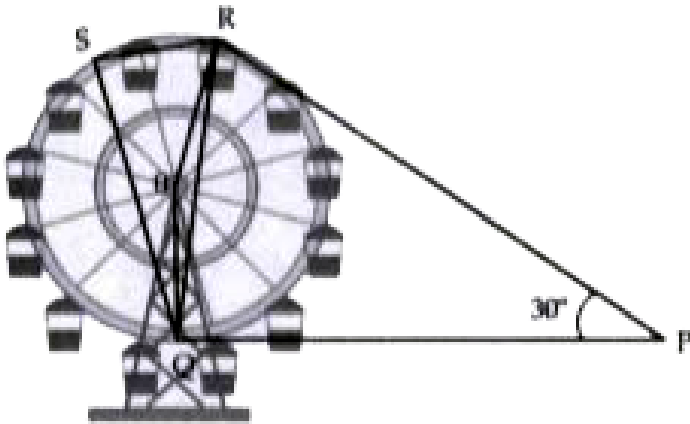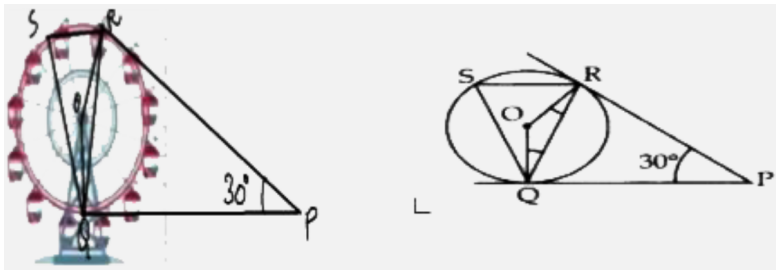
C. $150°$

D. $90°$

Answer: C

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12. A Ferris wheel (or a big wheel in the United Kingdom) is an amusement ride consisting of a rotating upright wheel with multiple passenger-carrying components (commonly referred to as passenger cars, cabins, tubs, capsules, gondolas,

or pods) attached to the rim in such a way that as the wheel turns, they are kept upright, usually by gravity.

After taking a ride in Ferris wheel, Aarti came out from the crowd and was observing her friends who were enjoying the ride . She was curious about the different angles and measures that the wheel will form. She forms the figure as given below.

Find ∠RQP

A. $75°$

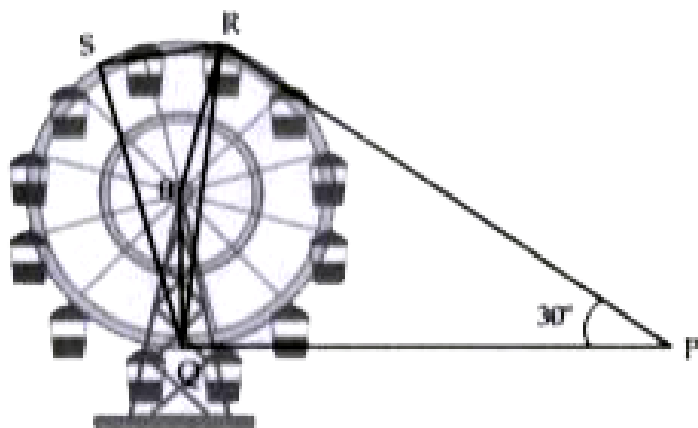B. $60°$

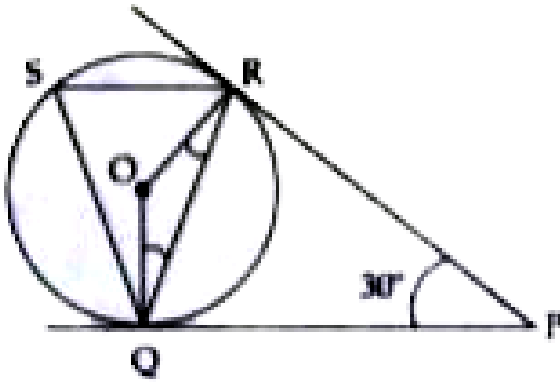C. $30°$

D. $90°$

Answer: A

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13. A ferris wheel (Or a big wheel in the United Kingdom) is an amusement ride consisting of a rotating upright wheel with multiple passenger

carrying components attached to the rim in such a wat that as the wheel turns ,they are kept upright , usually by gravity .

After taking a ride in Ferris wheel Aarti came out from the crowd and was observing her friends who were enjoying the ride .She was curios about the different angles and measures that wheel will form . She forms the figure as given below :

Find $\angle RSQ$

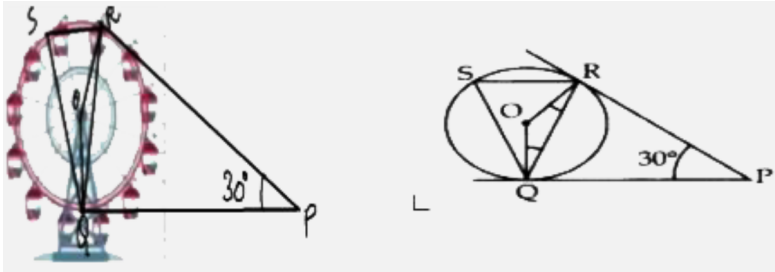A. $60°$

B. $75°$

C. $100°$

D. $30°$

Answer: B

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14. A Ferris wheel (or a big wheel in the United Kingdom) is an amusement ride consisting of a rotating upright wheel with multiple passenger-carrying components (commonly referred to as passenger cars, cabins, tubs, capsules, gondolas, or pods) attached to the rim in such a way that as the wheel turns, they are kept upright, usually by gravity.

After taking a ride in Ferris wheel, Aarti came out from the crowd and was observing her friends who were enjoying the ride . She was curious

about the different angles and measures that the

wheel will form. She forms the figure as given

below.

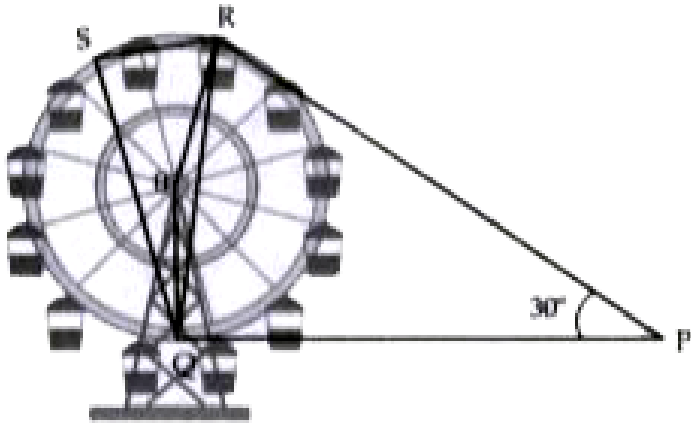Find $\angle ORP$

    A. $90°$

    B. $70°$

    C. $100°$

    D. $60°$

Answer: A

15. A ferris wheel (Or a big wheel in the United Kingdom) is an amusement ride consisting of a rotating upright wheel with multiple passenger carrying components attached to the rim in such a wat that as the wheel turns ,they are kept upright , usually by gravity .

After taking a ride in Ferris wheel Aarti came out from the crowd and was observing her friends who were enjoying the ride .She was curios about the different angles and measures that wheel will

form . She forms the figure as given below :
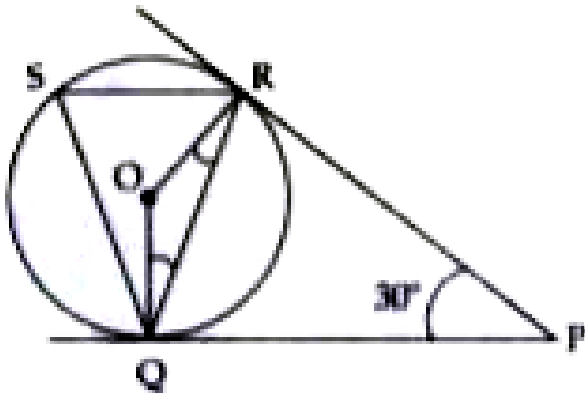
Find ∠ORQ

A. 20°

B. 10°

C. $16°$

D. $15°$

Answer: D

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Example

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

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2. Prove that the rectangle circumscribing a circle is a square
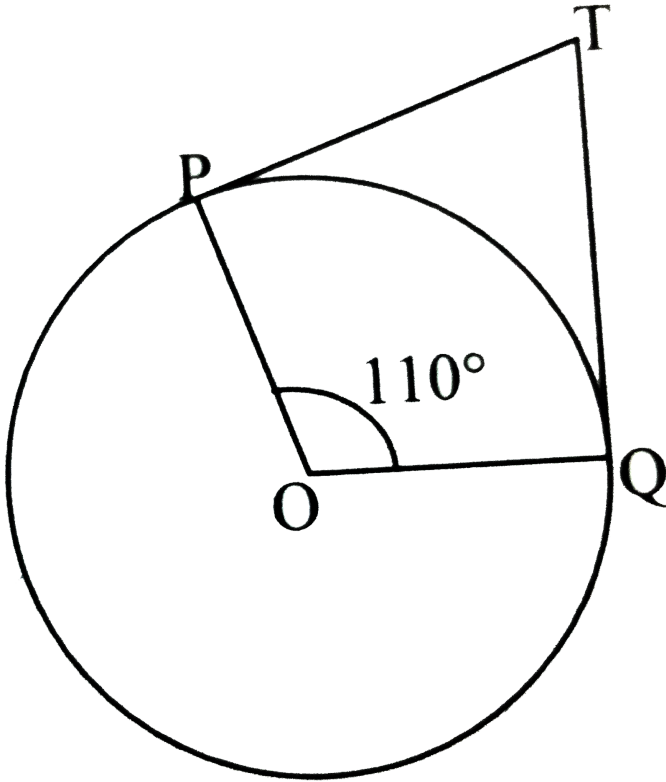
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Self Assessment 1 Multiple Choice Questions

1. In the given figure , if TP and TQ are the two tangents to a circle with centre O so that

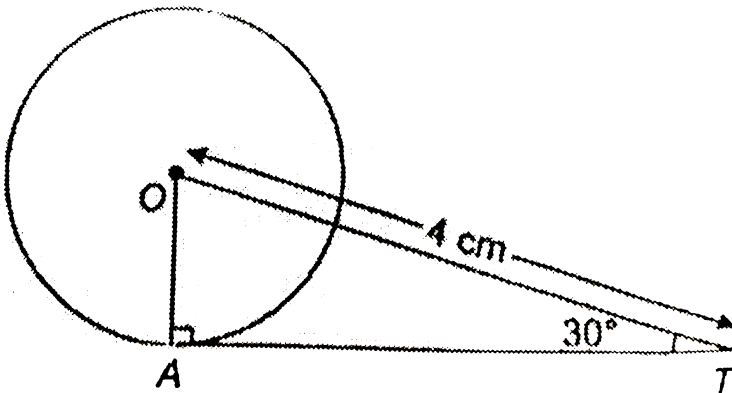$\angle POQ = 110°$, then $\angle PTQ$ is equal to

A. $110°$

B. $90°$

C. $80°$

D. $70°$

Answer:

2. In the giben figure, AT is a tangent to the circle with centre O such that OT = 4 cm and $\angle PTA = 30°$. Find the length of segment AT.

A. 2

B. $2\sqrt{3}$

C. $3\sqrt{3}$

D. $2\sqrt{2}$

Answer:

3. The length of the tangent drawn from a point 8

cm away from the centre of a circle of radius 6 cm

is .

A. $2\sqrt{2}$ cm

B. $2\sqrt{3}$ cm

C. $2\sqrt{7}$ cm

D. $3\sqrt{3}$ cm

Answer:

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Self Assessment 1 Fill In The Blanks

1. A tangent at any point of a circle is perpendicular to the radius through the _____.

2. A tangent to a circle intersects it in _____ points.

3. A line intersecting a circle in two points is called a _____.

1. In the given figure PA and PB are tangents to a circle with centre O. if $\angle APB = (2x + 3)^\circ$ and $\angle AOB = (3x + 7)^\circ$. then find the value of x.
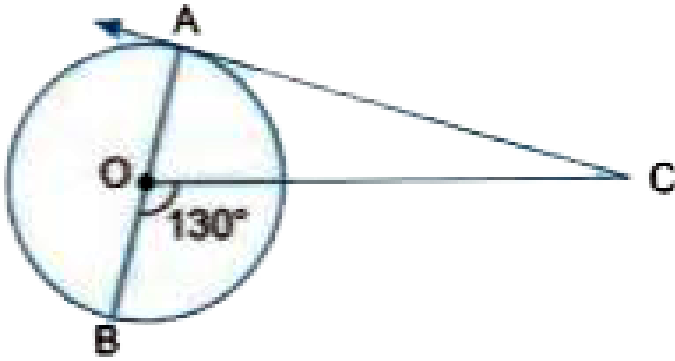
2. If Fig , AOB is diameter of a circle with centre O and AC is a tangent to the circle at A . If

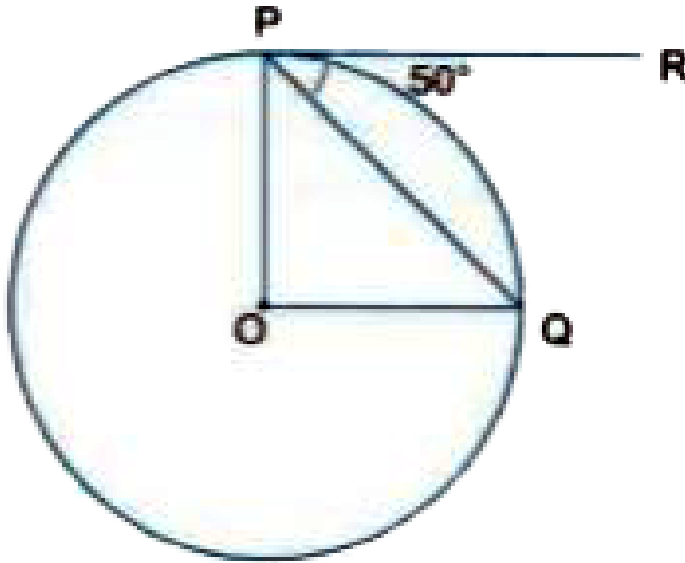$\angle BOC = 130°$, then find $\angle ACO$.

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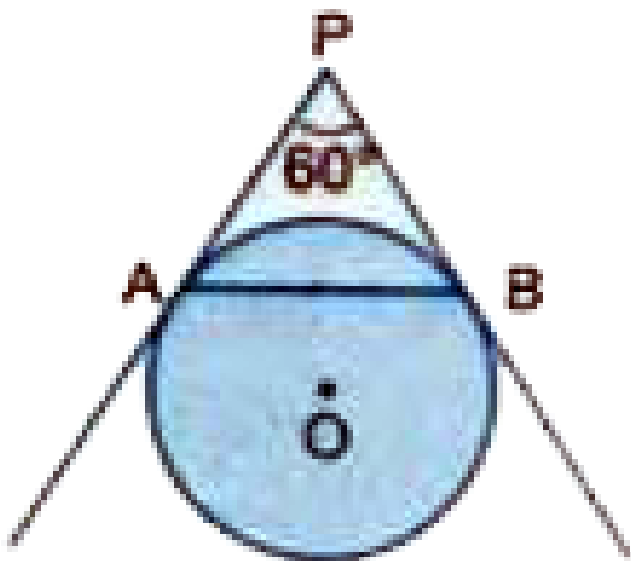
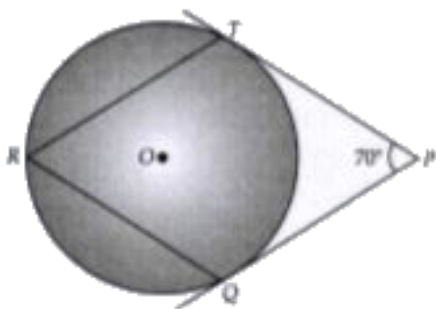and the tangent PR at P makes an angle of $50°$

with PQ. Find $\angle POQ$.

Self Assessment 1 Short Answer Type Questions I

1. In Fig AP and BP are tangents to a circle with centre O, such that AP = 5 cm , and $\angle APB = 60°$. Find the length of chord AB.
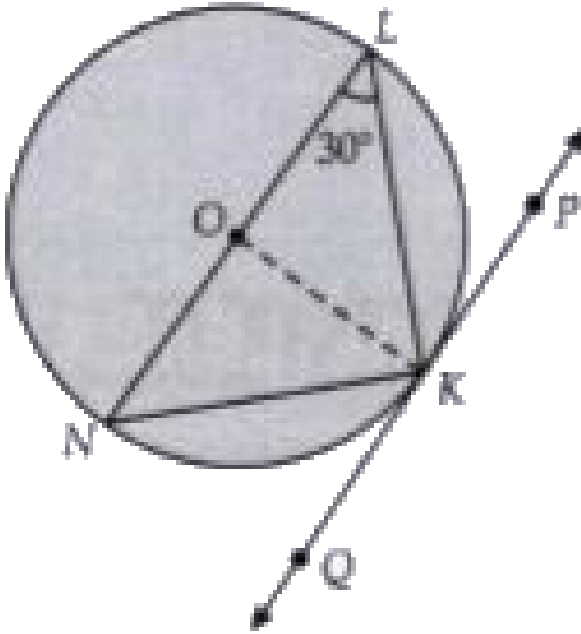
2. In figure, O is the centre of a circle. PT and PQ are tangents to the circle from an external point P. If $\angle TPQ = 70°$, find $\angle TRQ$.

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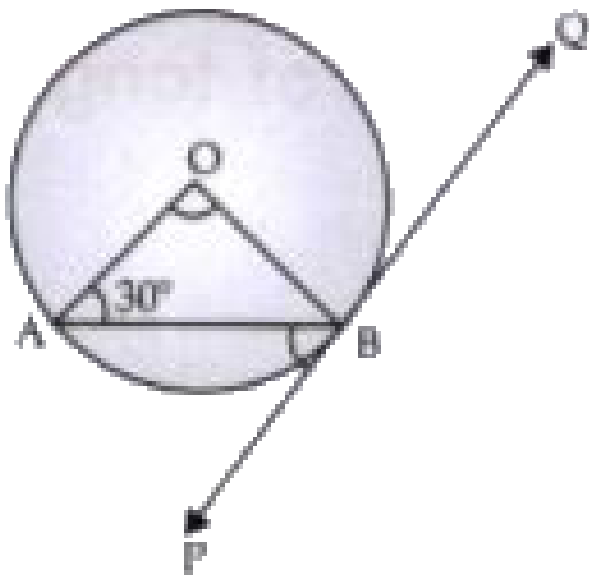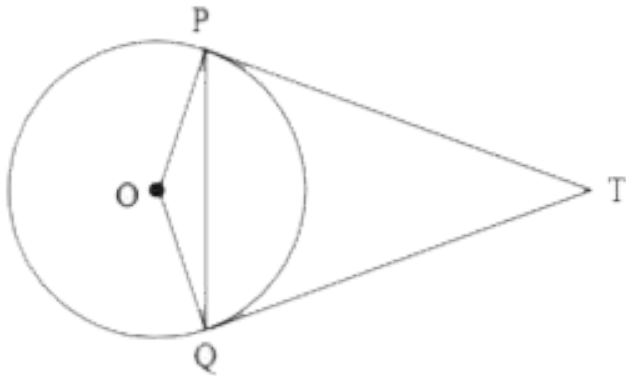
K and $\angle KLN = 30°$, find $\angle PKL$.

Self Assessment 1 Short Answer Type Questions Ii

1. In the figure, PQ is a tangent to a circle with centre O. If $\angle OAB = 30°$, find $\angle ABP$ and $\angle AOB$.
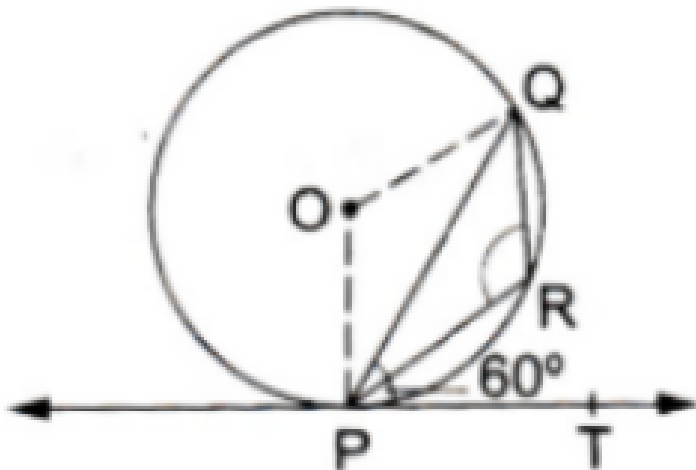
2. In the given fig. PQ is a chord of length 6 cm and the radius of the circle is 6 cm. TP and TQ are two tangents drawn from an external point T. Find $\angle PTQ$.

