



# MATHS

## BOOKS - PSEB

### CIRCLES

#### Exercise

1. How many tangents can a circle have ?



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2. Fill in the blank : A tangent to a circle intersects it in\_\_\_\_\_point (s).



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3. Fill in the blanks : A line intersecting a circle in two points is called a...



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4. Fill in the blanks : A circle can have.....  
parallel tangents at the most.



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5. Fill in the blanks : The common point of a  
tangent to a circle and the circle is called.....



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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:**



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



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8. 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. 12cm

C. 15cm

D. 24.5cm

**Answer:**



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**9.** In the following choose the correct option and give justification. In Fig. 10.11 , 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

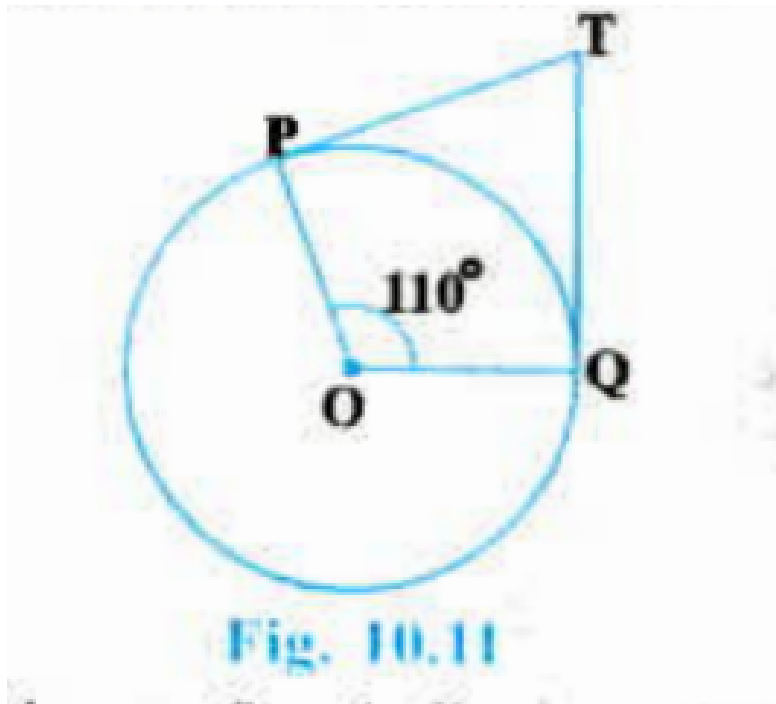


Fig. 10.11

A.  $60^\circ$

B.  $70^\circ$

C.  $80^\circ$

D.  $90^\circ$

**Answer:**



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**10.** 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

A.  $50^\circ$

B.  $60^\circ$

C.  $70^\circ$

D.  $80^\circ$



**Answer:**



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



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



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**13.** 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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**14.** 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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15. A quadrilateral  $ABCD$  is drawn to circumscribe a circle(seeFig).Prove that

$$AB + CD = AD + BC$$

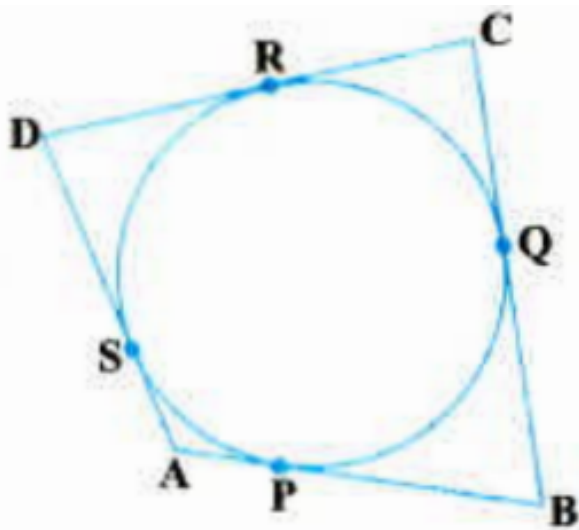


Fig. 10.12



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**16.** In Fig, 10.13,  $XY$  and  $X'Y'$  are two parallel tangents to a circle with centre  $O$  and another tangent  $AR$  with point of contact  $C$  intersecting  $XY$  at  $A$  and  $X'Y'$  at  $B$ . Prove that  $\angle AOB = 90^\circ$ .

