

Curriculum Outcomes:

(SS1) Solve problems and justify the solution strategy using circle properties, including: the perpendicular from the centre of a circle to a chord bisects the chord; the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc; the inscribed angles subtended by the same arc are congruent; a tangent to a circle is perpendicular to the radius at the point of tangency.

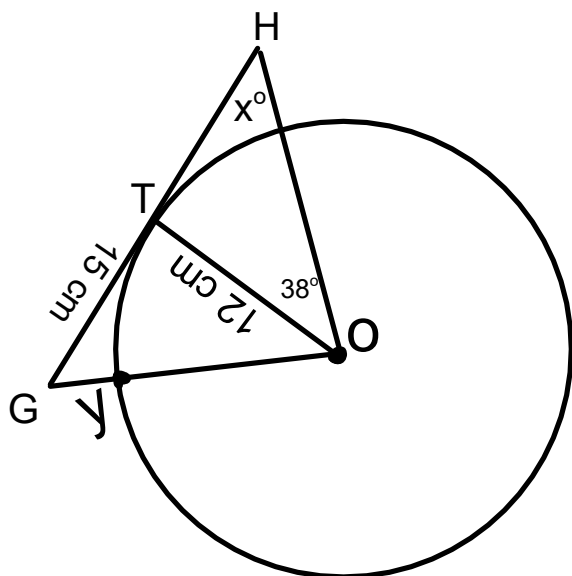
Student Friendly:

Review of Tangents and Chords

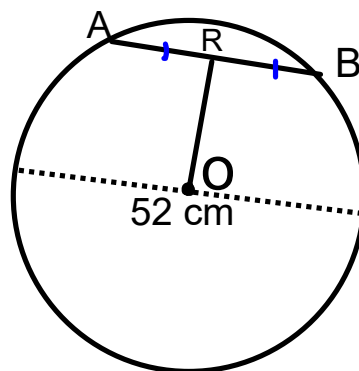
Warm Up

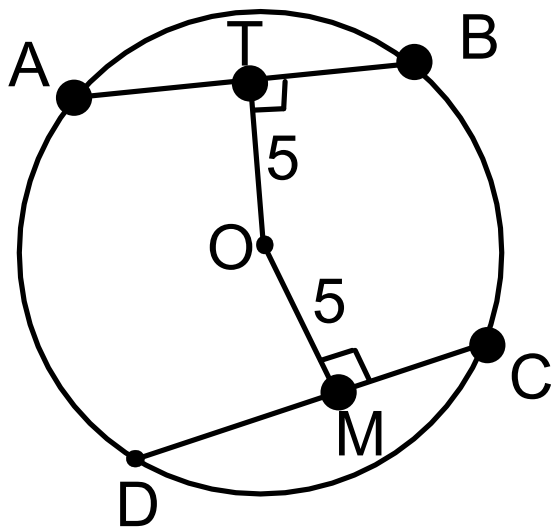
Day 2

Determine the unknowns:



What is the length of OR If the Chord AB is 22cm?

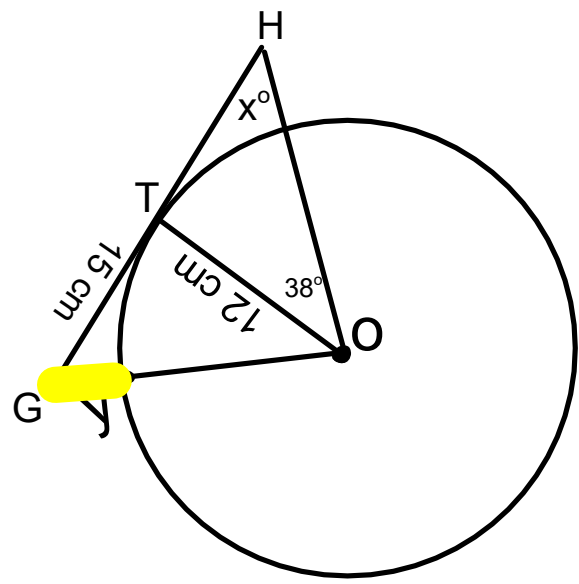




If the diameter of the circle is 20 cm , tell me everything you know about this diagram:

Warm Up

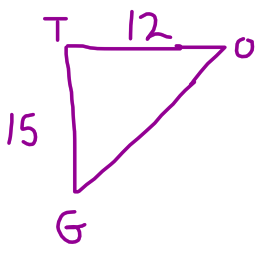
Determine the unknowns:



[Redacted]

[Redacted]

[Redacted]



GO => hyp

[Redacted]

[Redacted]

$$c^2 = 144 + 225$$

$$\sqrt{c^2} = \sqrt{369}$$

[Redacted]

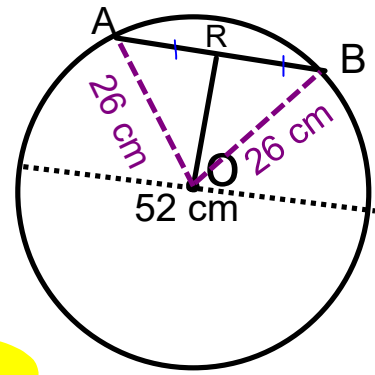
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What is the length of OR if the Chord

AB is 22cm



[Redacted handwritten notes]



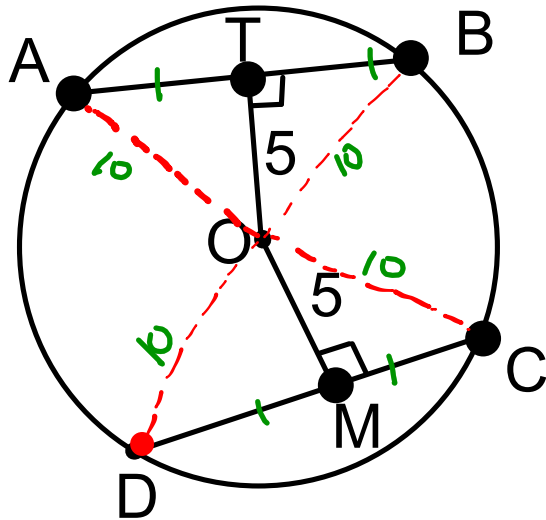
$RO \Rightarrow \text{leg}$

[Redacted]

$a^2 = 676 - 121$

$\sqrt{a^2} = \sqrt{555}$

[Redacted]



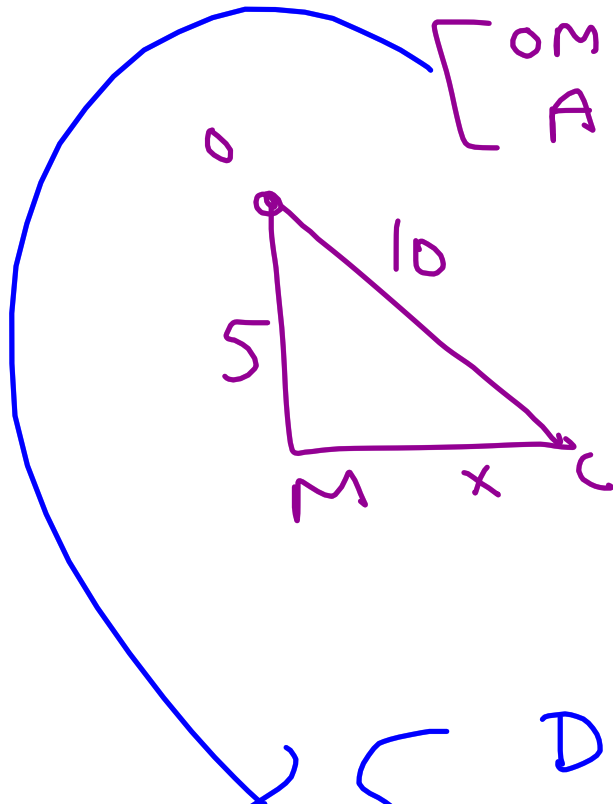
If the diameter of the circle is 20 cm , tell me everything you know about this diagram:

$OB = OA = OC = OD = 10$ (radii)

$\angle OMC = \angle OMD = 90^\circ$ (ChP3 given)

