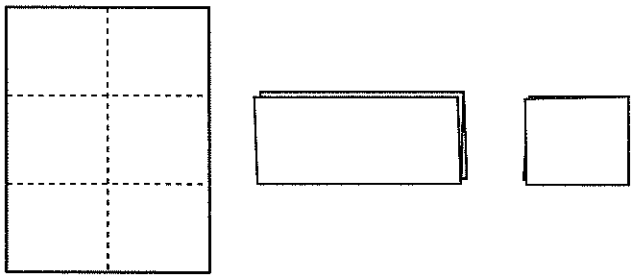
Name Date Time

LESSON 3•9

A Quadrangle Investigation

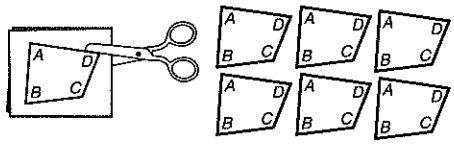
The sum of the angles in a quadrangle is equal to 360°. Since there are 360° in a circle, you might predict that every quadrangle will tessellate. Follow the procedure below to investigate this prediction.

1. Fold a piece of paper ($8\frac{1}{2}$" by 11") into six parts by first folding it into thirds and then into halves.



2. Using a straightedge, draw a quadrangle on the top layer of the folded paper. Label each of the four vertices with a letter *inside the figure*—for example, *A, B, C,* and *D.*

3. Cut through all six layers so that you have six identical quadrangles. Label the vertices of each quadrangle in the same manner as the quadrangle on top.



4. Arrange the quadrangles so that they tessellate.

5. When you have a tessellating pattern, tape the final pattern onto a separate piece of paper. Color it if you want to.

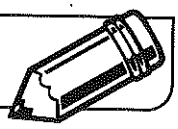
6. Talk with other students who did this investigation. Were their quadrangles a different shape than yours? Do you think that any quadrangle will tessellate?

Option To make a pattern that has more than six quadrangles, draw your original quadrangle on a piece of cardstock, cut it out, and use it as a stencil. By tracing around your quadrangle, you can easily cover a half-sheet of paper with your pattern. Label the angles on your stencil so you can be sure you are placing all four angles around points in the tessellation. Color your finished pattern.

Name Date Time

LESSON 3•9

Angle Measures in Polygons



The measure of the interior angles of a triangle is 180°. The number of triangles within a polygon is 2 less than the number of sides of the polygon.

1. Fill in the chart below using this pattern.

Polygons		
Number of Sides	**Number of Triangles**	**Sum of Angles**
4	2	2 * 180° = 360°
5	3	3 * 180° = _____
6	4	4 * 180° = _____
7	5	____ * 180° = _____
13		____ * 180° = _____
26		____ * _____ = _____
51		____ * _____ = _____
63		____ * _____ = _____
85		____ * _____ = _____

2. Use expressions to complete the statement.

If *n* equals the number of sides in a polygon, _____ equals the number of triangles within the polygon, and _____ equals the sum of the angles in the polygon.