Inscribed Angle Theorem
INSCRIB1 – INSCRIB5

Name _____

Class _____

Problem 1 – Inscribed Angle Theorem

Start the *Cabri Jr.* application by pressing the APPS key and selecting **CabriJr**. Open the file *INSCRIB1* by pressing Y=, selecting **Open…**, and selecting the file. In *INSCRIB1*, you are given circle *D* with radius *AD*. Angle *ADB* is a central angle and ∠*ACB* is an inscribed angle.

1. Move point *A* to 2 different positions and point *C* to 2 different positions and collect the data in the table below. Calculate the ratios of *m*∠*ACB* to *m*∠*ADB* for each position and record the calculation in the table below.

Position	Measure of ∠*ACB*	Measure of ∠*ADB*	$\dfrac{m\angle ACB}{m\angle ADB}$
1			
2			
3			
4			

2. Angles *ACB* and *ADB* are said to intercept the same arc ($\overarc{AB}$) because they go through the same points *A* and *B* on the circle. An inscribed angle in a circle is _____ the measure of the central angle that intercepts the same arc on the circle.

Open the file *INSCRIB2*. You are given circle *D*. Angles *ACB* and *AEB* are inscribed angles and intercept the same arc.

3. Move point *A* to 2 different positions and move point *E* to 2 different positions and collect the data in the table below.

Position	Measure of ∠*ACB*	Measure of ∠*AEB*
1		
2		
3		
4		

4. Make a conjecture about two inscribed angles who intercept the same arc in a circle.

Open the file *INSCRIB3*. You are given circle *D.* Use this file to answer the following questions.

5. In circle *D*, what kind of segment is *AB*?

6. In circle *D*, what is *m*∠*ACB*? (Hint: Use your answer to Exercise 4 to help you.).

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Problem 2 – Extension of the Inscribed Angle Theorem

Open the file *INSCRIB4*. You are given circle *D*, $\overarc{AB}$, and ∠*ACB*. Point *G* is a point on $\overarc{AB}$, ∠*ACB* is an inscribed angle, and *AG* and *BG* are lines.

7. Move point *A* to 2 different positions and move point *G* to 2 different positions and collect the data in the table below.

Position	Measure of ∠ACB	Measure of ∠ADB	Measure of ∠AGE
1			
2			
3			
4			

8. Make a conjecture: The angle formed by the intersection of $\overrightarrow{AG}$ and $\overrightarrow{BG}$ is _____ the measure of the central angle *ADB*.

Open the file *INSCRIB5*. You are given circle *D*, $\overarc{AB}$, and ∠*ACB*. Point *G* is a point on $\overarc{AB}$ and ∠*ACB* is an inscribed angle. Also, you are given chord *AB* and a tangent line *BE*.

9. Move point *A* to 2 different positions and move point *B* to 2 different positions and collect the data in the table below.

Position	Measure of ∠ACB	Measure of ∠ADB	Measure of ∠ABE
1			
2			
3			
4			

10. Make a conjecture: The angle between a chord and the tangent line at one of its intersection points equals _____ of the central angle intercepted by the chord.