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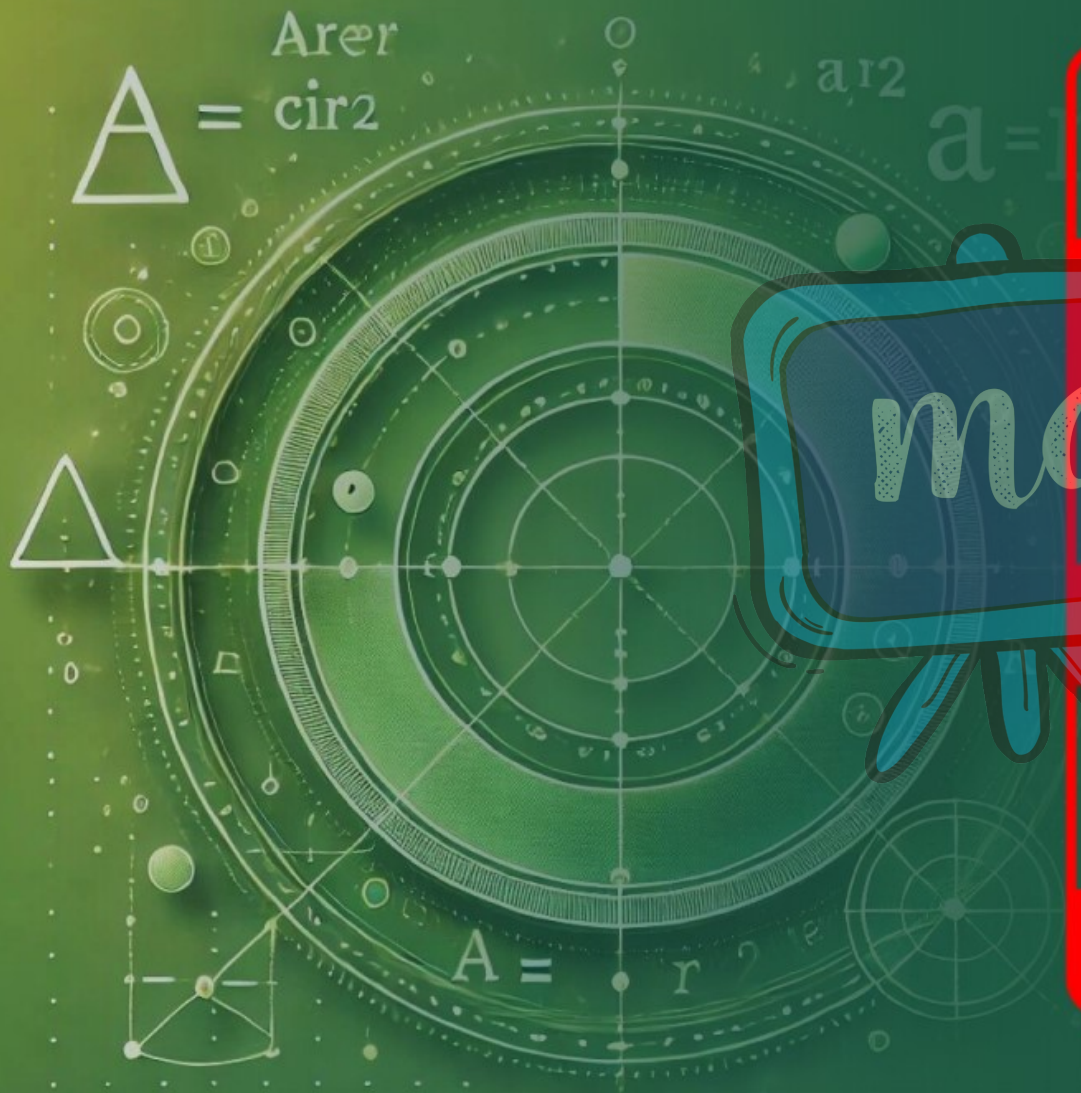
missiongyan



