

CHAPTER 10

Circle

OBJECTIVE QUESTIONS

QUESTION 1.

[Board 2022 Term 1 SQP Basic]

Two chords AB and CD of a circle intersect at E such that $AE = 2.4$ cm, $BE = 3.2$ cm and $CE = 1.6$ cm. The length of DE is

- (a) 1.6 cm (b) 3.2 cm
(c) 4.8 cm (d) 6.4 cm

Sol :

[View Answer](#)

QUESTION 2.

[Board 2022 Term 1 SQP STD]

If a regular hexagon is inscribed in a circle of radius r , then its perimeter is

- (a) $3r$ (b) $6r$
(c) $9r$ (d) $12r$

Sol :

[View Answer](#)

QUESTION 3.

[Board 2022 Term 1 STD]

Two circles of radii 20 cm and 37 cm intersect in A and B . If O_1 and O_2 are their centres and $AB = 24$ cm, then the distance O_1O_2 is equal to

- (a) 44 cm (b) 51 cm
(c) 40.5 cm (d) 45 cm

Sol :

[View Answer](#)

QUESTION 4.

[Board 2022 Term 1 Basic]

Two concentric circles are of radii 10 cm and 8 cm, then the length of the chord of the larger circle which touches the smaller circle is

- (a) 6 cm (b) 12 cm
(c) 18 cm (d) 9 cm

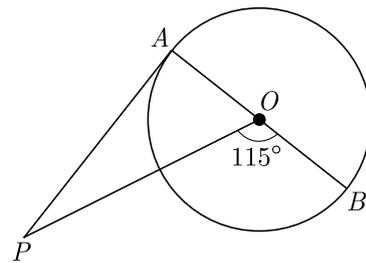
Sol :

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QUESTION 5.

[Board 2022 Term 1 STD]

In the given figure, PA is a tangent from an external point P to a circle with centre O . If $\angle POB = 115^\circ$, then perimeter of $\angle APO$ is



- (a) 25° (b) 20°
(c) 30° (d) 65°

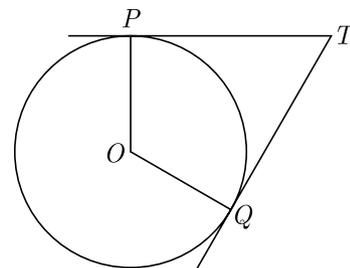
Sol :

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QUESTION 6.

[Board 2022 Term 1 Basic]

In the adjoining figure, TP and TQ are the two tangents to a circle with centre O . If $\angle POQ = 110^\circ$, then $\angle PTQ$ is



- (a) 60° (b) 70°
(c) 80° (d) 90°

Sol :

[View Answer](#)

QUESTION 7.

[Board 2020 Delhi Basic]

From an external point Q , the length of tangent to a circle is 12 cm and the distance of Q from the centre of circle is 13 cm. The radius of circle (in cm) is

- (a) 10 (b) 5
(c) 12 (d) 7

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QUESTION 8.

[Board 2020 Delhi Basic]

QP is a tangent to a circle with centre O at a point P on the circle. If $\triangle OPQ$ is isosceles, then $\angle OQR$ equals.

- (a) 30°
- (b) 45°
- (c) 60°
- (d) 90°

Sol :

View Answer

QUESTION 9.

[Board 2020 OD Basic]

A chord of a circle of radius 10 cm, subtends a right angle at its centre. The length of the chord (in cm) is

- (a) $\frac{5}{\sqrt{2}}$
- (b) $5\sqrt{2}$
- (c) $10\sqrt{2}$
- (d) $10\sqrt{3}$

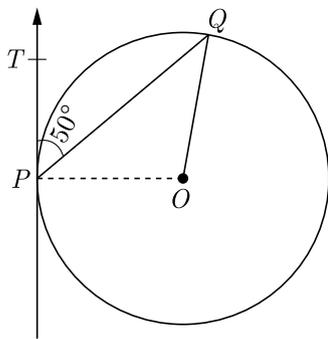
Sol :

View Answer

QUESTION 10.

[Board 2020 OD Basic]

In figure, O is the centre of circle. PQ is a chord and PT is tangent at P which makes an angle of 50° with PQ . $\angle POQ$ is



- (a) 130°
- (b) 90°
- (c) 100°
- (d) 75°

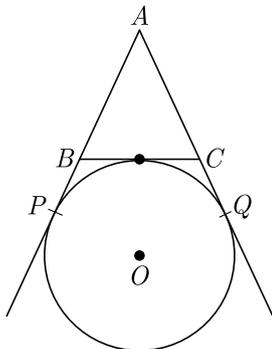
Sol :

View Answer

QUESTION 11.

[Board 2020 Delhi Basic]

In figure, AP , AQ and BC are tangents of the circle with centre O . If $AB = 5$ cm, $AC = 6$ cm and $BC = 4$ cm, then the length of AP (in cm) is



- (a) 15
- (b) 10
- (c) 9
- (d) 7.5

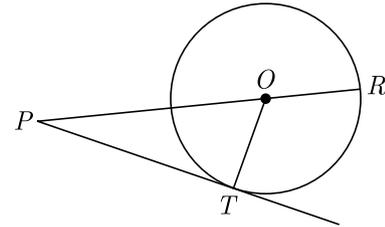
Sol :

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QUESTION 12.

[Board 2020 Delhi Basic]

In figure, on a circle of radius 7 cm, tangent PT is drawn from a point P such that $PT = 24$ cm. If O is the centre of the circle, then the length of PR is



- (a) 30 cm
- (b) 28 cm
- (c) 32 cm
- (d) 25 cm

Sol :

View Answer

QUESTION 13.

AB and CD are two common tangents to circles which touch each other at a point C . If D lies on AB such that $CD = 4$ cm then AB is

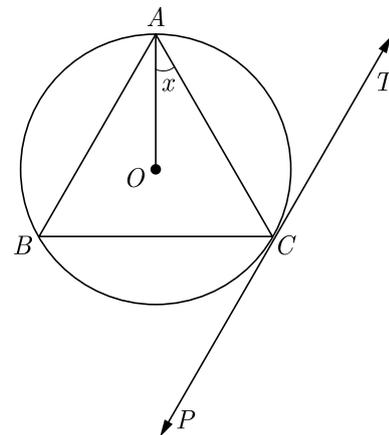
- (a) 12 cm
- (b) 8 cm
- (c) 4 cm
- (d) 6 cm

Sol :

View Answer

QUESTION 14.

In the adjoining figure, PT is a tangent at point C of the circle. O is the circumference of $\triangle ABC$. If $\angle ACP = 118^\circ$, then the measure of $\angle x$ is



- (a) 28°
- (b) 32°
- (c) 42°
- (d) 38°

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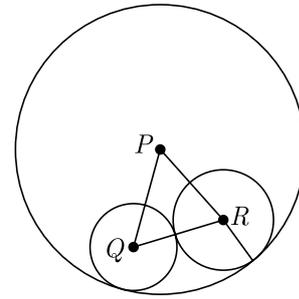
QUESTION 15.

Two concentric circles of radii a and b where $a > b$, The length of a chord of the larger circle which touches the other circle is

- (a) $\sqrt{a^2 + b^2}$
- (b) $2\sqrt{a^2 + b^2}$
- (c) $\sqrt{a^2 - b^2}$
- (d) $2\sqrt{a^2 - b^2}$

Sol :

View Answer



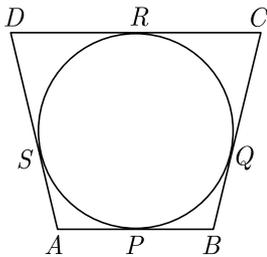
- (a) 30 cm
- (b) 20 cm
- (c) 10 cm
- (d) None of these

Sol :

View Answer

QUESTION 16.

