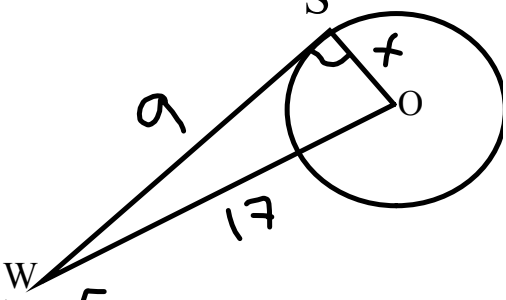
Warm Up



Fill in the blanks

1) The Tangent is SW

2) The center is labled with the letter O

3) The point of tangency is labled with the letter S

4) The radius is the line SO

SHOW YOUR WORK

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

$17^2 - 9^2 = a^2$

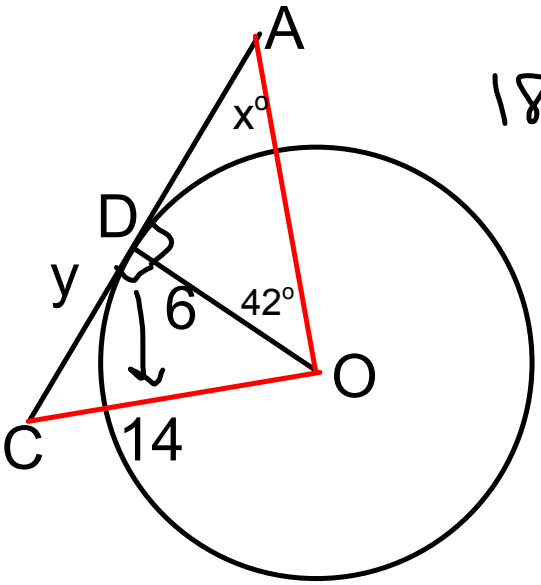
$289 - 81 = a^2$

5) Find the length of the radius if OW = 17 and SW = 9

$\sqrt{208}$

$a = 14.4cm$

Determine the unknowns:



$180 - 90 - 42$

$x = 48°$

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

$14^2 - 6^2 = a^2$

$\sqrt{196 - 36}$

$y = 12.6$

$14 - 6 = b^2$

$196 - 36$

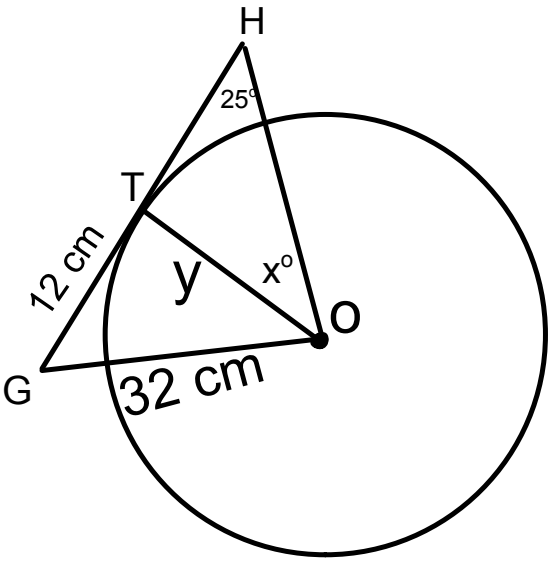
$\sqrt{160}$

$y = 12.6$

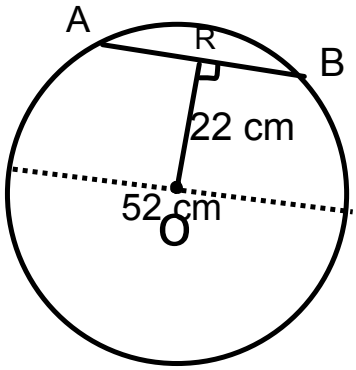
Warm Up

Day 2

Determine the unknowns:



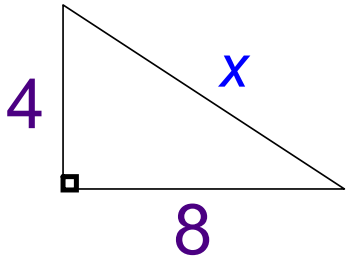
What is the length of the cord AB?