CLASS – 10

MATHEMATICS

CH – 10 : CIRCLES

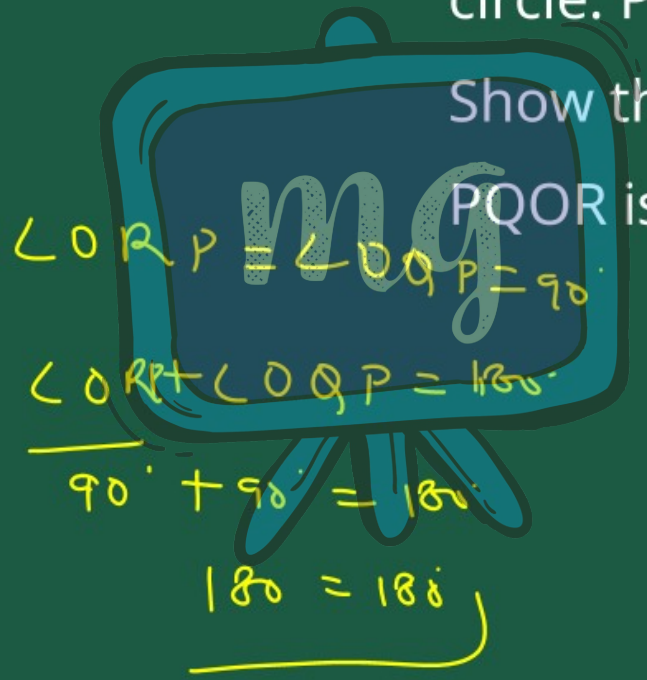
CBSE Board

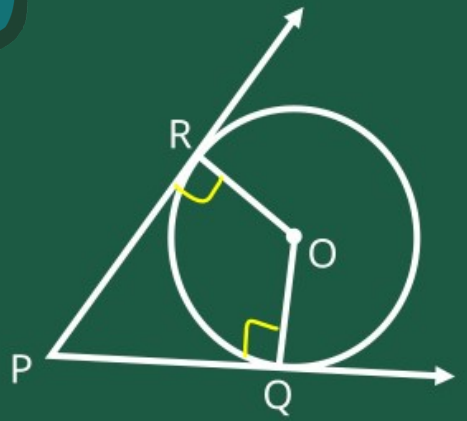
Previous Year Questions – 2

Shubham Tiwari

16. In Figure, O is the centre of the circle. PQ and PR are tangents. Show that the quadrilateral PQOR is cyclic.

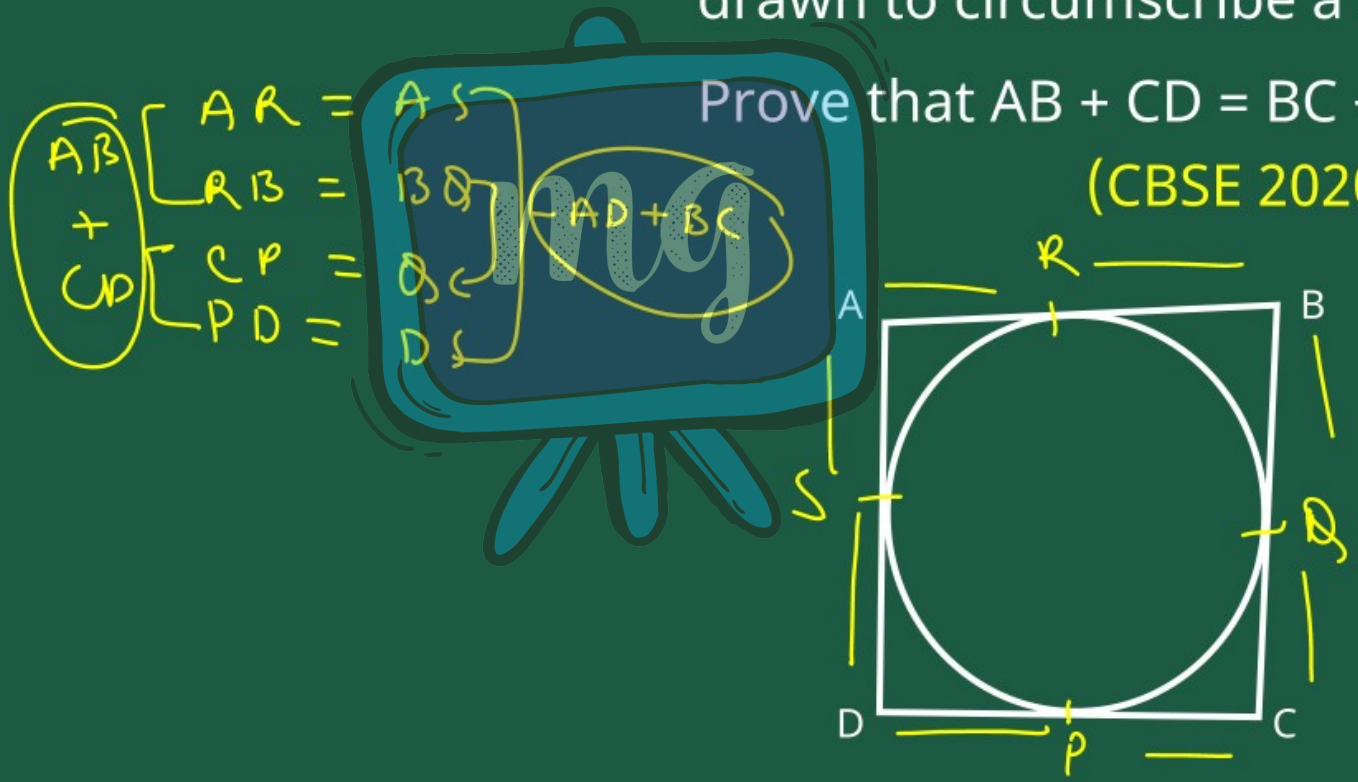
(CBSE Term II, 2022)





