MATHS

BOOKS - KALYANI MATHS (ASSAMESE ENGLISH)

CIRCLES

Example

1. CP and CQ are tangents to a circle with center O. ARB is another tangent touching the circle at R. If $CP = 11cm$ and $BC = 7cm$ find the BR.

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2. PA and PB are tangents to the circle with center O such that $\angle APB = 50^\circ$, find $\angle OAB$.

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3. In a circle of radius 6cm a chord AB of length 6cm is drawn. PA and PB are tangents to the circle, then find $\angle APB$.

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4. AB is a diameter of a circle with centre O and AT is a tangent. If $\angle AOT = 58^\circ$, find $\angle ATB$.

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5. Two tangents PA and PB are drawn to circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$

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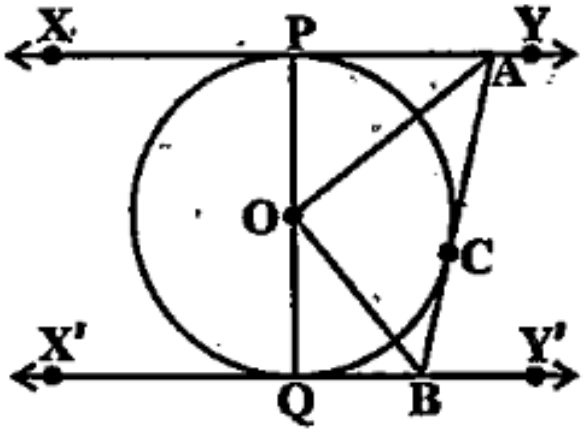
6. In Fig.10.13, XYandX'Y' are two parallel tangent to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B.Prove that

$\angle AOB = 90^\circ$.



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7. A circle inscribed in a triangle ABC having sides $AB = 8cm$, $AC = 10cm$ and $BC = 12cm$. Find AD, BE and CF, where D, E, F are on AB, BC and CA.

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8. A quadrilateral ABCD is drawn to tu circumscribe a circle. Prove that $AB + CD = AD + BC$.

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9. A circle is touching the side BC of $\triangle ABC$ at P and touching AB and AC produced at Q and R are respectively. Prove that $AQ = \frac{1}{2}(AB + BC + CA) = \frac{1}{2}(Perimeter of \triangle ABC)$.

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10. Construct a tangent to a circle of radius 4 cm from a point on the concentric circle of radius 6cm and measure its length. Also verify the measurement by actual calculation.

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Exercise

1. XP and XQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. Show that $XA + AR = XB + BR.$

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2. PA and PB are tangents to the circle with centre O such that $\angle APB = 60^\circ$, find $\angle OAB$.

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3. In a circle of radius $4cm$ a chord AB of length $4cm$ is drawn. PA and PB are tangents to the circle then find $\angle APB$.

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4. The length of a tangent drawn to a circle from a point which is a distance of 13 cm from tha centre of the circle is 12 cm.Find the radius of the circle.

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5. PA and PB are tangents to the circle with center O such that $\angle APB = 50^\circ$, find $\angle OAB$.

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6. From an external point T, tangents PT is drawn to the circle whose centre is O. If $OT = 29cm$ and $PT = 21cm$. Determine the diameter of the circle.

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7. AB is a diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 66^\circ$, find $\angle ATB$.

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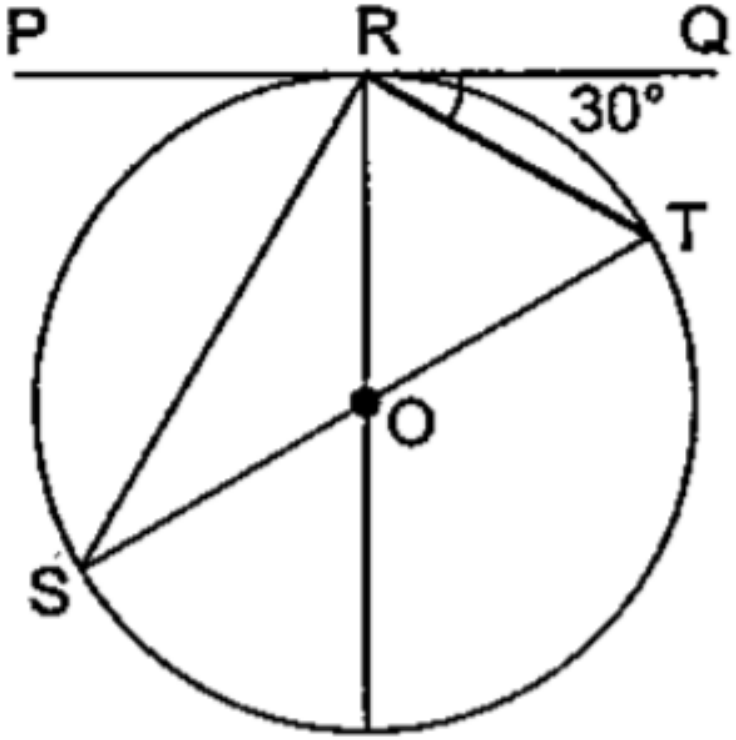
8. In figure, PQ is a tangent at a point R of the circle with centre O. If $\angle TRQ = 30^\circ$, find $\angle PRS$.