3. In the adjoining figure, PQ is a chord of a circle and PT is the tangent at P such that $\angle QPT = 60°$. Find $\angle PRQ$.
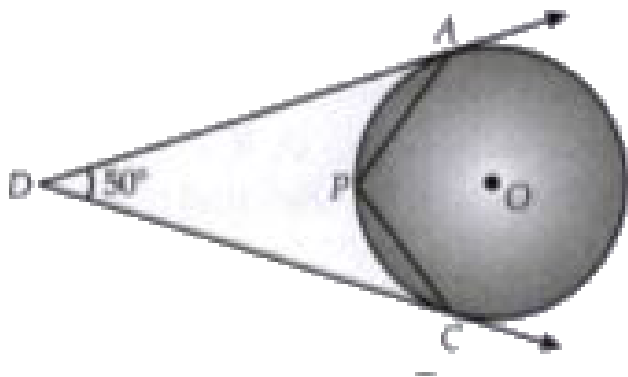
Self Assessment 1 Long Answer Type Questions

1. In the given figure, O is the centre of the circle. Determine $\angle APC$, if DA and DC are tangents and $\angle ADC = 50°$.

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2. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary

angles at the centre of the circle.

3. Two tangents TP and TQ are drawn to a circle with centre O from an external point T . Prove that $\angle PTQ = 2\angle OPQ$.

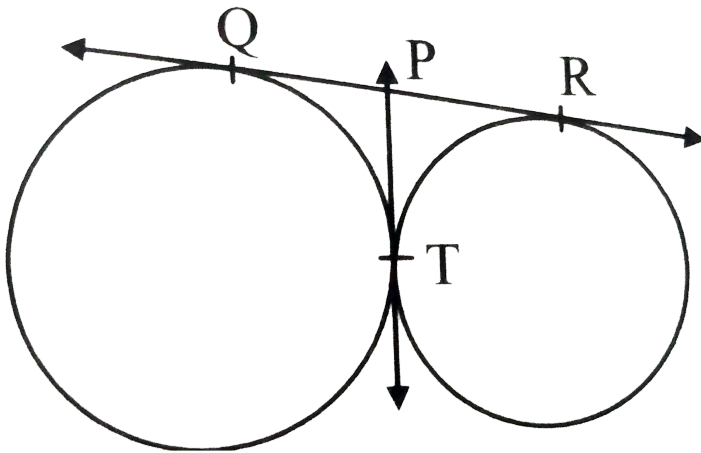**Self Assessment 2 Multiple Choice Questions**

1. In figure, QR is a common tangent to the given circles, touching externally at the point T. The tangent at T meets QR at P.

If PT=3.8cm, then the length of QR(in cm) is

A. 3.8 cm

B. 7.6 cm

C. 5.7 cm

D. 1.9 cm

Answer:

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2. PA and PB are two tangent draws from an external points p circle with centre C and redues an external point P to a and radius 4 cm. If PA|PB, then the length or CaCh fangent is :

A. 3 cm

B. 4 cm

C. 5 cm

D. 6 cm

Answer:

3. 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) $90o$

A. $30°$

B. 45°

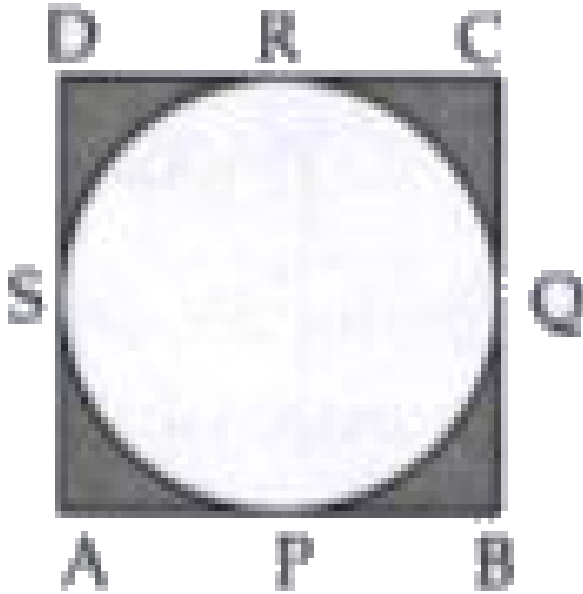C. 60°

D. 90°

Answer:

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Self Assessment 2 Fill In The Blanks

1. In figure, a quadrilateral ABCD is drawn to circumscribe a circle such that its sides AB, BC, CD

and AD touch the circle at P, Q, R and S respectively. If AB = x cm, BC = 7 cm, CR = 3cm and AS = 5cm, then x = _____.

2. A circle can have ....parallel tangents at the most.

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

▶ **Watch Video Solution**
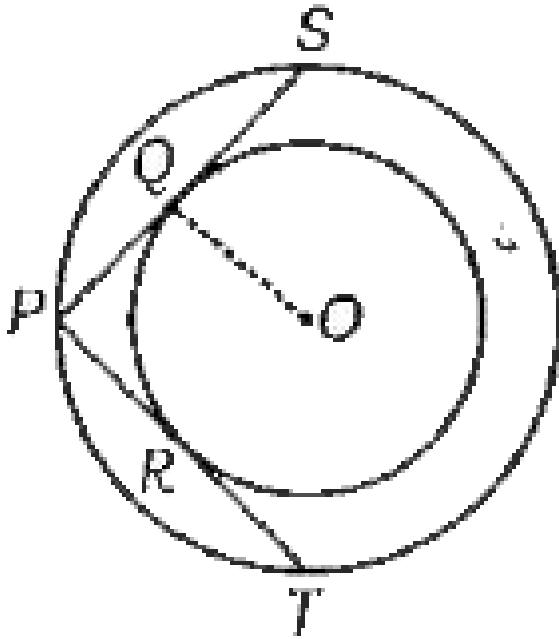
Self Assessment 2 Very Short Answer Type Questions

1. 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.

2. 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.

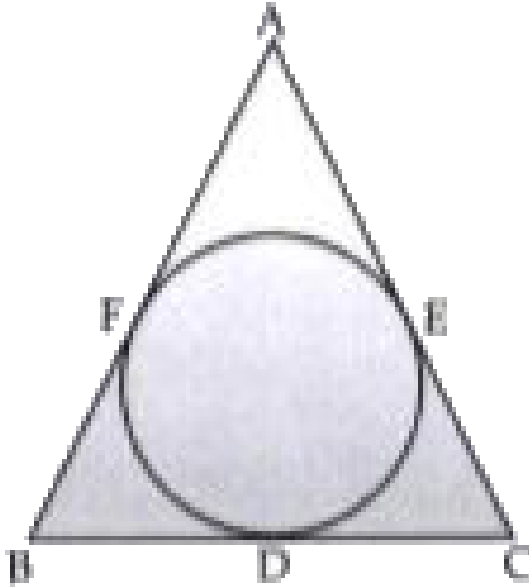**3.** A triangle ABC is drawn to circumscribe a circle.

If AB = 13 cm, BC = 14 cm and AE =7 cm, then find
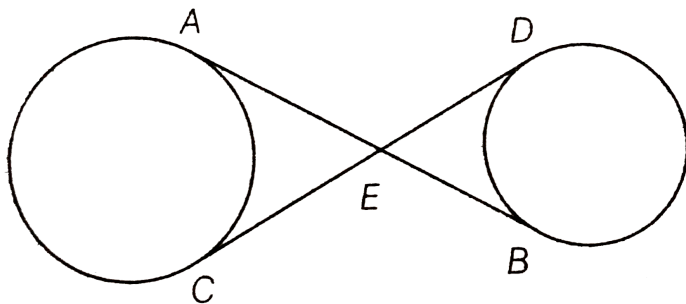
AC.

Self Assessment 2 Short Answer Type Questions I

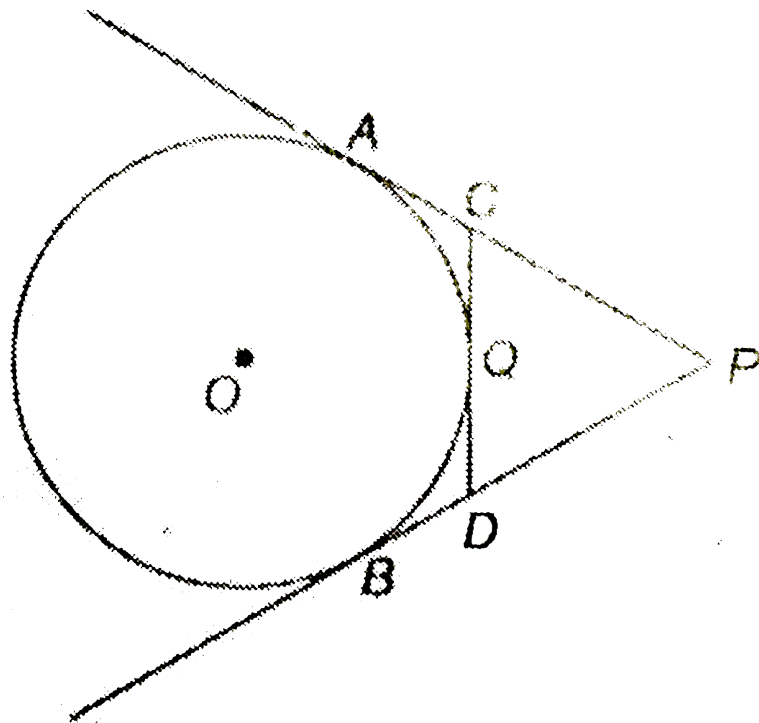**1.** In figure, common tangents AB and CD to two circles intersect at E. Prove that AB=CD.

2. 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,

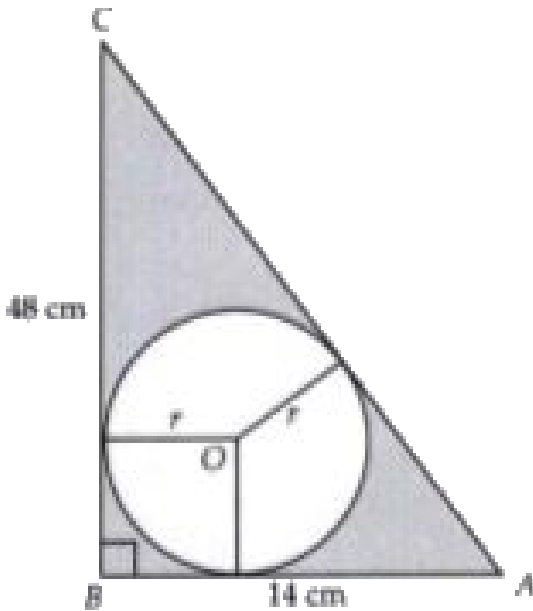QC=3cm, then find PC+PD.

3. In Fig, ABC is a triangle in which $\angle B = 90°$, BC
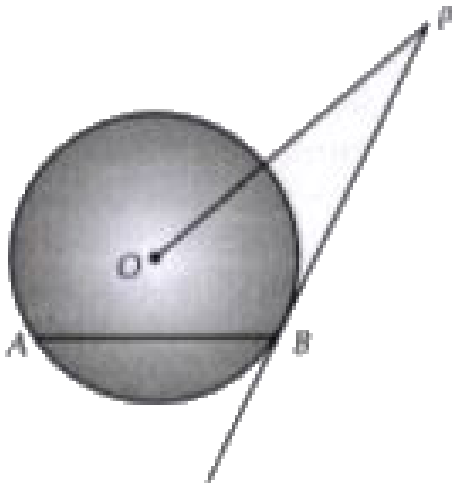
= 48 cm and AB = 14 cm. A circle is inscribed in the

triangle, whose centre is O. Find radius of the circle.

Self Assessment 2 Short Answer Type Questions Ii

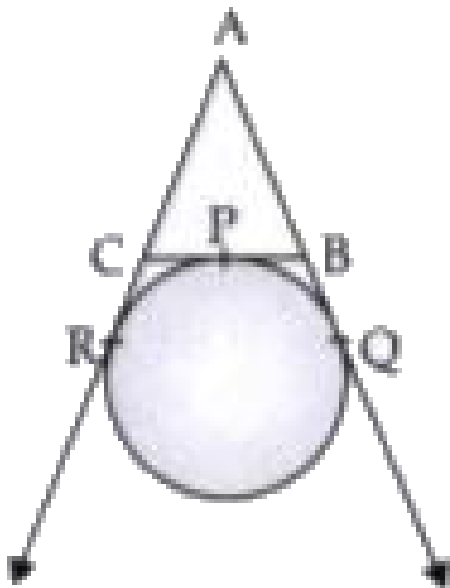**1.** AB is a chord of circle with centre O. At B, a tangent PB is drawn such that its length is 24 cm. The distance of P from the centre is 26 cm. If the chord AB is 16 cm, find its distance from the centre.

2. Using the figure given below, prove that $AR = \dfrac{1}{2}$ (Perimeter of triangle ABC)

3. B is a tangent to the circle with centre O to B. AB is a chord of length 24 cm at a distance of 5 cm from the centre. If the tangent is of length 20 cm, find the length of PO.
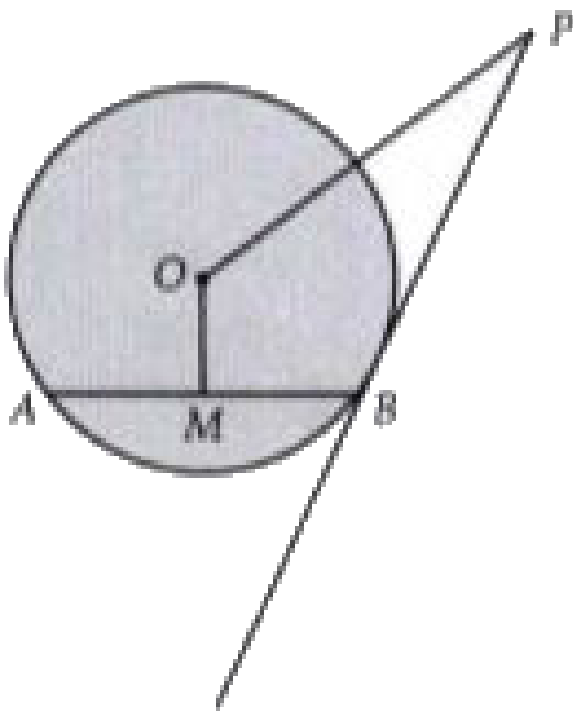
1. In the given figure, PA and PB are tangents to a circle from an external point P such that PA=4 cm and $\angle BAC = 135°$. Find the length of dhord AB.
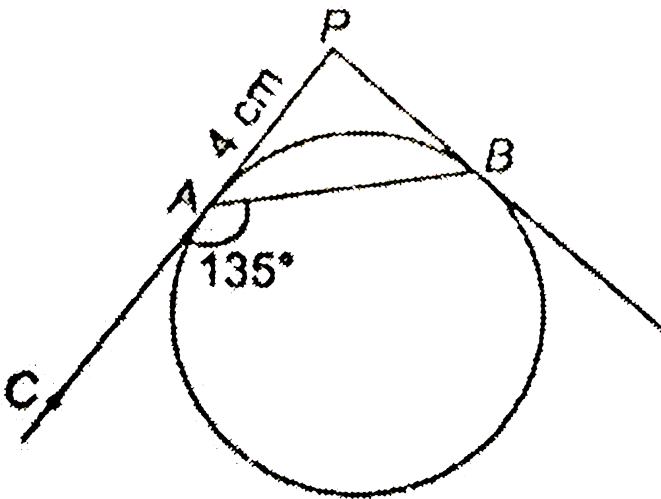
2. A circle is inscribed in a $\triangle\ ABC$ having sides 8 cm, 10 cm and 12 cm as shown in figure. Find AD, BE and CF.
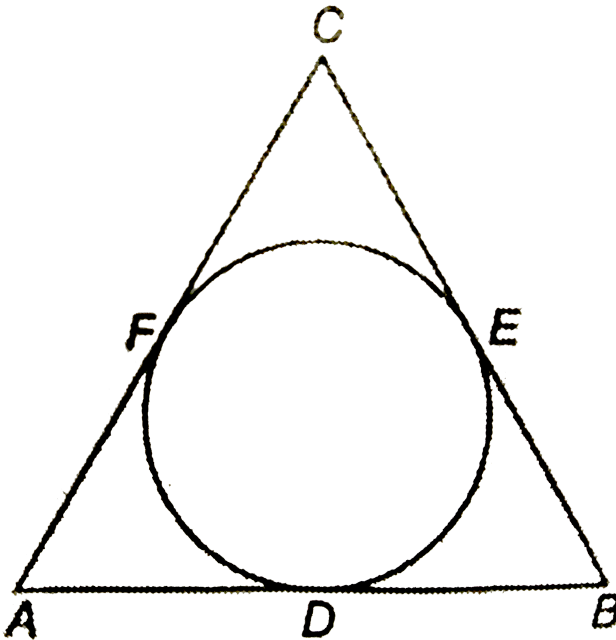
3. O is the centre of a circle of radius 5cm. T is a point such that OT=13cm and OT intersects the circle at E, find the length AB.

Self Assessment 2 Case Study Based Questions
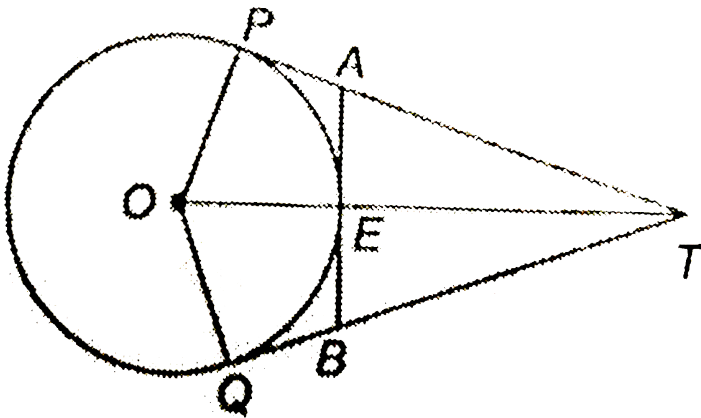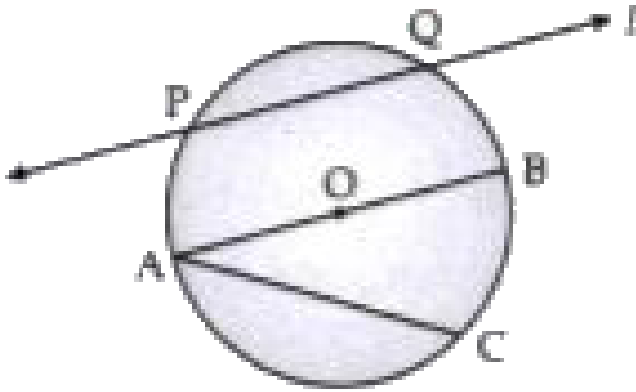
1.

A line which intersect the circle at two points (P and Q) is called a................ of the circle.

A. diameter

B. radius

C. chord

D. secant

Answer:
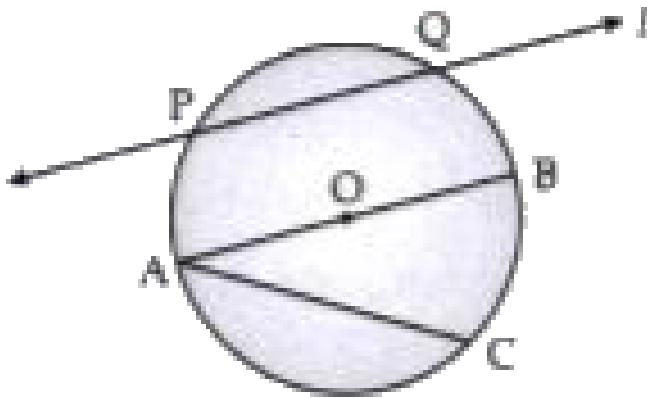
2.

