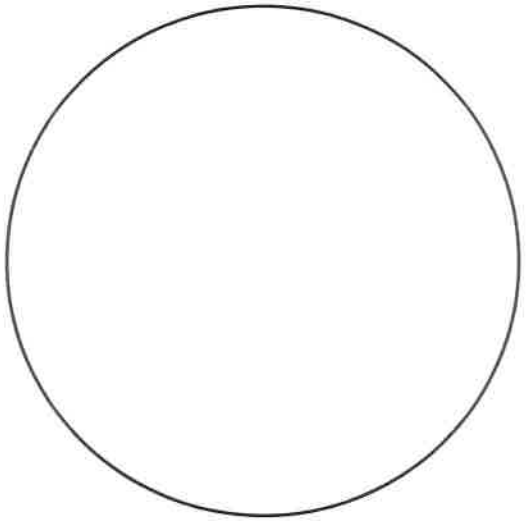
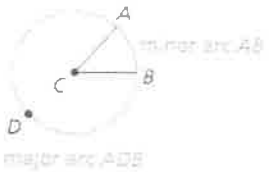
10.2 Finding Arc Measures Notes Date:

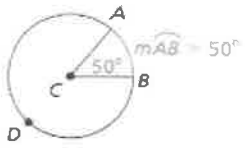


A central angle of a circle is an angle whose vertex is the center of the circle. In the diagram, ∠ACB is a central angle of ⊙C. If m∠ACB is less than 180°, then the points on ⊙C that lie in the interior of ∠ACB form a minor arc with endpoints A and B. The points on ⊙C that do not lie on the minor arc AB form a major arc with endpoints A and B. A semicircle is an arc with endpoints that are the endpoints of a diameter.



Minor arcs are named by their _____. The minor arc associated with ∠ACB is named _____.

Major arcs and semicircles are named by their _____ and a _____on the arc. The major arc associated with ∠ACB is named _____.



$m\widehat{ADB} = 360° - 50° = 310°$

The measure of a minor arc is the measure of its _____. The expression _____ is read as "_____".

The measure of the entire circle is _____. The measure of a major arc is the _____ of _____ and the measure of the related minor arc.

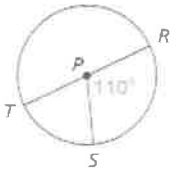
The measure of a semicircle is _____.

Ex 1 Find the measure of each arc of ⊙P, when $\overline{RT}$ is a diameter.

a. $\widehat{RS}$

b. $\widehat{RTS}$

c. $\widehat{RST}$



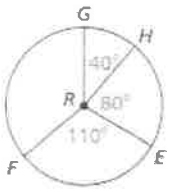
Two arcs of the SAME CIRCLE are _____ arcs when the intersect at EXACTLY one point. You can add the measures of two _____ arcs.

POSTULATE 10.1 **Arc Addition Postulate**

The measure of an arc formed by two adjacent arcs is the _____ of the measures of the two arcs.

Ex 2 Find the measure of each arc.

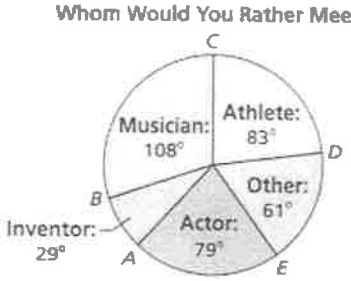
a. $\overset{\frown}{GE}$ b. $\overset{\frown}{GEF}$ c. $\overset{\frown}{GF}$



Ex 3 A recent survey asked teenagers whether they would rather meet a famous musician, athlete, actor, inventor, or other person. The circle graph shows the results. Find the indecated arc measures.

a. $m\overset{\frown}{AC}$ b. $m\overset{\frown}{ACD}$

c. $m\overset{\frown}{ADC}$ d. $m\overset{\frown}{EBD}$

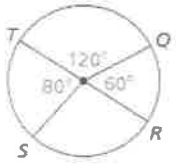


Your turn:

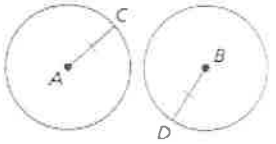
Identify the given arc as a *major arc*, *minor arc*, or *semicircle*. Then find the measure of the arc.

1. $\overset{\frown}{TQ}$ 2. $\overset{\frown}{QRT}$ 3. $\overset{\frown}{TQR}$

4. $\overset{\frown}{QS}$ 5. $\overset{\frown}{TS}$ 6. $\overset{\frown}{RST}$

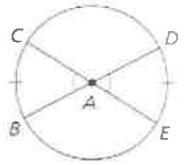


Two Circles are _____ iff a transformation or a composition of tranformations maps one circle onto the other.



Theorem 10.3 **Congruent Circles Theorem**
Two circles are congruent circles iff they have the same _____.

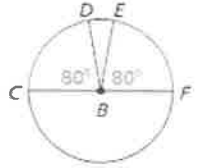
Two arcs are _____ iff they have the same _____ and they are arcs of the _____ circle or _____ circles.



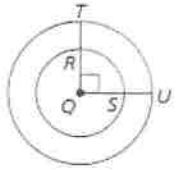
Theorem 10.4 **Congruent Central Angles Theorem**
In the _____ circle, or in _____ circles, two minor arcs are _____ iff their corresponding _____ angles are congruent.

Ex 4 Tell whether the red arcs are congruent. Explain why or why not.

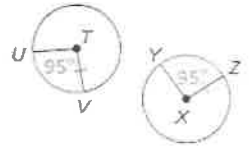
a.



b.

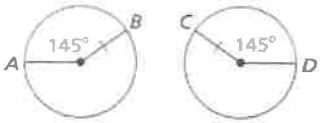


c.

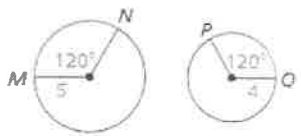


Your turn. **Tell whether the red arcs are congruent. Explain why or why not.**

7.



8.



Theorem 10.5 **Similar Circles Theorem**

ALL CIRCLES ARE _____.