

Measuring Surface Area

Reporting Category	Measurement
Topic	Measuring surface area
Primary SOL	3.10 The student will b) count the number of square units needed to cover a given surface in order to determine area.
Related SOL	3.9d

Materials

- Linking cubes
- Construction paper cut into polygons of various sizes
- Measuring Area Recording Sheet (attached)

Vocabulary

measure, area, estimate, square units, surface

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Using construction paper cutouts of various size polygons, demonstrate how to determine the area of a shape by covering the polygon with linking cubes. Explain that the number of linking cubes needed to cover the polygon is equal to the polygon's area expressed in "square units." (In this case, one square unit is one cube; therefore, if it takes 6 cubes to cover the polygon, the area of the polygon is 6 square units.) Explain that area is always measured in square units and should always be labeled as such.
2. Ask students to recall the step they took before they measured the distance around a shape when determining perimeter. Demonstrate estimating area before measuring the area of a shape.
3. Distribute construction paper polygons, linking cubes, and copies of the Measuring Area Recording Sheet. Have students practice estimating, measuring, and recording the areas of various size polygons.

Assessment

- **Questions**
 - What two surfaces in our classroom have similar areas? (e.g., table and door)
 - Why might it be important to know the area of a surface? What is an example of surface area which is important to know?
- **Journal/Writing Prompts**
 - Explain why perimeter is measured in linear units and area is measured in square units.
 - Compare and contrast area and perimeter.
- **Other**
 - Divide the class into small groups. Distribute resealable plastic bags containing different numbers of linking cubes. Have each group assemble their cubes into a

shape. Then, challenge each group to find a surface in the classroom that has the same area as the number of cubes in their bag.

- Display three different area measurements expressed in square units of grid paper (e.g., 26 sq. units). Distribute three sheets of grid paper to each student. Have each student draw one polygon on each sheet that have the three assigned areas exactly. Have students write the area measurement of each polygon below it. Group all polygons with the same area together so that students can see that many different shapes can have the same area.

Extensions and Connections (for all students)

- Have students look through magazines, newspapers, and books to find examples of surfaces measured using square units.

Strategies for Differentiation

- Use grid paper instead of construction paper for polygon cutouts.
- Have students connect the linking cubes instead of just placing them on the polygon to make it easier to keep the cubes inside the shape.

Measuring Area Recording Sheet

Name: _____ Date: _____

Directions: Trace the polygons you selected to measure in the left column below. Record an estimate of the area of each polygon. Measure the area of each polygon by counting the number of square units (cubes) needed to cover the polygon, and record your measurement. Be sure to label each estimate and measurement in **square units**.

Polygon	Estimate of Area	Actual Area