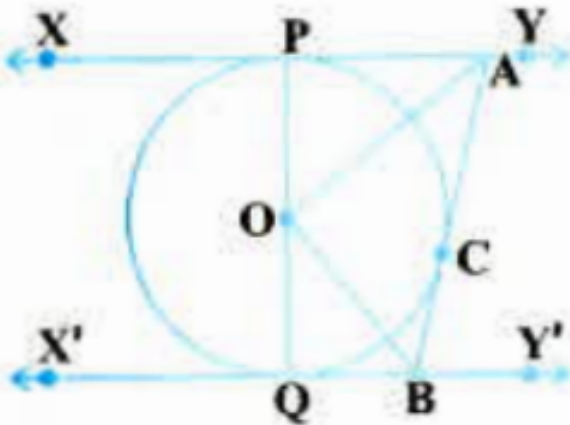


Fig. 10.13



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**17.** 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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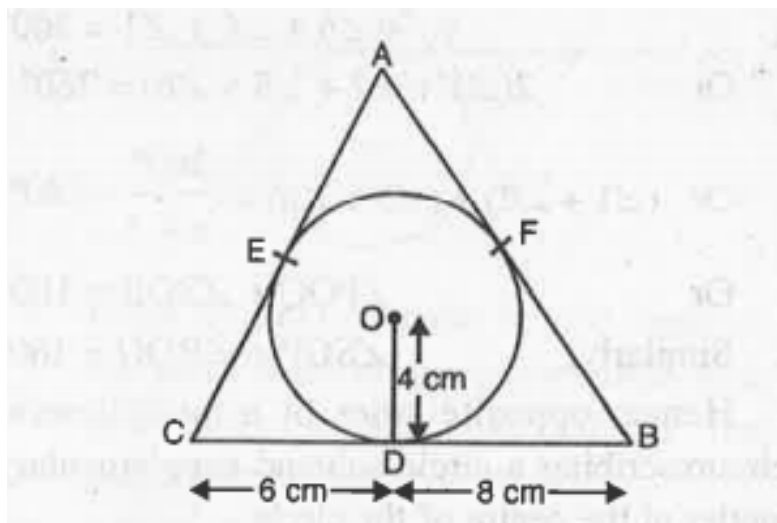
**18.** Prove that the parallelogram circumscribing a circle is a rhombus.



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**19.** 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 (see Fig). Find the sides AB and

AC.



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



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## Example

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.

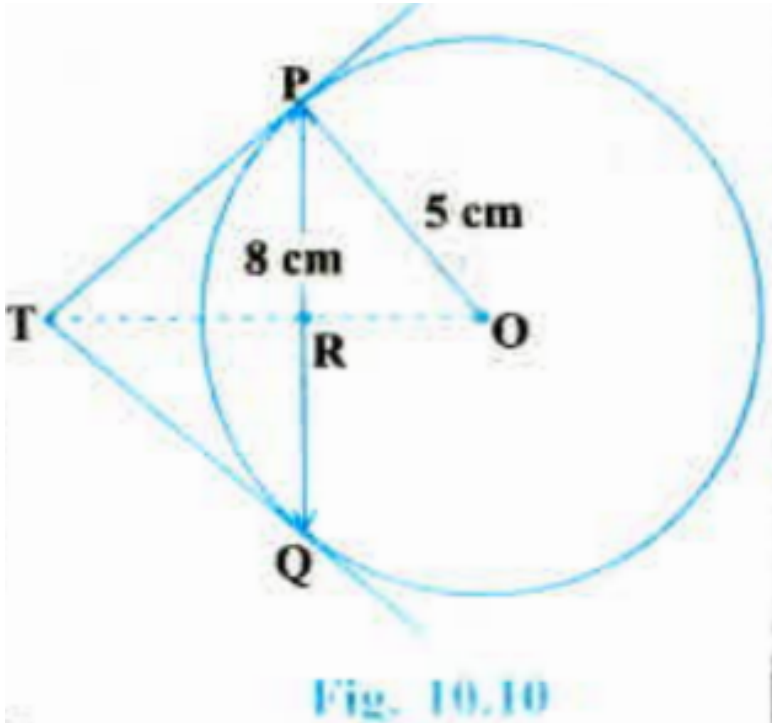
Prove that  $\angle PTQ = 2\angle OPQ$ .



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

at a point T (see Fig. 10.10). Find the length TP.



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