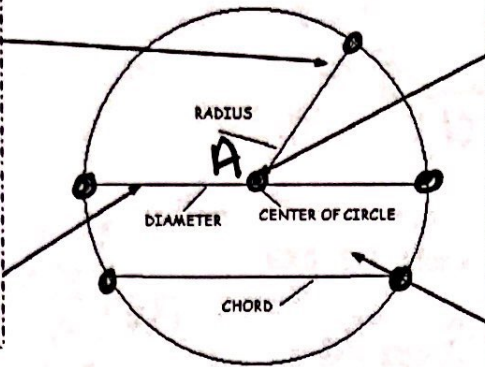


GUIDED NOTES: Chords and Arcs of Circles

Any segment with endpoints that are the center and a point on the circle is a radius.

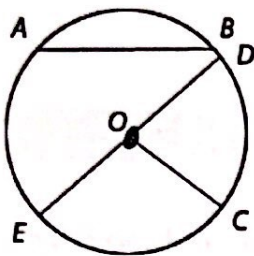
A chord that passes through the center is a diameter of a circle.



The given point is called the center. This point names the circle.

Any segment with endpoints that are on a circle is called a chord.

EX1: Name the circle, a radius, a chord, and a diameter of the circle.

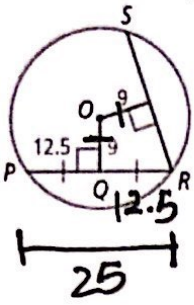


Circle: OO
 Radius: OE, OD, OC
 Chord: AB, DE
 Diameter: DE

**Since a diameter is composed of two radii, then $d = 2r$ and $r = d/2$

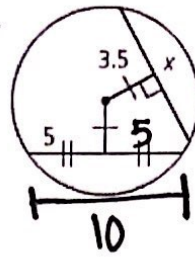
Theorem:	In My Own Words...	
Within a circle or in congruent circles, chords equidistant from the center or centers are congruent. If $OE = OF$, then $\overline{AB} \cong \overline{CD}$.	Chords the same distance from center are \cong	
Within a circle or in congruent circles, congruent central angles have congruent arcs. If $\angle AOB \cong \angle COD$, then $\widehat{AB} \cong \widehat{CD}$.	If central angles are \cong , arcs are \cong	
Within a circle or in congruent circles, congruent central angles have congruent chords. If $\angle AOB \cong \angle COD$, then $\overline{AB} \cong \overline{CD}$.	If central angles are \cong , chords are \cong	
Within a circle or in congruent circles, congruent chords have congruent arcs. If $\overline{AB} \cong \overline{CD}$, then $\widehat{AB} \cong \widehat{CD}$.	If chords are \cong , arcs are \cong	

EX2: What is the length of RS?



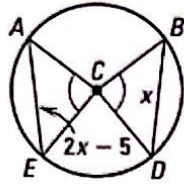
$$RS = 25$$

EX3: Solve for x.



$$x = 10$$

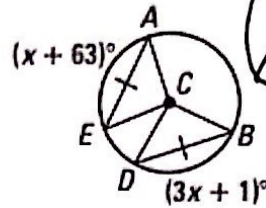
EX4: Solve for x.



$$2x - 5 = x + 5$$

$$x = 5$$

EX5: Solve for x.



$$x + 63 = 3x + 1$$

$$63 = 2x + 1$$

$$62 = 2x$$

$$\frac{62}{2} = \frac{2x}{2}$$

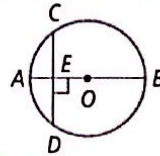
$$x = 31$$

Theorem:

In a circle, if a diameter is perpendicular to a chord, then it bisects the chord and its arc.

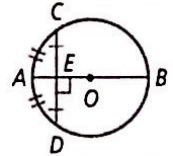
If ...

\overline{AB} is a diameter and $\overline{AB} \perp \overline{CD}$



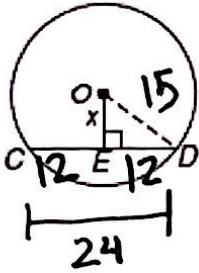
Then ...

$\overline{CE} \cong \overline{ED}$ and $\widehat{CA} \cong \widehat{AD}$



EX6: In $\odot O$, $\overline{CD} \perp \overline{OE}$, $OD = 15$, and $CD = 24$.

Find x



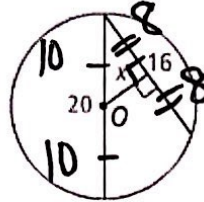
$$x^2 + 12^2 = 15^2$$

$$x^2 + 144 = 225$$

$$\sqrt{x^2} = \sqrt{81}$$

$$x = 9$$

EX7: Find the value of x.



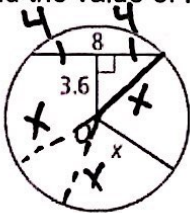
$$8^2 + x^2 = 10^2$$

$$64 + x^2 = 100$$

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

$$x = 6$$

EX8: Find the value of.



$$4^2 + 3.6^2 = x^2$$

$$x = 5.38$$