17. In figure, a quadrilateral ABCD is drawn to circumscribe a circle. Prove that AB + CD = BC + AD

(CBSE 2020, NCERT)



18. In figure, find the perimeter of ΔABC, if AP = 12cm. (CBSE 2020)

$AP = AQ = 12$

$BD = BP$ — (1)

$CD = CQ$ — (2)

Perimeter of ΔABC

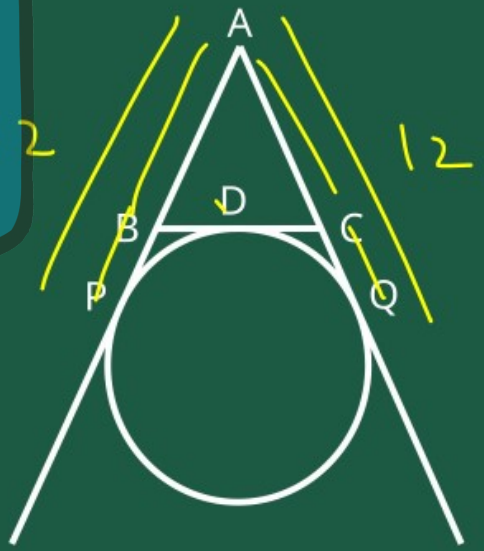
$= AB + BC + AC$

$= AB + BD + DC + AC$

$AB + BP + CQ + AC$

$AB + AP + AQ = 24$

$=$



19. In the given figure, a circle is inscribed in a quadrilateral ABCD in which ∠B = 90°. If AD = 17 cm. AB = 20 cm and DS = 3 cm, then find the radius of the circle. (CBSE 2023)

As ∠O = ∠P = ∠B
= ∠Q = 90°

□ OPBQ is a Rectangle.

