▶ ACTIVITY 10.3

Developing Concepts

Investigating Inscribed Angles

GROUP ACTIVITY
Work with a partner.

MATERIALS
• paper
• pencil
• compass
• straightedge
• protractor

▶ **QUESTION** An angle in a circle is an *inscribed angle* if its vertex is on the circle and its sides contain chords of the circle. How is the measure of an inscribed angle related to the measure of the corresponding central angle?

▶ **EXPLORING THE CONCEPT**

Follow the steps to construct an inscribed angle.

1 Construct a circle. Label its center P.

2 Use a straightedge to construct a central angle. Label it $\angle RPS$.

3 Locate three points on $\odot P$ in the exterior of $\angle RPS$ and label them T, U, and V. Use a straightedge to draw the inscribed angles $\angle RTS$, $\angle RUS$, and $\angle RVS$.
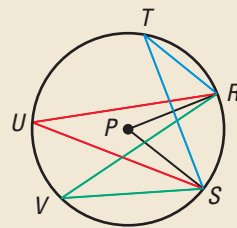
▶ **INVESTIGATE**

1. Use a protractor to measure $\angle RPS$, $\angle RTS$, $\angle RUS$, and $\angle RVS$. Make a table similar to the one below. Record the angle measures for Circle 1 in the table.

	$m\angle RPS$	$m\angle RTS$	$m\angle RUS$	$m\angle RVS$
Circle 1	?	?	?	?
Circle 2	?	?	?	?
Circle 3	?	?	?	?

2. Repeat Steps 1 through 3 using different central angles. Record the measures in your table.

▶ **MAKE A CONJECTURE**

3. Use the results in your table to make a conjecture about how the measure of an inscribed angle is related to the measure of the corresponding central angle.

EXTENSION

CRITICAL THINKING The star divides the circle into congruent arcs. Use the conjecture you made in Exercise 3 to find the measures of the angles that form the points of the star. Explain your reasoning. Then use a protractor to measure the angles to verify your conjecture.