9.0 Circle Definitions and Arcs Day 2

Learning Targets:

a. I can use central angles of a circle to find major and minor arcs of a circle.

b. I can use major and minor arcs of a circle to find central angles of a circle.

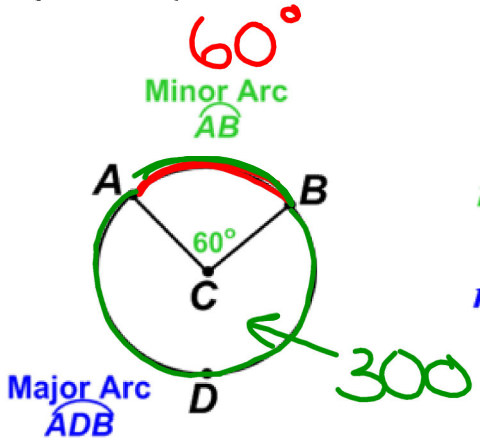
Any two points *A* and *B* on a circle *C* determine a ***MINOR ARC*** and a ***MAJOR ARC***.

MINOR ARC - The shorter arc connecting two points on a circle.

- A minor arc is less than 180°.
- The minor arc is denoted using two letters.
- The minor arc is equal to the measure of its central angle.

MAJOR ARC - The longer arc connecting two points on a circle.

- A major arc is between 180° and 360°.
- The major arc is denoted using three letters.
- The major arc is equal to the difference of 360° and the measure of the related minor arc.



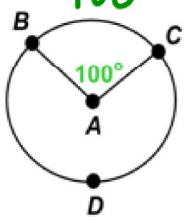
$m\overset{\frown}{AB} = 60°$

$m\overset{\frown}{ADB} = 360° - 60°$
$= 300°$

Examples

For #1 and 2 identify a major and minor arc and then find their measures.

1. 100



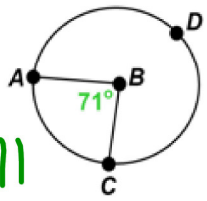
minor

$m\overset{\frown}{BC} = 100°$

major

$m\overset{\frown}{BDC} = 260°$

2.



71

minor

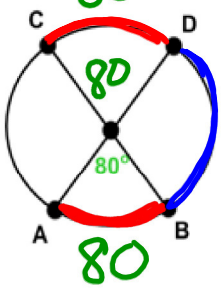
$m\overset{\frown}{AC} = 71°$

major

$m\overset{\frown}{CDA} = 289°$

For #3 and 4, find the measures of $\overset{\frown}{AB}$ and $\overset{\frown}{CD}$ in circle U. Are the arcs congruent?

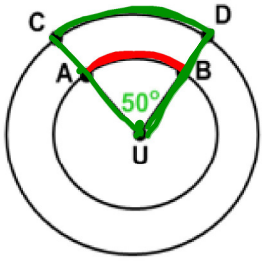
3.



$m\overset{\frown}{BD} = 100$

YES.

4.

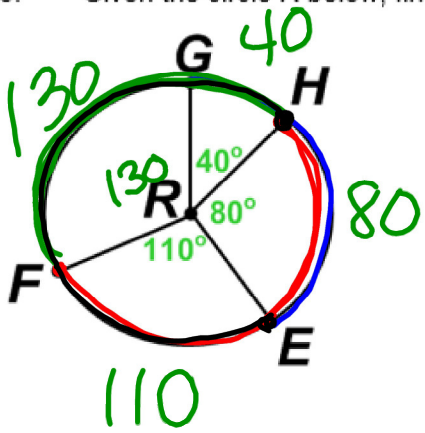


$m\overset{\frown}{AB} = 50°$

$m\overset{\frown}{CD} = 50°$

YES.

5. Given the circle R below, find the measure of the following arcs.



minor

a. $m\widehat{GE}$ = 120°

b. $m\widehat{HF}$ = 170°

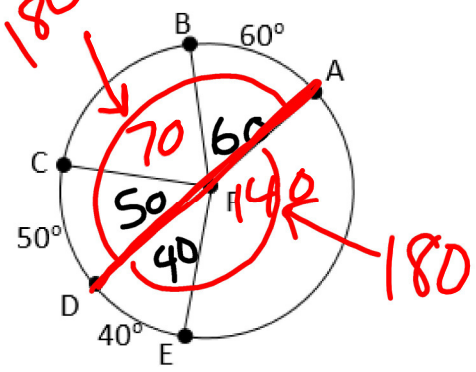
c. $m\widehat{HEF}$ = 190°

d. $m\widehat{HFE}$ = 280°

e. $m\widehat{GFE}$ = 240°

f. $m\widehat{FEG}$ = 230

6. Find the measure of each angle.



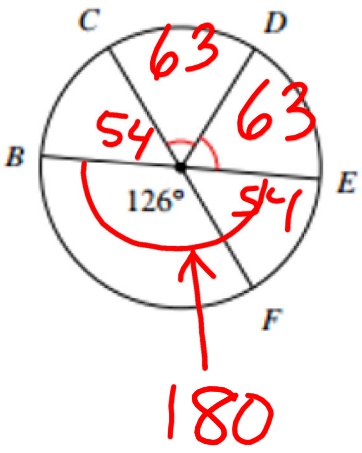
a. $m\angle DFB =$ 120°

b. $m\angle CFB =$ 70°

c. $m\angle CFE =$ 90°

d. $m\angle EFA =$ 140°

7. Given the circle below, find each of the following arcs.



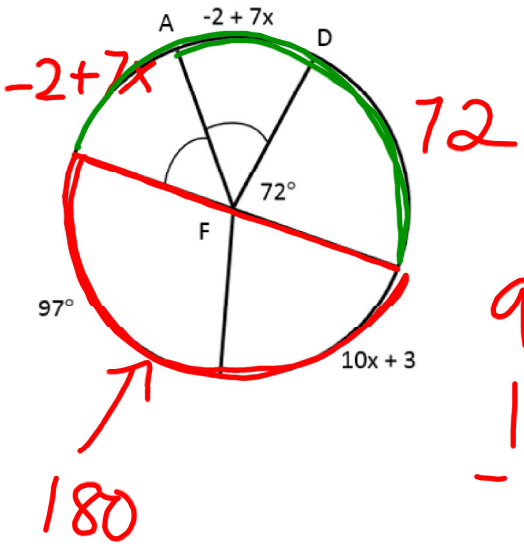
a. $m\widehat{CD}$ = 63°

b. $m\widehat{BD}$ = 117°

c. $m\widehat{BED}$ = 243°

d. $m\widehat{BDE}$ = 180°

One last example...



$-2+7x$ 72 180

$-2+7x-2+7x+72=180$

$97+10x+3=180$

$100+10x=180$

$-100 \quad -100$

$\frac{10x}{10}=\frac{80}{10}$

$x = 8$

$m\angle AFD = 54°$