MATHS

BOOKS - NCERT MATHS (ENGLISH)

CIRCLES

Exercise 9 1 Multiple Choice Questions Mcqs

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
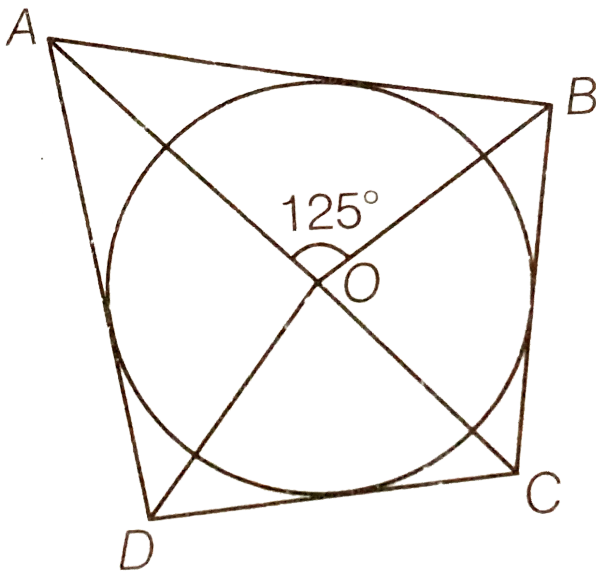
A. 3 cm

B. 6 cm

C. 9 cm

D. 1 cm

Answer: B

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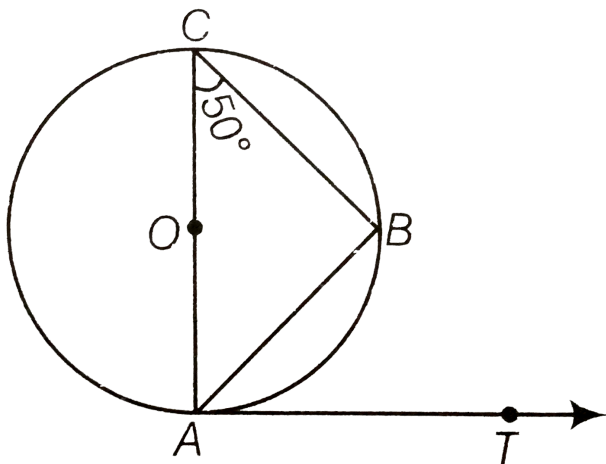**2.** In figure, if $\angle AOB = 125°$, $then \angle COD$ is equal to

A. 62.5°

B. 45°

C. 35°

D. 55°

Answer: D

3. In figure, AB 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. $45°$

B. $60°$

C. $50°$

D. $55°$

Answer: C

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4. From a point P which is at a distance of 13 cm from the center O of a circle of radius 5 cm, the pair of tangents PQ and PR to the

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

   A. 4 cm

   B. 5 cm

   C. 6 cm

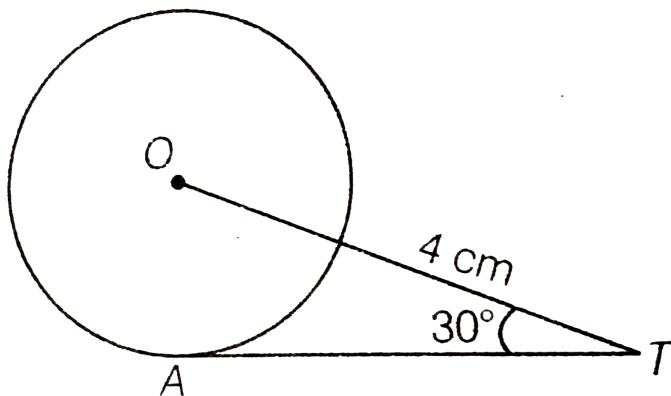   D. 8 cm

Answer: D

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6. In 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

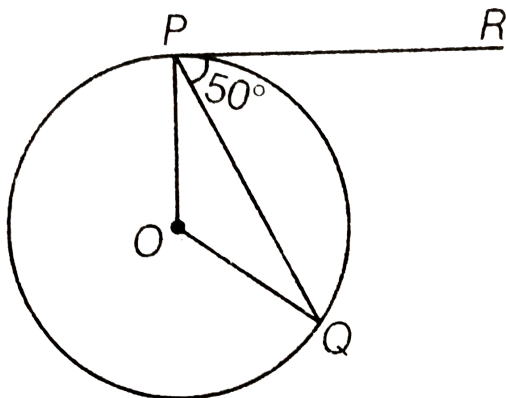B. 2 cm

C. $2\sqrt{3}cm$

D. $4\sqrt{3}cm$

Answer: C

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7. In figure, if O is the centre of a circle, PQ is