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9. Two tangents PA and PB are drawn to circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$

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10. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.

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11. ABC is a right angled triangle right angled at A. A circle is inscribed in it. The length of the two sides containing the right angle are $6cm$ and $8cm$. Find the radius of the incircle.

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12. Prove that tangents from extremities of any chord makes equal angle with the chord.

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13. PA and PB are two tangents drawn from an external point P at the points A and B on a circle C(0,r).Prove that $OP \perp AB$

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14. ABCD is a quadrilateral such that $\angle D = 90^\circ$.The circle C(0,r) touches the sides AB,BC,CD and DA at P,Q,R

and S respectively.If BC=38cm.CD=25cm and BP=27cm.then find r.

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15. Prove that parallelogram circumscribing a circle is a rhombus.

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16. From a point P, two tangents PA and PB are drawn to a circle C(0,r). If $OP = 2r$, show that ΔAPB is equilateral.

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17. Prove that the length of tangents drawn from an external point to a circle are equal.

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

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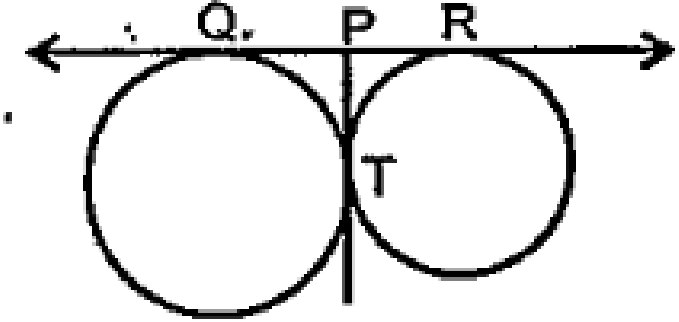
19. In figure two equal circles touch each other at T if QP =4.5 cm then QR=



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20. Draw a circle with centre O and radius $4cm$. Take a point P outside the circle at a distance of $7cm$ from its centre. Draw two tangents to the circle from the point P.

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21. Draw a circle of radius $1cm$. From a point P $2.2cm$ apart from the centre of a circle, draw two tangents to the circle.

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22. Construct a tangent to a circle of radius $1.8cm$ from a point on the concentric circle of radius $2.8cm$ and measure its length. Also verify the measurement by actual calculation.

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23. Draw a pair of tangents to a circle of radius $5cm$ which are inclined to each other at 60°.

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24. Draw a pair of tangent to a circle of radius $2.3cm$ which are inclined to each other at an angle of 60°.

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25. What is the relation between tangent and secant?

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26. From a point P,the length of the tangent to a circle is $15cm$ and distance of P from the centre of the circle is $17cm$. Find the radius of the circle.

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27. If CP and CQ are tangent from an external point C to a circle centered at O. AB is another tangent which touches the circle at R. Of $CP = 11cm$ and $BR = 4cm$, find the length of BC.

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28. If two tangents are drawn from an external point to a circle, what is the relation between the length of the tangents.

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29. How many tangents can you draw on a circle.

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30. If two tangents are drawn to a circle from an external points, they substand _____ angles at the _____.

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31. The length of tangent from an external point is always _____ then the length of the line joining the point and the _____.

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32. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.

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33. Prove that parallelogram circumscribing a circle is a rhombus.

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34. If OA and OB are radii and PA and PB are tangents to a circle, a special name assigned to the quadrilateral OPAB is _____.

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35. If the angle between two tangents drawn from a point outside of a circle is 120°. The angle at the centre is

A. 60°

B. 50°

C. 40°

D. 70°

Answer:

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36. To draw a pair of tangents to a circle which are inclined to each other at an angle of 60° it is required to draw tangents at end point of these radii of the circle. The angle between them is

A. 60°

B. 120°

C. 80°

D. 135°

Answer:

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37. The length of the tangent from a point at P at a circle of radius $3cm$ is $4cm$. The distance of P from the centre of the circle is

A. $\sqrt{5}cm$

B. $5cm$

C. $25cm$

D. $4cm$

Answer:

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38. APB is a tangent to a circle with centre O at a point P if $\angle QPB = 50^\circ$, the measure of $\angle POQ$ is

A. 100°

B. 110°

C. 90°

D. 120°

Answer:

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39. From the external pair T, TP and TQ are two tangents to a circle centered at O are drawn so that $\angle POQ = 110^\circ$. Then $\angle PTQ$ is

A. 60°

B. 80°

C. 70°

D. 90°

Answer:

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