

From Circles to Hexagons

Purpose

Students will identify and draw the diameter and radius of a circle and understand their relationship. Students will also draw and identify pentagons and hexagons.

Materials

For the teacher: overhead projector, compass, ruler, protractor

For each student: compass, ruler, protractor, scissors, paper

Activity

A. Introduction

1. Discuss with students the definition of the diameter of a circle. Explain that the diameter crosses through the center and touches the circle in two places.
2. Discuss the radius, which goes from the center of the circle to the outside of the circle and is half the length of the diameter.
3. Tell students about *pentagons*, which have five straight sides, and *hexagons*, which have six straight sides.

B. Activity

1. Ask each student to put a dot on his/her paper that is approximately in the middle.
2. Have each student use this dot as the center of his/her circle and draw a large circle that will fit on his/her paper.
3. Ask students to cut out the circle, fold it in half twice, and use the creases to draw lines. Tell them that these lines are diameters. Have students measure the lengths of these line segments and note that they are the same length.
4. Have students draw a radius from the center that does not overlap the diameter, measure it, and compare the diameter to the radius.
5. Have students draw four more circles on another sheet of paper. Direct students to start with a center dot each time and make each circle a different size.
6. Ask students to draw a diameter, measure it, draw a radius, and measure it. Ask: "How does the measure of the diameter compare to the radius?"

(continued)

EXTENDING
THE



ACTIVITY

Have students make a design with regular hexagons by making a pattern (template) of a hexagon and filling in their papers with this same shape. After the paper is filled with hexagons, have students color it to form a design.

connecting
across the
curriculum



Visual Arts

Have students draw a circle and then, using six points placed equally around that circle, draw other circles. Direct students to continue this process and color the sections of the resulting pattern.

Standards Link
5.4.1

Activity (continued)

7. For each circle, have students write “diameter = ___ and radius = ___” and have them compare the length of the radius to that of the diameter.
8. Have students use the circle that was cut out as a pattern and draw another circle on each of two sheets of paper.
9. Have students put five points on one of the circles, connect the points with lines, and cut on the lines to make a pentagon.
10. On the other circle, have students put six points, connect the points with lines, and cut on the lines to make a hexagon.

Questions for Review

Basic Concepts and Processes

During the activity, discuss the following questions with your students:



Why does a compass produce a circle?



What is the relationship between the diameter and the radius of a circle?



What is the diameter of a circle with radius 5 inches?



How many sides does a pentagon have and how many sides does a hexagon have?