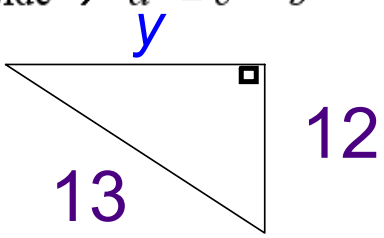
Calculating with **Tangents** We Only Use ...

1) Pythagorean Theorem

finding the hypotenuse → $c^2 = a^2 + b^2$



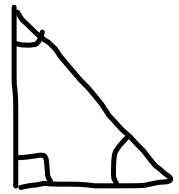
finding a side → $a^2 = c^2 - b^2$



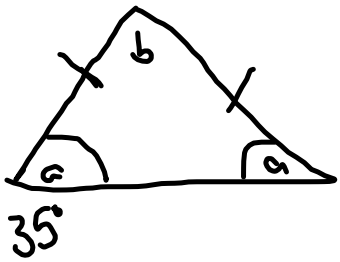
or

2) Angle Sum of Triangle

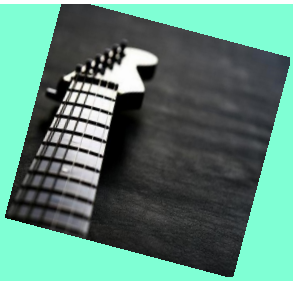
Unknown Angle= 180° - 90° - known angle



(SATT)

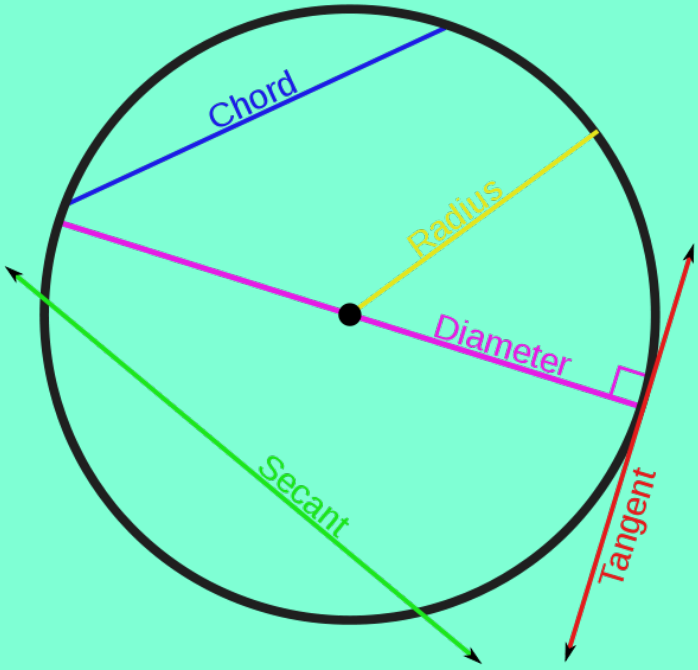


(ITT)