The chord, which passes through the centre of the circle, is called a .... of the circle.

A. diameter

B. radius

C. secant

D. segment
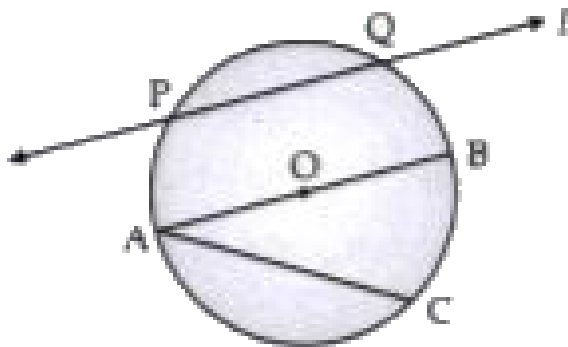
3.

The distance from the centre (O) of the circle to

any point on the circle is called a............. of the

circle,

    A. diameter

    B. chord

    C. centre

    D. radius

Answer: D

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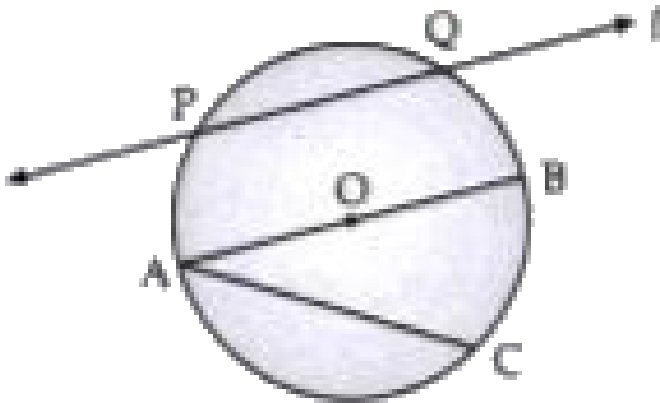
4.

Diameter is equal to two times the .... of the circle.

A. radius

B. chord

C. segment

D. secant

Answer: A
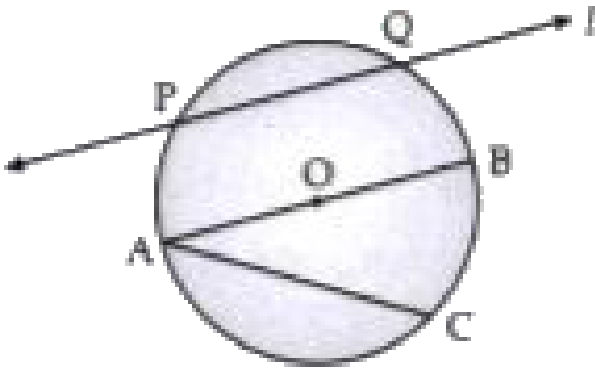
5.

Take two points A and C on the circle, them the line segment joining the point A and C is called a .... of the circle.

A. radius

B. diameter

C. chord

D. centre

Answer:

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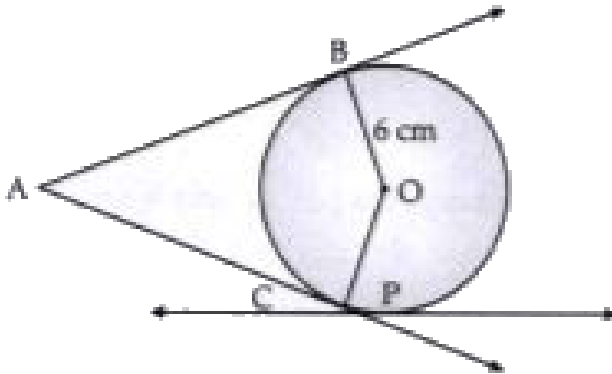
6.

How many tangents are draw from the external

point (A) to the circle?

A. 1

B. 2

C. 0

D. 3

Answer:

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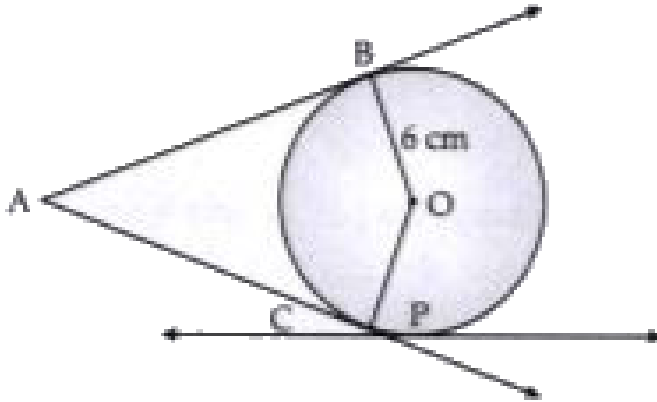
7.

How many tangents are drawn Through the point

lying on the circle?

A. 0

B. 1

C. 2

D. 3

Answer:

8.

How many tangents are drawn from the internal point of the circle?

A. 0

B. 1

C. 2

D. 3

Answer:

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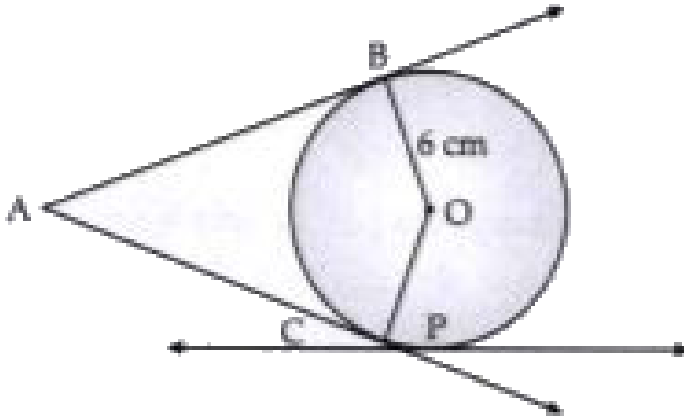
9.

The tangent at any point of a circle is .... to the

radius through the point of contact.

A. Parallel

B. Perpendicular

C. diagonally

D. None of these

Answer:
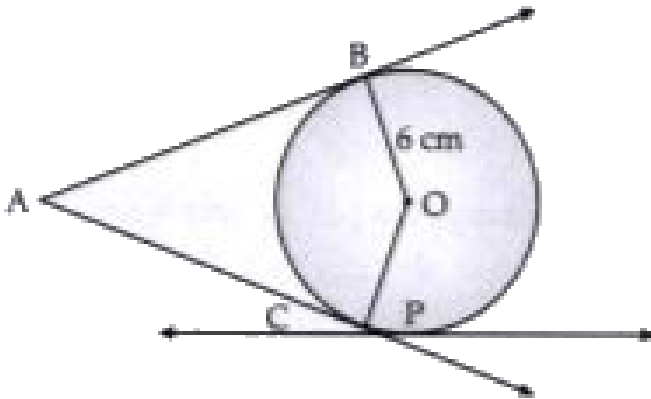
10.

The length of tangents drawn from the external point to a circle are ....

A. equal

B. unequal

C. one is two time the other

D. None of these

Answer:
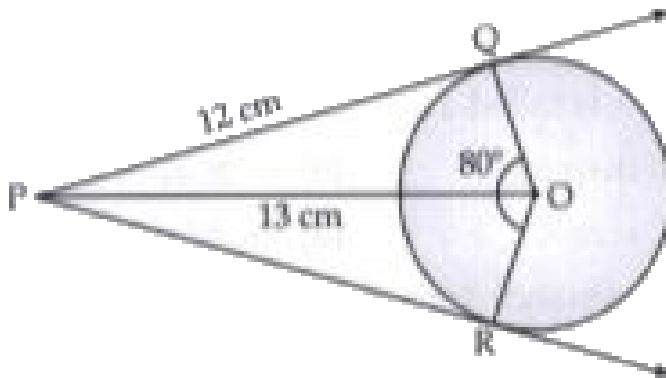
11.

A point P is 13 cm from the centre of the circle.

The two tangent PQ and PR are drawn from the

point P, The length of the tangent drawn from P to the circle is 12 cm.

$\angle PQO$ is equal to ....

A. $30°$

B. $90°$

C. $60°$

D. $180°$

Answer: B

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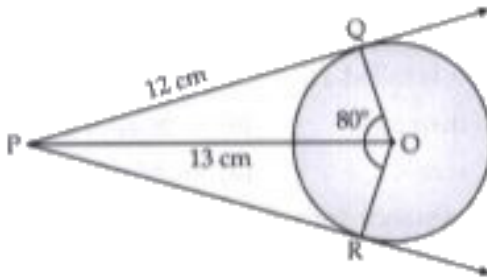
12.

A point P is 13 cm from the centre of the circle.

The two tangent PQ and PR are drawn from the

point P, The length of the tangent drawn from P

to the circle is 12 cm.

Find the radius of the circle.

A. 5 cm

B. 10 cm

C. 8 cm

D. 11 cm

Answer:
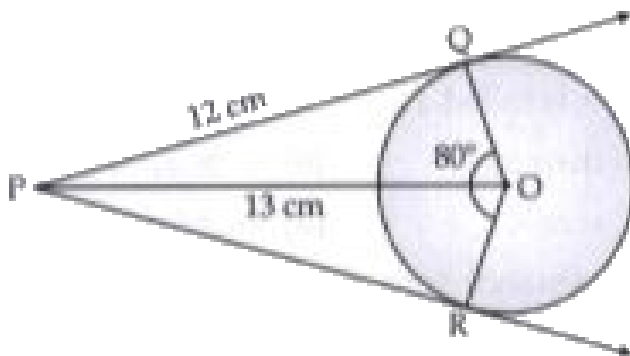
13.

A point P is 13 cm from the centre of the circle. The two tangent PQ and PR are drawn from the

point P, The length of the tangent drawn from P to the circle is 12 cm.

Find the angle QPR.

A. $90°$

B. $120°$

C. $60°$

D. $100°$

Answer: D

12 cm

80°

P

13 cm

O

R
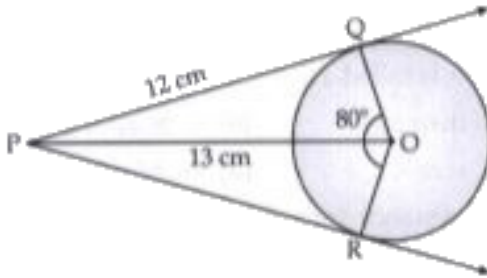
14.

A point P is 13 cm from the centre of the circle.

The two tangent PQ and PR are drawn from the

point P, The length of the tangent drawn from P

to the circle is 12 cm.

Find the length of OR.

A. 10 cm

B. 5 cm

C. 6 cm

D. 13 cm

Answer:
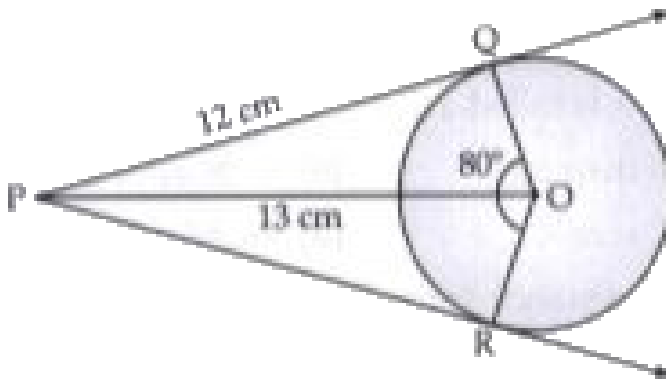
15.

A point P is 13 cm from the centre of the circle.

The two tangent PQ and PR are drawn from the

point P, The length of the tangent drawn from P to the circle is 12 cm.

Find the length of PR.

A. 5 cm

B. 13 cm

C. 12 cm

D. 11 cm

Answer: C

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1. How many tangents can a circle have?

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2. A tangent to a circle intersects it in _____ points.

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3. A line intersecting a circle in two points is called a _____.

4. A circle can have ....parallel tangents at the most.

5. Fill in the blanks

(i) A line intersecting a circle in two distinct

points is caled a....

(ii) A circle can have... parallel tangents at the most.

(iii) The common point of a tangent to a circle and the circle is called the....

(iv) A circle can have.... tangents.

6. 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 = 12 cm. Length PQ is:
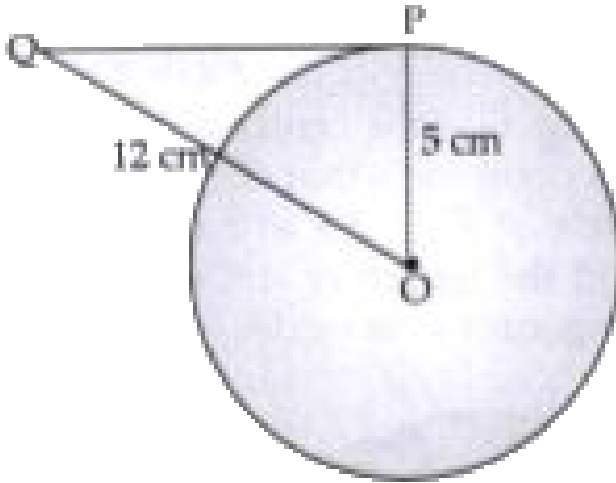
A. 12 cm

B. 13 cm

C. 8.5 cm

D. $\sqrt{119}cm$

Answer: d

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7. Draw a circle and two lines parallel to a given line such that one is a tangent and the other, a secant to the circle.

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Ncert Corner Exercise 10 2 Choose The Correct Option

1. From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the

centre is 25 cm. The radius of the circle is
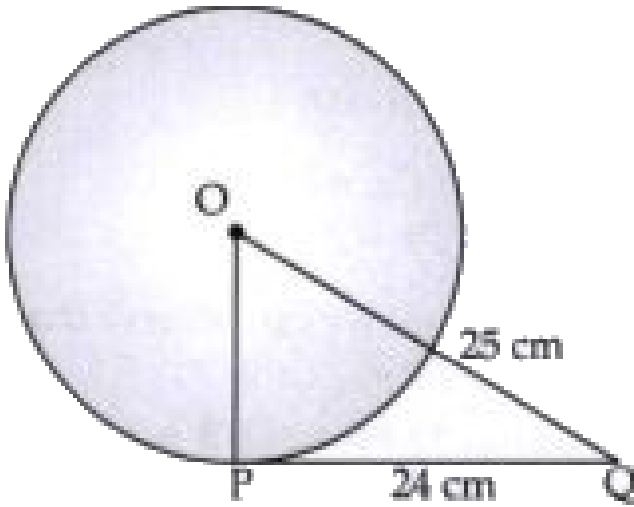
A. 7cm

B. 12 cm

C. 15 cm

D. 24.5 cm

Answer: A

2. In the given figure , if TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110°$, then $\angle PTQ$ is equal to

A. $60°$
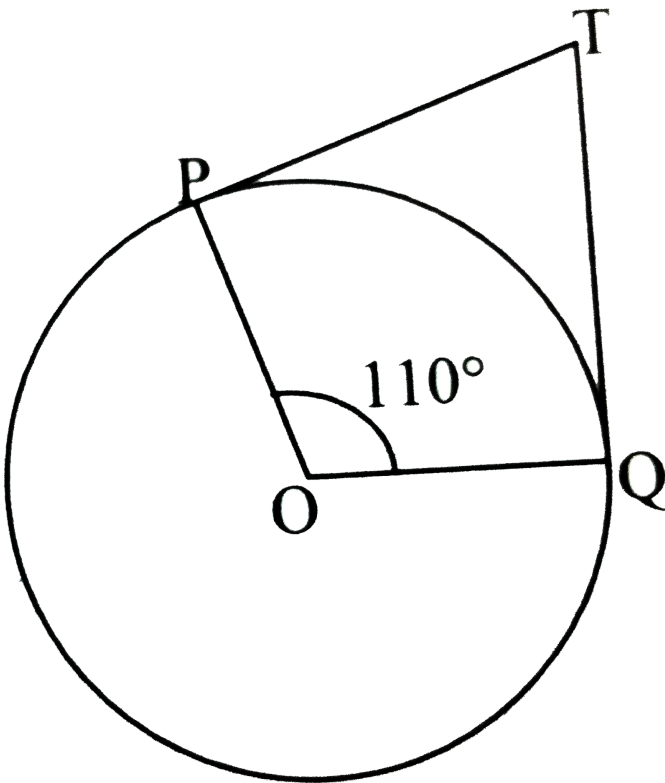
B. $70°$

C. $80°$

D. $90°$

Answer: B

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3. If tangents PA and PB from a point P to a circle

with centre O are inclined to each other at angle

of $80°$, then find $\angle POA$.

A. $50°$

B. $60°$

C. $70°$

D. $80°$
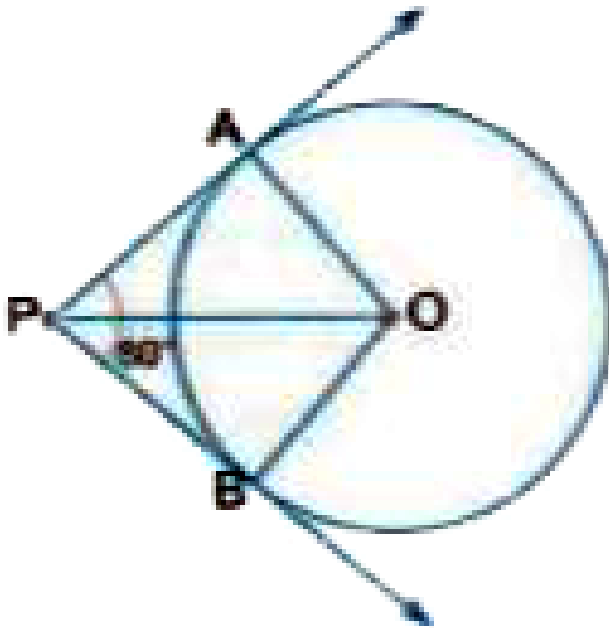
Answer: A

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Ncert Corner Exercise 10 2

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

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2. Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.

3. The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4

cm. Find the radius of the circle.
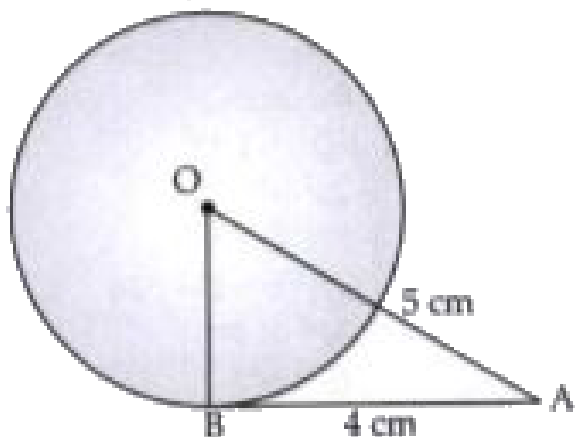
4. Two concentric circles are of radii 5 cm. and 3 c.

Find the length of the chord of the larger circle

which touches the cmaller circle.

5. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$

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 $\angle AOB = 90°$
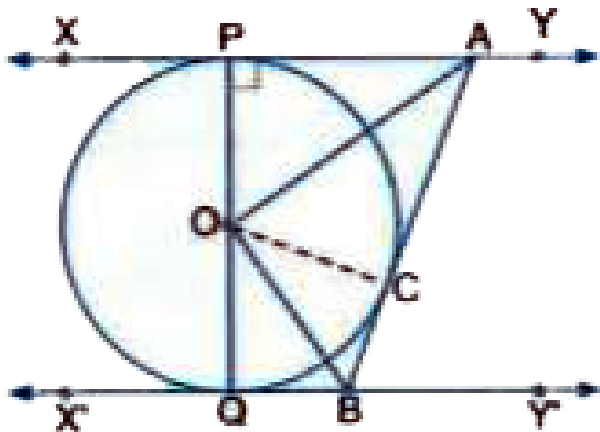
7. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre.

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

9. 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.

10. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

Ncert Exemplar Exercise 9 1 Choose The Correct Answer

1. 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. 3 cm

    B. 6 cm

    C. 9 cm

    D. 1 cm

Answer: B

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2. In the given figure , if $\angle AOB = 125°$,then $\angle COD$ is equal to :
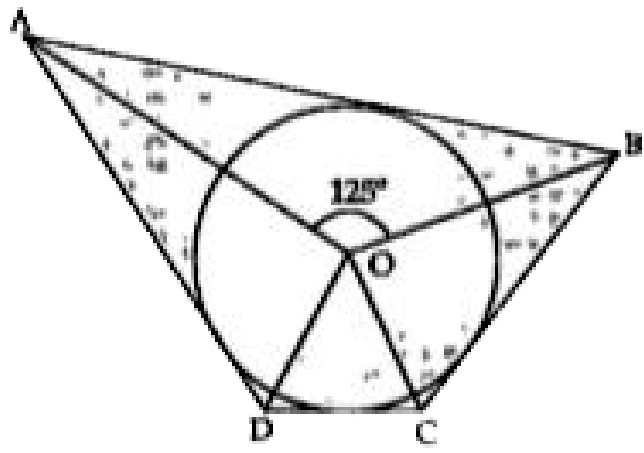
A. $62.5°$

B. $45°$

C. $35°$

D. $55°$

Answer: D

3. In the given figure A,B is a chord of the circle and AOC is its diameter ,such that $\angle ACB = 50°$ .If AT is the tangent to the circle at the point A, then $\angle BAT$ is equal to :

A. $65°$

B. $60°$

C. $50°$

D. $40°$
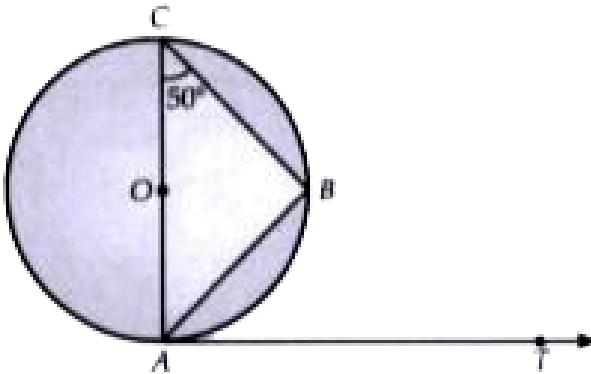
Answer: C

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4. 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. $60cm^2$

B. $65cm^2$

C. $30cm^2$

D. $32.5cm^2$

Answer: A

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5. At one end of a diameter PQ of a circle of radius 5cm, tangent XPY is drawn to the circle. The length of chord AB parallel to XY and at a distance of 8cm from P is (a) 5cm (b) 6cm (c) 7cm (d) 8cm

   A. 4 cm

   B. 5 cm

   C. 6 cm

   D. 8 cm

Answer: D

6. In the given figure ,AT is a tangent to the circle with centre O such that OT =4 cm and $\angle OTA = 30°$ .Then AT is equal to :
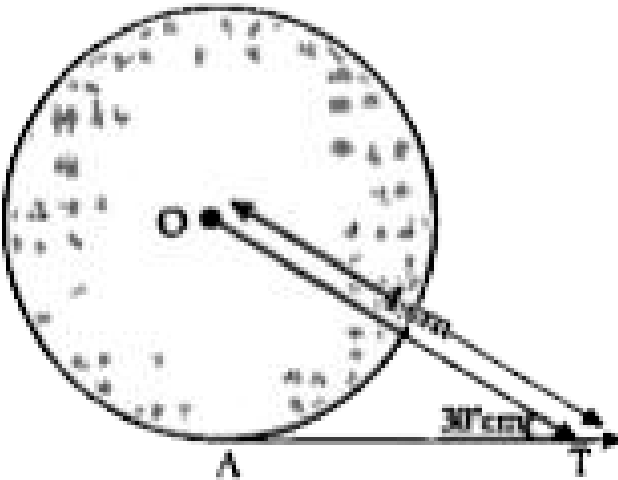
A. 4 cm

B. 2 cm

C. $2\sqrt{3}$ cm

D. $4\sqrt{3}$ cm

Answer: C

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7. In the given figure ,'O is the centre of circle ,PQ

is a chord and the tangent PR at P makes an

angle of $50°$ with PQ ,then $\angle POQ$ is equal to :
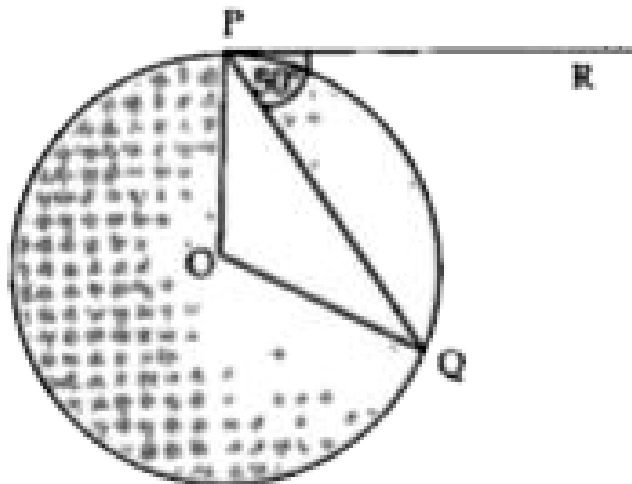
A. $100°$

B. $80°$

C. $90°$

D. $75°$

Answer: A

8. In figure, if PA and PB are tangents to the circle with centre O such that $\angle APB = 50°$, then $\angle OAB$ is equal to
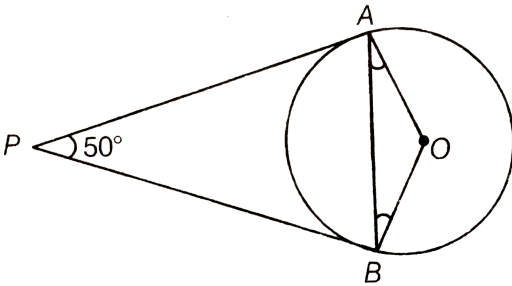
A. $25°$

B. $30°$

C. $40°$

D. $50°$

Answer: A

9. If two tangents inclined at an angle $60°$ are drawn to a circle of radius 3 cm, then, the length of each tangent is equal to
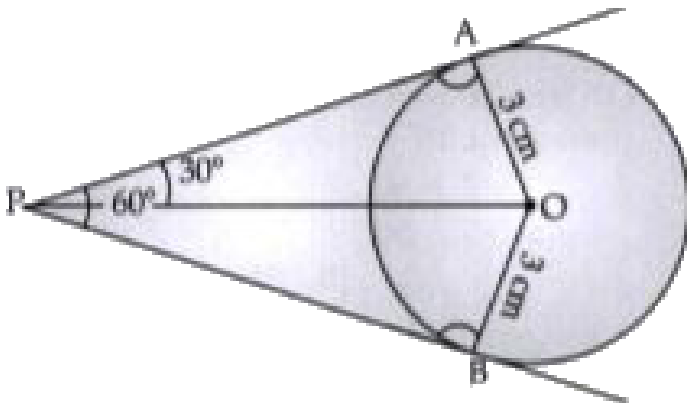
A. $\dfrac{3}{2}\sqrt{3}$ cm

B. 6 cm

C. 3 cm

D. $3\sqrt{3}$ cm

Answer: D

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10. In figure, if PQR is the tangent to a circle at Q whose centre is O, AB is a chord parallel to PR and

$\angle BQR = 70°$ then $\angle AQB$ is equal to
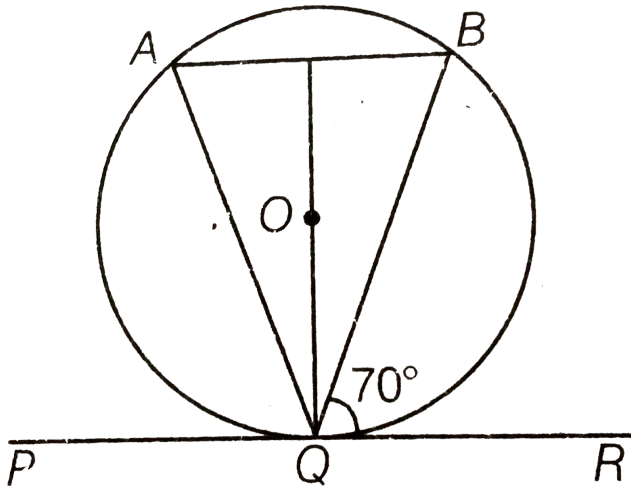
A. $20°$

B. $40°$

C. $35°$

D. $45°$

Answer: B

Ncert Exemplar Exercise 9 2 Write True Or False And Justify Your Solution

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.

3. The length of tangent from an external point P

on a circlewith centre 0 is always less than OP.

4. The angle between two tangents to a circle

may be $0°$.

5. If angle between two tangents drawn from a point P to a circle of radius a and centre 0 is $60°$ then $OP = a\sqrt{3}.$

6. If angle between two tangents drawn from a point P to a circle of radius a and centre 0 is $60°$ then $OP = a\sqrt{3}.$

7. The tangent to the circumcircle of an isosceles $\triangle ABC$ at A, in which AB= AC, is parallel to BC.

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8. 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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9. 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.

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

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

3. If from an extrenal point B of a circle with centre 0, two tangents BC and BD are drawn such that $\angle DBC = 120°$, prove that $BC + BD = BO$ i.e., BO=2BC.

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4. Prove that the centre of a circle touching two intersecting lines lies on the angle bisector of the lines.

5. In figure, AB and CD are common tangents to two circles of unequal radii. Prove that AB=CD
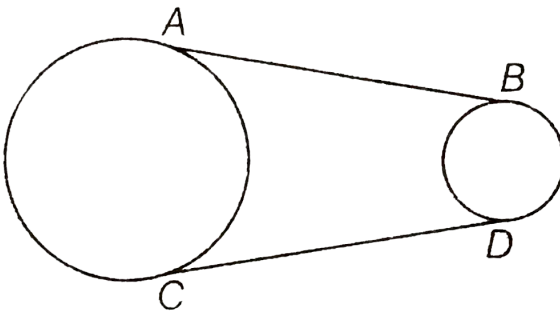
6. In figure, AB and CD are common tangents to two circles of equal radii. Prove that AB=CD.
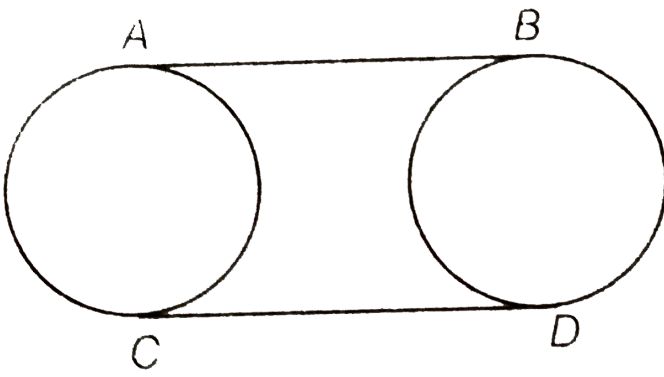
7. In figure, common tangents AB and CD to two circles intersect at E. Prove that AB=CD.
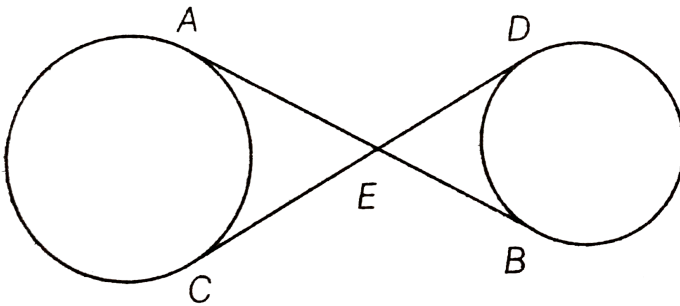
8. A chord PQ of a circle is parallel to the tangent drawn at a point R of the circle,Prove that R bisects the arc PRQ.

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

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

Ncert Exemplar Exercise 9 4

1. In a hexagon ABCDEF circumscribe a circle, prove   that

$$AB + CD + EF = BC + DE + FA.$$

2. Let s denotes the semi-perimeter of a $\triangle ABC$ 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.

▶ Watch Video Solution

3. From an external point P, two tangents, PA and PB are drawn to a circle with centre O. 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.

4. If AB is chord of a circle with centre O, AOC is a

diameter and AT is the tangent at A as shown in

figure. Prove that $\angle BAT = \angle ACB$.
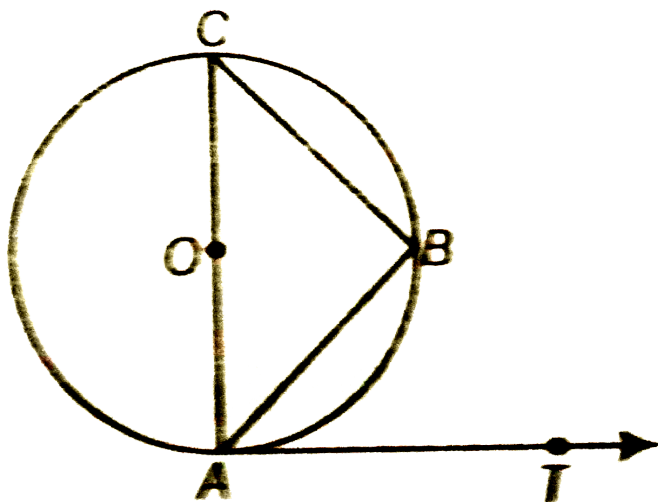
5. Two circles with centres O and O' of radii 3 cm and 4 cm , respectively intersect at two points P and Q such that OP and O'P are tangents to the two circle . Find the length of the common chord PQ.

6. In a right angle triangle $\triangle ABC$ is which $\angle B = 90°$ a circle is drawn with AB diameter

intersecting the hypotenuse AC at P.Prove that

the tangent to the circle at PQ bisects BC.

7. In figure, tangents PQ and PR are drawn to a

circle such that $\angle RPQ = 30°$. A chord RS is

drawn parallel to the tangent PQ. Find the $\angle RQS$

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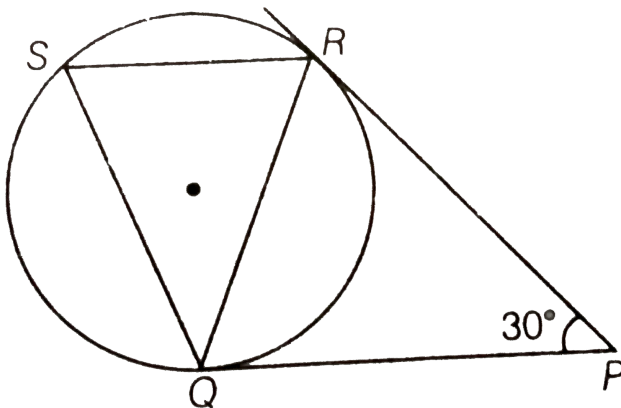
8. AB is a diameter of a circle and AC is its chord such that $\angle BAC = 30°$. If the tengent at C intersects AB extended at D, then BC=BD.

9. 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

10. 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.
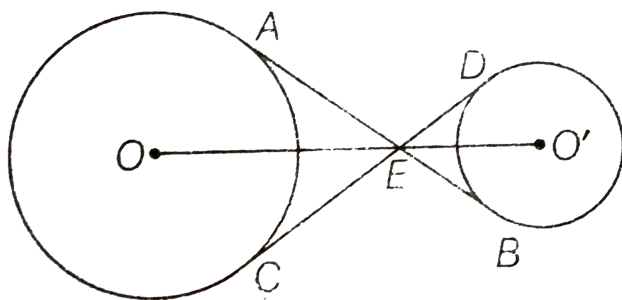
11. O is the centre of a circle of radius $5cm.$ T is a point such that $OT = 13cm and OT$ intersects

the circle at E. If AB is the tangent to the circle

at E, find length of AB.

12. The tangent at a point C of a circle and a

diameter AB when extended intersect at P. If

$\angle PCA = 110°$ find$\angle CBA$.

13. If an isosceles triangle ABC in which

$AB = AC = 6cm$ is inscribed in a circle of

radius $9cm,$ find the area of the triangle.

14. 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

1. 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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1. 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.

2. A circle is inscribed in $\triangle$ PQR having sides 8 cm, 10 cm and 12 cm. A circle touches the sides PQ, QR and RP at D, E and F. Find PD

3. 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 $\angle AOB$

4. Theorem 10.2 : The lengths of tangents drawn from an external point to a circle are equal.

5. 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.
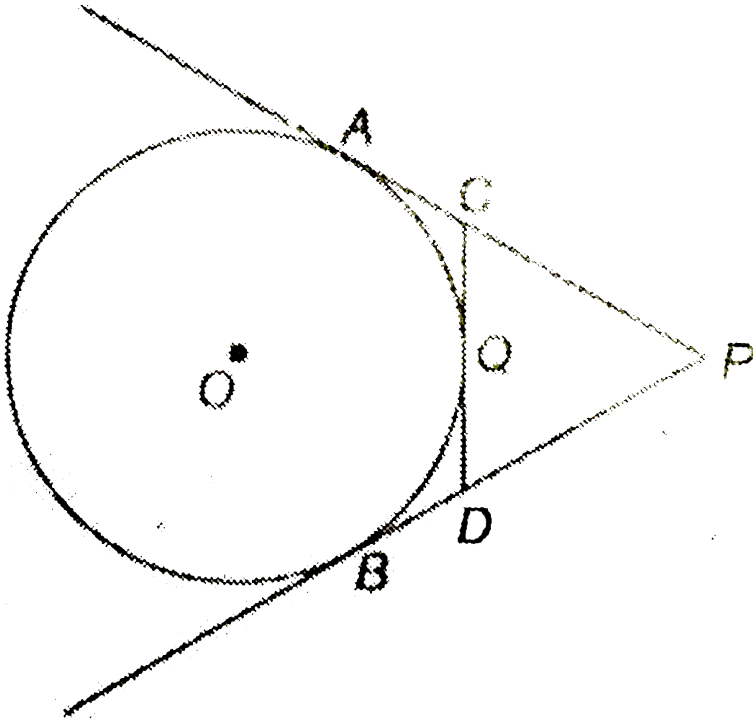
6. Prove that the tangents drawn at the ends of a

diameter of a circle are parallel.

7. In figure, AB and CD are common tangents to two circles of unequal radii. Prove that AB=CD
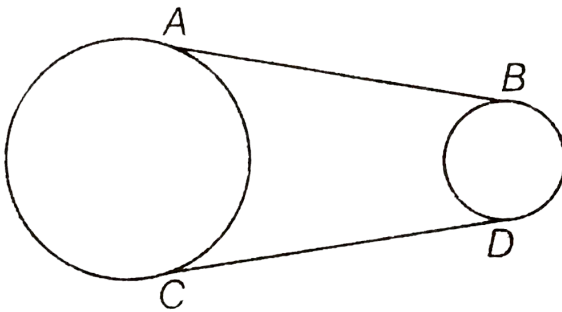
8. Prove that the tangents drawn at the end points of a chord of a circle make equal angles

with the chord.

9. A circle touches all the four sides of a quadrilateral ABCD. Prove that AB + CD = BC + DA

10. Two tangents TP and TQ are drawn to a circle with centre O from an external point T . Prove that $\angle PTQ = 2\angle OPQ$.