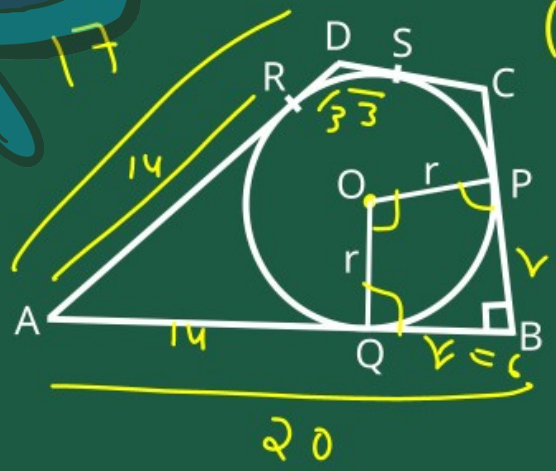
OP = OQ

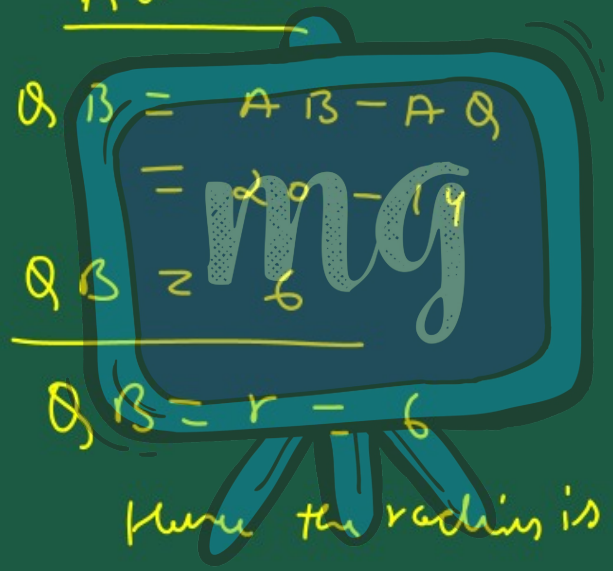
So □ OPBQ is a square

AD − DS = AR

AD − DR = AR

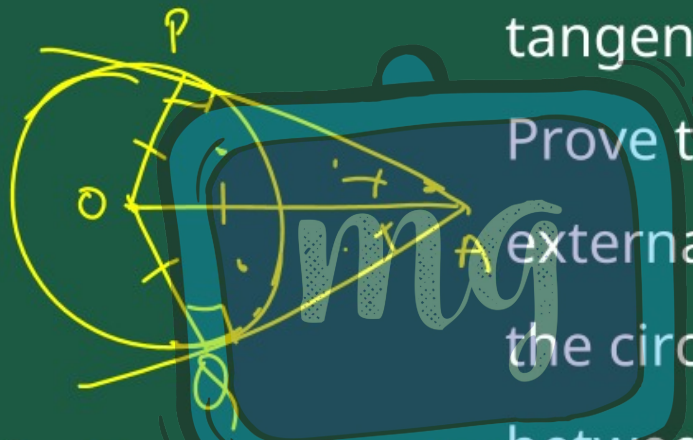
17 − 3 = 14 = AR





Hence the radius is 6 cm.

20. From an external point, two tangents are drawn to a circle. Prove that the line joining the external point to the centre of the circle bisects the angle between the two tangents.



In $\triangle OPA$ & $\triangle OQA$

$OP = OQ = r$

$OA = OA =$ (Common)

$\angle OPA = \angle OQA = 90°$

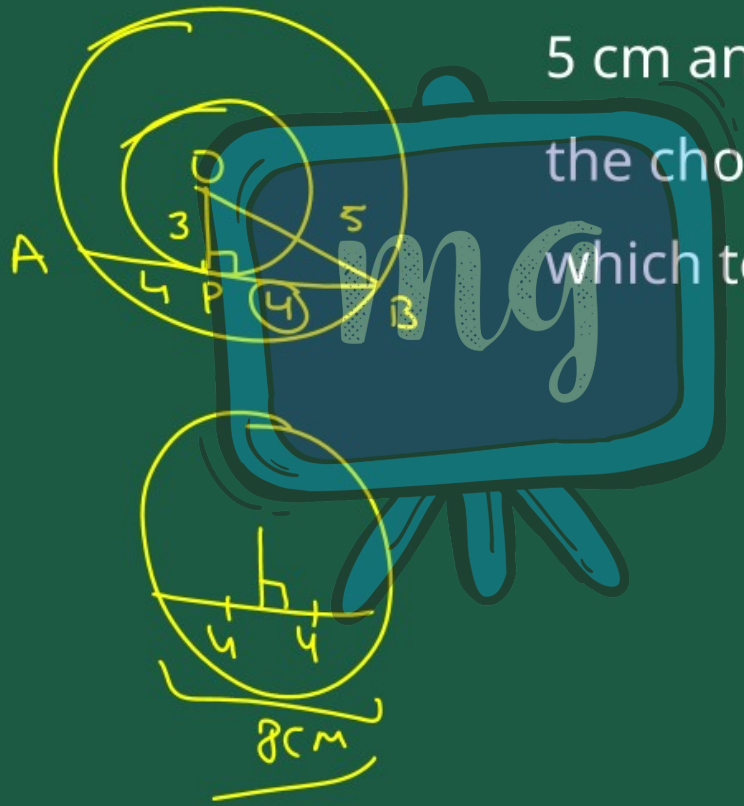
By RHS Congruency Rule (CBSE 2023)