a chord and the tangent PR at P makes an

angle of $50°$ with PQ, then $\angle POQ$ is equal to

A. $100°$

B. $80°$

C. $90°$
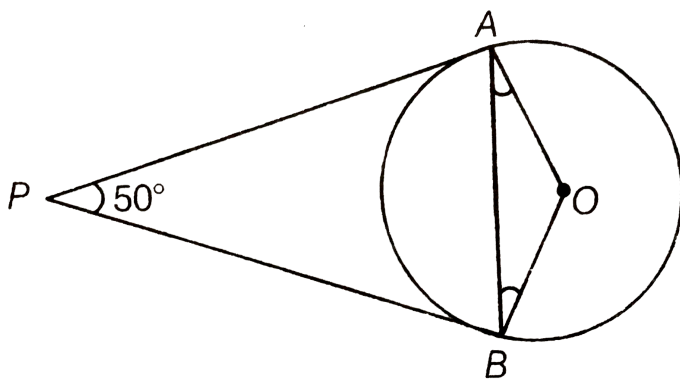
D. $75°$

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 find the length of each tangent.

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

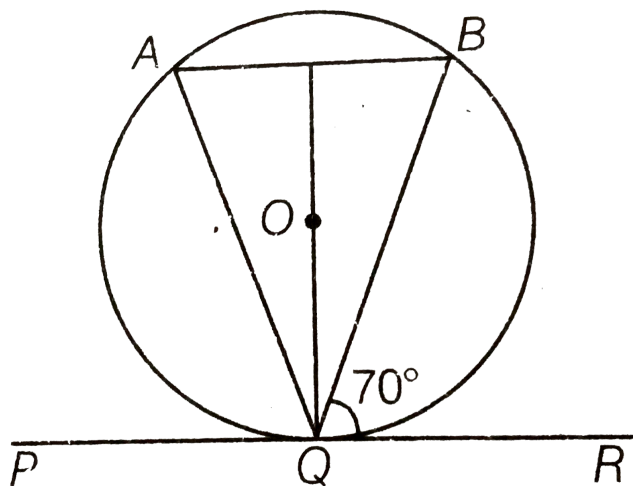B. 6 cm

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

Exercise 9 2 Very Short Answer Type Questions

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

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

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

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

5. Write true or false and state reason:

If angle between two tangents drawn from a point P to a circle of radius a and centre O is $90°$ then $OP = a\sqrt{2}$.

    A. true

    B. false

C. can not determine

D. none of these

Answer: A

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6. Write True or False and justify your answer:

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

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

9. If a number of circles pass through the end points P and Q of a line segment PQ, then Prove that 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.

Exercise 9 3 Short Answer Type Questions

1. Out of the two 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.

    A. 2 cm

    B. 3 cm

C. 4 cm

D. 5 cm

Answer: B

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

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3. Prove that the centre of a circle touching two intersecting lines lies on the angle bisector of the lines.
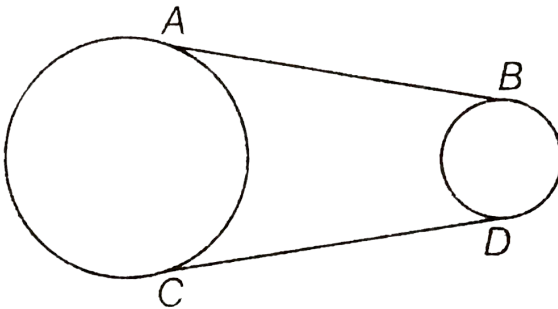
4. If from an extrenal point B of a circle with centre 0, two tangents BC and BD are drawn such that $\angle DBC = 120°$, prove that $BC + BD = BO$ i.e., BO=2BC.
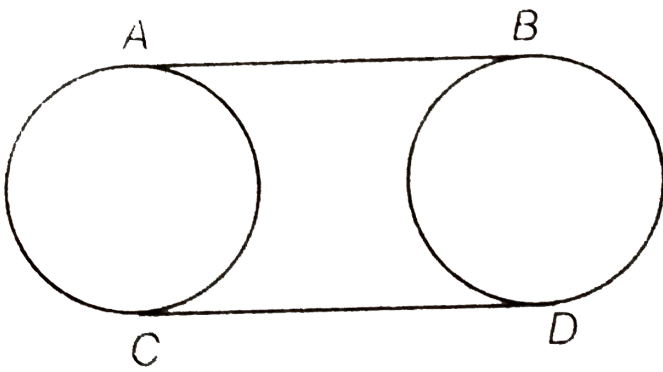
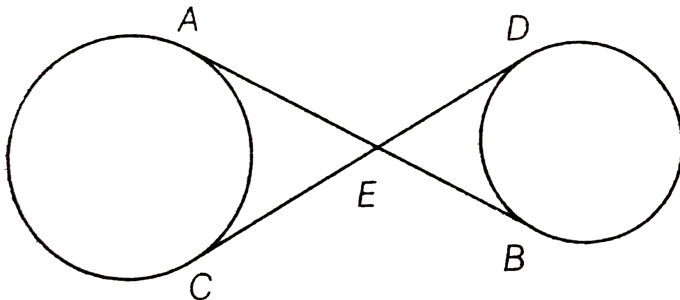**5.** In figure, AB and CD are common tangents to two circles of unequal radii. Prove that AB=CD

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 parallel to the tangent at the point A.

