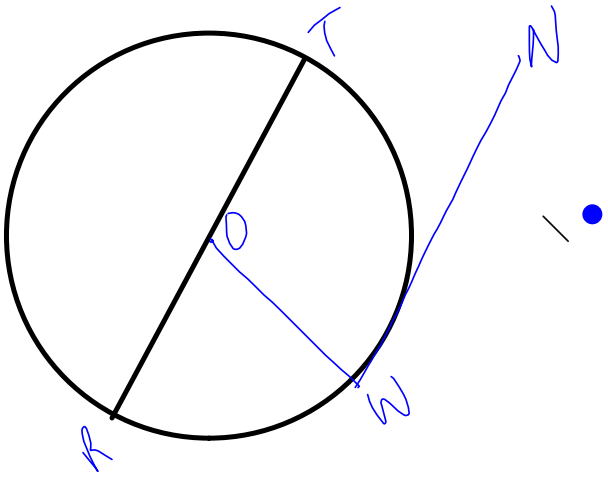
Warm-Up May 17, 2017

1. Label the center O
2. Draw a diameter and label RT
3. draw a radius from point O and call the endpoint W.
4. Draw a tangent and call it WN

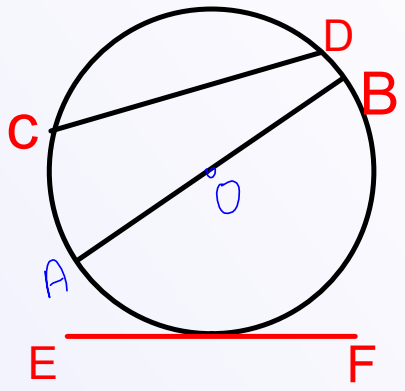


SECTION 8.2
PROPERTIES OF A CHORD

A line segment that joins two points on a circle is a **CHORD**. [any line that goes from one side of the circle to the other side]

A diameter of the circle is a chord that goes through the center of the circle.

Use two letters to name a line



1. Name the tangent.

EF or FE

2. Name the chord[s].

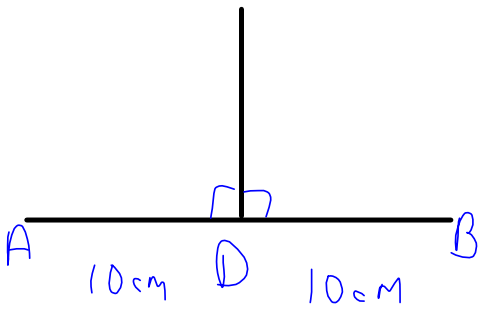
CD, AB
DC, BA

3. Name the diameter

AB

A perpendicular bisector intersects a line segment at 90° and divides the line segment into two equal parts.

AB = 20cm



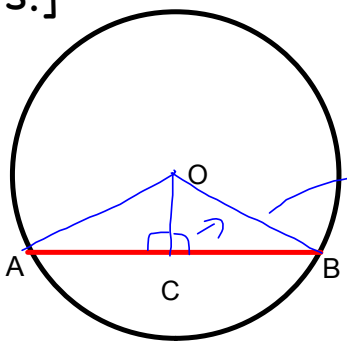
Properties of a CHORD

1. Perpendicular to chord Property 1

The perpendicular from the center of a circle to a chord bisects the chord [that is the perpendicular divides the chord into two equal parts.]

AC = CB

<ACO = <BCO



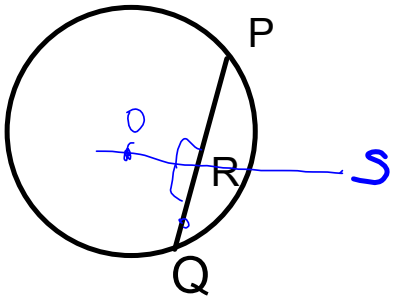
AB=16

hypotenuse

2. Perpendicular to Chord Property 2

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

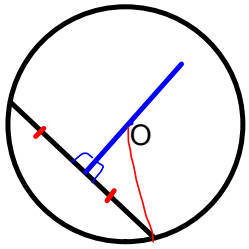
When PR = QR and <SRP =<SRQ then SR passes through O [the center of the circle]



To Summarize

A perpendicular bisector of a chord:

* Hits the chord at a 90° angle
* Cuts the chord into two equal parts
* Passes through the center



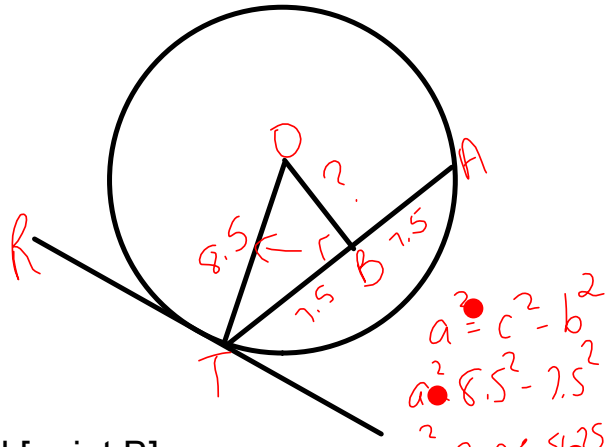
Draw a circle that includes the following information:

1. A tangent [RT] where T is the point of tangency

2. Label the center O

3. A radius [OT]

4. A cord [TA]



5. Perpendicular line from O to the chord [point B]

6. If the ~~diameter~~ radius of the circle is ~~17~~ 8.5 and the chord length is 15 what is the distance from the center of the circle to the chord?