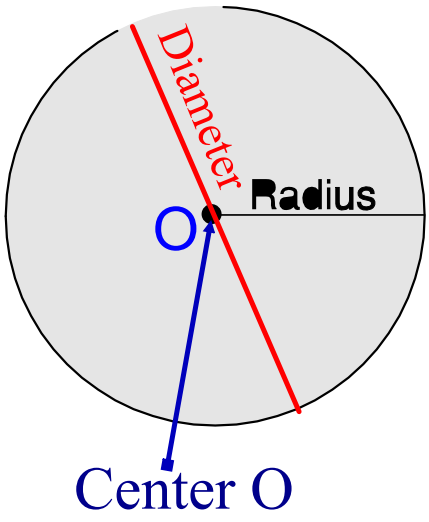
Section 8.2

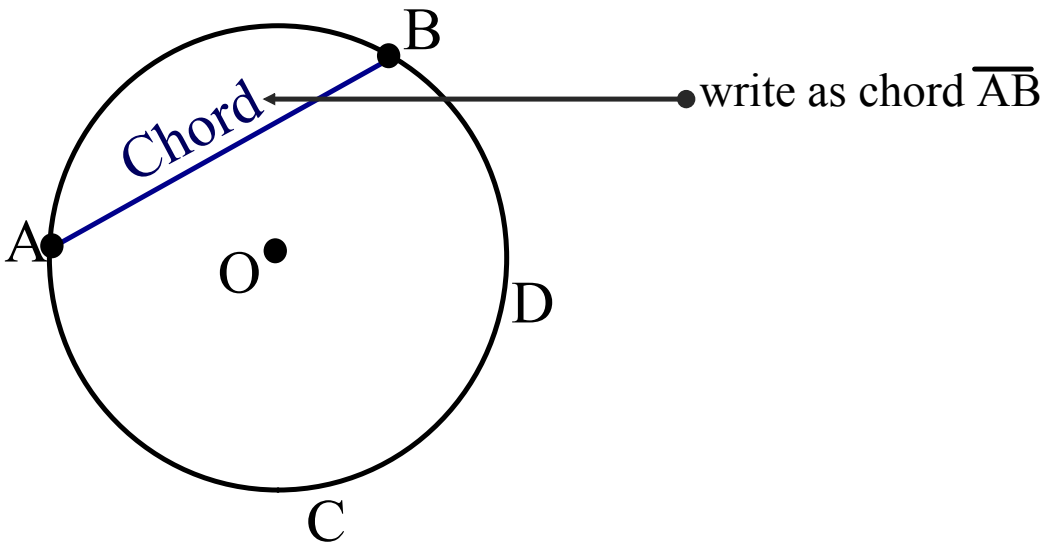
Properties of Chords in Circles



Properties of Circles & Terminology:

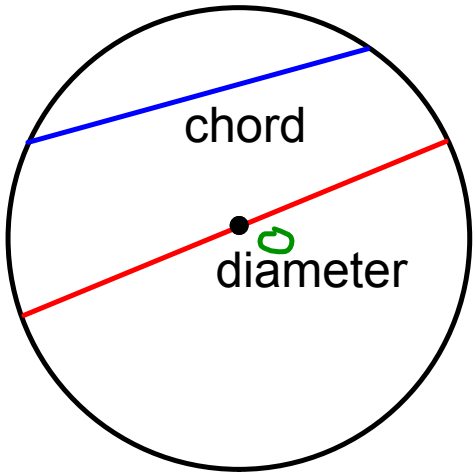
Circle - the set of all points that are equidistant from a fixed point.





- A line segment that joins two points on a circle is a **chord**.

- A **diameter** of a circle is a chord through the centre of the circle.

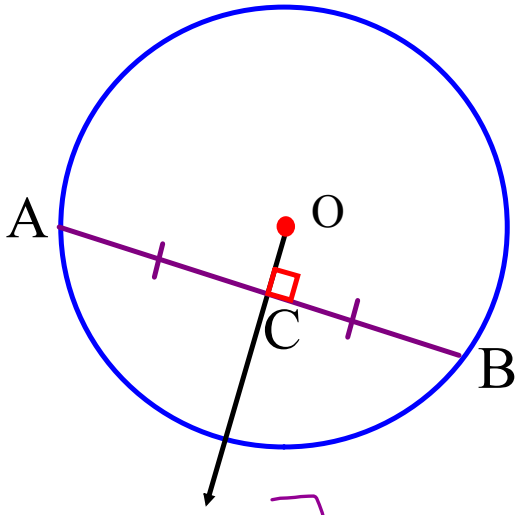


Perpendicular to a Chord Property 1

- A line drawn from the centre of a circle that is perpendicular to a chord bisects the chord. (It cuts the chord into two equal parts.)

