



# MATHS

**BOOKS - CALCUTTA BOOK HOUSE**

**MATHS (BENGALI ENGLISH)**

**CONSTRUCTION: CONSTRUCTION OF  
TANGENT TO A CIRCLE**

**Examples**

1. Draw a circle of radius 3.2 cm . Then construct a tangent to that circle on any point of that circle.



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2. Draw a line segment AB, the length of which is 3 cm. Draw a circle with centre at A and with radius equal to AB. Tehn construct a tangent to that circle at the point B.



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**3.** Construct a circle of radius 2.5 cm . Take a point at a distance of 6.5 cm from the centre of the circle . Then draw a tangent to that circle from that external point and find the length of the tangent by a scale.



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**4.** Construct a circle of radius 2.8 cm . Take a point at a distance of 7.5 cm from the centre

of the circle. Draw two tangents to that circle from that external point.



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5. PQ is a chord of the circle with centre at O.

Draw two tangents at P and Q respectively .



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6. Draw a line segment XY of length 8 cm and taking XY as the diameter, draw a circle . Then

construct two tangents to that circle at the points X and Y. Also find the relation between the two tangents.



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7. Draw an equilateral triangle of sides 5 cm and then draw circumcircle of that triangle . Also draw three tangents at A, B and C respectively.



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8. Construct an equilateral triangle ABC of sides 5 cm each and then construct its circumcircle. Draw a tangent at A of the circle and then a point P on it such that  $AP=5$  cm. Draw another tangent to the circle from the point P and observe minutely at point of the circle this tangent intersects.



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9. O is any point on the line segment AB. Draw a perpendicular PQ at O on AB. Draw two circles

with centres at A and B and radius equal to AO and BO. Also write what PQ is called with respect to these circles.



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**10.** P is any point on the circle with centre at O. Draw a tangent to that circle at P and cut off the part PQ equal to the radius of the circle from that tangent. From the point Q, draw another tangent QR to that circle and find the value of  $\angle(PQR)$ .



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**11.** Construct a circle of radius 2.5 cm. Take any point on the circle and draw a tangent to the circle at that point.



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**12.** Draw a circle of radius 2 cm . Draw any triangle inside the circle so that the drawn circle be the circumcircle of the triangle. Now,



draw three tangents to the circle with centre at O at the three vertices of that triangle.



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**13.** Draw a circle of radius 3 cm . Take any point at a distance of 5 cm from the centre of that circle and then construct a tangent to the circle from that point .



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**14.** Construct the circumcircle by drawing an equilateral triangle of sides 5 cm each. Also draw two tangents to that circle at A and C which intersect each other at P. Write what type of the quadrilateral ABCP is .



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**15.** Construct two circles of radii 2 cm and 4 cm, the distance of whose centres is 8 cm.

Construct a direct common tangent to these two circle.



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**16.** Construct two circles of radii 2 cm each, the distance of whose centres is 10 cm . Then construct a direct common tangent to two circles.



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**17.** Construct two circles of radii 2.5 cm each, the distance of whose centres is 8 cm. Then construct a transverse common tangent to these two circles.



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**18.** Construct two circles of radii 2 cm and 3 cm, the distance between whose centres is 8.7 cm. Then draw a transverse common tangent to these two circles.





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## Exercise 8 1

1. Construct a circle of radius 2.4 cm . Also draw a tangent at any point on the circumference of that circle.



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2. Construct a circle of radius 4 cm. Take a point at a distance of 6 cm from the centre of

that circle . Then construct a tangent from that point to the circle .



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**3.** Construct a circle of radius 5 cm . Take a point at a distance of 6.2 cm from the centre of that circle. Also draw a tangent to that circle from that point.



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4. Construct a circle of radius 6 cm. Take a point at a distance of 8 cm from the centre of the circle. Also draw two tangents to the circle from that external point.



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5. The circle with centre  $O$  is inscribed in the  $\triangle ABC$  and its radius is 4 cm. The circle intersect the side  $BC$  at a point  $D$  in such a way

that  $BD=8$  cm and  $DC = 6$ cm . Determine the lengths of  $AB$  and  $AC$ .



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6. The radii of two concentric circles are 5 cm and 3 cm respectively . Find the length of the chord of the greater circle which is also a tangent to the smaller circle.



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7.  $XY$  and  $X'Y'$  are two parallel tangents to the circle with centre at  $O$ . Another tangent  $AB$  touches the circle at  $C$  and  $XY$  at  $A$  and  $X'Y'$  at  $B$ . Prove that  $\angle AOB = 90^\circ$ .



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## Exercise 8 2

1. Construct two circles of radii 4.2 cm and 2.8 cm, the distance between whose centres is 10

cm . Draw a direct common tangent to these two circles .



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2. Construct a circle of radius 2.5 cm .Take a point at a distance of 6.5 cm away from the centre of the circle. Draw a tangent to that circle from the external point.



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3. The distance between the centres of two circles of radii 4 cm and 3 cm is 8 cm .  
Construct the circles at first and then draw a direct common tangent to these circles .



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4. Draw two circles of radii 2.4 cm and 14 cm, the distance between whose centres is 8 cm .  
Construct a direct common tangent to these circles.





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5. Construct two circles of radii 2.5 cm and 4.2 cm , the distance between whose centres is 10 cm . Draw a transverse common tangent to these circles.



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