1. In the given figure, a quadrilateral ABCD is drawn to circumscribe a circle such that its sides AB, BC, CD and AD touch the circle at P, Q, R and S respectively. If AB = x cm, BC = 7 cm, CR = 3 cm and

AS = 5 cm, find x.
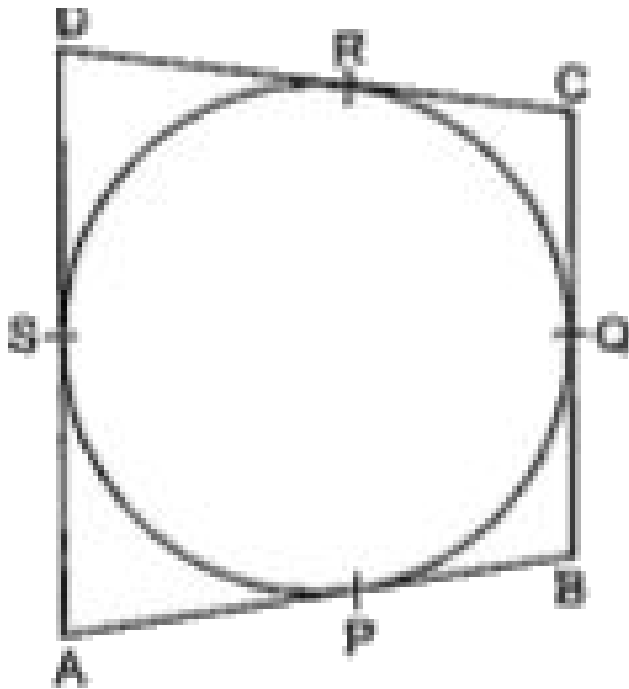
A. 19

B. 9

C. 8

D. 7

Answer: B

2. Two concentric circles have radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller (circle at a point).

A. 4

B. 5

C. 8

D. 10

Answer: C

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

A. $5\sqrt{2}$

B. $10\sqrt{2}$

C. $\dfrac{5}{\sqrt{2}}$

D. $10\sqrt{3}$

Answer: B

4. Two circles touch each other externally at P. AB is a common tangent to the circles, touching them at A and B. The value of $\angle APB$ is:

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer: D

5. In the given figure, QR is a common tangent to the given circles, touching externally at point T, The tangent at T meets QR at P. If PT = 3.8 cm, then the length of QR (in cm) is :

A. 3.8

B. 7.6

C. 5.7

D. 1.9
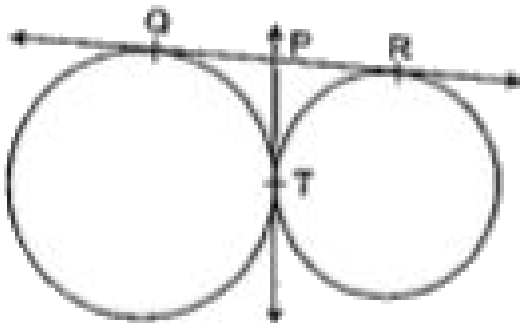
Answer: B

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6. In the given figure, PQ and PR are two tangents to a circle with centre O. If $\angle QPR = 46°$, then

$\angle QOR$ equals:

A. $67°$

B. $134°$

C. $44°$

D. $46°$

Answer: B

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7. In the given figure, if $\angle AOD = 135°$, then

$\angle BOC$ is equal to:

A. $52.5°$

B. $45°$

C. $62.5°$

D. $25°$
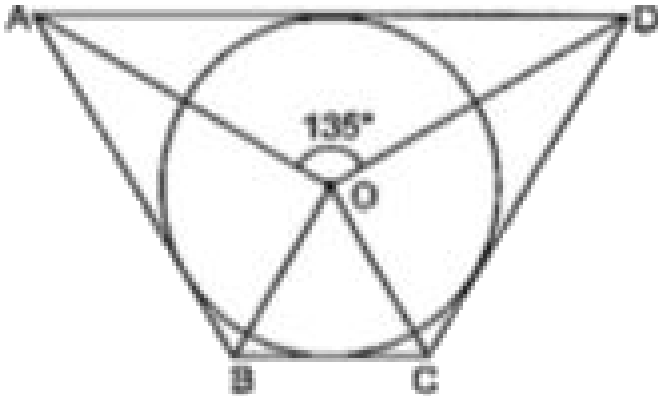
Answer: B

8. In the given figure, two circles touch each other at C and AB is a tangent to both circles. Then, $\angle ACB$ equal to :
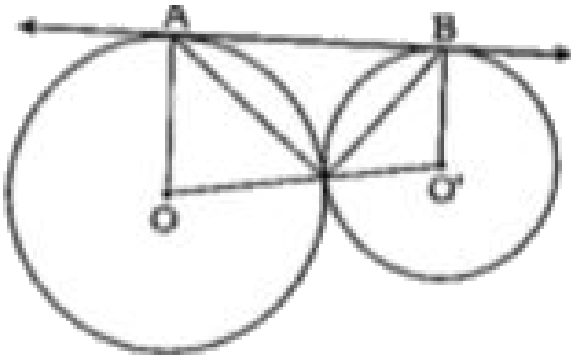
A. 60°

B. $45°$

C. $120°$

D. $90°$

Answer: B

▶ **View Text Solution**

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9. In the given figure, PA and PB are two tangents drawn from an external point P to a circle with centre C and radius 4 cm. If PA is perpendicular to

PB, then the length of each tangent is :
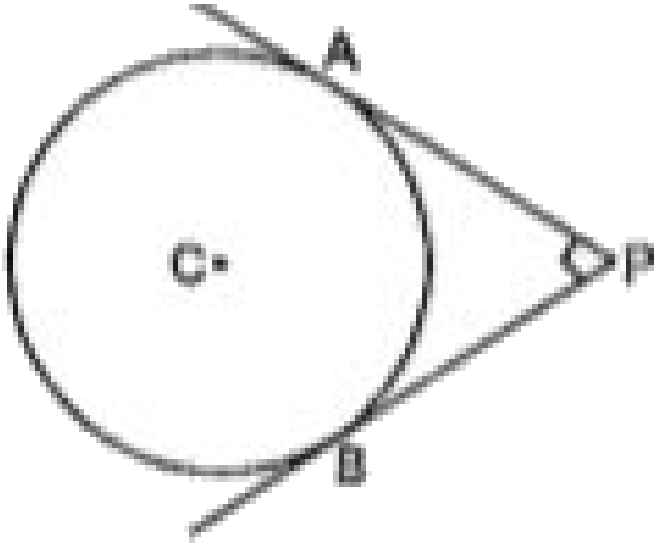
A. 3 cm

B. 4 cm

C. 5 cm

D. 6 cm

Answer: B

10. In the given figure, a circle with centre O is inscribed in a quadrilateral ABCD such that it touches the side BC, AB, AD and CD at points P, Q, R and S respectively. If AB = 29 cm, AD =23 cm, $\angle B = 90°$ and DS = 5 cm, then the radius of the

circle (in cm) is :

A. 11

B. 18

C. 6

D. 5
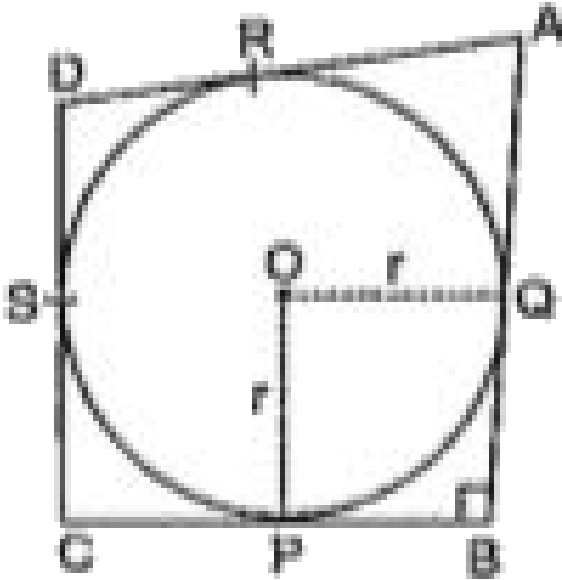
Answer: A

11. From a point Q, 13 cm away from the centre of a circle, the length of tangent PQ to the circle is 12 cm. The radius of the circle (in cm) is:

A. 25

B. $\sqrt{313}$

C. 5

D. 1

Answer: C

12. In the given 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
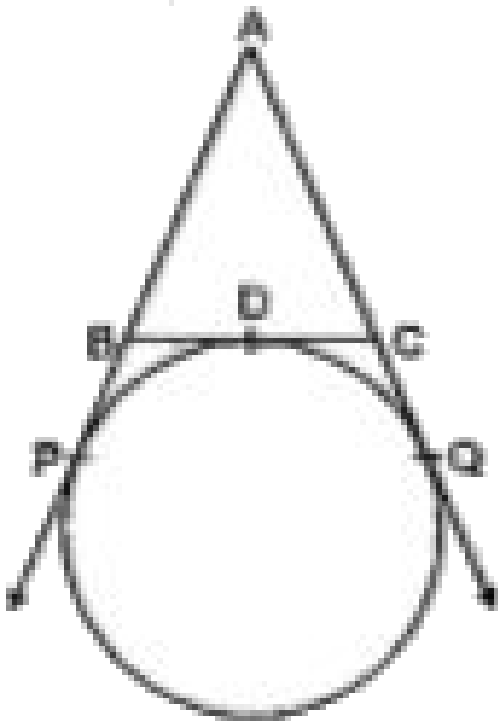
Answer: A

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13. In the given figure, the sides AB, BC and CA of a triangle ABC touch a circle at P, Q and R respectively. If PA = 4 cm, BP = 3 cm and AC = 11 cm,

then the length of BC (in cm) is :

A. 11
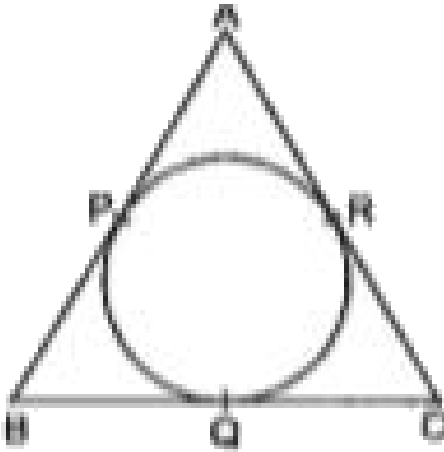
B. 10

C. 14

D. 15

Answer: B

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14. In the given figure, O is the centre of the circle, PQ is a chord and PT is the tangent at P. If $\angle POQ = 70°$ then $\angle TPQ$ equals to:

A. $70°$

B. $45°$

C. 90°

D. 35°

Answer: D

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15. 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. $50°$
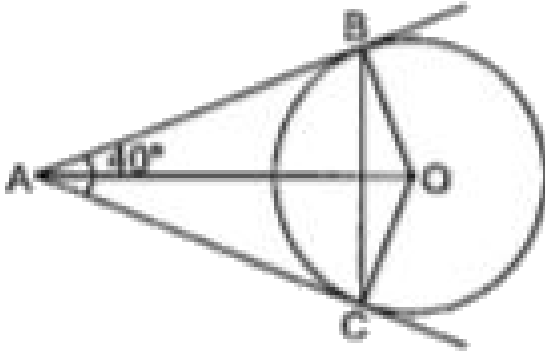
C. $140°$

D. $150°$

Answer: C

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16. In the given figure, O is the centre of the circle, AB is the chord and AT is the tangent at A. If $\angle AOB = 100°$, then $\angle BAT$ is equal to-
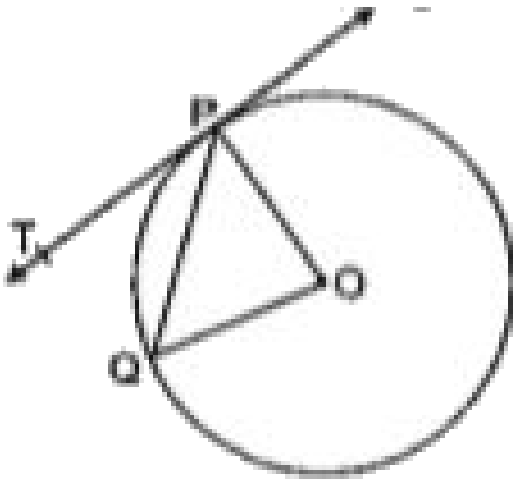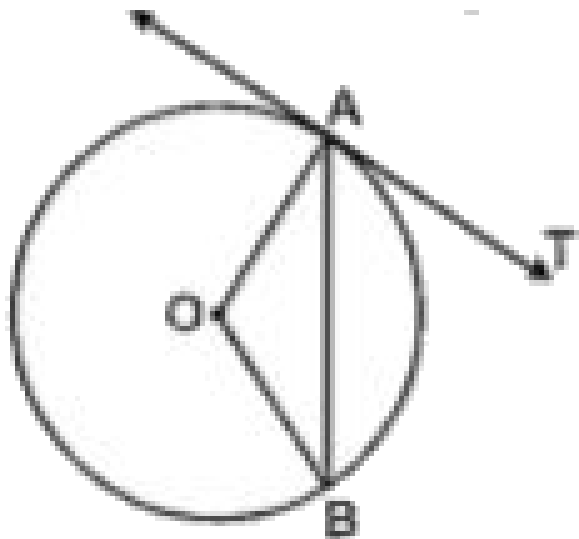

A. $100°$

B. $40°$

C. $50°$

D. 90°

Answer: C

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17. In the given 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°
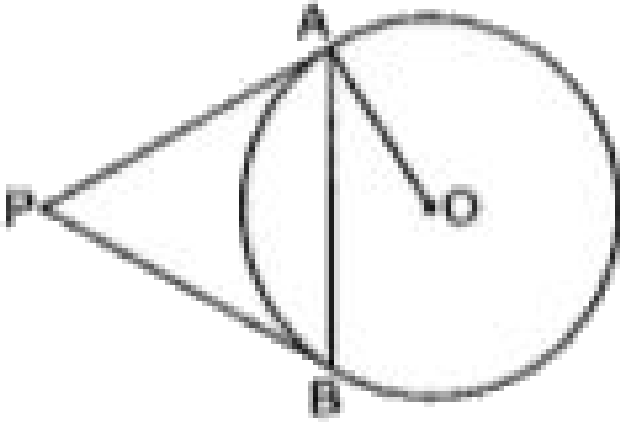
Answer: A

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18. 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 (in cm) is :
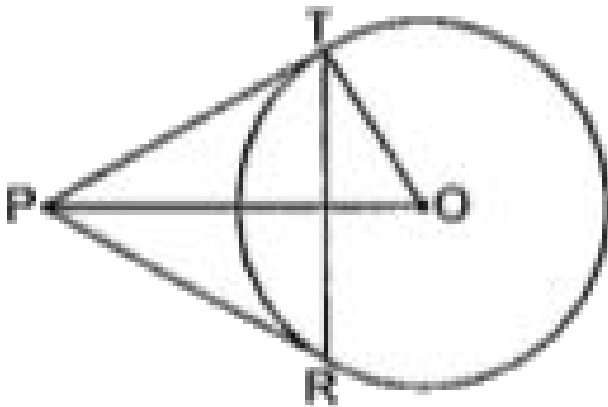

A. 25

B. 26

C. 24

D. 10

Answer: D

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19. In the given figure, TP and QT are two

tangents to a circle with centre O such that

$\angle POQ = 110°$. Then $\angle PTQ$ is equal to-
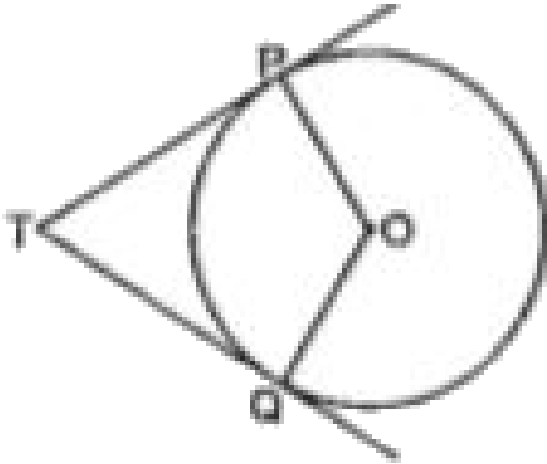
A. $55°$

B. $70°$

C. $110°$

D. $90°$

Answer: B

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20. In the given figure, DE and DF are tangents

from the external point D to a circle with centre

A. If DE = 5 cm and DE is perpendicular to DP, then

the radius of the circle is :
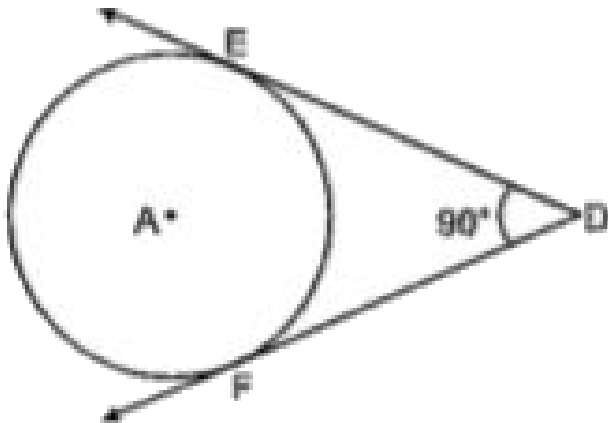
A. 3 cm

B. 5 cm

C. 4 cm

D. 6 cm

Answer: B

▶ **View Text Solution**

21. In the given figure, a circle with centre O is inscribed in a quadrilateral ABCD such that it touches sides BC, AB, AD and CD at points P, Q, R and S respectively. If AB = 29 cm, AD = 23 cm, $\angle B = 90°$ and DS = 5 cm, then the radius of the

circle (in cm) is :
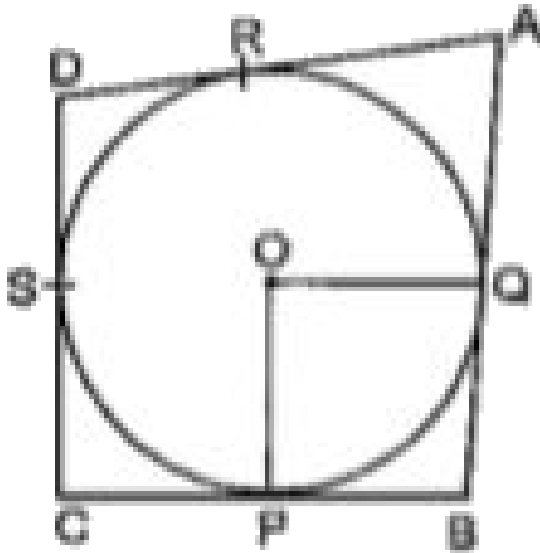
A. 11

B. 18

C. 6

D. 15

Answer: A

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

A. 3 cm

B. 6 cm

C. 9 cm

D. 1 cm

Answer: B

23. In figure if $\angle AOB = 125°$, then $\angle COD$ is equal to:
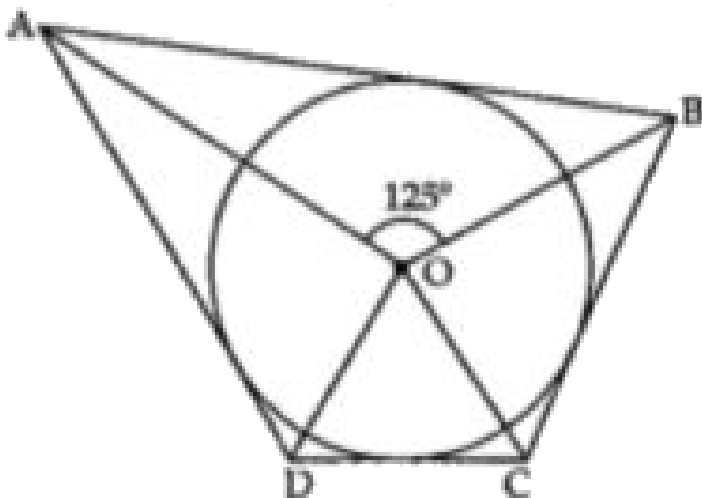
A. $62.5°$

B. $45°$

C. $35°$

D. $55°$

Answer: D

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24. In figure, AB is a chord of the circle AOC is its diameter such that $\angle ACB = 50°$. If AT is the tangent to the circle at the point A, then $\angle BAT$

is equal to:

A. $65°$

B. $60°$

C. $50°$

D. $40°$
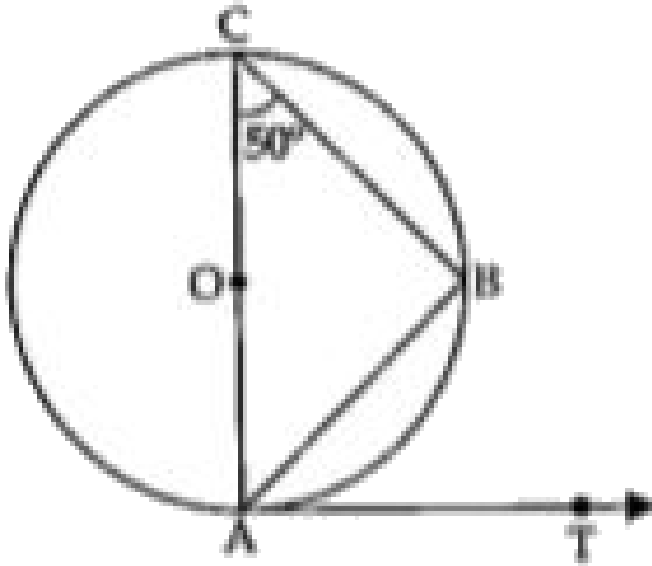
Answer: C

25. 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. $60cm^2$

B. $65cm^2$

C. $30cm^2$

D. $32.5cm^2$

Answer: A

26. PA and PB are tangents to the circle drawn from an external point P. CD is the third tangent touching the circle at Q. If PB = 12 cm and CQ = 3 cm, then the length of PC will be:

A. 8 cm

B. 9 cm

C. 6 cm

D. 4 cm

Answer: B

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27. The tangent of a circle makes-angle with radius at point of contact:

A. $45°$

B. $30°$

C. $90°$

D. $60°$

Answer: C

▶ **View Text Solution**

28. Form the point A at a distance of 5 cm from the centre of a circle is 4 cm. What is the radius

of the circle ?
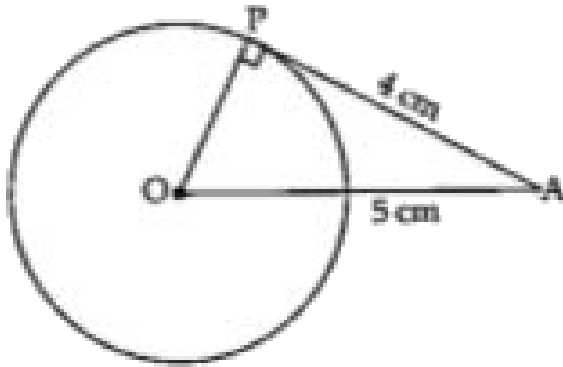
A. 3 cm

B. 2 cm

C. 1 cm

D. 0 cm

Answer: A

▶ View Text Solution

29. The angle subtended by the diameter of a semicircle is :

A. $90°$

B. $45°$

C. $180°$

D. $60°$

Answer: C

▶ View Text Solution

30. If chords AB and CD of congruent circles subtend equal angles at their centres, then :

A. AB = CD

B. $AB > CD$

C. $AB < AD$

D. None of these

Answer: A

31. In the given figure, BOC is a diameter of a circle with centre O. If AB and CD are two chords such that AB = CD. If AB = 10 cm, then CD = ?
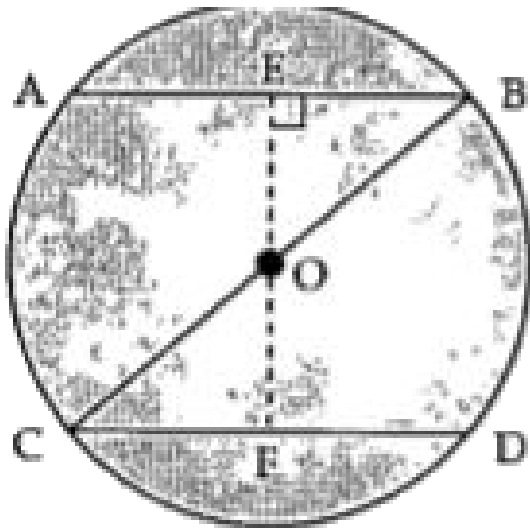
A. 5 cm

B. 12.5 cm

C. 15 cm

D. 10 cm

Answer: D

▶ **View Text Solution**

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32. In the given figure, AB is a chord of a circle with centre O and AB is produced to C such that BC = OB. Also, CO is joined and produced to meet the circle in D. If $\angle ACD = 25°$, then $\angle AOD =$

?
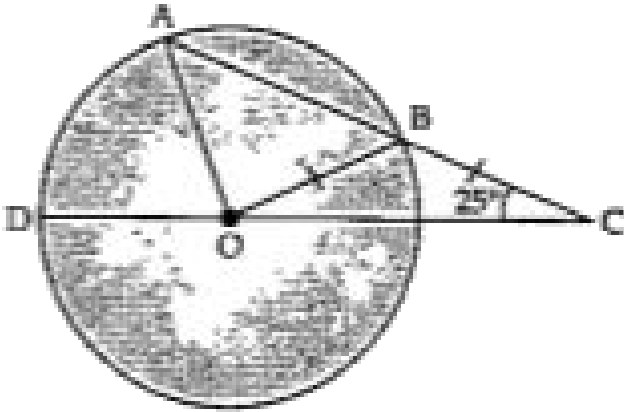
A. $50°$

B. $75°$

C. $90°$

D. $100°$

Answer: B

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33. In the given figure, AB is a chord of a circle with centre O and BOC is a diameter. If $OD \perp AB$ such that OD = 6 cm, then AC = ?
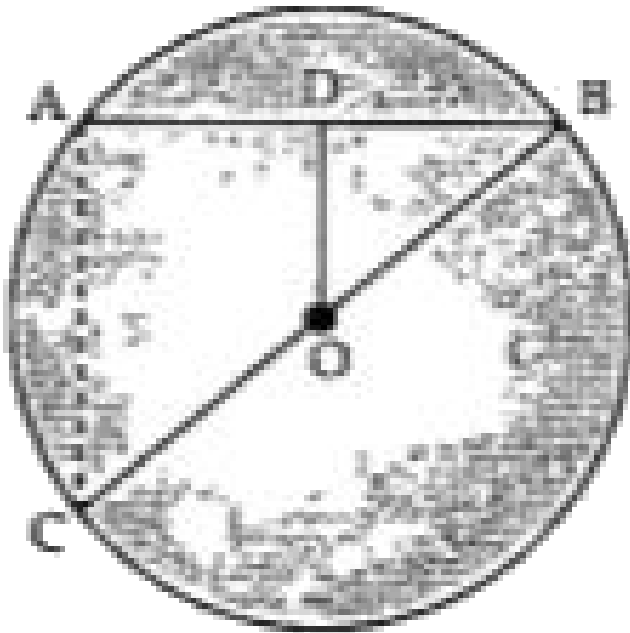
A. 9 cm

B. 12 cm

C. 15 cm

D. 7.5 cm

Answer: B

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34. An equilateral triangle of side 9 cm is inscribed in a circle. The radius of the circle is :

A. 3 cm

B. $3\sqrt{2}$ cm

C. $3\sqrt{3}$ cm

D. 6 cm

Answer: C

▶ **View Text Solution**

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35. In the given figures, $\triangle ABC$ and $\triangle DBC$ are inscribed in a circle such that $\angle BAC = 60°$

and $\angle DBC = 50°$. Then, $\angle BCD$ = ?

A. $50°$
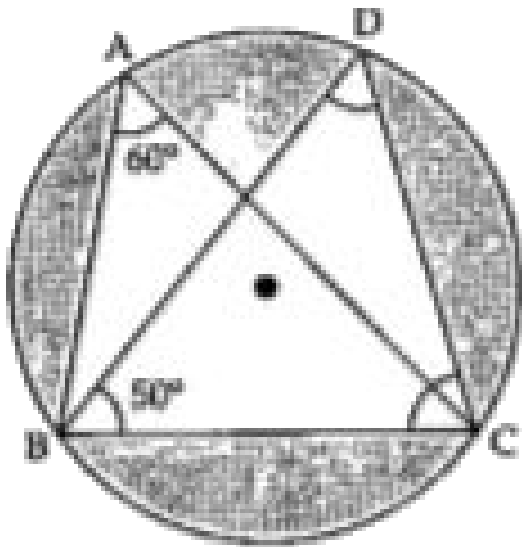
B. $60°$

C. $70°$

D. $80°$

Answer: C

36. In the given figure, BOC is a diameter of a circle with centro O. If $\angle BCA = 30°$, then find $\angle CDA$.
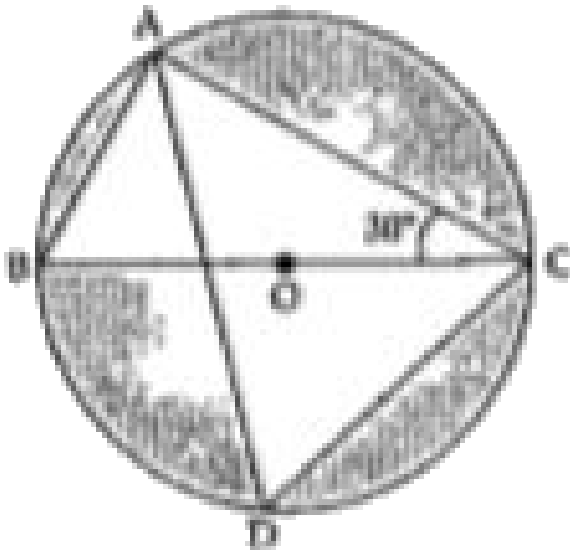
A. $30°$

B. $45°$

C. $60°$

D. $50°$

Answer: C

▶ **View Text Solution**

37. In the given figure, O is the centre of a circle. If $\angle OAC = 50°$ then $\angle ODB$ = ?
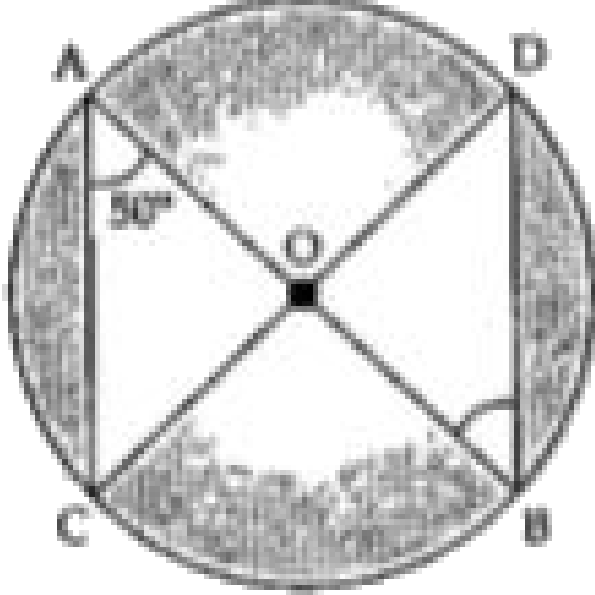
A. 40°

B. 50°

C. 60°

D. 75°

Answer: B

38. In the given figure, O is the centre of a circle in which $\angle OBA = 20°$ and $\angle OCA = 30°$. Then, $\angle BOC = ?$
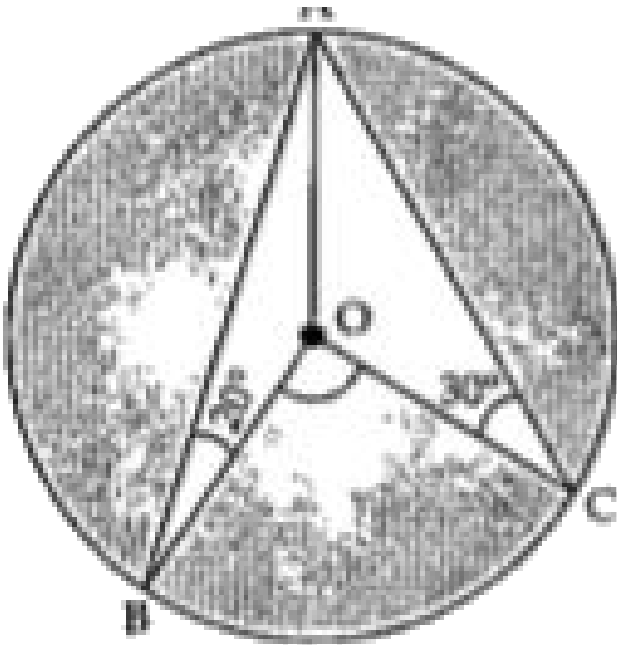
A. $50°$

B. $90°$

C. $100°$

D. $130°$

Answer: C

⏵ **View Text Solution**

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39. In the given figure, side AB and AD of quad. ABCD are produced to E and F respectively. If

$\angle CBE = 100°$, then $\angle CDF =$?
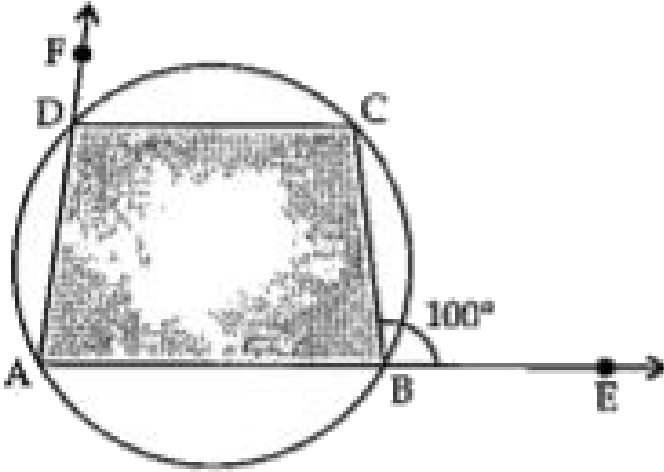
A. $100°$

B. $80°$

C. $130°$

D. $90°$

Answer: B

40. From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the centre is 25 cm. The radius of the circle is :

    A. 7 cm

    B. 12 cm

    C. 15 cm

    D. 24.5 cm

Answer: A

▶ View Text Solution

41. The length of the tangent from a point A at a circle, of radius 3 cm, is 4 cm. The distance of A from the centre of the circle is :

A. $\sqrt{7}$ cm

B. 7 cm

C. 5 cm

D. 25 cm

Answer: C

42. If TP and TQ are two tangents to a circle with centre O so that $\angle POQ = 110°$, then, $\angle PTQ$ is equal to :

A. $60°$

B. $70°$

C. $80°$

D. $90°$

Answer: B

▶ View Text Solution

43. PQ is a tangent to a circle with centre O at the point P. If $\triangle OPQ$ is an isosceles triangle, then $\angle OQP$ is equal to :

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer: B

▶ View Text Solution

44. ABC is a right angled triangle, right angled at B such that BC = 6 cm and AB = 8 cm. A circle with centre O is incribed in $\triangle ABC$. The radius of the circle is :

    A. 1 cm

    B. 2 cm

    C. 3 cm

    D. 4 cm

Answer: B

45. In the Fig., if TP and TQ are the two tangents to a circle with ccentre O so that $\angle POQ = 110°$, then $\angle PTQ$ is equal to :

A. $60°$

B. $70°$

C. $80°$

D. $90°$

Answer: B

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46. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of $80°$, then $\angle POA$ is equal to :

A. $50°$

B. $60°$

C. $70°$

D. $80°$

Answer: A

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47. 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 = 12 cm. Length PQ is :

A. 12 cm

B. 13 cm

C. 8.5 cm

D. $\sqrt{119}$ cm

Answer: D

 View Text Solution

48. In the given figure , a quadrilateral ABCD is drawn to circumscribe a circle such that its sides AB, BC , CD and AD touch the circle at P,Q,R and S respectively . If AB = x cm , BC = 7 cm , CR = 3m and AS = 5 cm , find x .
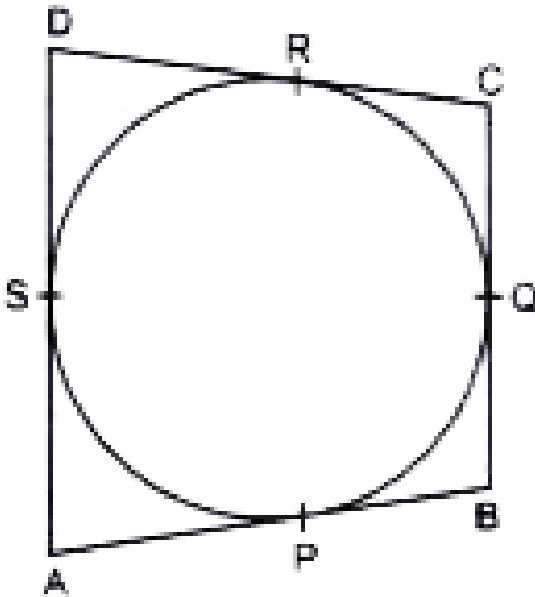
A. 10 cm

B. 9 cm

C. 8 cm

D. 7 cm

Answer: B

▶ **View Text Solution**

49. Two concentric circles have radii 5 cm and 3 cm Find the length of the chord of the larger circle which touches the smaller circle (at a point)

A. 4 cm

B. 5 cm

C. 8 cm

D. 10 cm

Answer: C

▶ **View Text Solution**

50. Two circles touch each other externally at P.AB is a common tangent to the circles, touching them at A and B. The value of $\angle APB$ is:

A. $30°$

B. 45°

C. 60°

D. 90°

Answer: D

▶ **View Text Solution**

51. In the given figure, QR is a common tangent to the given circles, touching externally at point T. The tangent at T meets QR at P. If PT = 3.8 cm,

then the length of QR (in cm) is:

A. 3.8

B. 7.6

C. 5.7

D. 1.9
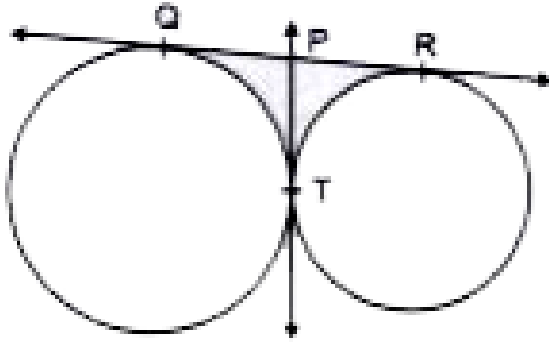
Answer: B

> ▶ View Text Solution

52. In the given figure, if $\angle AOD = 135°$, then $\angle BOC$ is equal to:

A. $52.5°$

B. $45°$

C. $62.5°$

D. $25°$

Answer: B

53. In the given figure, PA and PB are two tangents drawn from an external point P to a circle with centre C and radius 4 cm. If PA is perpendicular to PB, then the length of each

tangent is:
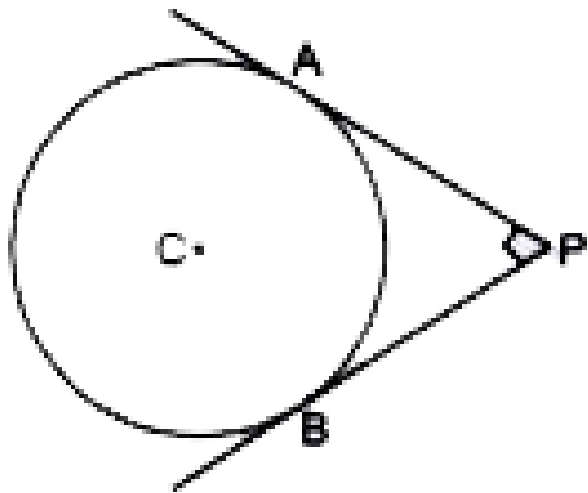
A. 3 cm

B. 4 cm

C. 5 cm

D. 6 cm

Answer: B

54. In the given figure, a circle with centre O is inscribed in a quadrilateral ABCD such that it touches the side BC, AB, AD and CD at points P, Q, R and S respectively. If AB = 29 cm, AD = 23 cm, $\angle B = 90°$ and DS = 5 cm, then the radius of the

circle (in cm) is:

A. 11

B. 18

C. 6

D. 5

Answer: A

55. From a point Q, 13 cm away from the centre of a circle, the length of tangent PQ to the circle is 12 cm. The radius of the circle (in cm) is:

A. 25

B. $\sqrt{313}$

C. 5

D. 1

Answer: C

▶ View Text Solution

56. In the given 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
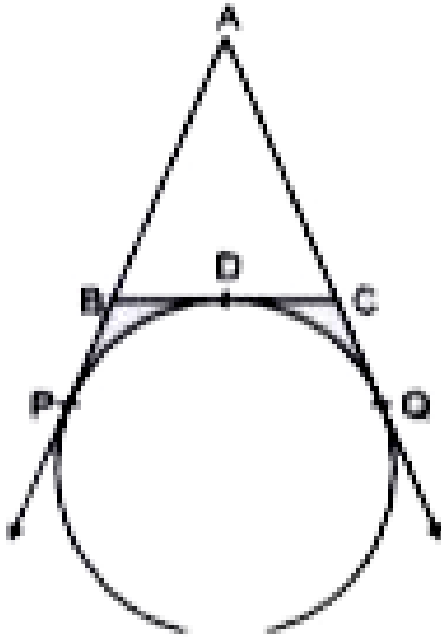
Answer: A

▶ View Text Solution

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57. In the given figure, the sides AB, BC and CA of a triangle ABC touch a circle at P, Q and R respectively. If PA = 4 cm, BP = 3 cm and AC = 11 cm,

then the length of BC (in cm) is:

A. 11

B. 10

C. 14

D. 15
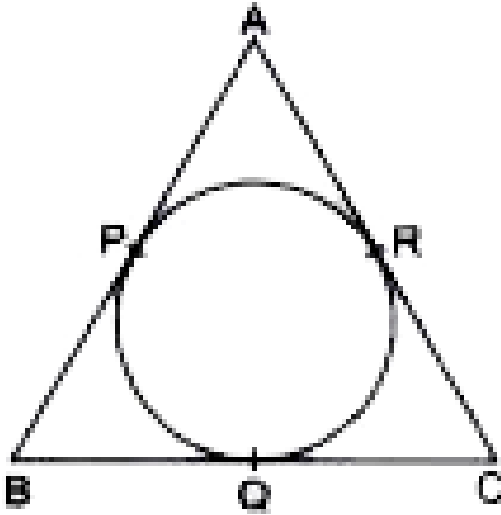
Answer: B

58. In the given figure, O is the centre of the circle, PQ is a chord and PT is the tangent at P. If $\angle POQ = 70°$, then $\angle TPQ$ equals to:

A. 70°

B. 45°

C. 90°

D. 35°
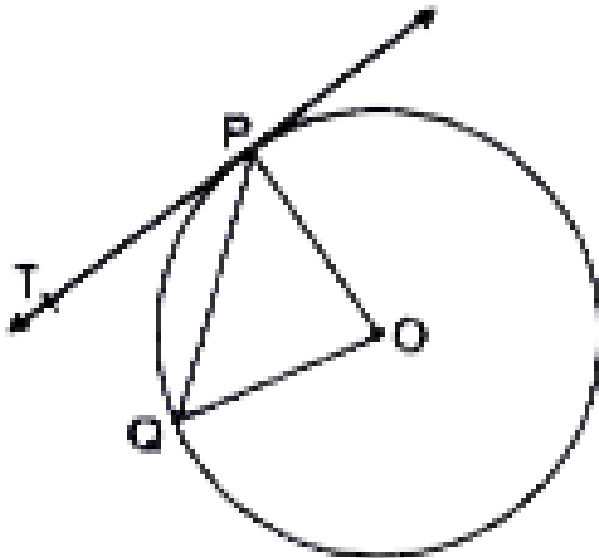
Answer: D

▶ View Text Solution

59. 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°

Answer: C

▶ View Text Solution

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

$\angle OAB$ is:

A. $30\degree$

B. $60\degree$

C. $90\degree$

D. $15\degree$
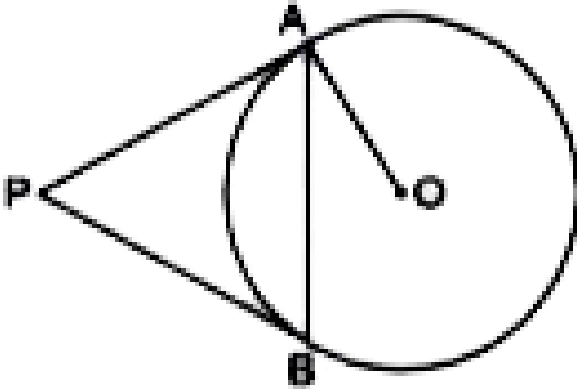
Answer: A

View Text Solution

61. 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. $60cm^2$

B. $65cm^2$

C. $30cm^2$

D. $32.5cm^2$

Answer: A

62. PA and PB are tangents to the circle drawn from an external point P. CD is the third tangent touching the circle at Q. If PB = 12 cm and CQ = 3

cm, then the length of PC will be:
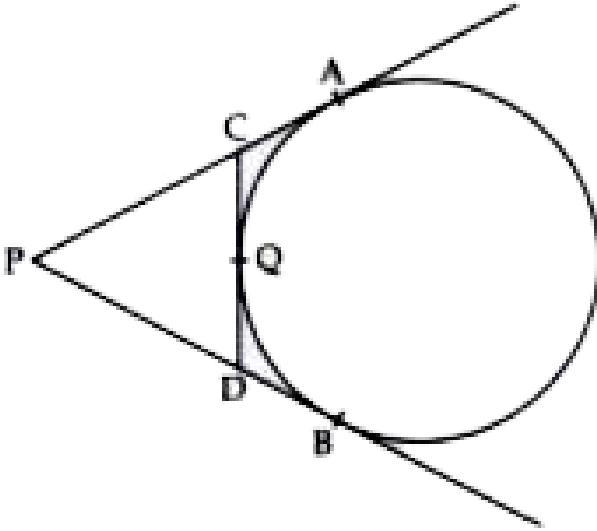
A. 8 cm

B. 9 cm

C. 6 cm

D. 4 cm

Answer: B

63. The tangent of a circle makes-angle with radius at point of contact:

A. $45°$

B. $30°$

C. $90°$

D. $60°$

Answer: C

64. The length of the tangent from a point A at a circle, of radius 3 cm, is 4 cm. The distance of A from the centre of the circle is:

A. $\sqrt{7}cm$

B. 7 cm

C. 5 cm

D. 25 cm

Answer: C

▶ View Text Solution

65. If TP and TQ are two tangents to a circle with centre O so that $\angle POQ = 110°$, then $\angle PTQ$ is equal to:

A. $60°$

B. $70°$

C. $80°$

D. $90°$

Answer: B

66. PQ is a tangent to a circle with centre O at the point P. If ΔOPQ is an isosceles triangle, then $\angle OQP$ is equal to:

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer: B

▶ View Text Solution

67. ABC is a right angled triangle, right angled at B such that BC= 6 cm and AB = 8 cm. A circle with centre O is incribed in $\triangle ABC$. The radius of the circle is:

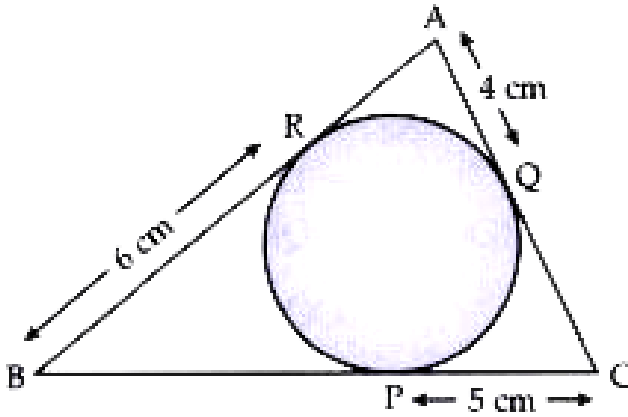A. 1 cm

B. 2 cm

C. 3 cm

D. 4 cm

Answer: B

▶ View Text Solution

68. In the figure, the perimeter of $\triangle ABC$ is:

A. 30 cm

B. 60 cm

C. 45 cm

D. 15 cm

Answer: A

69. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of $80°$, then $\angle POA$ is equal to:

A. $50°$

B. $60°$

C. $70°$

D. $80°$

Answer: A

Very Short Answer Type Questions

1. Two concentric circles are of radii 7 cm and r cm respectively, where $r > 7$ A chord of the larger circle of length 48 cm touches the smaller circle. Find the value of r.

▶ View Text Solution

2. From a point P, 10 cm away from the centre of a circle, a tangent PT of length 8 cm is drawn. Find

the radius of the circle.

3. A circle is inscribed in a $\triangle ABC$, touching BC, CA and AB at P, Q and R respectively. If AB = 10 cm, AQ=7 cm and CQ=5 cm, then find the length of BC.

4. A circle is touching the side BC of $\triangle ABC$ at P and touching AB and AC produced at Q and R

respectively. Prove that $AQ = \dfrac{1}{2}$ (perimeter of $\triangle ABC$)

> ▶ View Text Solution

5. In given figure, AB is the diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58°$, find $\angle ATQ$

> ▶ View Text Solution

6. From a point P, two tangents PA and PB are drawn to a circle with centre O. If OP = diameter

of the circle, show that $\triangle APB$ is equilateral.

7. In the figure, a circle touches all the four sides of a quadrilateral ABCD with AB = 6 cm, BC = 7 cm, and CD = 4 cm. Find AD.

8. 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 are PQ to intersect AP at B and AQ at C, find the perimeter of the $\triangle ABC$.

9. If PT is a tangent at T to a circle whose centre is O and OP = 17 cm, OT = 8 cm. Find the length of the tangent segment PT.

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

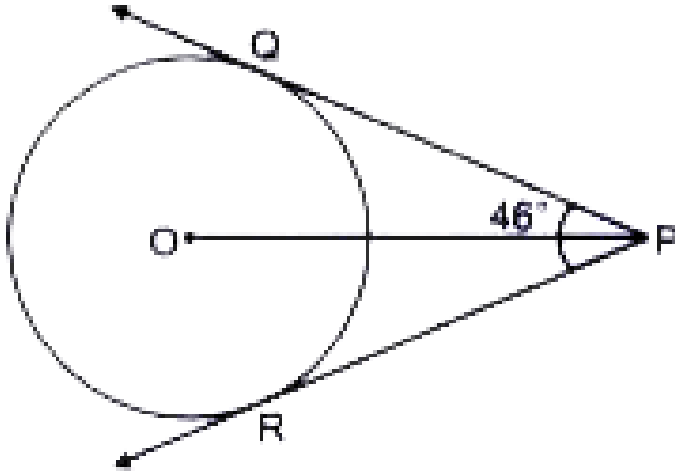**11.** In the given figure, PQ and PR are two tangents to a circle with centre O. If $\angle QPR = 46°$, then

find $\angle QOR.$

▶ View Text Solution

12. Find the perimeter of a square circumscribing

a circle of radius a cm.

▶ View Text Solution
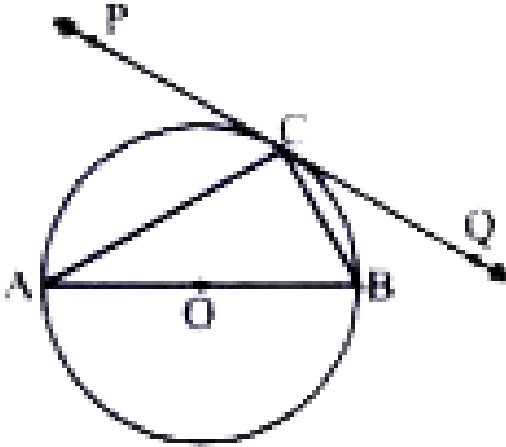
13. From an external point P, tangents PA and PB are drawn to a circle with centre O. If $\angle PAB = 50°$, then find $\angle AOB$.

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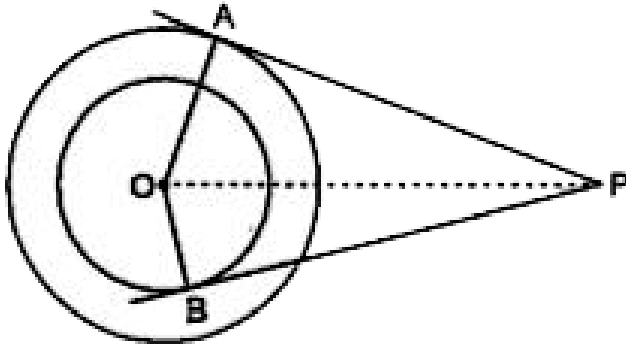
$\angle CAB = 30°$, find $\angle PCA$.

▶ View Text Solution

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

length of BP.
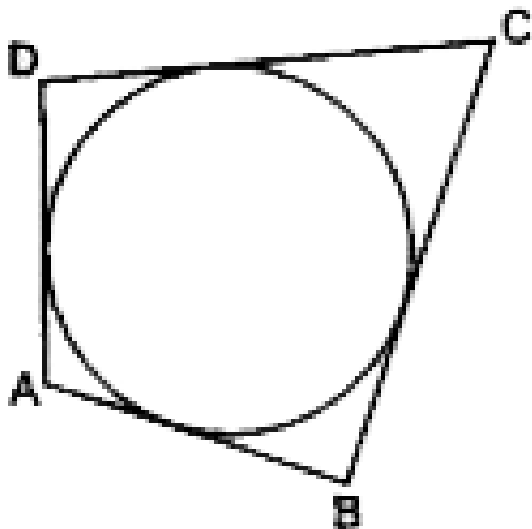
16. In the given figure, a circle touches all the four

sides of a quadrilateral ABCD whose sides are AB

= 6 cm, BC = 9 cm and CD = 8 cm. Find the length

of side AD.

17. Two concentric circles are of radii 7 cm and r

cm respectively, where $r > 7$. A chord of the

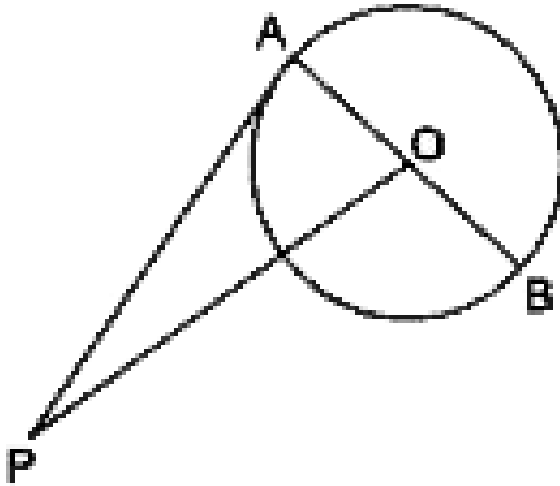larger circle of length 48 cm touches the smaller

circle. Find the value of r.

18. A circle is inscribed in a $\triangle ABC$, touching BC, CA and AB at P, Q and R respectively. If AB = 10 cm, AQ = 7 cm and CQ = 5 cm, then find the length of BC.

19. In the given figure, PA is a tangent from an external point P to a circle with centre O. If
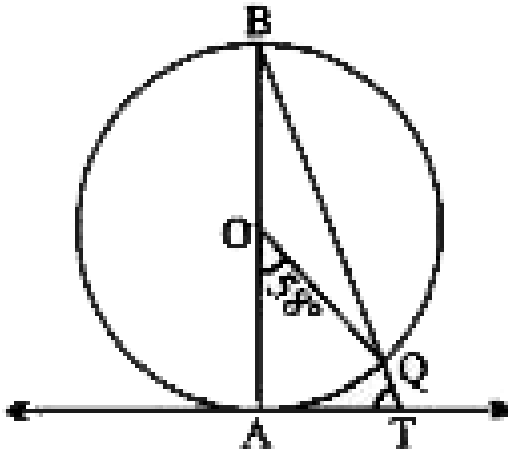
$\angle POB = 115°$, find $\angle APO$.

20. In given figure, AB is the diameter of a circle with centre O and AT is a tangent. If

$\angle AOQ = 58°$, find $\angle ATQ$.
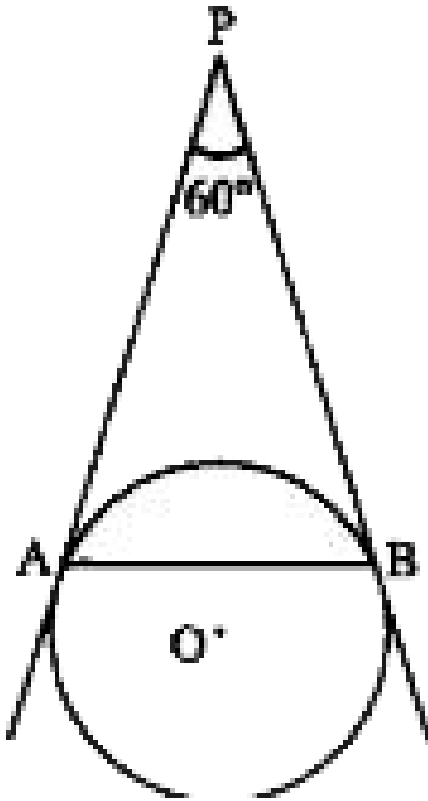
21. In the given figure, AP and BP are tangents to ,

a circle with centre O, such that AP = 5 cm and

$\angle APB = 60°$. Find the length of chord AB.

22. 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 = QD = 3cm, then find.PC + PD.
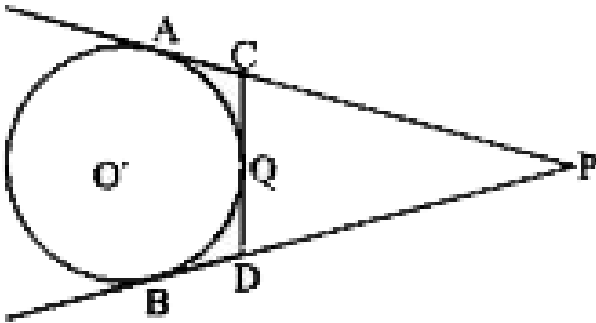
23. A village Panchayt constructed a circular tank to serve as a bird bath. A fencing was made in the shape of a quadrilateral. Sides of the quadrilatieral touched the circle as shown in the figure.
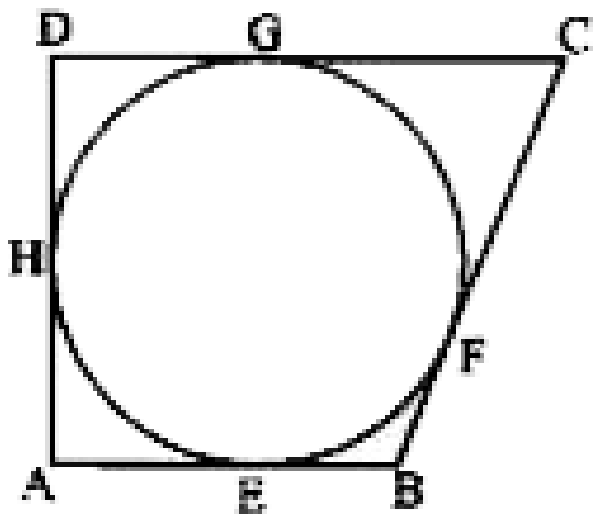
If AB = 5m, CD= 6m BC = 7 m, then find AD

1. A circle is inscribed in a $\triangle ABC$ touching AB, BC and AC at P, Q and R respectively. If AB = 10 cm, AR = 7 cm and CR = 5 cm, find the length of BC.

▶ View Text Solution

2. Find the length of a tangent drawn to a circle with radius 5 cm, form a point 13 cm from the centre of the circle.

3. A point P is 26 cm away from O of circle and the length PT of the tangent drawn from P to the circle is 10 cm. Find the radius of the circle.

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

5. In Fig, below, PQ is tangent at point R of the circle with center O. If $\angle TRQ = 30°$, find $\angle PRS$

6. If PA and PB are tangents from an outside point P. Such that PA = 10 cm and $\angle APB = 60°$. Find the length of chord AB.

7. In the given figure, a $\triangle PQR$ is drawn to circumscribe a circle of radius 6 cm such that the segments QT and TR into which QR is divided by the point of contact are of lengths 12 cm and 9 cm respectively. If the area of $\triangle PQR = 189cm^2$, then find the lengths of sides PQ and PR.

