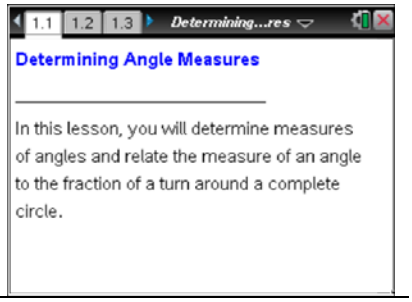
Determining Angle Measures
Student Activity

Name _____

Class _____

Open the TI-Nspire document *Determining_Angle_Measures.tns.*

What determines the measure of an angle? Do larger angles have longer sides? This activity will help you answer these questions.



Move to page 1.2.

Press ctrl ▶ and ctrl ◀ to navigate through the lesson.

1. Move point *A*. Press esc to let go of point *A*. What changes and what stays the same?

2. Move the arrow to where $\overrightarrow{CA}$ looks like it ends. Press ctrl to grab the ray and pull it away from point *C*. Press esc to let go. What happens to the angle?

3. Move the arrow to where $\overrightarrow{CB}$ looks like it ends. Grab the ray and pull it away from point *C*. Press esc to let go.
   a. What happens to the angle?

   b. Make a conjecture about what you need to do to change the measure of the angle.

4. Grab and move one of the open circles. Press esc to let go of one open circle before grabbing the other open circle.
   a. What is the difference between what happened now and what happened in questions 1 and 2?

   b. What affects the measure of an angle? Explain.

   c. What does not affect the measure of an angle? Explain.

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5. Create pairs of angles that are congruent by rotating the rays using the open circles. Describe the conditions you think are necessary to have congruent angles.
   Note: To get from one side of the screen to the other, click ctrl tab.

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An angle is measured in degrees. One degree is $\frac{1}{360}$ of a circle. A complete turn or rotation in a circle measures 360°.

6. Move the open circle to point *M*. The highlighted arc is $\frac{1}{4}$ of a full turn in the circle. How many degrees does this turn represent? How do you know?

7. Move the *x* to point *N*.

   a. What fraction of a complete turn does the highlighted arc represent?

   b. How does this compare to your answer in question 6?

8. Sammy clicked on a point between point *C* and point *M*. He said his angle represented a smaller turn than when he clicked on point *M*. Do you agree with Sammy? Why or why not?

9. Decide whether each of the statements below is true or false. Explain your reasoning.

	Statements	T or F	Explanation
1.	The measure of an angle depends on how long the sides look.		
2.	The measure of an angle depends on the length of a segment connecting the two rays.		
3.	A half turn around a circle is 180°.		
4.	The measure of an angle depends on the fraction of a complete rotation in any circle centered at the vertex of the angle.		
5.	An angle whose measure is 60° represents $\frac{1}{3}$ of a complete rotation in a circle.		

10. In your own words, explain what determines the measure of an angle.