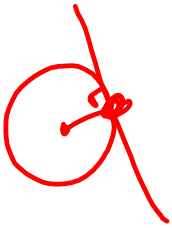
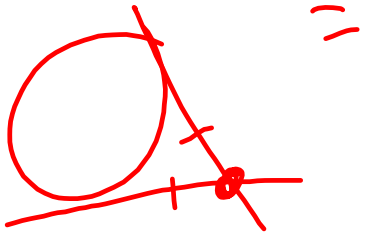
A tangent is...



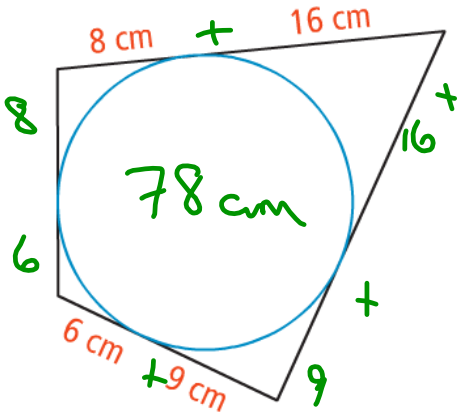
A radius and a tangent are...

2 tangents that intersect outside a circle are...



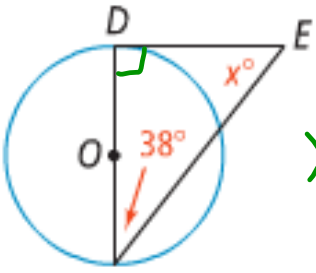
Warm Up:

1. What is the perimeter of the polygon?



2. Find x

$90+38+X=180$



$X=52$

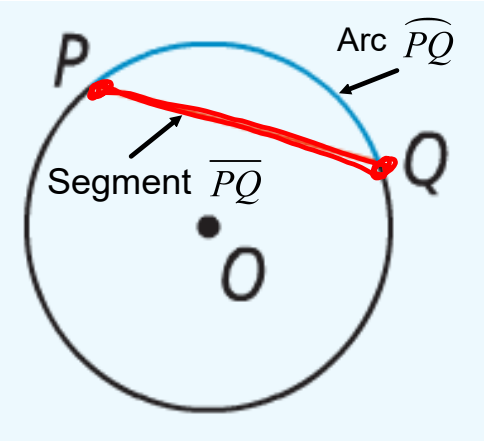
Learning Goal: Today I will learn about chords and arcs.

Success Criteria: I am able to apply the properties of chords and arcs in order to problem solve.

12-2 Chords and Arcs

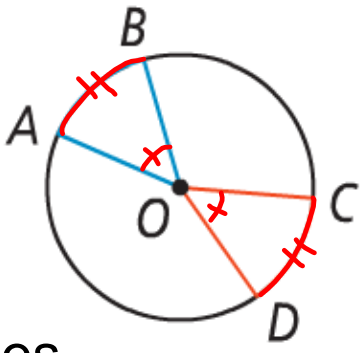
*Chord

Chord - a **segment** whose **endpoints** are on a **circle**.



Which is longer...?

*Theorem 12-4

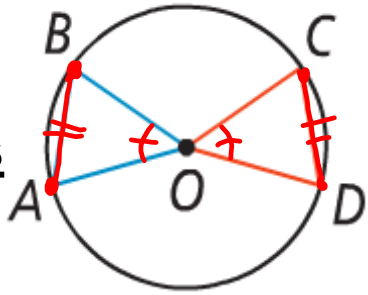


Within a circle or in congruent circles, congruent **central angles** have congruent arcs.

Within a circle or in congruent circles, **congruent arcs** have congruent **central angles**.

Label the picture!

*Theorem 12-5

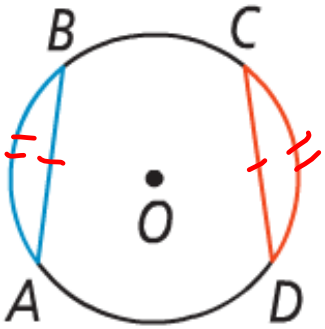


Within a circle or in congruent circles, congruent **central angles** have congruent **chords**.

Label the picture!

Within a circle or in congruent circles, **congruent** chords have **congruent** central angles.