$DM = MC$ (ChP1)

$OM = OT = 5$ (given)
 $AB = DC = ?$ (ChP4)



$a^2 = c^2 - b^2$

$a^2 = 10^2 - 5^2$

$a^2 = 100 - 25$

$a^2 = 75$

$a = 8.7$

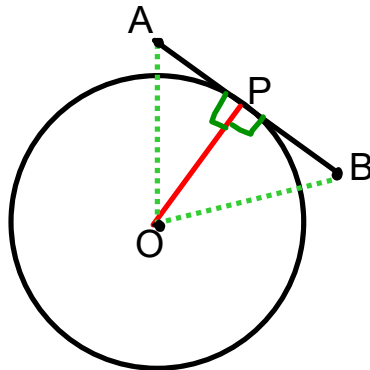
ChP4

$DC = 2(8.7)$

$= 17.4$

$AB = 17.4$

Tangent



Tangent Properties:

$$\angle APO = 90^\circ \text{ (Tang P)}$$

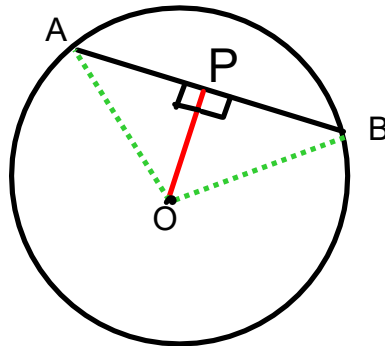
$$\angle BPO = 90^\circ \text{ (Tang P)}$$

To Solve use:

$$\text{Angle} = \underline{\quad}^\circ \text{ (SATT)}$$

$$\text{Side} = \underline{\quad} \text{ cm (Pythagorean theorem)}$$

Chords



Chord Properties:

$$\left[\begin{array}{l} \angle \underline{OPA} = \angle \underline{OPB} = 90^\circ \text{ (Chord P3)} \\ \underline{AP} = \underline{BP} = \underline{\#} \text{ (Chord P1)} \\ \underline{OA} = \underline{OB} = \underline{\#} \text{ (Radii)} \end{array} \right.$$

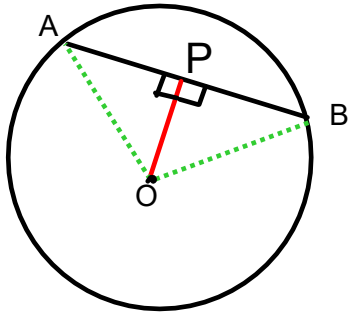
given

To Solve use:

Angle= ___^o (SATT) or (ITT)

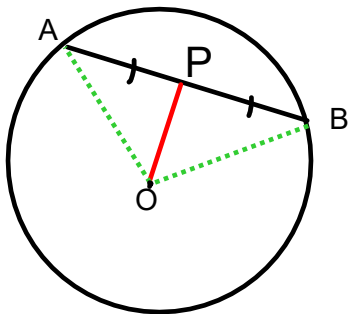
Side= ___ cm (Pythagorean theorem)

Chord Properties:



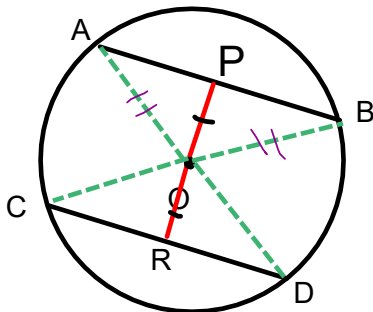
$\angle OPB = \angle OPA = 90^\circ$ (Given)

$AP = PB$ (Chord P 1)



$AP = PB$ (Given)

$\angle APO = \angle BPO = 90^\circ$ (Chord P 3)



If $OP = OR$ (Given)

$AB = CD$ (Chord P 4)

If $AB = CD$ (Given)

$OP = OR$ (Chord P 4)

To Solve use:

Angle= ___ $^\circ$ (SATT) or (ITT)

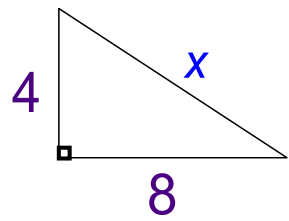
Side= ___ cm (Pythagorean theorem)

Working With Chords Lengths We Only Use ...

