Name: _____

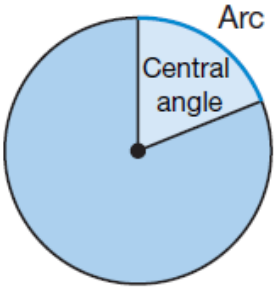
Date: _____

Period: _____

Geometry Lesson 26

Objective: TSW find and use central angles and arc measures.

_____ - A part of a circle consisting of two points on the circle, called endpoints, and all the points on the circle between them.



_____ Arcs - When two arcs on a circle share exactly one endpoint.

_____ Angle - An angle whose vertex is at the center of a circle.

<u>Arcs of a Circle</u>

_____ Arc - An arc that is smaller than half a circle.

The measure of a minor arc is the same as the measure of its central angle. The measure of a minor arc must be greater than ____° and less than _____°.

All minor arcs are named using the two endpoints of the arc. $\overset{\frown}{\_\_}$

_____ Arc - An arc that is larger than half a circle.

The measure of a major arc is the difference of 360° and the measure of the associated minor arc.

The measure of a major arc must be greater than _____°and less than _____°.

All major arcs are named using the two endpoints of the arc and a point on the circle between the endpoints. $\overset{\frown}{\_\_\_}$

_____ - An arc equal to half a circle.

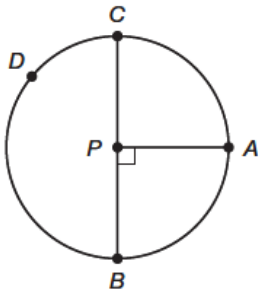
The measure of a semicircle is _____°.

Like major arcs, semicircles can be named with the two endpoints of the semi-circle and a point on the circle between the endpoints.

Example 1 Identifying Arcs and Angles

Identify a central angle, minor arc, major arc, and semicircle in $\odot P$.

SOLUTION



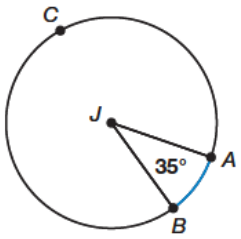
Example 2 Finding Arc Measures

What is m $\overset{\frown}{AB}$?

SOLUTION

Math Reasoning

Predict In Example 2, what would be the measure of the major arc $\overset{\frown}{ACB}$?

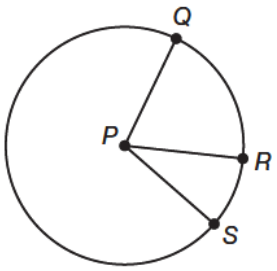


_____ Arcs - Two arcs that are in the same circle or in congruent circles and that have the same measure.

Example 3 Congruent Arcs

The measure of $\widehat{DE}$ is given by the expression 3*x* + 10, and the measure of $\widehat{HJ}$ is given by the expression 5*x* - 40. It is given that $\widehat{DE} \cong \widehat{HJ}$. Determine the value of *x* and the measure of each arc.

SOLUTION



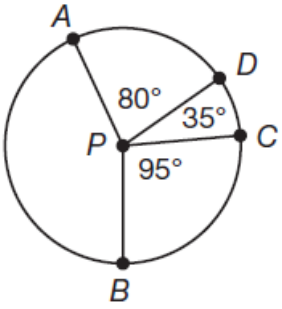
Postulate 14: Arc Addition Postulate - The measure of an arc formed by two adjacent arcs is the sum of the measures of the two arcs.

Example: _____

Example 4 Using the Arc Addition Postulate

a. Use the Arc Addition Postulate to write an expression that represents $m\widehat{AC}$.

SOLUTION



b. Find $m\widehat{AC}$.

SOLUTION

Example 5 Application: Surveillance Cameras

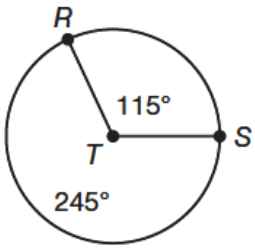
The cameras' overlap will be any number of degrees over 180° that they cover when their viewing angles are added together. How many surveillance cameras would be needed to cover a semicircle of a room, with minimal overlap of the area to be viewed? How much of an overlap would these cameras produce?

SOLUTION

You Try!!!!!!

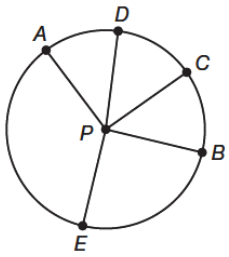
a. Draw a diagram of a circle, identifying a central angle, a minor arc, and a major arc.

b. Identify the measure of the minor arc.

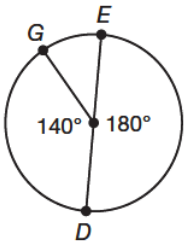


c. The measure of $\widehat{JK}$ is given by the expression 2*x* - 15, and the measure of $\widehat{LM}$ is given by the expression *x* + 30. It is given that $\widehat{JK} \cong \widehat{LM}$. Determine the value of *x* and the measure of each arc.

d. Use the Arc Addition Postulate to write an expression that represents $m\widehat{AB}$.



e. Find $m\widehat{DEG}$.



f. Outdoor: Lighting A lamp projects a beam of light over a 100° arc. How many lamps facing outward from the center of a circle would be needed to form a full circle of light at the center of a park? What would be the overlap of these beams?