*Theorem 12-6



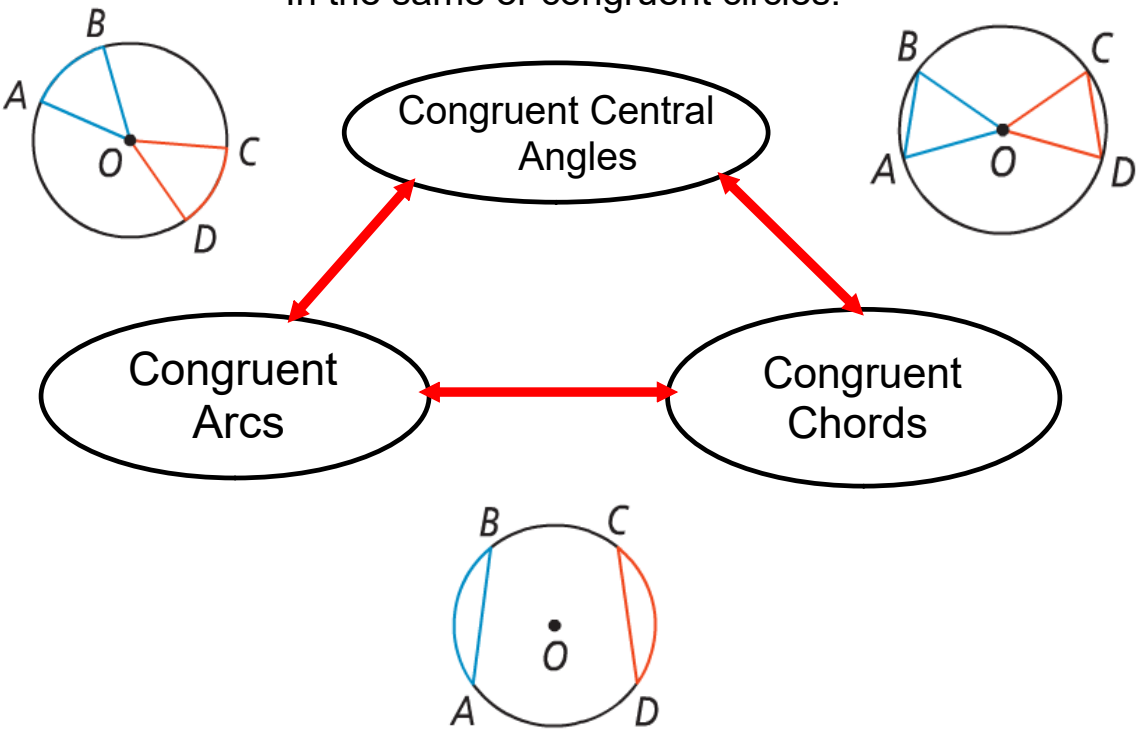
Label the picture!

Within a circle or in congruent circles, congruent **chords** have congruent **arcs**.

Within a circle or in congruent circles, **congruent** arcs have **congruent** chords.

Chords and Arcs

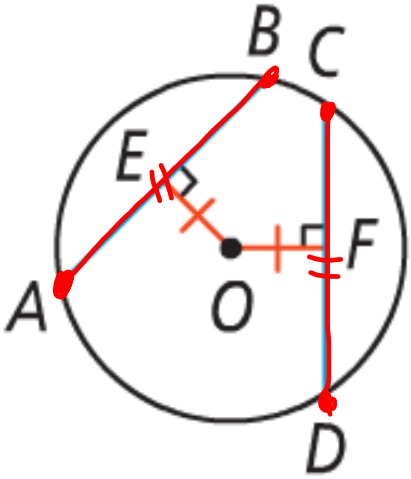
In the same or congruent circles:



*Theorem 12-7

$\overline{AB} \cong \overline{CD}$

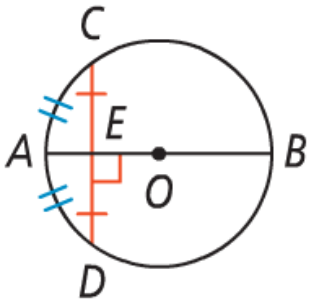
Chords equidistant from the center(s) are congruent.



Congruent chords are equidistant from the center.

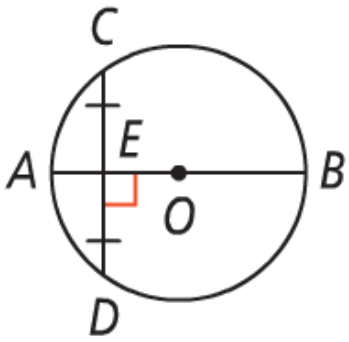
*Theorem 12-8

If a diameter is perpendicular to a chord, then it bisects the chord and arc



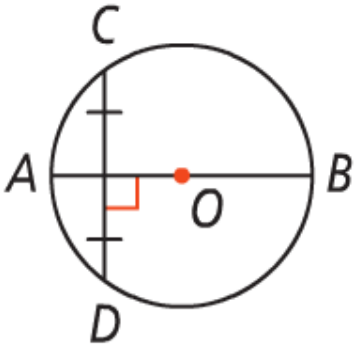
*Theorem 12-9

If a **diameter** that bisects a chord, then it is perpendicular to the **chord**.

