



MATHS

BOOKS - NCERT EXEMPLAR MATHS (HINGLISH)

CIRCLES

Circles

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

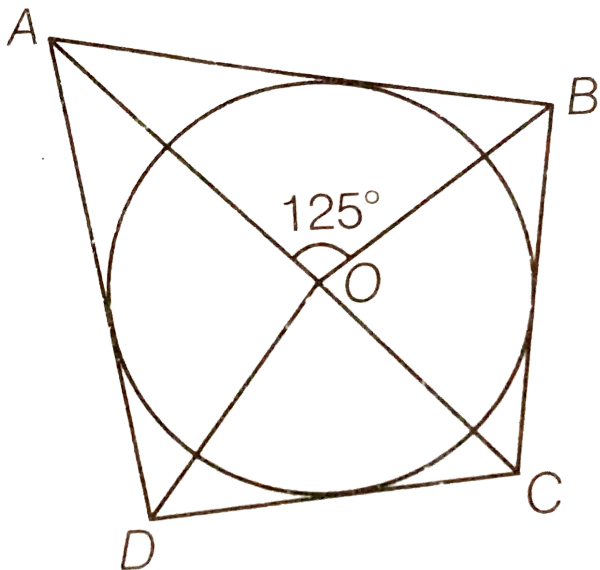
D. 1 cm

Answer: B



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



A. 62.5°

B. 45°

C. 35°

D. 55°

Answer: D



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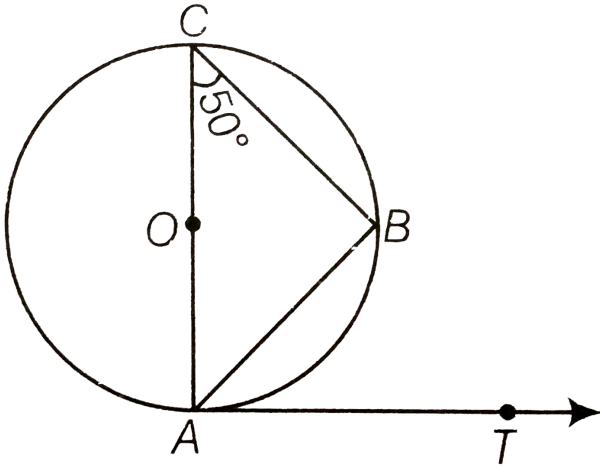
3. In figure, AB is a chord of the circle and AOC is its diameter such that $\angle ACB = 50^\circ$. If AT is the tangent to the circle at the point A , then

$\angle BAT$

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 POQR 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 parallel to XY and at a distance 8 cm from A .

A. 4 cm

B. 5 cm

C. 6 cm

D. 8 cm

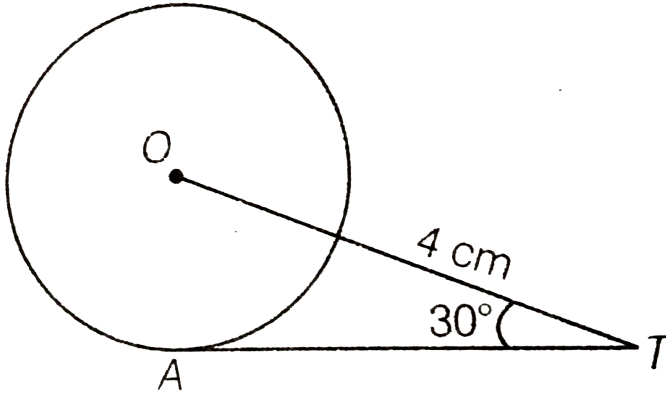
Answer: D



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

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



A. 4 cm

B. 2 cm

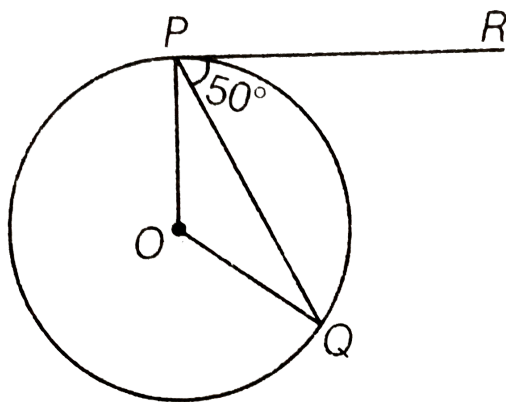
C. $2\sqrt{3}\text{ cm}$

D. $4\sqrt{3}\text{ cm}$

Answer: C



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°

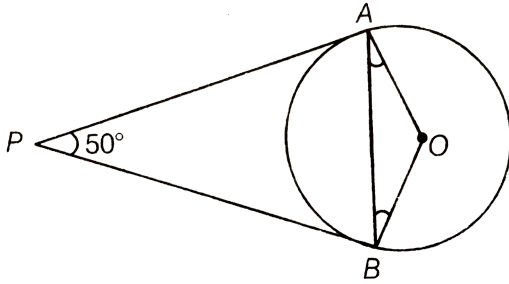
Answer: A



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8. In figure, if PA and PB are tangents to the circle with centre O such that $\angle APB = 50^\circ$,