If OC is perpendicular to AB

Then AC = CB

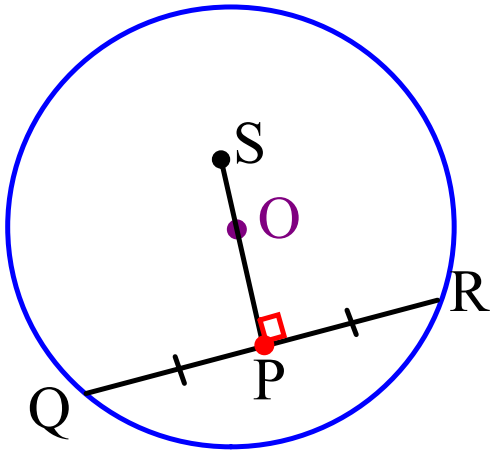


Perpendicular bisector:

→ cuts a cord in to two equal pieces at 90° angle

Perpendicular to a Chord Property 2

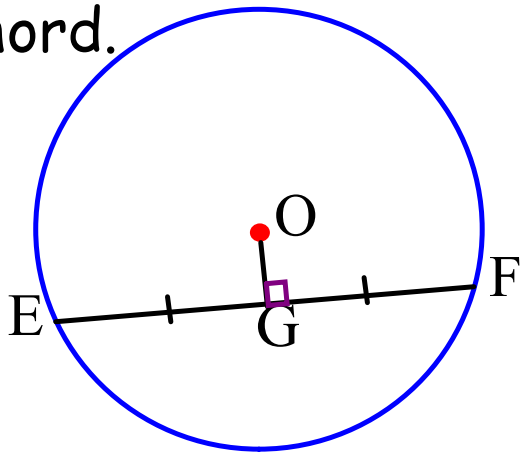
- The perpendicular bisector of a chord in a circle passes through the centre of the circle.



Perpendicular to a Chord Property 3

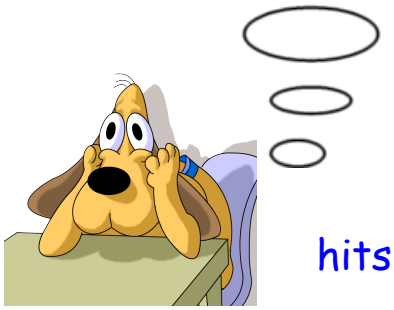
- A line that joins the centre of a circle and the midpoint of a chord is perpendicular to the chord.

If O is the centre and
EG = GF, then
$\angle OGE = \angle OGF = 90^0$.

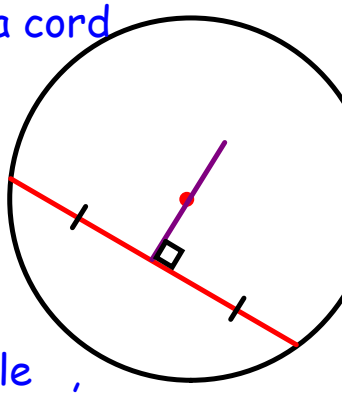


STOP!

Aren't they all saying the same thing?



Yes!
We know
that a
perpendicular bisector of a cord



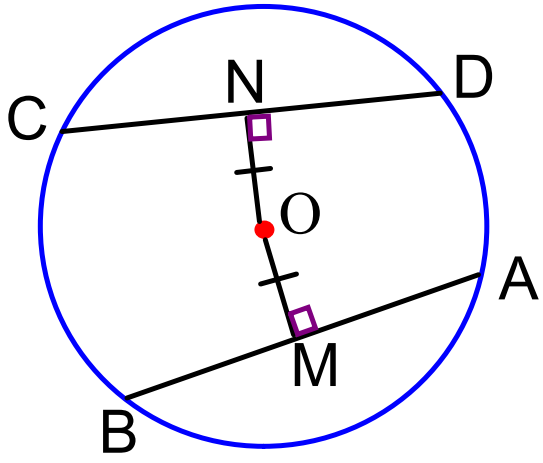
hits the cord at a 90 degree angle ,

the chord is cut in two equal pieces,

and passes through the centre.