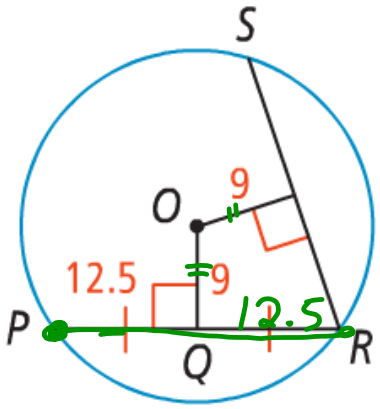


*Theorem 12-10

The perpendicular **bisector** of a chord contains the **center** of the circle.



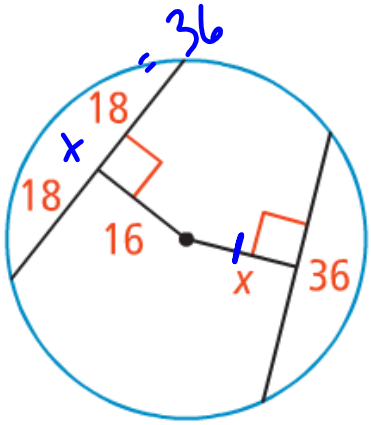
Example



$PR \cong SR$

Find the length of $\overline{RS}$

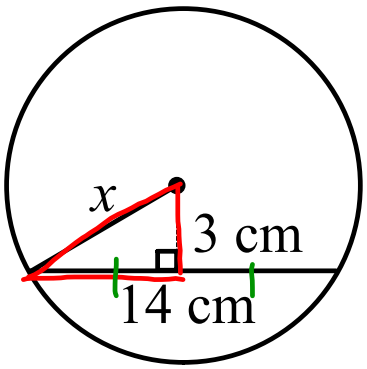
12.5+12.5=25



Find x=16

Example

Find the missing values of the variable.



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

$3^2 + 7^2 = x^2$

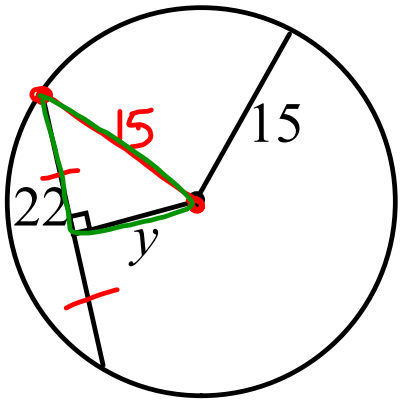
$9 + 49 = x^2$

$\sqrt{58} = \sqrt{x^2}$

$7.62 = x$

Example

Find the missing values of the variable.



$y^2 + 11^2 = 15^2$

$y^2 + 121 = 225$

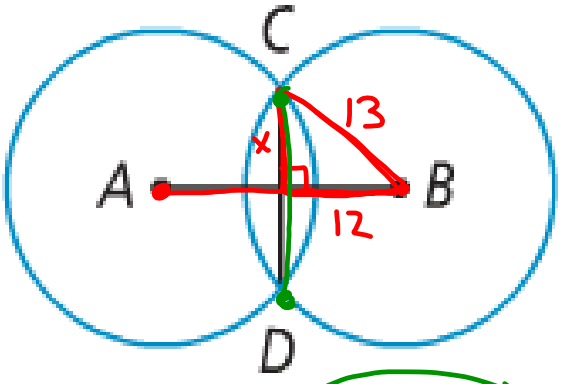
$-121 \quad -121$

$\sqrt{y^2} = \sqrt{104}$

$y = 10.2$

$\odot A$ and $\odot B$ are congruent. $\overline{CD}$ is a chord of both circles.

If $AB = 24$ cm and a radius $= 13$ cm, how long is $\overline{CD}$?



$x^2 + 12^2 = 13^2$

$x^2 + 144 = 169$

$-144 \quad -144$

$\sqrt{x^2} = \sqrt{25}$

$x = 5$

$CD = 10$

Add: Vocab: pi and concentric circles

Closure: Today I learned about chords and arcs, and their properties.