Unit 4: Family Letter

Home Link 3-14

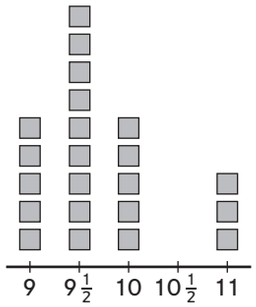
NAME DATE TIME

Measurement and Geometry

In this unit children learn to make more precise measurements as they measure lengths, including perimeters, to the nearest half inch. Children will generate measurement data by measuring their shoe lengths and body parts, and they will represent the data on line plots. Building on their experiences from second grade, they will further explore attributes of polygons that help define shape categories such as quadrilaterals. Children develop an understanding of the area of rectangles and square units. They find areas by counting unit squares, repeatedly adding composite units, and multiplying side lengths. Through solving real-world and abstract problems, children will explore ways to find the perimeters of polygons and calculate the areas of rectilinear figures.

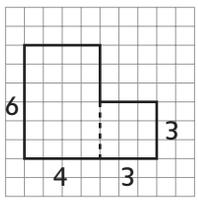
In Unit 4, children will:

- Measure to the nearest centimeter and $\frac{1}{2}$ inch.
- Generate and represent measurement data on a line plot.
- Review characteristics of polygons.
- Sort quadrilaterals into categories based on defining attributes.
- Measure perimeters of rectangles.
- Distinguish between perimeter as a measure of distance around and area as a measure of the amount of surface within the boundaries of a 2-dimensional shape.
- Find the areas of rectangles using composite units.
- Write multiplication number sentences that show how to find areas of rectangles.
- Develop strategies for finding area and perimeter.
- Find the areas of real-world rectilinear figures by partitioning figures into rectangles.



Line plot with stick-on notes

Example of a Rectilinear Figure



Key: □ = 1 square yard

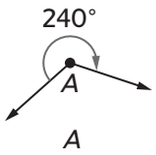
Number models for finding areas of rectangles:
$6 \times 4 = 24$; $3 \times 3 = 9$
$24 + 9 = 33$
Area of whole shape: 33 square yards

Please keep this Family Letter for reference as your child works through Unit 4.

Vocabulary

Important terms in Unit 4:

angle A figure that is formed by two rays or line segments that have the same endpoint.

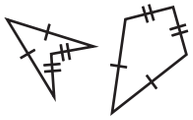


area The amount of surface inside a shape. Area is usually measured in square units such as square inches or square centimeters.

composite unit A unit made up of a group of units. A row made up of square units is a composite unit that can be used to find area.

data Information that is gathered by counting, measuring, questioning, or observing.

kite A quadrilateral that has two nonoverlapping pairs of adjacent, equal-length sides.



length The distance between two points.

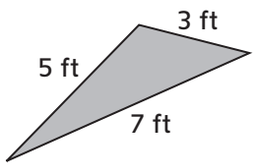
line plot A sketch of data that uses Xs, checks, or other marks above a number line to show how many times each value appears in a set of data.

parallel line segments Segments that are always the same distance apart. They never meet or cross, even when extended.

parallelogram A trapezoid that has two pairs of parallel sides.

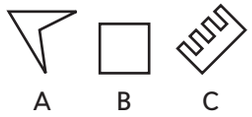
partition To divide a shape into smaller shapes.

perimeter The distance around a 2-dimensional figure.



perimeter = 5 ft + 3 ft + 7 ft = 15 ft

polygon A 2-dimensional figure formed by line segments (sides) joined end to end to make one closed path. The sides may not cross one another.

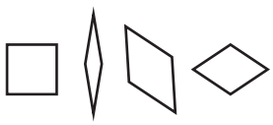


quadrilateral A 4-sided polygon. Polygons A and B above are quadrilaterals.

rectilinear figure A polygon with a right angle at each vertex.

rectangle A parallelogram with four right angles.

rhombus A parallelogram with four equal-length sides.



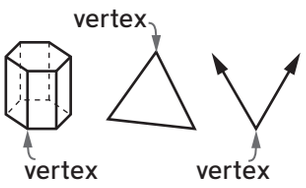
right angle A 90° angle. The sides of a right angle form a square corner.

scale of a graph The unit interval, or distance between numbers, on graphs.

square A rectangle with 4 equal-length sides.

square unit A unit used to measure area.

vertex The point at which the rays of an angle, the sides of a polygon, or the edges of a polyhedron meet.



Do-Anytime Activities

The following activities provide practice for concepts taught in this and previous units.