In the given figure, a circle touches all the four sides of quadrilateral $ABCD$ with $AB = 6$ cm, $BC = 7$ cm and $CD = 4$ cm, then length of AD is



- (a) 3 cm
- (b) 4 cm
- (c) 5 cm
- (d) 6 cm

Sol :

View Answer

QUESTION 19.

From an external point P , tangents PA and PB are drawn to a circle with centre O . If CD is the tangent to the circle at a point E and $PA = 14$ cm. The perimeter of $\triangle PCD$ is

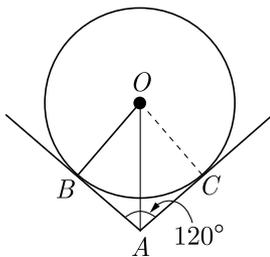
- (a) 14 cm
- (b) 21 cm
- (c) 28 cm
- (d) 35 cm

Sol :

View Answer

QUESTION 17.

In the given figure, two tangents AB and AC are drawn to a circle with centre O such that $\angle BAC = 120^\circ$, then OA is equal to that



- (a) $2AB$
- (b) $3AB$
- (c) $4AB$
- (d) $5AB$

Sol :

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QUESTION 20.

If radii of two concentric circles are 4 cm and 5 cm, then the length of each of one circle which is tangent to the other circle, is

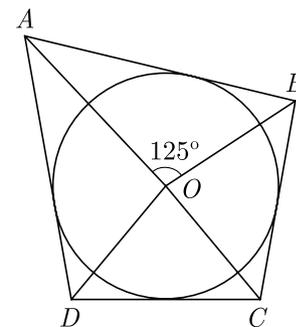
- (a) 3 cm
- (b) 6 cm
- (c) 9 cm
- (d) 1 cm

Sol :

View Answer

QUESTION 21.

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



- (a) 62.5°
- (b) 45°
- (c) 35°
- (d) 55°

Sol :

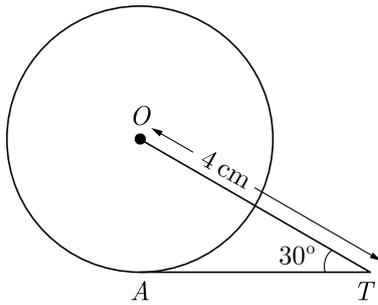
View Answer

QUESTION 18.

In the given figure, three circles with centres P , Q and R are drawn, such that the circles with centres Q and R touch each other externally and they touch the circle with centre P , internally. If $PQ = 10$ cm, $PR = 8$ cm and $QR = 12$ cm, then the diameter of the largest circle is:

QUESTION 22.

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) $2\sqrt{3}$ cm
- (d) $4\sqrt{3}$ cm

Sol : [View Answer](#)

QUESTION 23.

Assertion : If in a circle, the radius of the circle is 3 cm and distance of a point from the centre of a circle is 5 cm, then length of the tangent will be 4 cm.

Reason : $(\text{hypotenuse})^2 = (\text{base})^2 + (\text{height})^2$

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

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QUESTION 24.

Assertion : The two tangents are drawn to a circle from an external point, then they subtend equal angles at the centre.

Reason : A parallelogram circumscribing a circle is a rhombus.

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

Sol : [View Answer](#)

QUESTION 25.

Assertion : PA and PB are two tangents to a circle with centre O . Such that $\angle AOB = 110^\circ$, then $\angle APB = 90^\circ$.

Reason : The length of two tangents drawn from an external point are equal.

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

Sol : [View Answer](#)

ONE MARK QUESTIONS

QUESTION 26.

[Board 2020 Delhi Basic]

From an external point Q , the length of tangent to a circle is 12 cm and the distance of Q from the centre of circle is 13 cm. What is the radius of circle?

Sol : [View Answer](#)

QUESTION 27.

[Board 2020 Delhi Basic]

QP is a tangent to a circle with centre O at a point P on the circle. If ΔOPQ is isosceles, then find $\angle OQR$?

Sol : [View Answer](#)

QUESTION 28.

[Board 2020 OD Basic]

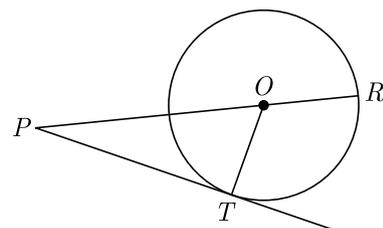
A chord of a circle of radius 10 cm, subtends a right angle at its centre. What is the length of the chord?

Sol : [View Answer](#)

QUESTION 29.

[Board 2020 Delhi Basic]

In figure, on a circle of radius 7 cm, tangent PT is drawn from a point P such that $PT = 24$ cm. If O is the centre of the circle, then what is the length of PR ?

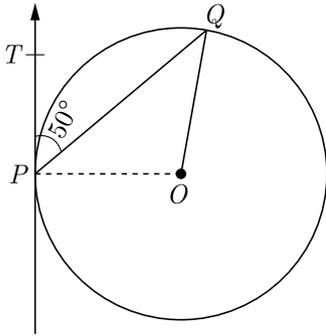


Sol : [View Answer](#)

QUESTION 30.

[Board 2020 OD Basic]

In figure, O is the centre of circle. PQ is a chord and PT is tangent at P which makes an angle of 50° with PQ . Find the angle $\angle POQ$.

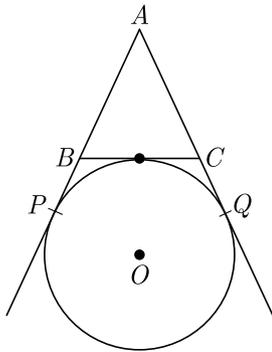


Sol :

[View Answer](#)**QUESTION 31.**

[Board 2020 Delhi Basic]

In figure, AP , AQ and BC are tangents of the circle with centre O . If $AB = 5$ cm, $AC = 6$ cm and $BC = 4$ cm, then what is the length of AP ?



Sol :

[View Answer](#)**QUESTION 32.**

[Board Term-2 OD 2011]

Two chords AB and CD of a circle intersect at E such that $AE = 2.4$ cm, $BE = 3.2$ cm and $CE = 1.6$ cm. What is the length of DE ?

Sol :

[View Answer](#)**QUESTION 33.**

[Board Term-2 Foreign 2016]

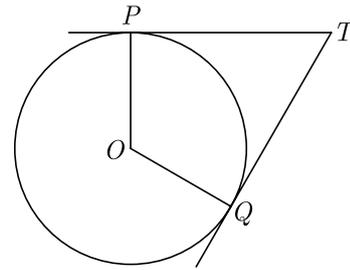
Two circles of radii 20 cm and 37 cm intersect in A and B . If O_1 and O_2 are their centres and $AB = 24$ cm, then find the distance O_1O_2 .

Sol :

[View Answer](#)**QUESTION 34.**

[Board Term-2 Compt. 2016]

In the adjoining figure, TP and TQ are the two tangents to a circle with centre O . If $\angle POQ = 110^\circ$, then find the angle $\angle PTQ$.