Perpendicular to a Chord Property 4

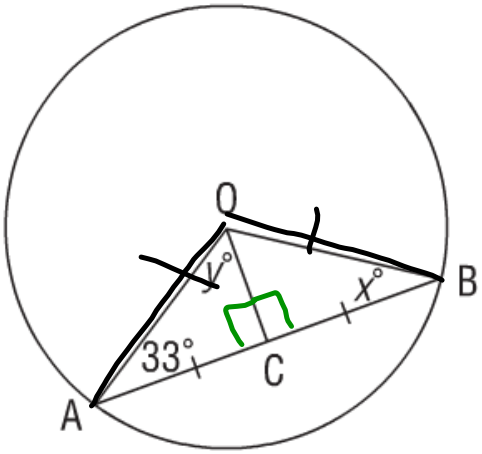
- Two chord that are equal distance from the center must be the same



If OM = ON,
then AB = CD
OR
If AB = CD,
then OM = ON

Determining the Measure of Angles in a Triangle

Example #1. Determine the values of x^o and y^o.



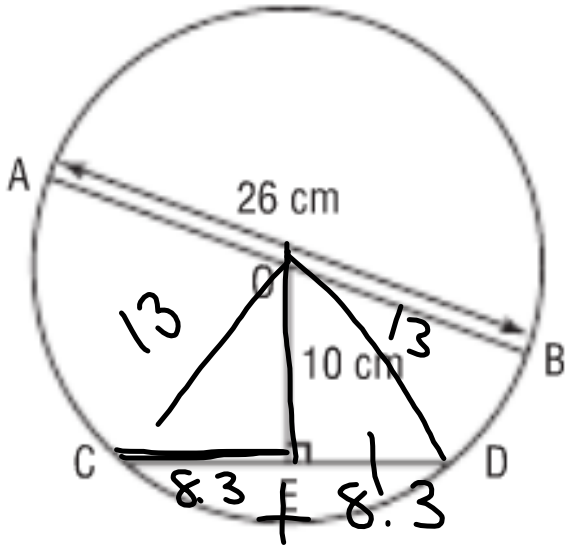
180 - 90 - 33

y = 57° (SATT)

X = 33° (ITT)

Using the Pythagorean Theorem in a Circle

Example #2. What is the length of chord CD, to the nearest tenth?



16.6cm

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

$13^2 - 10^2 = a^2$

$169 - 100$

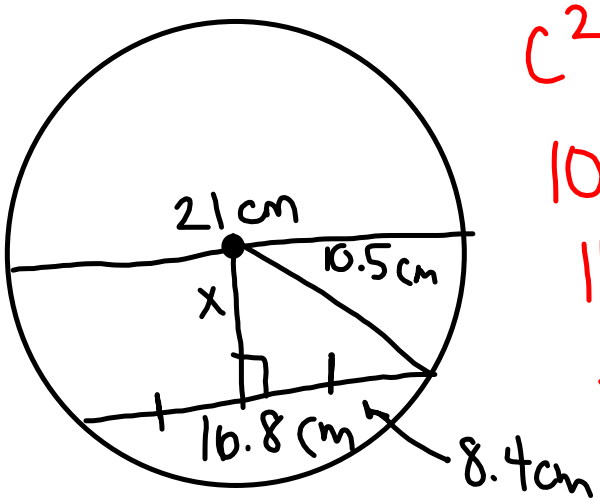
$\sqrt{69} = \sqrt{a^2}$

$a = 8.3$

16.6cm

EXAMPLE...

A chord that is 16.8 cm in length, is drawn in a circle that has a diameter of 21 cm. How far is the chord from the center of the circle?



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

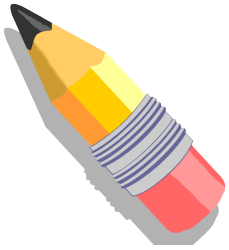
$10.5^2 - 8.4^2$

$110.25 - 70.56$

$\sqrt{39.69}$

$= 6.3 \text{ cm}$

Homework:



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Questions: 3, 4, 5, 6

6, 7(b), 10(a), 11, 14, 15