$\triangle OPA \cong \triangle OQA$

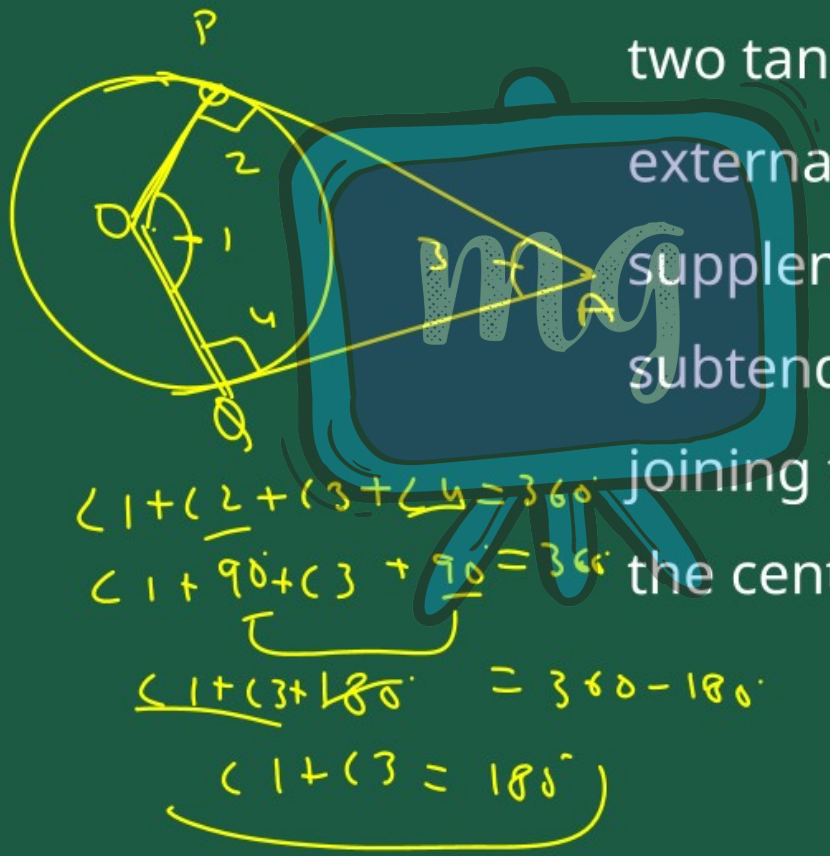
$\angle OAP = \angle OAQ$

21. 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.

(CBSE 2023, NCERT)