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

▶ View Text Solution

9. In the given figure, PQ is tangent at point R of the circle with center O. If $\angle TRQ = 30°$ find
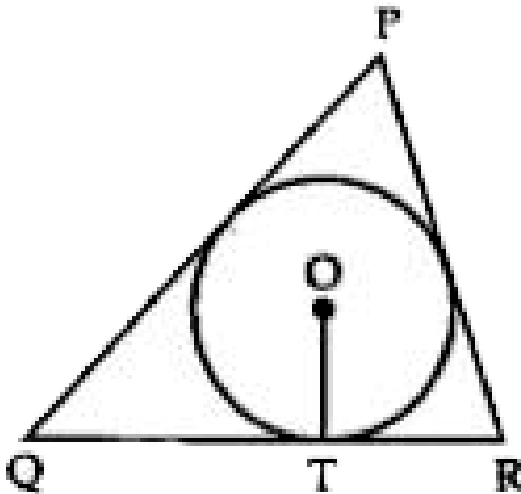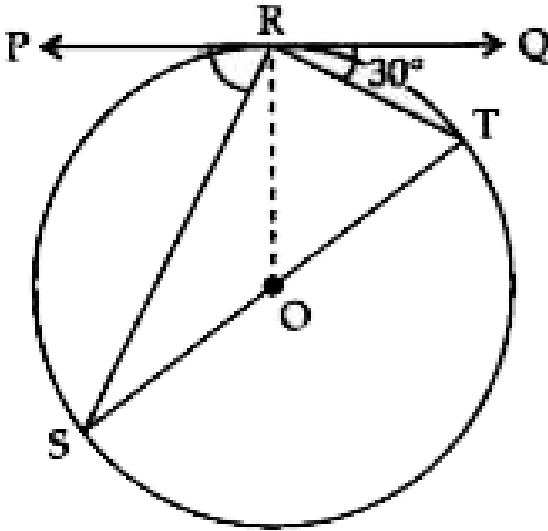
$\angle PRS$

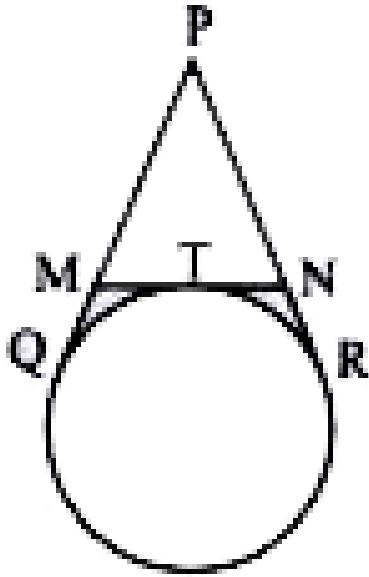**10.** In figure, PQ is a chord of a circle with centre O and PT is a tangent . If $\angle QPT = 60°$, find

$\angle PRQ$
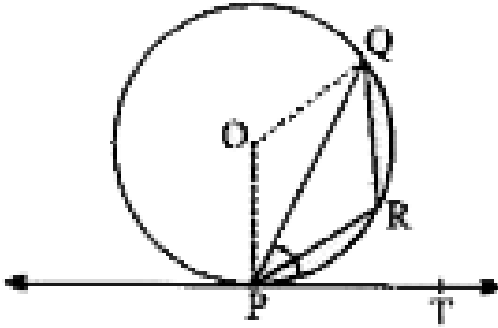
11. Shipra prepared a project for rain water harvesting. diagrammatic representation of the project is given in the figure. PQ and PR are the pipes touching the circular pit. Length of these pipes is 5 m each. What is the perimeter of

ΔPMN ?

Long Answer Type Questions

1. From an external point P, tangents PA and PB are drawn to a circle with centre O. If CD is the tangent to the circle at a point E and PA = 14 cm, find the perimeter of $\triangle PCD$.

2. Out of the two concentric circles, the radius of the outer circle is 5 cm and the chord AC of length 8 cm is a tangent to the inner circle. Find the radius of the inner circle.

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

4. In the given figure, PQ is a chord of length 16 cm and the radius of the circle is 10 cm. The tangents at P and Q intersect at a point T. Find

the length of TP.

5. In the given figure, PQ is a chord of length 8 cm of a circle of radius 5 cm and centre O. The tangents at P and Q intersect at point T. Find the

length of TP.

6. Out of the two concentric circles, the radius of the outer circle is 5 cm and the chord AC of length 8 cm is a tangent to the inner circle. Find the radius of the inner circle.
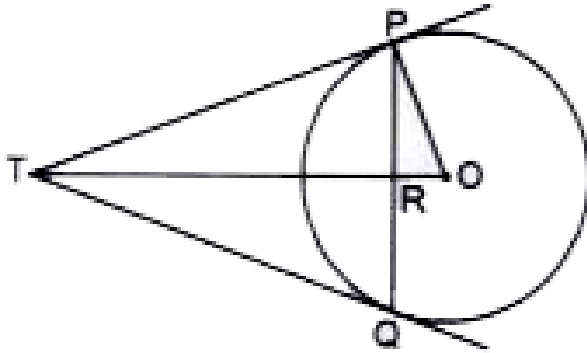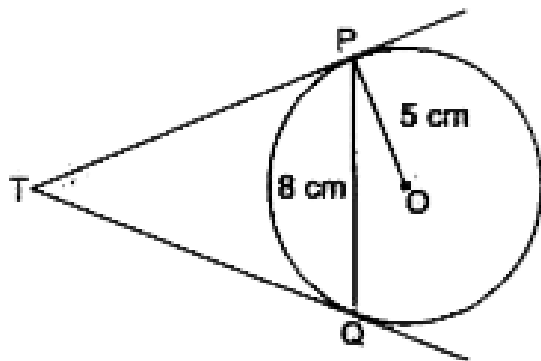
7. The radii of two concentric circles are 13 cm and 8 cm. PQ is a diameter of the bigger circle. QR is a tangent to the smaller circle touching it at R. Find the length PR.

8. A, B and C are three points on a circle. The tangent at Cmeets BA produced at T. Given that $\angle ATC = 36°$ and that the $\angle ACT = 48°$, calculate the angle subtended by AB at the centre

of the circle.

Evaluation And Analysis Based Questions

1. The radii of two concentric circles are 13 cm and

8 cm. PQ is a diameter of the bigger circle. QR is a

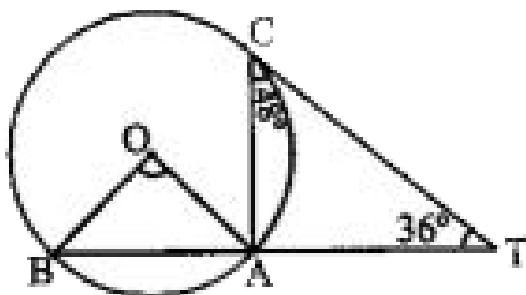tangent to the smaller circle touching it at R. Find the length PR.

2. In a circle, OP is equal to diameter of the circle. PA and PB are two tangents. Prove that $\triangle ABP$ is an equilateral triangle.

Assertion And Reason Based Questions

1. Assertion: The radius of a circle is 10 cm and the length of one of its chords is 16 cm. Then the distance of the chord from the centre is 6cm.

Reason : The perpendicular from the centre of a circle to a chord bisects the chord.

A. Both the Assertion and the Reason are correct and Reason is the correct explanation of the Assertion.

B. Both the Assertion and the Reason are correct but Reason is not the correct explanation of the Assertion.

C. Assertion is true but Reason is false.

D. Both Assertion and Reason are false.

Answer: A

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2. Assertion : If in a circle, the radius of the circle is 3 cm and distance of a point from the centre of a circle is 5 cm, then length of the tangent from that point will be 4 cm. Reason : $(\text{hypotenuse})^2 = (\text{base})^2 + (\text{perpendicular height})^2$

▶ View Text Solution

1. 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 = 13 cm. Find the length of PQ.

▶ View Text Solution

2. The radius of the incircle of a triangle is 8 cm and the segments into which one side is divided

by the point of contact are 12cm and 16cm. Determine the other two sides of the triangle.

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

4. Two concentric circles are of radii 10 cm and 6 cm. Find the length of the chord of the larger
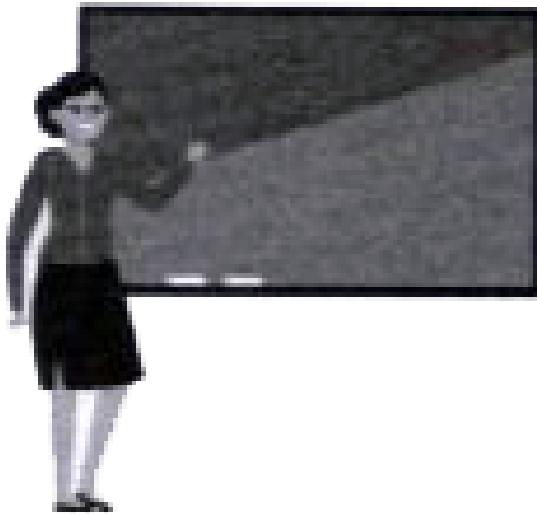
circle which touches the smaller circle.

5. From an external point P, tangents PA and PB are drawn to a circle with centre O. If CD is the tangent to the circle at a point E and PA = 14 cm, find the perimeter of $\triangle PCD$.
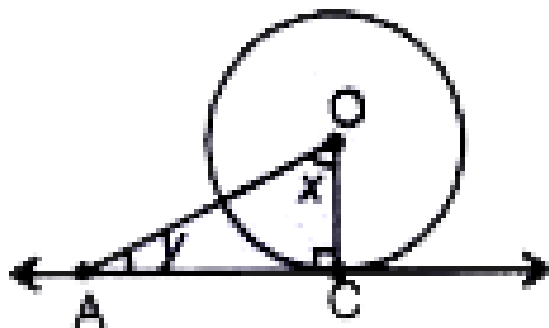
Case Based Questions

1. For class 10 students, a teacher planned a game for the revision of chapter circles with some questions written on the board, which are to be answered by the students. For each correct answer, a student will get a reward. Some of the questions are given below.

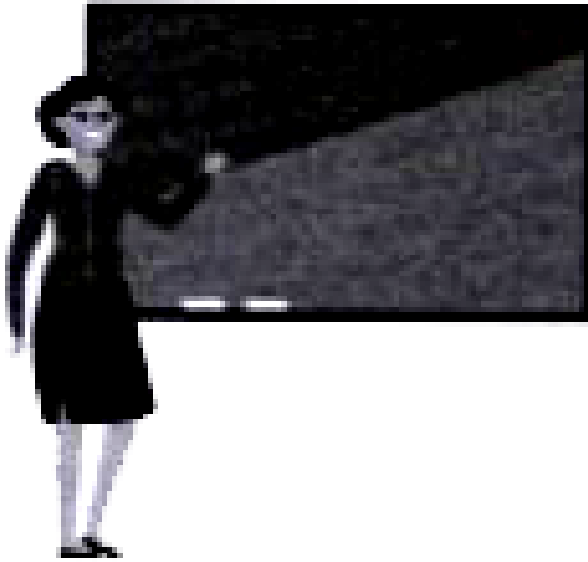In the given figure, x + y =

A. $60°$

B. $90°$

C. $120°$

D. $145°$

Answer: B

▶ View Text Solution

2. For class 10 students, a teacher planned a game for the revision of chapter circles with some questions written on the board, which are to be answered by the students. For each correct answer, a student will get a reward. Some of the questions are given below.

If PA and PB are two tangents drawn to a circle with centre O from P such that $\angle PBA = 50°$, then $\angle OAB =$

A. $50°$

B. $25°$

C. $40°$

D. $130°$

Answer: C

3. For class 10 students, a teacher planned a game for the revision of chapter circles with some questions written on the board, which are to be answered by the students. For each correct answer, a student will get a reward. Some of the questions are given below.

In the given, figure PQ and PR are two tangents to

the circle, then $\angle ROQ$ =
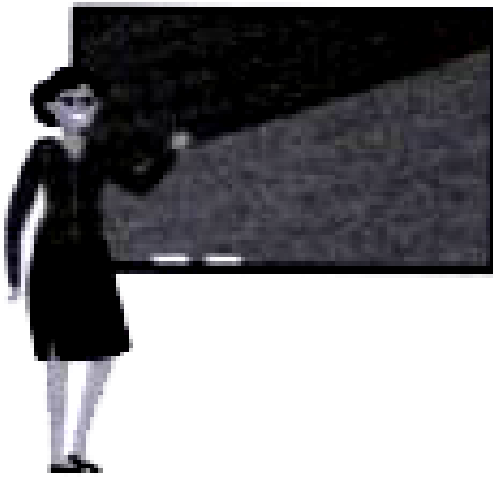

A. $30°$

B. $60°$
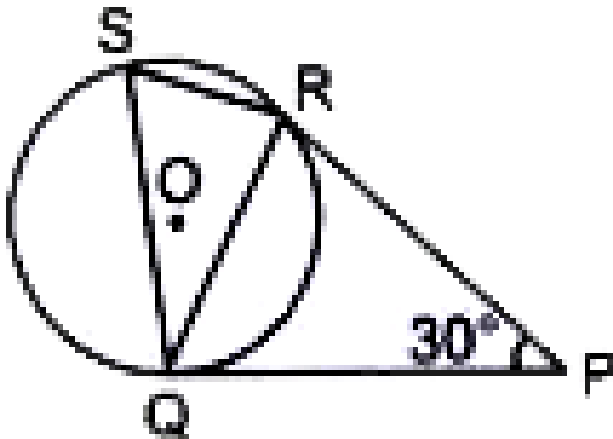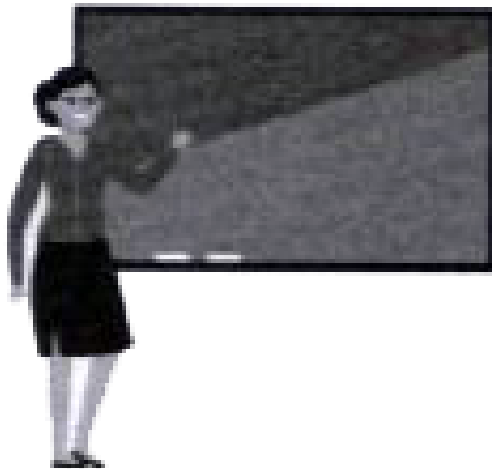
C. $105°$

D. $150°$

Answer: D

⏵ **View Text Solution**

4. For class 10 students, a teacher planned a game for the revision of chapter circles with some questions written on the board, which are to be answered by the students. For each correct answer, a student will get a reward. Some of the

questions are given below.

In the adjoining figure, AB is a chord of the circle and AOC is its diameter such that

$\angle ACB = 55°$, $\angle BAT =$

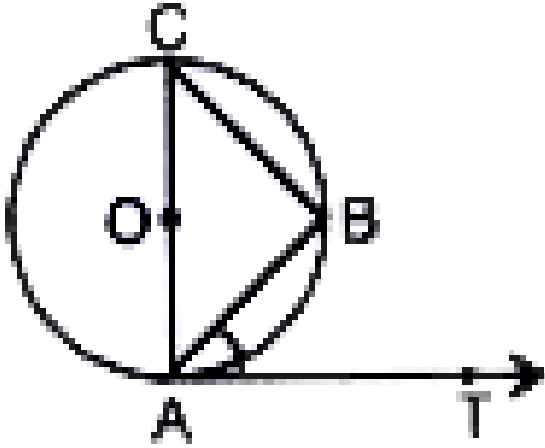A. $35°$

B. $55°$

C. $125°$

D. $110°$
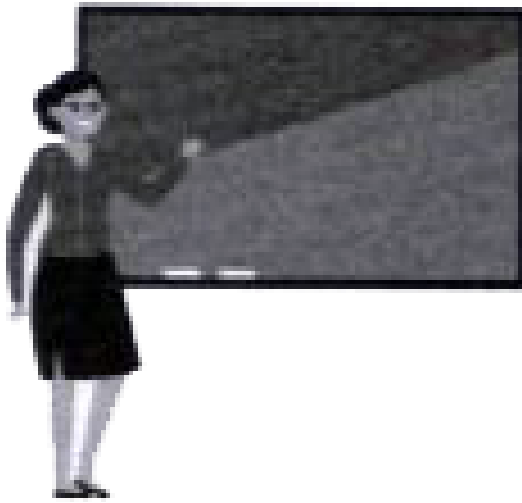
Answer: B

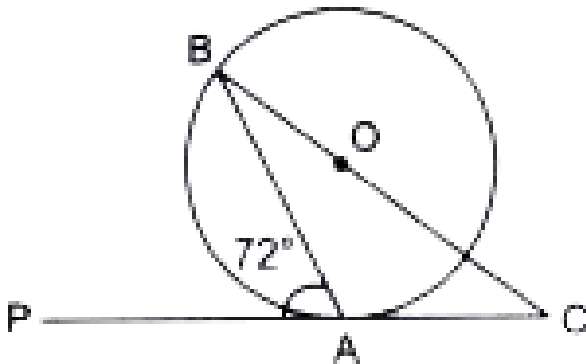**5.** For class 10 students, a teacher planned a game for the revision of chapter circles with some questions written on the board, which are to be answered by the students. For each correct answer, a student will get a reward. Some of the questions are given below.

In the adjoining figure, if PC is the A of the circle with $\angle PAB = 72°$ and $\angle AOB = 13°$ then $\angle ABC = $.

A. $18°$

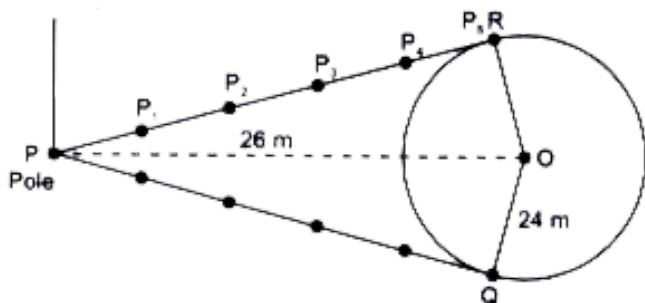B. $30°$

C. $60°$

D. can't be determined

Answer: B

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Passage Based Questions

1. Read the following passage and answer the questions that follows:

There is a circular park of radius 24 m and a pole at a distance of 26 m from the centre of the park, as shown in the figure. From the pole, there are two paths PR and PQ, which are tangential to the park.

Find the length of each path.

2. Read the following passage and answer the questions that follows:

There is a circular park of radius 24 m and a pole at a distance of 26 m from the centre of the park, as shown in the figure. From the pole, there are two paths PR and PQ, which are tangential to the park.
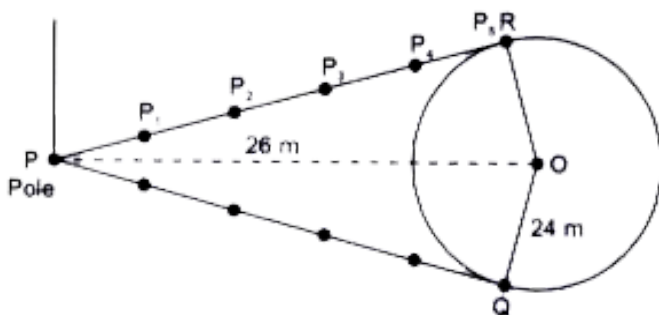

If five light poles has to be put along each

tangential path at equal distances, find the distance between each consecutive light pole.

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Self Assessment

1. 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 = 13 cm. Find the length of PQ.

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2. The radius of the in circle of a triangle is 8 cm and the segments into which one side is divided by the point of contact are 12cm and 16cm. Determine the other two sides of the triangle.

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

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4. Two concentric circles are of radii 10 cm and 6 cm. Find the length of the chord of the larger A circle which touches the smaller circle.
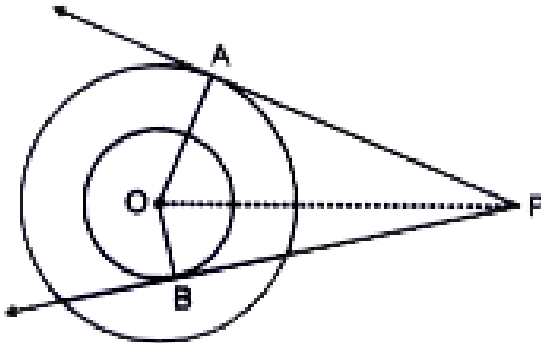
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5. From an external point P, tangents PA and PB are drawn to a circle with centre O. If CD is the tangent to the circle at a point E and PA = 14 cm, find the perimeter of $\triangle PCD$.
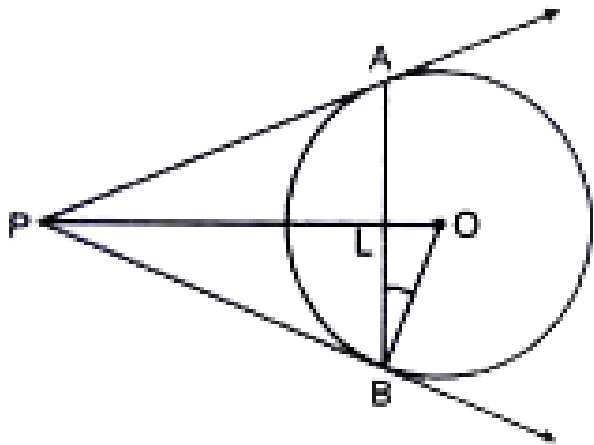
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6. In the given figure, there are two concentric circles with centre O of radii 5 cm and 3 cm. From an external point P, tangents PA and PB are drawn to these circle. If AP = 12 cm, find the length of BP.

7. In the given figure, AB is a chord of length 16 cm of a circle of radius 10 cm. The tangents at A and B intersect at a point P. Find the length of PA.