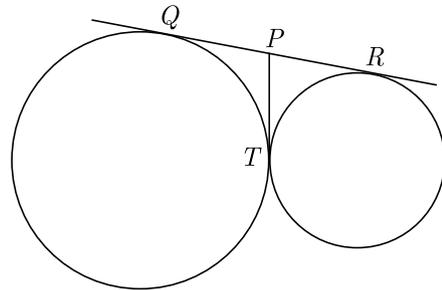


Sol :

[View Answer](#)**QUESTION 35.**

[Board Term-2 Delhi 2012, 2014]

In the figure, QR is a common tangent to given circle which meet at T . Tangent at T meets QR at P . If $QP = 3.8$ cm, then find length of QR .

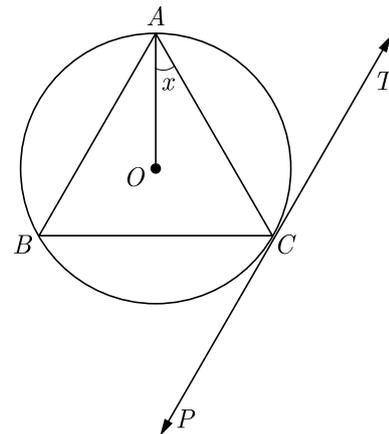


Sol :

[View Answer](#)**QUESTION 36.**

[Board Term-2 Foreign 2012]

In the adjoining figure, PT is a tangent at point C of the circle. O is the circumference of ΔABC . If $\angle ACP = 118^\circ$, then find the angle $\angle x$?



Sol :

[View Answer](#)

QUESTION 37.

[Board Term-2, 2014]

If a circle can be inscribed in a parallelogram how will the parallelogram change?

Sol :

[View Answer](#)

QUESTION 38.

[Board Term-2 Delhi 2011]

Two concentric circles are of radii 10 cm and 8 cm, then find the length of the chord of the larger circle which touches the smaller circle.

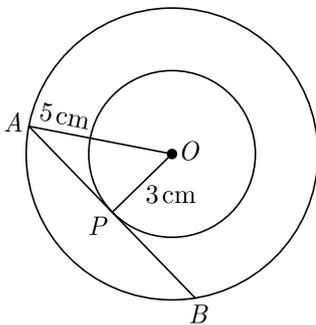
Sol :

[View Answer](#)

QUESTION 39.

[Board 2020 OD Standard]

In given figure, the length $PB = \dots\dots\dots$ cm.



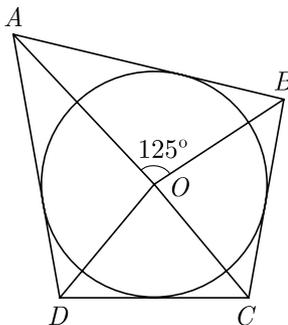
Sol :

[View Answer](#)

QUESTION 40.

[Board Term-2 Delhi Compt. 2014]

In given figure, if $\angle AOB = 125^\circ$, then find the angle $\angle COD$?



Sol :

[View Answer](#)

QUESTION 41.

[Board Term-2 2012]

If the angle between two radii of a circle is 130° , then what is the angle between the tangents at the end points of radii at their point of intersection ?

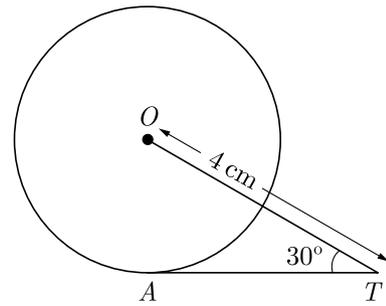
Sol :

[View Answer](#)

QUESTION 42.

[Board Term-2 Delhi 2013]

In figure, AT is a tangent to the circle with centre O such that $OT = 4$ cm and $\angle OTA = 30^\circ$. What is the length of AT ?



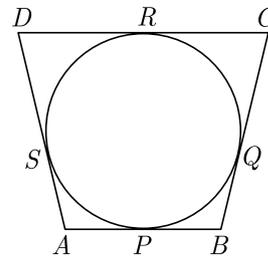
Sol :

[View Answer](#)

QUESTION 43.

[Board Term-2 OD 2017]

In the given figure, a circle touches all the four sides of quadrilateral $ABCD$ with $AB = 6$ cm, $BC = 7$ cm and $CD = 4$ cm, then what is the length of AD ?



Sol :

[View Answer](#)

QUESTION 44.

[Board Term-2 2012]

To draw a pair of tangents to a circle which are inclined to each other at an angle of 30° , it is required to draw tangents at end points of two radii of the circle, what will be the angle between them ?

Sol :

[View Answer](#)

QUESTION 45.

[Board Term-2 2012]

What is the maximum number of parallel tangents a circle can have on a diameter?

Sol :

[View Answer](#)

QUESTION 46.

[Board Term-2 OD 2015]

Two concentric circles of radii a and b where $a > b$, Find the length of a chord of the larger circle which touches the other circle.

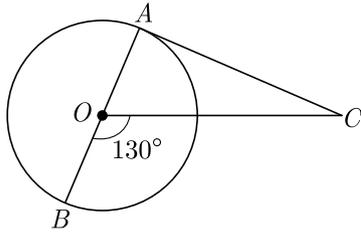
Sol :

[View Answer](#)

QUESTION 47.

[Board Term-2 Foreign 2016]

In the given figure, AOB is a diameter of the circle with centre O and AC is a tangent to the circle at A . If $\angle BOC = 130^\circ$, then find $\angle ACO$.



Sol :

[View Answer](#)**QUESTION 48.**

[Board 2020 OD Basic, Foreign 2014]

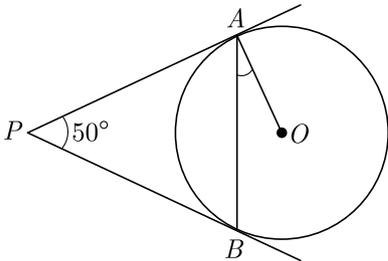
Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of larger circle (in cm) which touches the smaller circle.

Sol :

[View Answer](#)**QUESTION 49.**

[[Board Term-2 Delhi 2015]

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

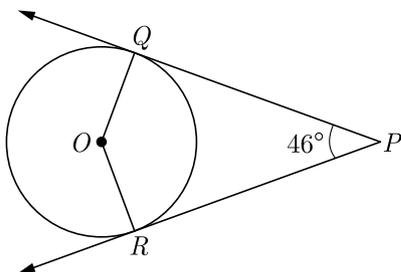


Sol :

[View Answer](#)**QUESTION 50.**

[Board Term-2 Delhi 2014]

If PQ and PR are two tangents to a circle with centre O . If $\angle QPR = 46^\circ$ then find $\angle QOR$.

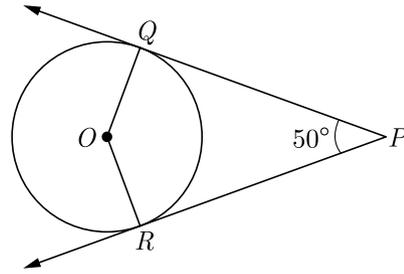


Sol :

[View Answer](#)**QUESTION 51.**

[Board Term-2 Delhi 2012, 2015]

In the given figure, PQ and PR are tangents to the circle with centre O such that $\angle QPR = 50^\circ$, Then find $\angle OQR$.



Sol :

[View Answer](#)**QUESTION 52.**

If the radii of two concentric circle are 4 cm and 5 cm, then find the length of each chord of one circle which is tangent to the other circle.