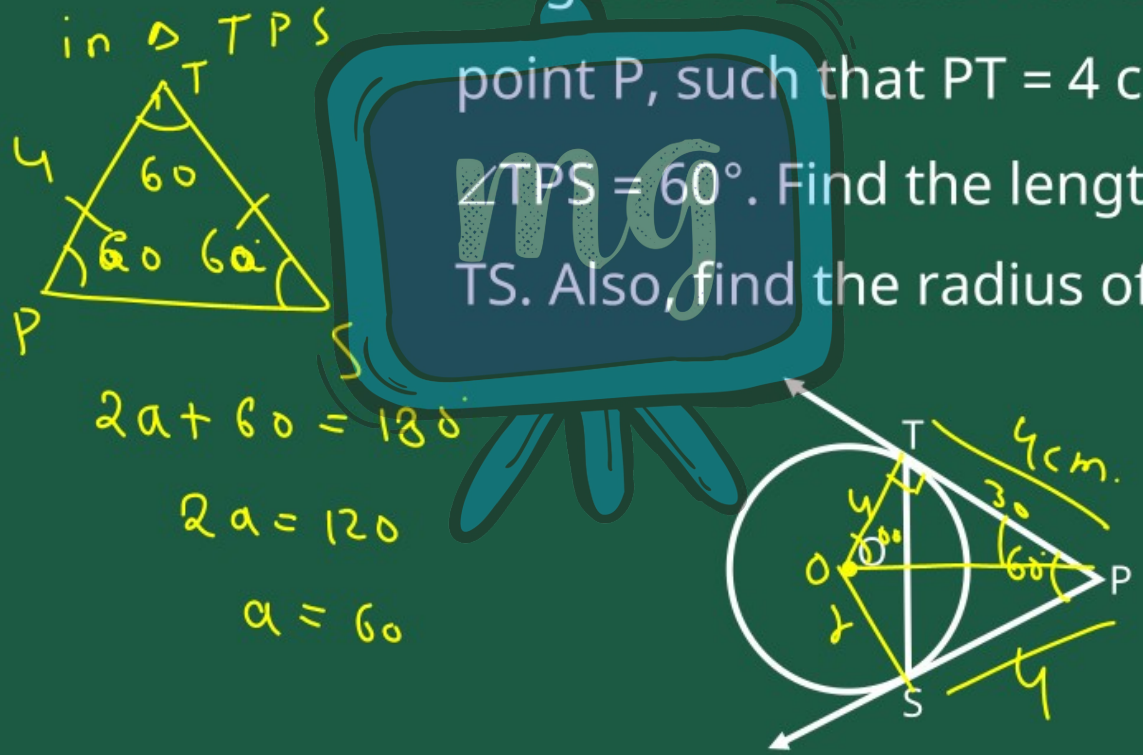


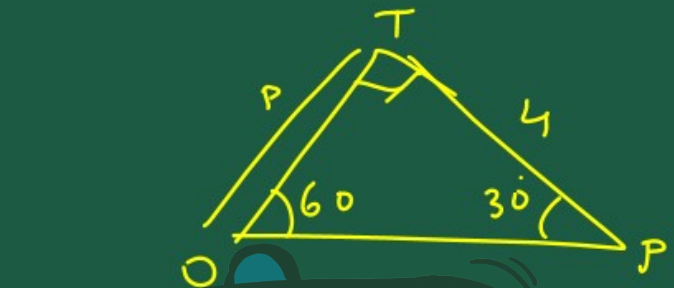
22. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre. (CBSE 2023, NCERT)



23. In the given figure, PT and PS are tangents to a circle with centre O, from a point P, such that PT = 4 cm and angle ∠TPS = 60°. Find the length of the chord TS. Also, find the radius of the circle.

(CBSE 2023)





$\tan\theta = \frac{P}{B}$

$\tan 30^\circ = \frac{TO}{TP}$

$\frac{1}{\sqrt{3}} = \frac{P}{4}$

$P = \frac{4}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$P = \frac{4\sqrt{3}}{3}$

