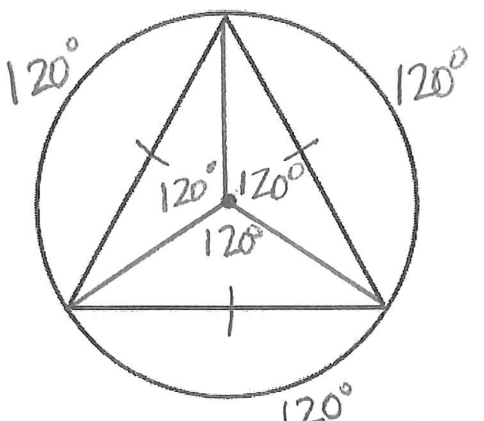
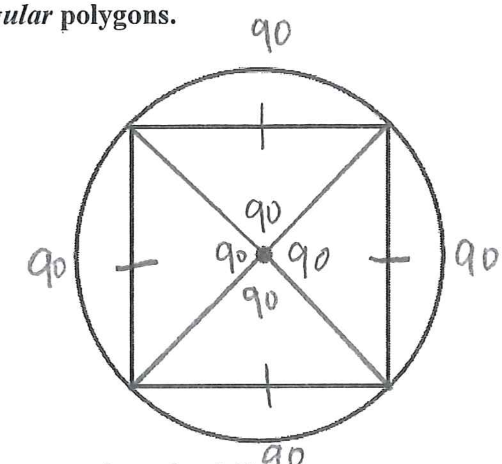
9.2 Chord Properties Day 2 Notes Name: Key

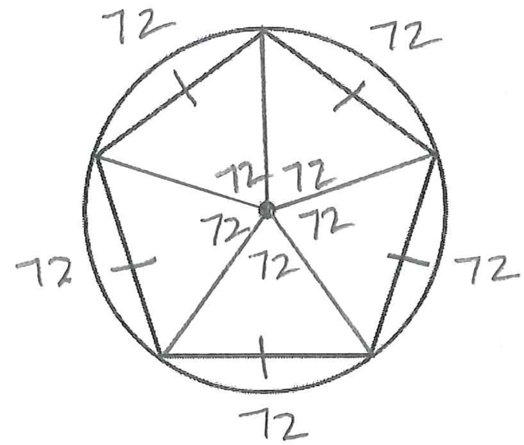
Learning Targets

- I can determine and apply the relationship between congruent chords and their central angles and intercepted arcs.

The figures below show inscribed *regular* polygons.







For each inscribed *regular* polygon, complete the following:

The polygon sides are Congruent. Add markings on your figures to reflect this.

The sides of the polygons are also called Chords of the circle.

- Draw radii from the center of the circle to each vertex.
- Label the central angles with their measurements in degrees.
- Label the intercepted arcs with their measurements in degrees.

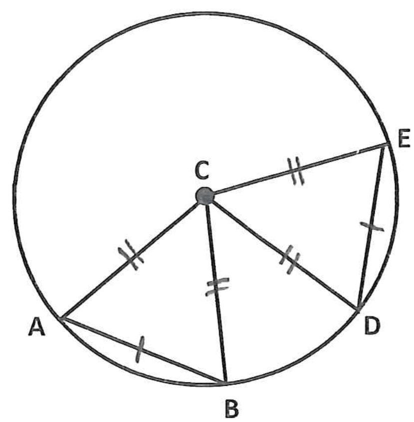
The chords are congruent when their central angles or minor arcs are congruent

Developing a Proof

We have seen that the measurements of minor arcs are equal to their central angle measurements.