then $\angle OAB$ is equal to



A. 25°

B. 30°

C. 40°

D. 50°

Answer: A



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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. $\frac{3}{2}\sqrt{3}cm$

B. 6 cm

C. 3 cm

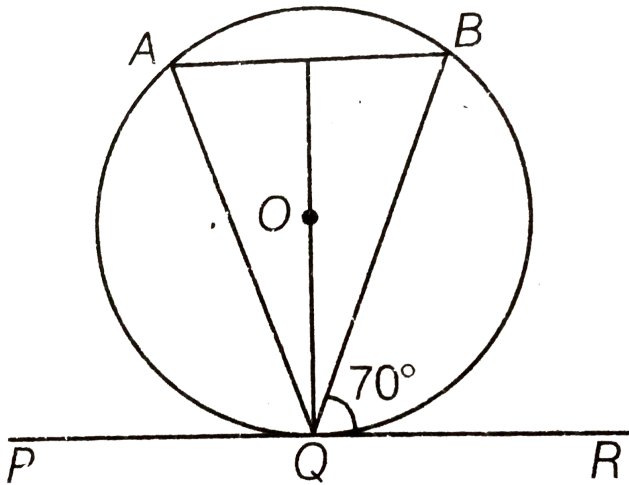
D. $3\sqrt{3}cm$

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 $\angle BQR = 70^\circ$ then $\angle AQB$ is equal to



A. 20°

B. 40°

C. 35°

D. 45°

Answer: B



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11. If a chord AB subtends an 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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12. The length of tangent from an external point on a circle is always greater than the radius of the circle.



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



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



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15. 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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16. 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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17. The tangent to the circumcircle of an isosceles $\triangle ABC$ at A, in which $AB = AC$, is parallel to BC.



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



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



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



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21. 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

A. 2 cm

B. 3 cm

C. 4 cm

D. 5 cm

Answer: B



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



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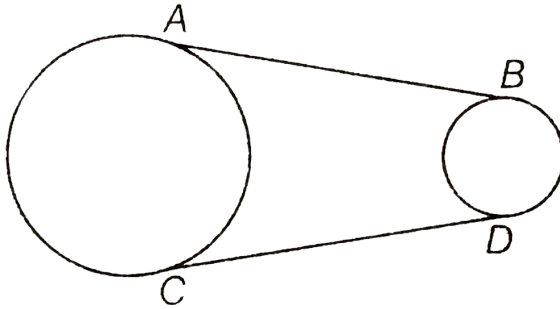
24. If from an external point B of a circle with centre O , two tangents BC and BD are drawn such that $\angle DBC = 120^\circ$, prove that $BC + BD = BO$ i.e., $BO = 2BC$.



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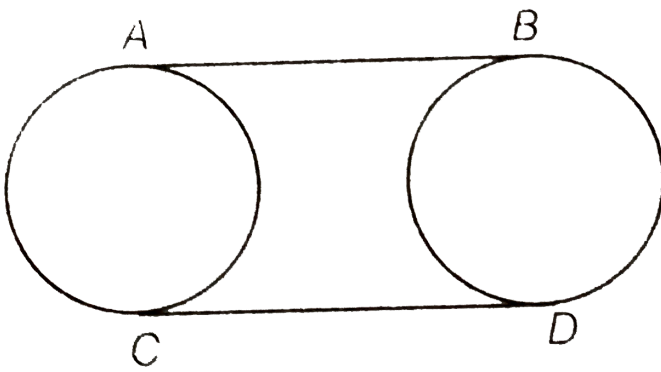
25. In figure, AB and CD are common tangents to two circles of unequal radii. Prove that

$$AB=CD$$



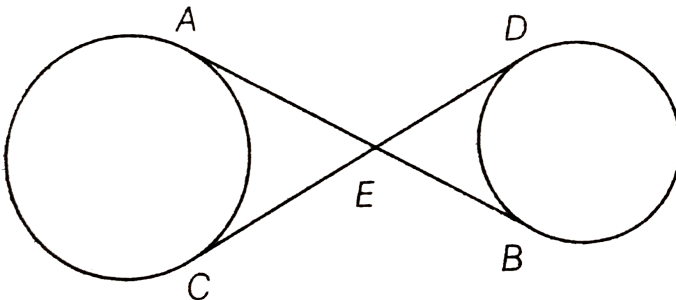
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26. In figure, AB and CD are common tangents to two circles of equal radii. Prove that $AB=CD$.