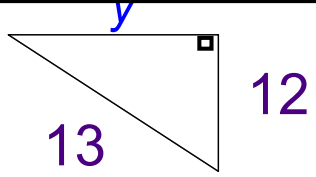
* **Note: the only reason they give you diameter is so you can use the radius** *

1) Pythagorean Theorem

finding the hypotenuse $\rightarrow c^2 = a^2 + b^2$



finding a side $\rightarrow a^2 = c^2 - b^2$



or

2) Angle Sum of Triangle (SATT)

Unknown Angle = $180^\circ - 90^\circ - \text{known angle}$

or

3) Isosceles Triangle (ITT)

OA=OB \Rightarrow radii

$\angle OAB = \angle OBA$ (Iso Δ)

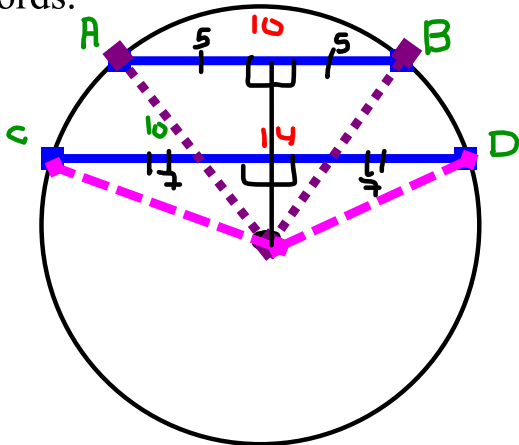
$x + 2y = 180^\circ$

$x = 180^\circ - 2y$ (SATT)

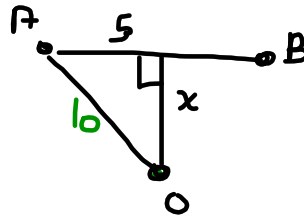
$y = \frac{180 - x}{2}$ (ITT)

EXAMPLE...

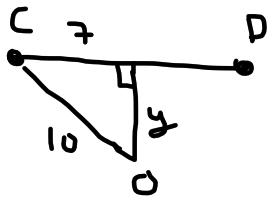
Two parallel chords, AB & CD, have lengths of 10 cm and 14 cm respectively. The diameter of the circle is 20 cm. Find the **smallest** possible distance that could separate these two chords.



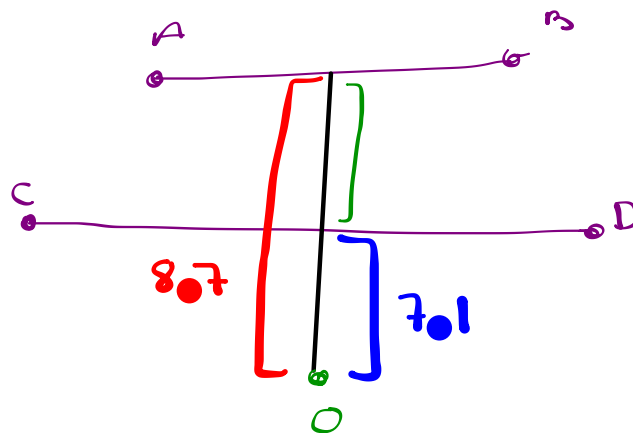
(Chord P)



$$\begin{aligned}
 x &\Rightarrow \text{leg} \\
 a^2 &= c^2 - b^2 \\
 a^2 &= 10^2 - 5^2 \\
 \sqrt{a^2} &= \sqrt{75} \\
 a &= 8.7
 \end{aligned}$$



$$\begin{aligned}
 y &\Rightarrow \text{leg} \\
 a^2 &= c^2 - b^2 \\
 a^2 &= 14^2 - 7^2 \\
 \sqrt{a^2} &= \sqrt{175} \\
 a &= 13.2
 \end{aligned}$$



$$\begin{aligned}
 8.7 &- 7.1 \\
 &= 1.6
 \end{aligned}$$



Homework :

p.403

- #1
- #2
- #3
- #6
- #7

