Problem 1 – Central Angles & Inscribed Angles

Start the Cabri Jr. application. Then, open the file ANGARC1.

Note: The measure of a central angle is equal to the measure of the intercepted arc. Since there is no "arc measure" tool, the central angle measure is used as the arc measure.

Create point *C* on the circle using the **Point On** tool. Use the **Segment** tool to construct $\overline{AC}$ and $\overline{BC}$. Measure ∠*ACB.*

1. Record the measurements you made of the central and inscribed angles. Drag points *A* or *B* to change the angles.

m∠*AOB*	*m*∠*ACB*	*m**AB*

2. Complete these conjectures:

    - The measure of the inscribed angle is _____ the measure of the central angle.

    - The measure of the inscribed angle is _____ the measure of the intercepted arc.

3. Drag point *C* instead of *A* or *B.* What do you notice about the measurements?
    Why do you think this happens?

4. Place another point, *D*, on the circle. Construct and measure ∠*ADB.*

    What do you notice about the measures of ∠*ADB* and ∠*ACB*, which are angles that intercept the same arc?

Problem 2 – Angles with Vertex Inside or Outside the Circle

Open the Cabri Jr. file ANGARC2.

5. Drag point *P* to different locations <u>*inside*</u> the circle. Record the measure of ∠*YPZ,* the sum of the arc measures, and the absolute value of the difference of the arc measures. You can also drag *W* and *X*.

m∠YPZ	*mYZ* + m*WX*	|*mYZ* − m*WX*|

6. Drag point *P* to different locations <u>*outside*</u> the circle. Record the measure of ∠*YPZ,* the sum of the arc measures, and the absolute value of the difference of the arc measures. You can also drag *W* and *X*.

m∠YPZ	*mYZ* + m*WX*	|*mYZ* − m*WX*|

7. Based on the location of *P*, when is the measure of ∠*YPZ* related to the sum of the arc measures? When is it related to the difference?

8. What is the relationship between ∠*YPZ* and the sum? between ∠*YPZ* and the difference?

Extension/Homework

Find the missing measure in each figure.

1.

2.

3.