Sol :

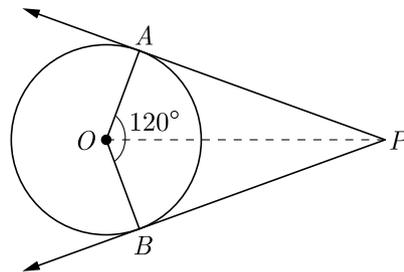
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QUESTION 53.

[Board Term-2 Delhi 2012, 2014]

In the figure, PA and PB are tangents to a circle with centre O . If $\angle AOB = 120^\circ$, then find $\angle OPA$.



Sol :

[View Answer](#)**QUESTION 54.**

[Board Term-2, 2012]

What is the length of the tangent drawn from a point 8 cm away from the centre of a circle of radius 6 cm ?

Sol :

[View Answer](#)**QUESTION 55.**

[Board Term-2, 2012]

If a line intersects a circle in two distinct points, what is it called ?

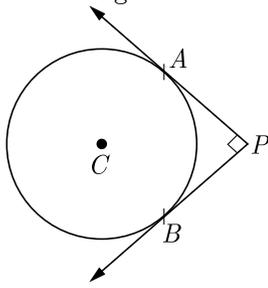
Sol :

[View Answer](#)

QUESTION 56.

[Board Term-2, 2013]

In figure, PA and PB are two tangents drawn from an external point P to a circle with centre C and radius 4 cm. If $PA \perp PB$, then find the length of each tangent.



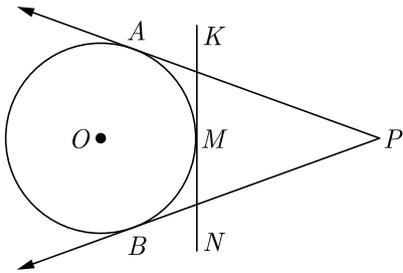
Sol :

View Answer

QUESTION 57.

[Board Term-2, 2012]

PA and PB are tangents from point P to the circle with centre O as shown in figure. At point M , a tangent is drawn cutting PA at K and PB at N . Prove that $KN = AK + BN$



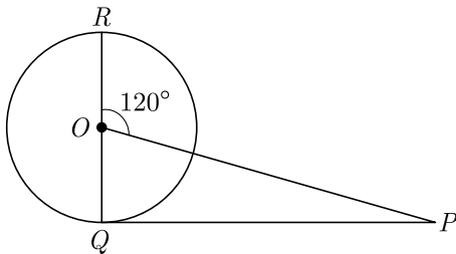
Sol :

View Answer

QUESTION 58.

[Board Term-2 Foreign 2017]

PQ is a tangent drawn from an external point P to a circle with centre O , QOR is the diameter of the circle. If $\angle POR = 120^\circ$, What is the measure of $\angle OPQ$?



Sol :

View Answer

QUESTION 59.

[Board, Term-2, 2013]

Two tangents making an angle of 60° between them are drawn to a circle of radius $\sqrt{3}$ cm, then find the length of each tangent.

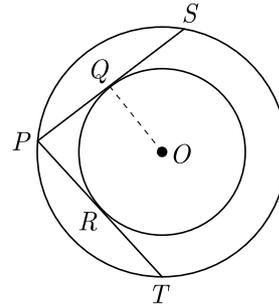
Sol :

View Answer

QUESTION 60.

[Board Term-2 Delhi Compt. 2017]

In the figure there are two concentric circles with centre O . PRT and PQS are tangents to the inner circle from a point P lying on the outer circle. If $PR = 5$ cm find the length of PS .



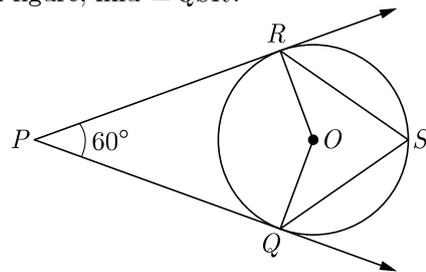
Sol :

View Answer

QUESTION 61.

[Board Term-2, 2012]

In the given figure, find $\angle QSR$.



Sol :

View Answer

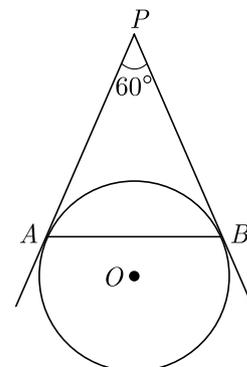
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QUESTION 62.

[Board Term-2 Delhi 2016]

In figure, AP and BP are tangents to a circle with centre O , such that $AP = 5$ cm and $\angle APB = 60^\circ$. Find the length of chord AB .



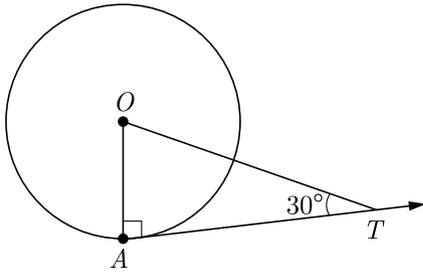
Sol :

View Answer

QUESTION 63.

[Board Term-2, 2012]

In given figure, if AT is a tangent to the circle with centre O , such that $OT = 4$ cm and $\angle OTA = 30^\circ$, then find the length of AT .

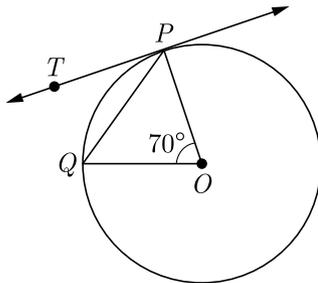


Sol :

[View Answer](#)**QUESTION 64.**

[Board Term-2 OD 2017]

In figure, O is the centre of the circle, PQ is a chord and PT is tangent to the circle at P . Find $\angle OPQ$ and $\angle TPQ$

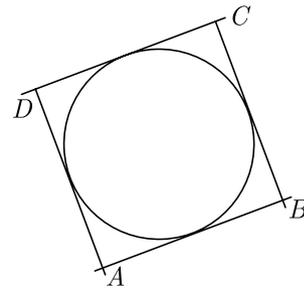


Sol :

[View Answer](#)**QUESTION 68.**

[Board 2020 Delhi Basic]

In figure, a circle touches all the four sides of a quadrilateral $ABCD$. If $AB = 6$ cm, $BC = 9$ cm and $CD = 8$ cm, then find the length of AD .



Sol :

[View Answer](#)**QUESTION 65.**

[Board 2020 OD Basic]

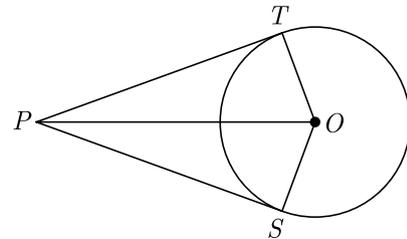
A circle is inscribed in a ΔABC touching AB , BC and AC at P , Q and R respectively. If $AB = 10$ cm, $AR = 7$ cm and $CR = 5$ cm, then find the length of BC

Sol :

[View Answer](#)**QUESTION 69.**

[Board Term-2 Foreign 2016]

In the given figure, from a point P , two tangents PT and PS are drawn to a circle with centre O such that $\angle SPT = 120^\circ$. Prove that $OP = 2PS$.



