



# MATHS

## NCERT - NCERT

## MATHEMATICS(HINGLISH)

### CIRCLES

#### Exercise 10 2

1. 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.



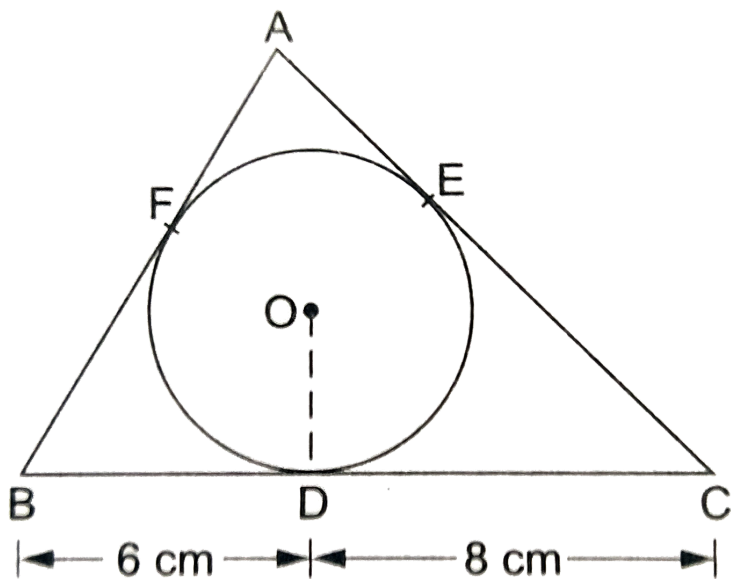
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2. Prove that the parallelogram circumscribing a circle is a rhombus.



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





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4. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that

$$AB + CD = AD + BC$$



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



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



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7. If  $TP$  and  $TQ$  are the two tangents to a circle with centre  $O$  so that  $\angle POQ = 110^\circ$ , then  $\angle PTQ$  is equal to



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



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9. 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.



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**10.** Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.



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**11.** 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



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



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



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## Exercise 10 1

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  $OQ = 12 \text{ cm}$ . Length PQ is :

(A) 12 cm (B) 13 cm (C) 8.5 cm (D)  $\sqrt{119}$ cm.



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2. 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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## Solved Examples

1. Prove that in two concentric circles, the chord of the larger circle, which touches the smaller circle, is bisected at the point of contact.



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2. Two tangents  $TP$  and  $TQ$  are drawn to a circle with centre  $O$  from an external point  $T$  .

Prove that  $\angle PTQ = 2\angle OPQ$  .



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3.  $PQ$  is a chord of length 8 cm, of a circle with centre  $O$  and of radius 5 cm. The tangents at  $P$  and  $Q$  intersect at a point  $T$ . The length of  $TP$  is



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