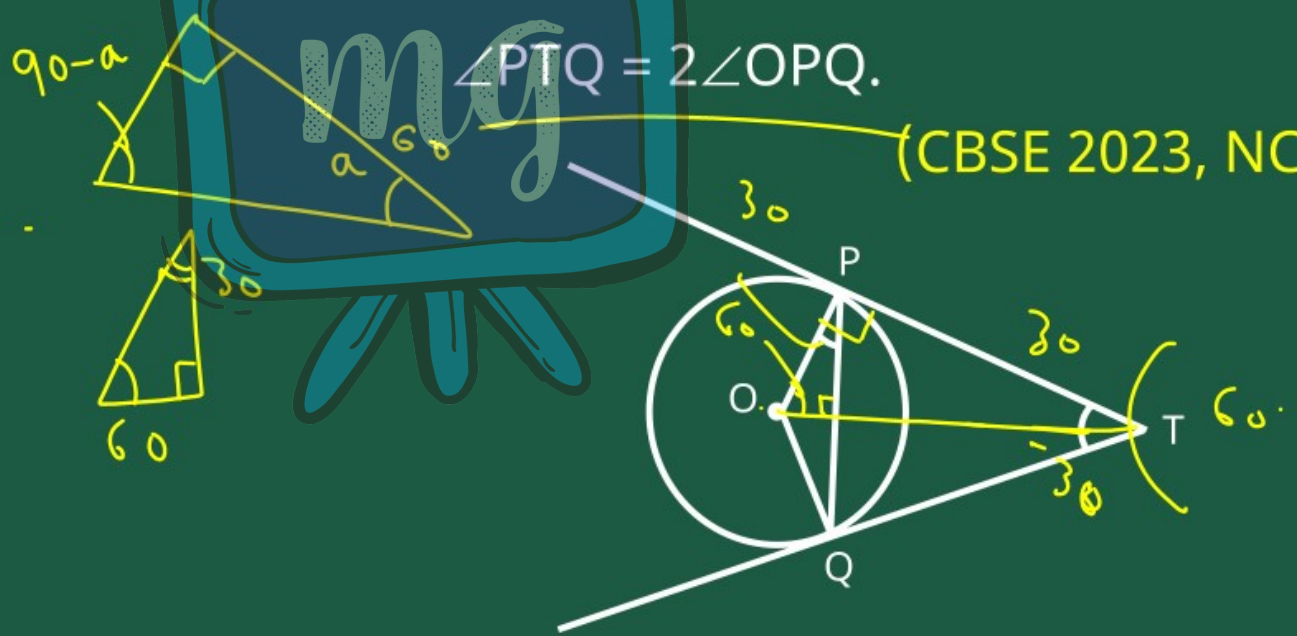
Hence the radius is $\frac{4\sqrt{3}}{3}$ cm.

$90 - a + b = 90$

$a = b$

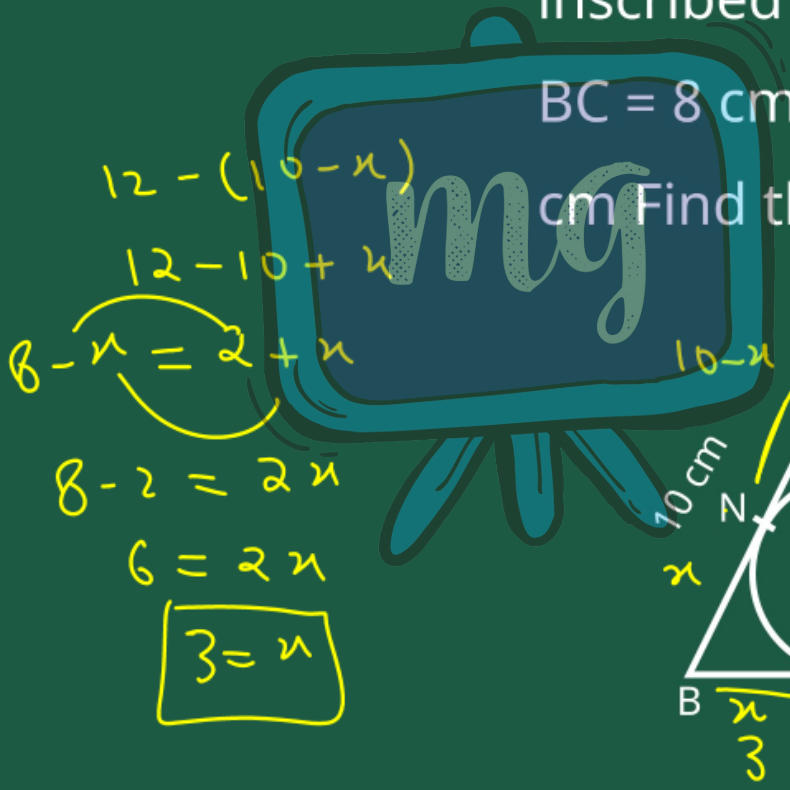
24. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that angle $\angle PTQ = 2\angle OPQ$.

(CBSE 2023, NCERT)



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

(CBSE Delhi 2019)



$12-(10-x)$

$12-10+x$

$8-x=2+x$

$8-2=2x$

$6=2x$

$3=x$

$BL=3cm$

$CM=2+x$

$CM=5cm$

$AN=10-x$

$=10-3$

$AN=7cm$