Sol :

[View Answer](#)**TWO MARKS QUESTIONS****QUESTION 65.**

[Board 2020 OD Basic]

A circle is inscribed in a ΔABC touching AB , BC and AC at P , Q and R respectively. If $AB = 10$ cm, $AR = 7$ cm and $CR = 5$ cm, then find the length of BC

Sol :

[View Answer](#)**QUESTION 66.**

[Board Term-2, 2012]

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

Sol :

[View Answer](#)**QUESTION 67.**

[Board Term-2 Delhi 2016]

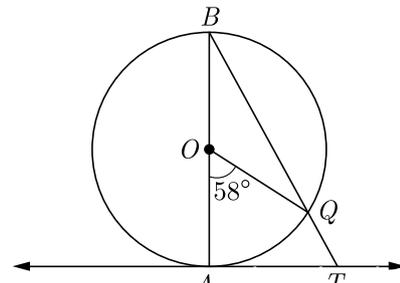
From an external point P , tangents PA and PB are drawn to a circle with centre O . If $\angle PAB = 50^\circ$, then find $\angle AOB$.

Sol :

[View Answer](#)**QUESTION 70.**

[Board Term-2, 2015]

In given figure, AB is the diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58^\circ$, find $\angle ATQ$.

[View Answer](#)**QUESTION 71.**

[Board 2020 OD Basic, 2018]

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

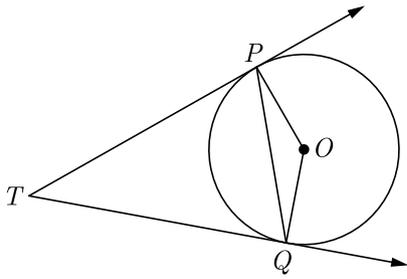
Sol :

[View Answer](#)

QUESTION 72.

[Board Term-2 Delhi 2016]

In the given figure PQ is chord of length 6 cm of the circle of radius 6 cm. TP and TQ are tangents to the circle at points P and Q respectively. Find $\angle PTQ$.



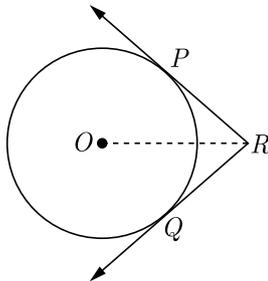
Sol :

[View Answer](#)

QUESTION 73.

[Board Term-2 OD 2015]

In figure, two tangents RQ and RP are drawn from an external point R to the circle with centre O . If $\angle PRQ = 120^\circ$, then prove that $OR = PR + RQ$.



Sol :

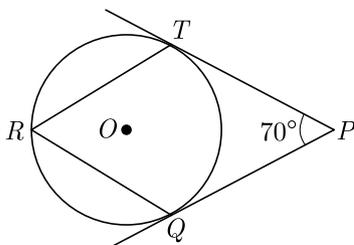
[View Answer](#)

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QUESTION 74.

[Board Term-2 Foreign 2015]

In figure, O is the centre of a circle. PT are tangents to the circle from an external point P . If $\angle TPQ = 70^\circ$, find $\angle TRQ$.



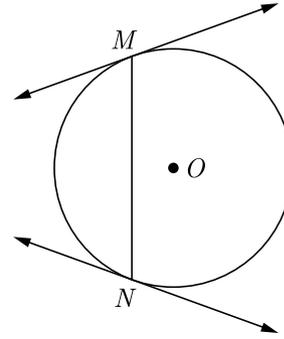
Sol :

[View Answer](#)

QUESTION 75.

[Board Term-2 Delhi 2015]

Prove that tangents drawn at the ends of a chord of a circle make equal angles with the chord.



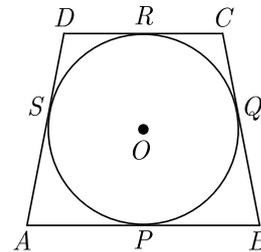
Sol :

[View Answer](#)

QUESTION 76.

[Board Term-2 OD 2016]

In Figure a quadrilateral $ABCD$ is drawn to circumscribe a circle, with centre O , in such a way that the sides AB , BC , CD , and DA touch the circle at the points P , Q , R and S respectively. Prove that $AB + CD = BC + DA$.



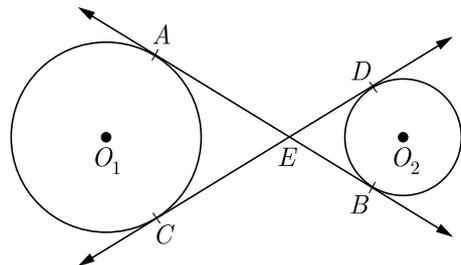
Sol :

[View Answer](#)

QUESTION 77.

[Board Term-2 OD 2014]

In Figure, common tangents AB and CD to the two circle with centres O_1 and O_2 intersect at E . Prove that $AB = CD$.



Sol :

[View Answer](#)

QUESTION 78.

[Board Term-2, 2012]

Two tangents PA and PB are drawn from an external point P to a circle inclined to each other at an angle of 70° , then what is the value of $\angle PAB$?

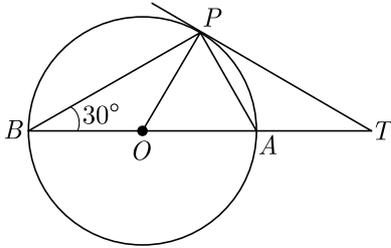
Sol :

[View Answer](#)

QUESTION 79.

[Board Term-2, 2012]

In the given figure, BOA is a diameter of a circle and the tangent at a point P meets BA when produced at T . If $\angle PBO = 30^\circ$, what is the measure of $\angle PTA$?



Sol :

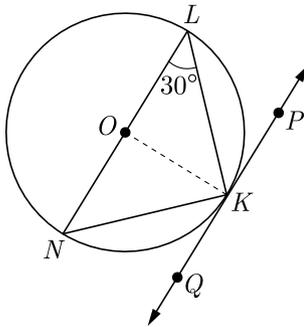
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**QUESTION 80.**

[Board Term-2 OD Compt 2017]

In figure, O is the centre of the circle and LN is a diameter. If PQ is a tangent to the circle at K and $\angle KLN = 30^\circ$, find $\angle PKL$.

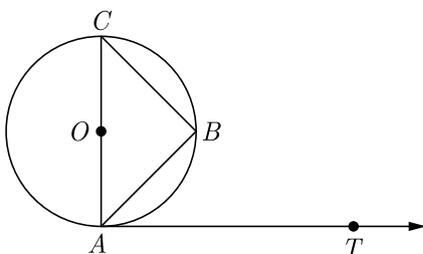


Sol :

[View Answer](#)**QUESTION 81.**

[Board Term-2 2012]

In the given 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 , find $\angle BAT$.

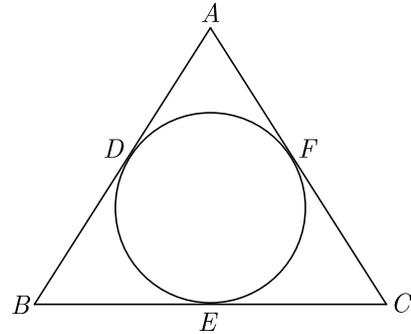


Sol :

[View Answer](#)**QUESTION 82.**

[Board Term-2 OD 2017]

In the given figure, if $AB = AC$, prove that $BE = CE$.