Given: Circle C with $\overline{AB} \cong \overline{DE}$

Prove: $\angle ACB \cong \angle DCE$



Statement	Reason
Circle C with $\overline{AB} \cong \overline{DE}$	Given
$\overline{CA} \cong \overline{CD}$	Radius Definition
$\overline{CB} \cong \overline{CE}$	Radius Definition
$\Delta ACB \cong \Delta DCE$	SSS
$\angle ACB \cong \angle DCE$	CPCTC

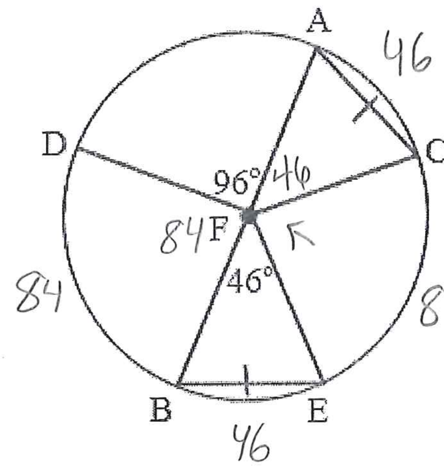
Chord Central Angles Conjecture

If two chords of a circle are Congruent, then they determine two Central angles which are congruent.

Chord Arcs Conjecture

If two chords of a circle are Congruent, then their intersecting arcs are congruent.

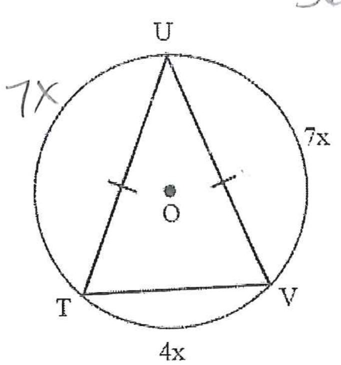
Use Circle F to answer questions #1 - #6. Assume $\overline{AB}$ is a diameter.



1. $m\widehat{BE} =$ 46°
2. $m\widehat{AC} =$ 46°
3. $m\angle CFE =$ 88°
4. $m\angle DFB =$ 84°
5. $m\widehat{DEC} =$ 218°
6. $m\widehat{DAE} =$ 230°

For problems #7- #10, use the figure to find the missing information.

7.



$360 = 7X + 7X + 4X$

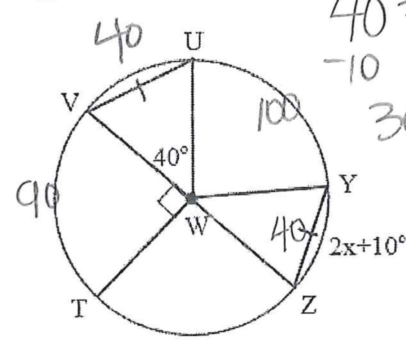
$\frac{360}{18} = \frac{18X}{18}$

$x =$ 20

$m\widehat{TVU} =$ 220°

$m\widehat{TUV} =$ 280°

8.



$40 = 2X + 10$

$-10 \quad -10$

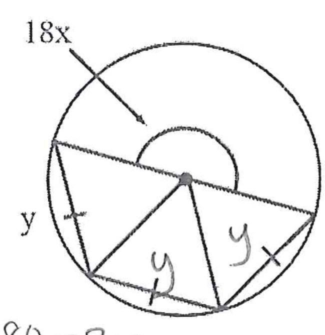
$30 = 2X$

$x =$ 15

$m\widehat{ZU} =$ 140°

$m\widehat{TUY} =$ 230°

9.

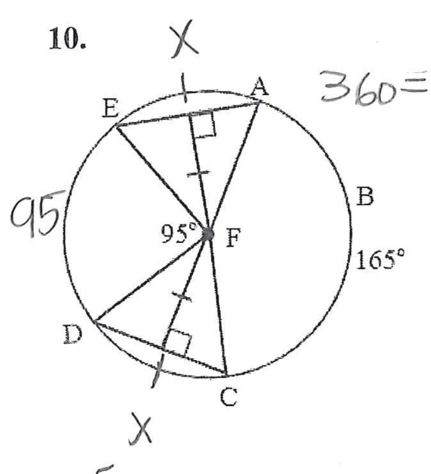


$\frac{180}{3} = \frac{3y}{3}$

$x =$ 10°

$y =$ 60°

10.



$360 = 95 + 2x + 165$

$2x = 100$

$X = 50$

$\widehat{EA} \cong$ DC

$m\widehat{DCA} =$ 215°