1. Together read *Spaghetti and Meatballs for All!* by Marilyn Burns (Scholastic, 2008).
2. Help your child measure objects to the nearest centimeter or $\frac{1}{2}$ inch.
3. Ask your child to identify polygons such as pentagons, hexagons, and octagons, as well as quadrilaterals, including squares, rectangles, parallelograms, rhombuses, kites, and trapezoids.
4. Ask your child to think of situations in which knowing how to find perimeter and area can help with solving problems. Such situations include purchasing carpeting, painting walls, and building fences.

Building Skills through Games

In Unit 4 your child will practice calculating area and perimeter as well as identifying quadrilaterals by playing the following games. For detailed instructions, see the *Student Reference Book.*

The Area and Perimeter Game Children score points by finding the perimeters and areas of rectangles.

What's My Polygon Rule? Children sort polygons into categories based on their similarities and differences. They recognize additional characteristics of polygons.

As You Help Your Child with Homework

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

Home Link 4-1

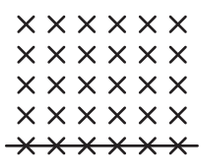
1. 438 **2.** 168

Home Link 4-2

1. 6 **2.** 2 **3.** 43

4. 14; 21

5. 30; 24



Home Link 4-3

1. Sample answers: Tape measure, toolkit ruler, 12-inch ruler, string, yardstick

3. 35; 42 **4.** 60; 54

5. 40; 48 **6.** 70; 63

Home Link 4-4

1. The third and fifth shapes should be crossed out. Sample answers: Polygons have straight sides that do not cross. The shapes I crossed out have curved sides or sides that cross.

Home Link 4-5

1. Sample answers: square; rhombus; Both shapes have 4 same-length sides. A square has to have 4 right angles. A rhombus doesn't have to have all 4 right angles.
2. Sample answers: rhombus; rectangle; Both shapes have 2 pairs of equal opposite sides. A rhombus has all 4 equal-length sides. A rectangle has 4 right angles.

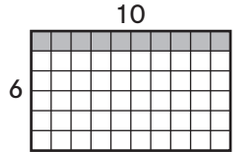
Home Link 4-6

1. Sample answer: $2 + 2 + 1 + 1 = 6$; about 6 inches
2. Sample answer: $2\frac{1}{2} + 1 + 1 + 1 = 5\frac{1}{2}$; about $5\frac{1}{2}$ inches
3. Sample answer: $4 \times 5 = 20$; 20 meters
4. Sample answer: $12 + 12 + 5 + 5 = 34$; 34 centimeters

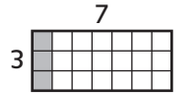
Home Link 4-7

1. I agree. The perimeter is the total length of sides, so $2 + 6 + 2 + 6 = 16$. The area is the number of squares inside the rectangle.

Home Link 4-8

1. 

Sarah needs 60 tiles.

2. 

21 square yards

3. Sample answer: I made a composite unit of a column of 3 squares and counted by 3s seven times to get 21.

Home Link 4-9

1. 7; 5; $7 \times 5 = 35$; 35 square units
2. 6; 7; $6 \times 7 = 42$; 42 square units
3. $4 \times 8 = 32$
4. $9 \times 5 = 45$

Home Link 4-10

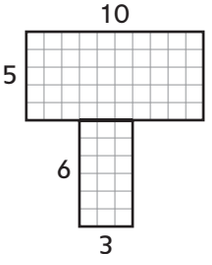
1. Area: 16; Perimeter: 20
2. Area: 12; Perimeter: 14
3. Sample answer: I multiplied two side lengths to find the area: $3 \times 4 = 12$. I added the side lengths to find the perimeter: $3 + 4 + 3 + 4 = 14$.
4. Area: 30; Perimeter: 22; Sample answer: I found the area by multiplying $5 \times 6 = 30$. I added two side lengths and doubled the total to find the perimeter: $5 + 6 = 11$ and $11 \times 2 = 22$.

Home Link 4-11

1. Perimeter = 6 feet; Perimeter = 24 feet
2. 2 quarts; Sample answer: I drew a rectangle for the wall and marked off 10 feet on one side and 8 feet on the other side. I drew in squares so that it looked like an array with 8 rows of 10 squares. I skip counted by 10s to find the total number of squares. There were 80 squares, so the area is 80 square feet. Sue needs to buy 2 quarts, but she will have some paint left over.

Home Link 4-12

1–3. Sample answers:



4. Sample number sentences: $5 \times 10 = 50$, $6 \times 3 = 18$; $50 + 18 = 68$
   Area: 68 square units
5. Sample answer: I can find the area of each rectangle and then add the two together to get the area of the whole shape.