Sol :

[View Answer](#)**THREE MARKS QUESTIONS****QUESTION 83.**

[Board 2020 Delhi Basic]

If tangents PA and PB drawn from an external point P to a circle with centre O are inclined to each other at an angle of 80° , then find $\angle POA$.

Sol :

[View Answer](#)**QUESTION 84.**

[Board 2020 OD Basic]

An isosceles triangle ABC , with $AB = AC$, circumscribes a circle, touching BC at P , AC at Q and AB at R . Prove that the contact point P bisects BC .

Sol :

[View Answer](#)**QUESTION 85.**

[Board 2020 SQP Standard]

Prove that the rectangle circumscribing a circle is a square.

Sol :

[View Answer](#)**QUESTION 86.**

[Board 2020 Delhi Basic]

Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

Sol :

[View Answer](#)**QUESTION 87.**

[Board 2020 OD Standard, 2016]

If a circle touches the side BC of a triangle ABC at P and extended sides AB and AC at Q and R , respectively, prove that $AQ = \frac{1}{2}(BC + CA + AB)$

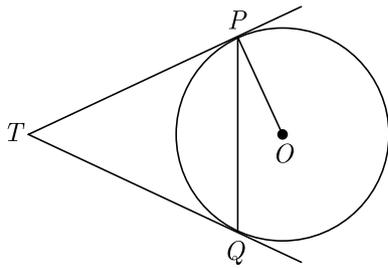
Sol :

[View Answer](#)

QUESTION 88.

[Board 2020 Delhi Standard]

In figure, two tangents TP and TQ are drawn to circle with centre O from an external point T . Prove that $\angle PTQ = 2\angle OPQ$.



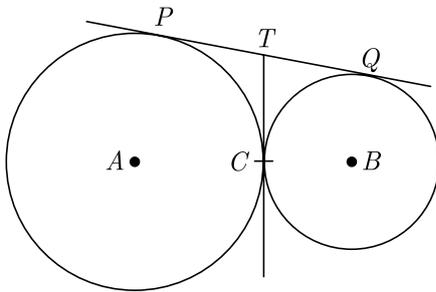
Sol :

[View Answer](#)

QUESTION 89.

[Board 2020 OD Basic, 2020 Delhi Standard]

In given figure, two circles touch each other at the point C . Prove that the common tangent to the circles at C , bisects the common tangent at P and Q .



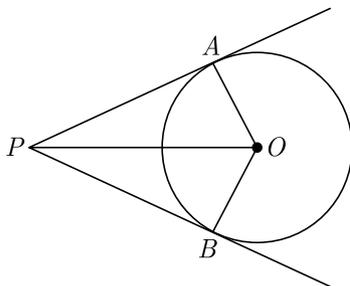
Sol :

[View Answer](#)

QUESTION 90.

[Board Term-2, 2014]

In the given figure, OP is equal to the diameter of a circle with centre O and PA and PB are tangents. Prove that ABP is an equilateral triangle.



Sol :

[View Answer](#)

QUESTION 91.

[Board Term-2, 2012]

From a point P , which is at a distant of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR are drawn to the circle, then the area of the quadrilateral $PQOR$ (in cm^2).

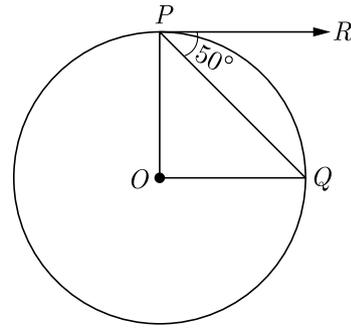
Sol :

[View Answer](#)

QUESTION 92.

[Board Term-2, 2012]

If O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ , find $\angle POQ$.



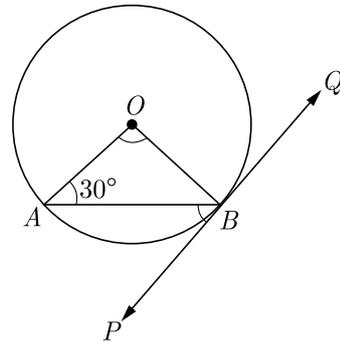
Sol :

[View Answer](#)

QUESTION 93.

[Board Term-2 Delhi 2014]

In the figure, PQ is a tangent to a circle with centre O . If $\angle OAB = 30^\circ$, find $\angle ABP$ and $\angle AOB$.



Sol :

[View Answer](#)

QUESTION 94.

[Board Term-2 Delhi 2014, 2012]

In $\triangle ABD$, $AB = AC$. If the interior circle of $\triangle ABC$ touches the sides AB, BC and CA at D, E and F respectively. Prove that E bisects BC .

Sol :

[View Answer](#)

QUESTION 95.

[Board Term-2 Delhi 2013, 2012]

A circle is inscribed in a $\triangle ABC$, with sides AC, AB and BC as 8 cm, 10 cm and 12 cm respectively. Find the length of AD, BE and CF .

Sol :

[View Answer](#)

QUESTION 96.

[Board 2020 Delhi Basic, 2017, 2014]

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

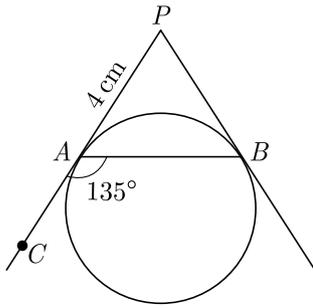
Sol :

[View Answer](#)

QUESTION 97.

[Board Term-2 OD 2017]

In the given figure, PA and PB are tangents to a circle from an external point P such that $PA = 4$ cm and $\angle BAC = 135^\circ$. Find the length of chord AB .



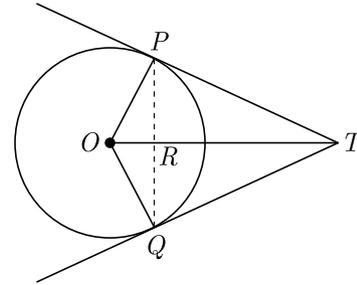
Sol :

[View Answer](#)

QUESTION 100.

[Board Term-2 OD Compt 2017]

In figure PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents drawn at P and Q intersect at T . Find the length of TP .



Sol :

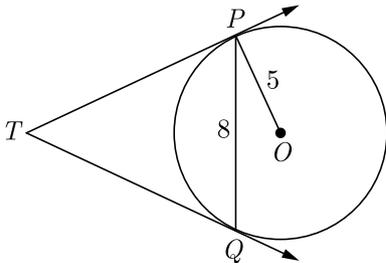
[View Answer](#)

FIVE MARKS QUESTIONS

QUESTION 98.

[Board 2019 Delhi Standard]

In Figure, PQ is a chord of length 8 cm of a circle of radius 5 cm and centre O . The tangents at P and Q intersect at point T . Find the length of TP .



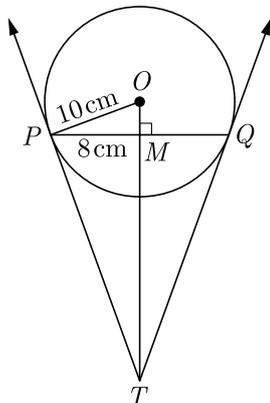
Sol :

[View Answer](#)

QUESTION 99.

[Board Term-2 Delhi 2014]

In figure, PQ , is a chord of length 16 cm, of a circle of radius 10 cm. the tangents at P and Q intersect at a point T . Find the length of TP .



Sol :

[View Answer](#)

QUESTION 101.

[Board 2020 SQP STD]

If the angle between two tangents drawn from an external point P to a circle of radius a and centre O , is 60° , then find the length of OP .