Exercise 9 4 Long Answer Type Questions

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

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

2. Let s denotes the semi-perimeter of a ΔABC in which BC=a, CA=b and AB=c. If a circle touches the sides BC, CA, AB, at D, E, F, respectively. Prove that BD=s-b.
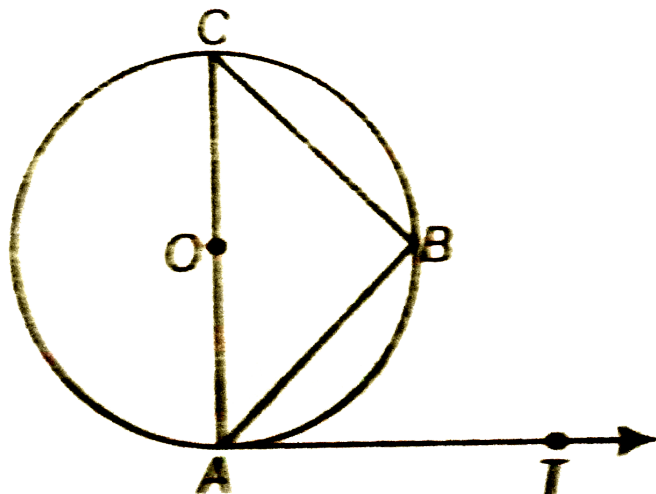
3. From an external point P, two tangents, PA and PB are drawn to a circle with centre 0. At one point E on the circle tangent is drawn which intersects PA and PB at C and D, respectively. If PA=10 cm, find the perimeter of the triangle PCD.

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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 centers O and O' of radii 6cm and 8 cm respectively intersect two points P and Q such that OP and O'P are tangents to

the two circle. The length of the common chord PQ is

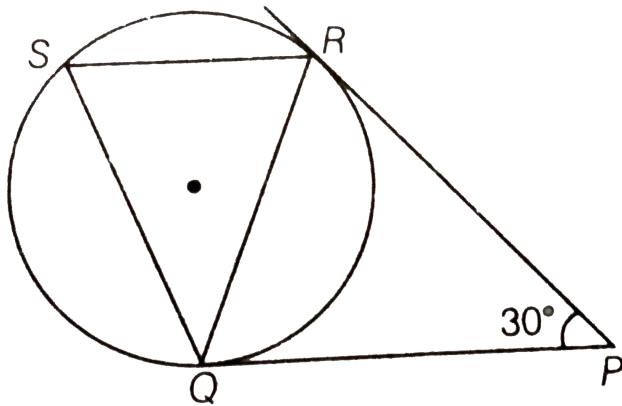**6.** In a right angle triangle $\triangle ABC$ is which $\angle B = 90°$ a circle is drawn with AB diameter intersecting the hypotenuse AC at P.Prove that the tangent to the circle at PQ bisects BC.

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 $\angle RQS$.

A. $30°$

B. $40°$

C. $50°$

D. $60^°$

Answer: A

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.
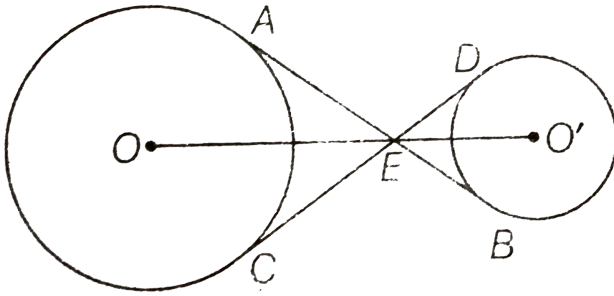
9. . Prove that the tangent drawn at the mid-point of an arc of a circle is parallel to the chord joining the end points of the arc.

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. Type V: O is the center of the 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 the length of AB.

12. The tangent at a point C of a circle and a diameter AB when extended intersect at P. If $\angle PCA = 110° \text{ find} \angle CBA.$

A. $20°$

B. $70°$

C. $60°$

D. $80°$

Answer: B

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 B and AQ at C, find the perimeter of the $\triangle ABC$

A. 12 cm

B. 20 cm

C. 24 cm

D. 30 cm

Answer: C