



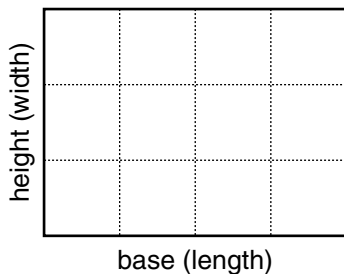
Unit 8: Perimeter and Area

In previous grades, your child studied the *perimeter* (distance around) and the *area* (amount of surface) of various geometric figures. This next unit will extend your child's understanding of geometry by developing and applying formulas for the areas of figures such as rectangles, parallelograms, and triangles.

Area of a Rectangle

Area = base * height (or length * width)

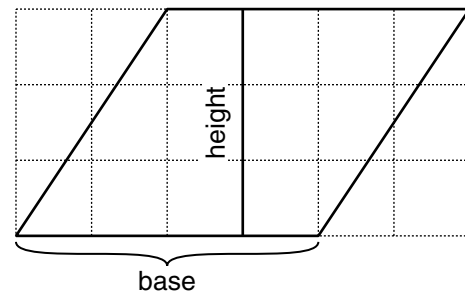
$$A = b * h \text{ (or } l * w \text{)}$$



Area of a Parallelogram

Area = base * height

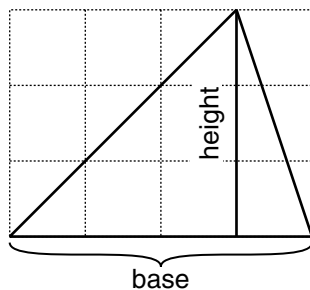
$$A = b * h$$



Area of a Triangle

Area = $\frac{1}{2}$ of (base * height)

$$A = \frac{1}{2} * b * h$$



Students will learn how to make scale drawings and apply their knowledge of perimeter, area, and scale drawing by analyzing the arrangement of the appliances in their kitchens and the furniture in their bedrooms.

Students will also calculate the area of the skin that covers the entire body. A rule of thumb is that the area of a person's skin is about 100 times the area of one side of that person's hand. Ask your child to show you how to calculate the area of your own skin.

At the beginning of the year, the class learned to draw certain geometric figures using only a compass and straightedge. In this unit, your child will practice several new compass-and-straightedge constructions.

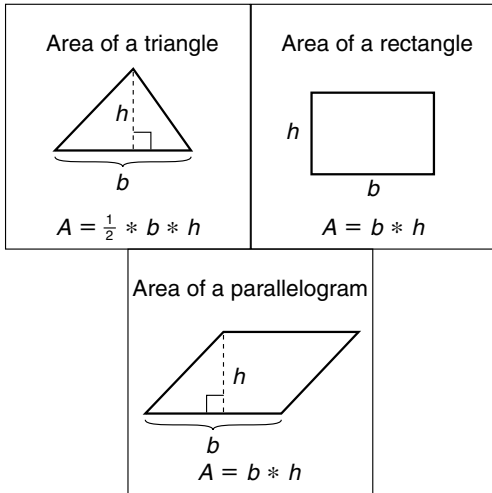
The World Tour will continue. Students will examine how geographical areas are measured, and difficulties in making accurate measurements. They will compare areas for South American countries by using division to calculate the ratio of areas.

Please keep this Family Letter for reference as your child works through Unit 8.

Vocabulary

Important terms in Unit 8:

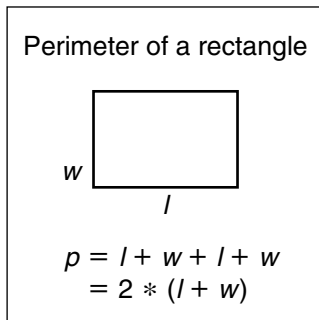
area The amount of surface inside a closed boundary. Area is measured in *square units*, such as square inches or square centimeters.