Sol :

[View Answer](#)

QUESTION 102.

[Board 2020 Delhi Basic]

A right triangle ABC , right angled at A is circumscribing a circle. If $AB = 6$ cm and $BC = 10$ cm, find the radius r of the circle.

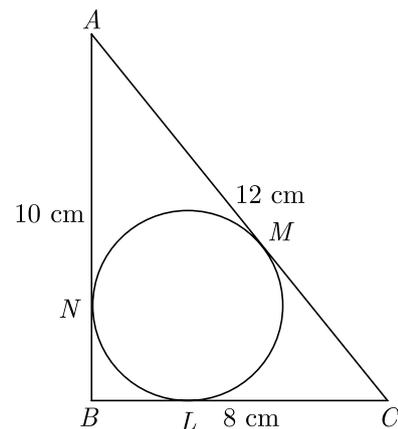
Sol :

[View Answer](#)

QUESTION 103.

[Board 2019 Delhi]

In figure, a circle is inscribed in a ΔABC having sides $BC = 8$ cm, $AB = 10$ cm and $AC = 12$ cm. Find the length BL , CM and AN .



Sol :

[View Answer](#)

QUESTION 104.

[Board Term-2 Delhi 2016]

a, b and c are the sides of a right triangle, where c is the hypotenuse. A circle, of radius r , touches the sides of the triangle. Prove that $r = \frac{a+b-c}{2}$.

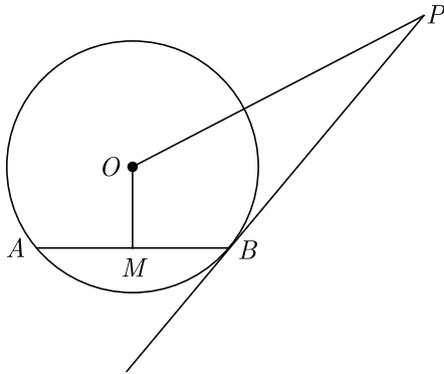
Sol :

[View Answer](#)

QUESTION 105.

[Board Term-2 Delhi 2015]

PB is a tangent to the circle with centre O to B . AB is a chord of length 24 cm at a distance of 5 cm from the centre. It the tangent is length 20 cm, find the length of PO .



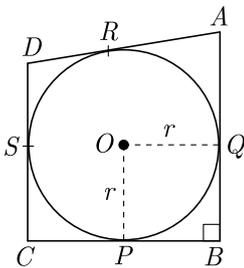
Sol :

[View Answer](#)

QUESTION 106.

[Board Term-2, 2013]

In figure, a circle with centre O is inscribed in a quadrilateral $ABCD$ such that, it touches the sides BC, AB, AD and CD at points P, Q, R and S respectively. If $AB = 29$ cm, $AD = 23$ cm, $\angle B = 90^\circ$ and $DS = 5$ cm, then find the radius of the circle (in cm).



Sol :

[View Answer](#)

QUESTION 107.

[Board Term-2 Foreign 2017, OD 2014]

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

Sol :

[View Answer](#)

QUESTION 108.

[Board Term-2 OD 2016]

Prove that tangent drawn at any point of a circle perpendicular to the radius through the point contact.

Sol :

[View Answer](#)

QUESTION 109.

[Board Term-2, 2011]

Two tangents PA and PB are drawn from an external point P to a circle with centre O , such that $\angle APB = \angle x$ and $\angle AOB = y$. Prove that opposite angles are supplementary.

Sol :

[View Answer](#)

QUESTION 110.

[Board Term-2 OD 2015, 2017]

In figure, PQ is a chord of a circle O and PT is a tangent. If $\angle QPT = 60^\circ$, find $\angle PRQ$.

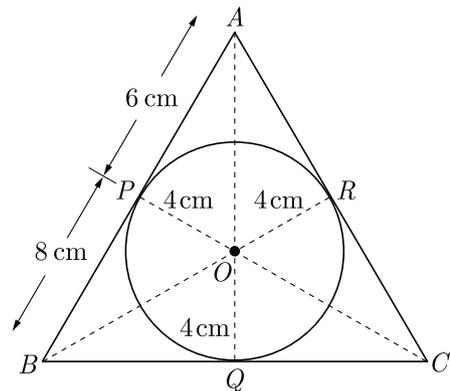
Sol :

[View Answer](#)

QUESTION 111.

[Board Term-2 Delhi 2012, 2014, OD Compt. 2017]

In Figure the radius of incircle of ΔABC of area 84 cm^2 and the lengths of the segments AP and BP into which side AB is divided by the point of contact are 6 cm and 8 cm Find the lengths of the sides AC and BC .



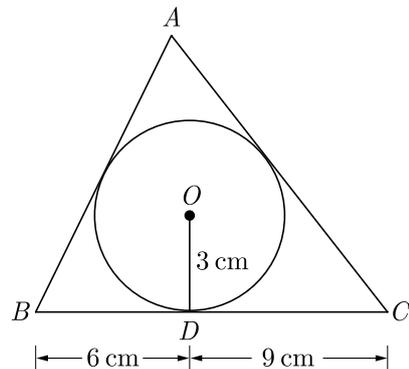
Sol :

[View Answer](#)

QUESTION 112.

[Board Term-2 OD 2015]

In figure, a triangle ABC is drawn to circumscribe a circle of radius 3 cm, such that the segments BD and DC are respectively of lengths 6 cm and 9 cm. If the area of ΔABC is 54 cm^2 , then find the lengths of sides AB and AC .



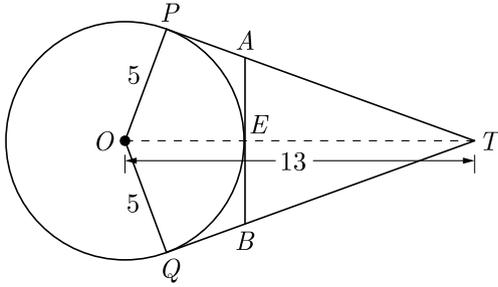
Sol :

[View Answer](#)

QUESTION 113.

[Board Term-2 Delhi 2016]

In figure O is the centre of a circle of radius 5 cm. T is a point such that $OT = 13$ cm and OT intersects circle at E . If AB is a tangent to the circle at E , find the length of AB , where TP and TQ are two tangents to the circle.



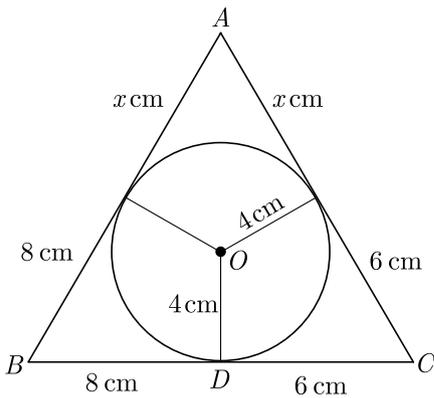
Sol :

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QUESTION 114.

[Board Term-2 Delhi 2014, 2012]

In the figure, the ΔABC is drawn to circumscribe a circle of radius 4 cm, such that the segments BD and DC are of lengths 8 cm and 6 cm respectively. Find AB and AC .



