

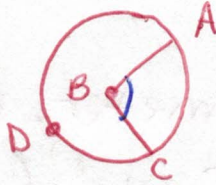
# Arcs and Central Angles

UNIT 6 LESSON \_\_\_\_\_ INVESTIGATION \_\_\_\_\_ NOTES

## Lesson Vocabulary

Central Angle - An angle within a circle with its vertex at the center of the circle and the sides are radii.

$\angle ABC$  and  $\angle ADC$   
are central angles



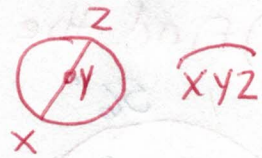
Sum of Central Angles - The sum of all central angles in a circle =  $360^\circ$ .

Arc - part of a circle formed by a central angle. It measures in degrees.

3 Types of Arcs:

1. Semicircle (linear pair)

- Equals  $180^\circ$
- use 3 letters to name



2. Minor Arc

- Its measure is less than  $180^\circ$
- Use two letters to name.
- minor arc = the measure of its central  $\angle$

3. Major Arc

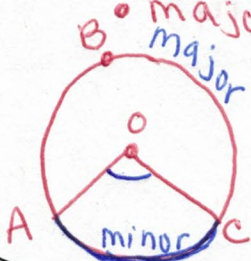
- Its measure is greater than  $180^\circ$
- Use three letters to name.

major arc =  $360 - \text{minor arc}$   
Central  $\angle$  -  $\angle AOC$

minor Arc -  $\widehat{AC}$  or  $\widehat{CA}$

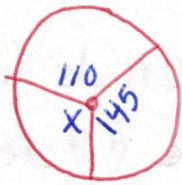
major Arc -  $\widehat{ABC}$  or  $\widehat{CBA}$

NOT major -  $\widehat{ACB}$



Example Problem(s)

ex.) find  $m\angle x$ .

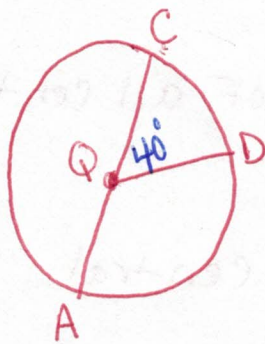


$$x + 110 + 145 = 360$$

$$x + 255 = 360$$

$$x = 105^\circ$$

ex.)  $\overline{AC}$  is a diameter. Find  $\widehat{CD}$ ,  $\widehat{CAD}$ ,  $\widehat{AD}$ ,  $\widehat{DCA}$



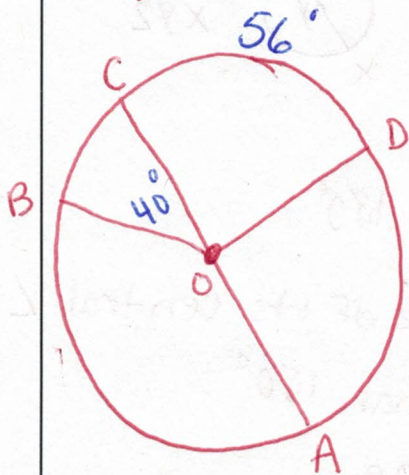
$$\widehat{CD} = 40^\circ \text{ (= its central } \angle)$$

$$\widehat{CAD} = 360 - 40 = 320^\circ$$

$$\widehat{AD} = 180 - 40 = 140^\circ \text{ (ADC is a semicircle, AC is a diameter)}$$

$$\widehat{DCA} = 360 - 140 = 220^\circ \text{ or } 180 + 40 = 220^\circ$$

ex.) Find the measure of each:



$$\widehat{BC} = 40^\circ \text{ (= central } \angle)$$

$$\widehat{BD} = 40 + 56 = 96^\circ$$

$$\widehat{ABC} = 180 \text{ (Semicircle)}$$

$$\widehat{AB} = 180 - 40 = 140^\circ$$

$$\widehat{BAD} = 360 - 40 - 56 = 264^\circ$$

$$\angle COD = 56^\circ \text{ (= its minor arc)}$$

$$\angle BOA = 180 - 40 = 140^\circ$$

ex.) Find  $x$ .



$$180 - 78 = 102$$

$$5x - 52 = 102$$

$$5x = 154$$

$$x = 30.8$$