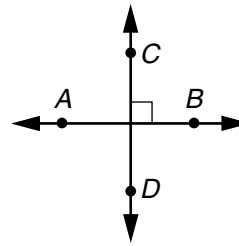
formula A general rule for finding the value of something. A formula is often written using letters, called *variables*, that stand for the quantities involved.

length The measurement of something along its greatest dimension. The length of a rectangle is usually the longer dimension of the rectangle.

perimeter The distance around a closed 2-dimensional shape. The perimeter of a circle is called its *circumference*. The perimeter of a polygon is the sum of the lengths of its sides.

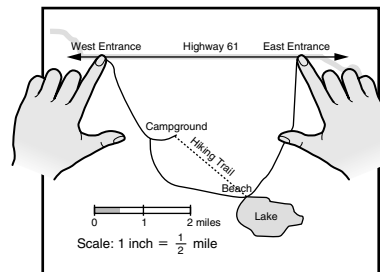


perpendicular Meeting at right angles. Lines, rays, line segments, and planes that meet at right angles are perpendicular. The symbol \perp is read "is perpendicular to," as in "line $CD \perp$ line AB ." The symbol \sqcup indicates a right angle.



Perpendicular lines

scale The ratio of the distance on a map, globe, drawing, or model to an actual distance.



scale drawing A drawing of an object or region in which all parts are drawn to the same scale. Architects and builders often use scale drawings.

square unit A unit used in measuring area. For example, a square that measures one inch on each side has an area of one square inch.

variable A letter or other symbol that represents a number. A variable can represent one specific number or it can stand for many different numbers.

width The measurement of something along its shortest dimension. The width of a rectangle is usually the shorter dimension of the rectangle.

Do-Anytime Activities

To work with your child on concepts taught in this unit, try these interesting and rewarding activities:

- 1** Have your child pretend that he or she is a carpenter whose job is to redesign a room—for example, a bedroom, the kitchen, or the living room. Have him or her make a rough estimate of the area of the room. Then help your child check the estimate by finding the actual area using a tape measure or, if possible, blueprints.
- 2** Have your child pretend that he or she is an architect. Give him or her some dimensions and space requirements to work with. Then have your child design a “dream house,” “dream bedroom,” or sports stadium, and make a scale drawing for that design.
- 3** Work with your child to make a scale drawing of your neighborhood. Or have your child make a scale drawing of the floor plan of your house or apartment.
- 4** Have your child compare the areas of continents, countries, states, or major cities.

As You Help Your Child with Homework

As your child brings assignments home, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through this unit's Study Links.

Study Link 8.1

- 1a. Perimeter = 19 feet 6 inches
- 1b. Perimeter = 20 feet 2 inches
2. Distance = 9 feet 3 inches; no

Study Link 8.2

1. a. 52
- b. 117
- c. $32\frac{1}{2}$
- d. $175\frac{1}{2}$

3.

Rectangle	Height in Drawing	Actual Height
Rectangle A	$\frac{1}{2}$ in.	12 ft
Rectangle B	$1\frac{1}{4}$ in.	30 ft
Rectangle C	2 in.	48 ft
Rectangle D	$1\frac{3}{4}$ in.	42 ft
Rectangle E	1 in.	24 ft

Study Link 8.3

1. 24
2. 24

Study Link 8.4

1. 85,000
2. 17,500

Study Link 8.5

1. 78 ft
2. 27 ft
3. 2,106 sq ft
4. 2,808 sq ft
5. Sample answer: In a singles game, each player covers $\frac{1}{2}$ of 2,106 sq ft, or 1,053 sq ft. In a doubles game, each player covers $\frac{1}{4}$ of 2,808 sq ft, or 702 sq ft.

Study Link 8.6

1. 36
2. $29\frac{1}{4}$
3. 24
4. 46.8
5. 13
6. 8.5

Study Link 8.7

1. 16
2. 30
3. 12.75, or $12\frac{3}{4}$
4. 11.25, or $11\frac{1}{4}$
5. 3
6. 6

Study Link 8.8

1. Russia and Mexico and Brazil
2. Pakistan and Argentina
3. 5
4. 10, or 11
5. $\frac{1}{2}$
6. 9 or 10