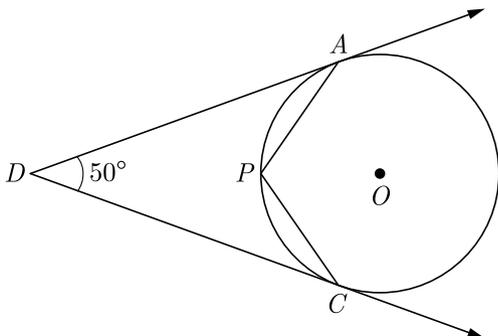
Sol :

[View Answer](#)

QUESTION 115.

[Board Term-2, 2015]

In the given figure, O is the centre of the circle. Determine $\angle APC$, if DA and DC are tangents and $\angle ADC = 50^\circ$.



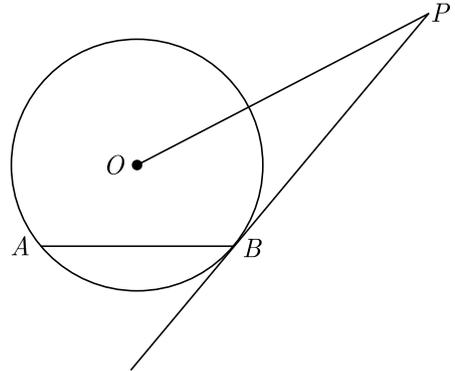
Sol :

[View Answer](#)

QUESTION 116.

[Board Term-2 Delhi 2014, 2012]

AB is a chord of circle with centre O . At B , a tangent PB is drawn such that its length is 24 cm. The distance of P from the centre is 26 cm. If the chord AB is 16 cm, find its distance from the centre.



Sol :

[View Answer](#)

QUESTION 117.

[Board Term-2 Delhi 2015]

From a point T outside a circle of centre O , tangents TP and TQ are drawn to the circle. Prove that OT is the right bisector of line segment PQ .

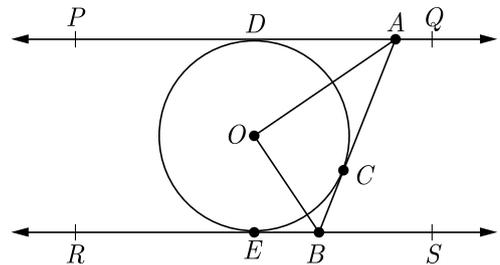
Sol :

[View Answer](#)

QUESTION 118.

[Board 2019 OD STD, 2014, 2012]

In Figure, PQ and RS are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting PQ at A and RS at B . Prove that $\angle AOB = 90^\circ$.



Sol :

[View Answer](#)

QUESTION 119.

[Board 2020 Delhi STD, 2013, 2014]

Prove that the parallelogram circumscribing a circle is a rhombus.

Sol :

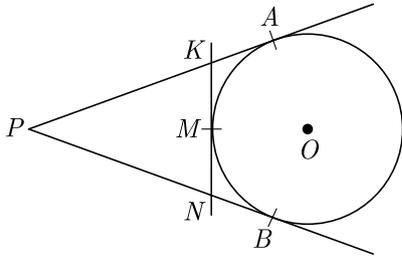
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QUESTION 120.

[Board Term-2, 2012]

In given figure, PA and PB are tangents from a point P to the circle with centre O . At the point M , other tangent to the circle is drawn cutting PA and PB at K and N . Prove that the perimeter of $\Delta PNK = 2PB$.



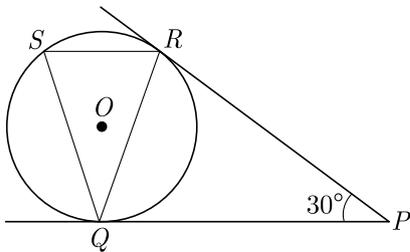
Sol :

[View Answer](#)

QUESTION 121.

[Board Term-2 Delhi 2015]

In the figure, tangents PQ and PR are drawn from an external point P to a circle with centre O , such that $\angle RPQ = 30^\circ$. A chord RS is drawn parallel to the tangent PQ . Find $\angle RQS$.



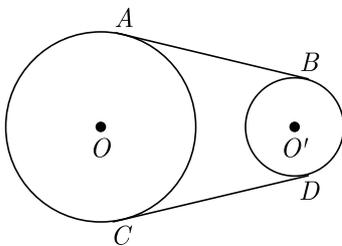
Sol :

[View Answer](#)

QUESTION 122.

[Board Term-2 Delhi Compt. 2017]

In the figure AB and CD are common tangents to two circles of unequal radii. Prove that $AB = CD$.

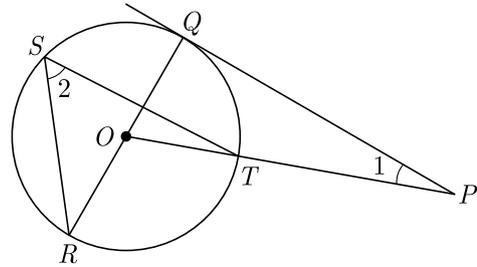


Sol :

[View Answer](#)

QUESTION 123.

In figure PQ is a tangent from an external point P to a circle with centre O and OP cuts the circle at T and $\angle QOR$ is a diameter. If $\angle POR = 130^\circ$ and S is a point on the circle, find $\angle 1 + \angle 2$.



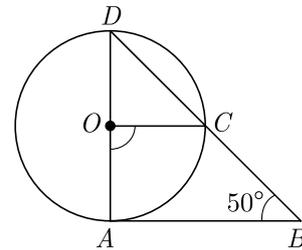
Sol :

[View Answer](#)

QUESTION 124.

[Board Term-2 2015]

In the given figure, AD is a diameter of a circle with centre O and AB is a tangent at A . C is a point on the circle such that DC produced intersects the tangent at B and $\angle ABC = 50^\circ$. Find $\angle AOC$.



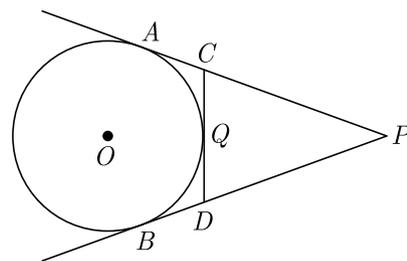
Sol :

[View Answer](#)

QUESTION 125.

[Board Term-2 Delhi Compt. 2017]

In the given figure, PA and PB are tangents to the circle from an external point P . CD is another tangent touching the circle at Q . If $PA = 12$ cm, $QC = QD = 3$ cm, then find $PC + PD$.



Sol :

[View Answer](#)

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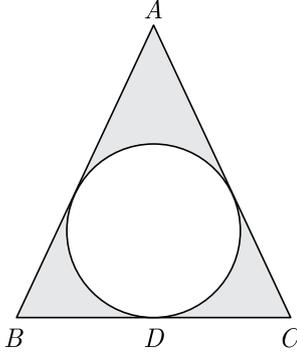
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COMPETENCY BASED QUESTIONS

QUESTION 126.

[Board 2021 Comp. Basic]

A children's park is in the triangular shape as shown in Figure below. In the middle of the park, there is a circular region for younger children to play. It is fenced with three layers of wire. The radius of the circular region is 3 m.



Based on the above, answer the following questions:

- (i) Find the perimeter (or circumference) of the circular region.
- (ii) What is the total length of wire used?
- (iii) What is the area of the circular region?
- (iv) If $BD = 6$ m, $DC = 9$ m and $ar(\triangle ABC) = 54$ m², then find the length of sides AB and AC , respectively.
- (v) Find the perimeter of $\triangle ABC$.

Sol :

[View Answer](#)

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