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





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



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





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



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31. If a hexagon $ABCDEF$ circumscribe a circle, prove that

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



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32. Let's denote 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 $BD=s-b$.



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33. 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

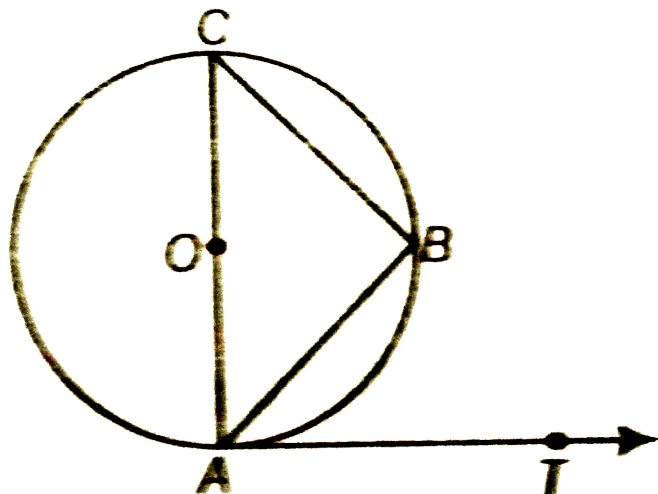
which intersects PA and PB at C and D, respectively. If $PA=10$ cm, find the perimeter of the triangle PCD.



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34. 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 $\angle BAT = \angle ACB$.



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35. Two circles with centers O and O' of radii 6cm and 8cm respectively intersect two points P and Q such that OP and $O'P$ are tangents to

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



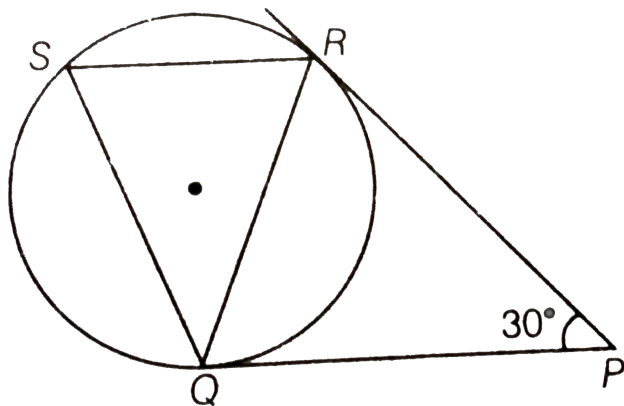
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36. In a right angle triangle $\triangle ABC$ in which $\angle B = 90^\circ$ a circle is drawn with AB diameter intersecting the hypotenuse AC at P. Prove that the tangent to the circle at P bisects BC.



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37. In figure, tangents PQ and PR are drawn to a circle such that $\angle RPQ = 30^\circ$. A chord RS is drawn parallel to the tangent PQ. Find the $\angle RQS$.



- A. 30°
- B. 40°
- C. 50°

D. 60°

Answer: A



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



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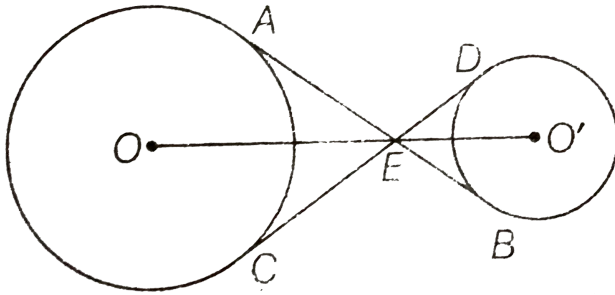
39. . Prove that the tangent drawn at the midpoint of an arc of a circle is parallel to the chord joining the end points of the arc.



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40. 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.

are collinear.



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41. Type V: O is the center of the circle of radius 5cm . T is a point such that $OT=13\text{cm}$ and OT intersects the circle at E . If AB is the tangent to the circle at E ; find the length of AB .



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42. The tangent at a point C of a circle and a diameter AB when extended intersect at P. If $\angle PCA = 110^\circ$ find $\angle CBA$.

A. 20°

B. 70°

C. 60°

D. 80°

Answer: B



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



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44. 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



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