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

$a^2 = 8.5^2 - 7.5^2$

$a^2 = 72.25 - 56.25$

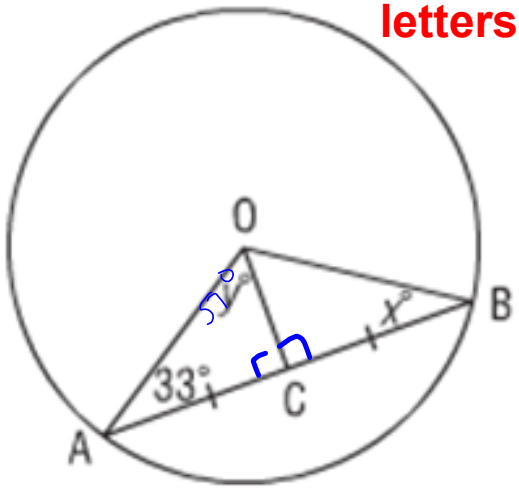
$\sqrt{a^2} = \sqrt{16}$

$a = 4$

Let's apply these properties of a chord...

Find the value of y and x

An angle has to be named using 3 letters!!!

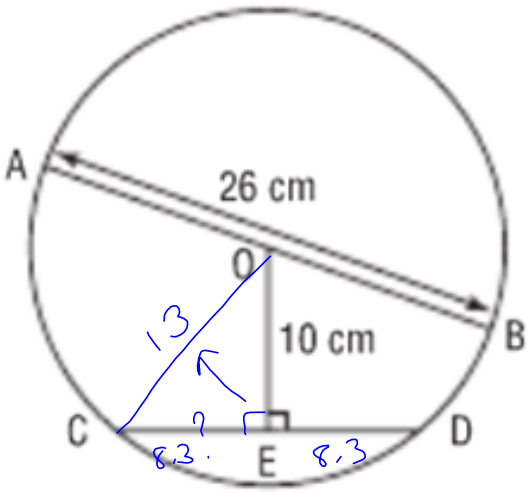


$\angle AOC = 57^\circ$

$33 + 90 + 57^\circ = 180^\circ$

$\angle OBA = 33^\circ$

Find the length of CD.



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

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

$a^2 = 169 - 100$

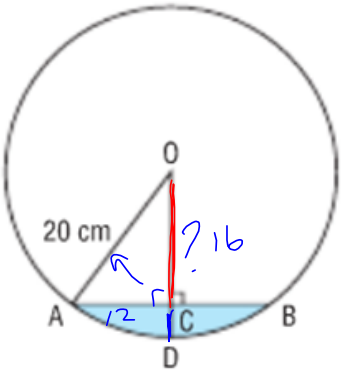
$\sqrt{a^2} = \sqrt{69}$

$a = 8.3$

$CD = 16.6$ cm

The radius of the pipe below is 20 cm. Water fills less than one-half of the pipe. The surface of the water AB is 24 cm wide.

Determine the maximum depth of the water, which is the depth CD.



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

$a^2 = 20^2 - 12^2$

$a^2 = 400 - 144$

$\sqrt{a^2} = \sqrt{256}$

$a = 16$

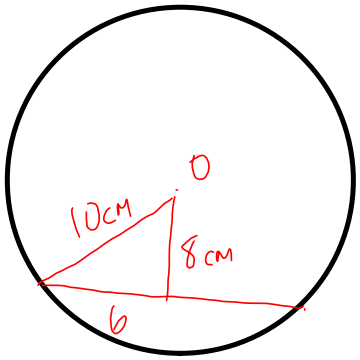
$20 - 16 = 4$ cm

A circle has a diameter of 20cm.

radius 10 cm

The distance from the center to the chord is 8 cm. Find the length of the chord. You MUST INCLUDE A DIAGRAM!!!

chord = 12 cm



$c^2 = a^2 + b^2$

$10^2 = a^2 + 8^2$

$100 = a^2 + 64$

$\sqrt{36} = \sqrt{a^2}$

$6 = a$

Homework

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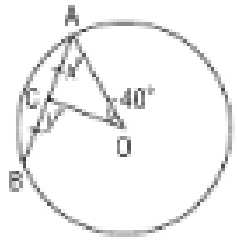
3, 4, 5, 6, 7, 11, 14

Pg 533 Answers

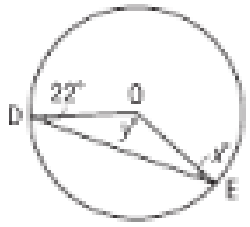
Use 3 Letters to Name an Angle !

4. Point O is the centre of each circle. Determine each value of $x°$ and $y°$.

a)



b)



c)