North Penn School District

Elementary Math Parent Letter

Grade 4

Unit 6 – Chapter 13: Algebra: Perimeter and Area

Examples for each lesson:

Lesson 13.1

Perimeter

Perimeter is the distance around a shape. You can use grid paper to count the number of units around the outside of a rectangle to find its perimeter.

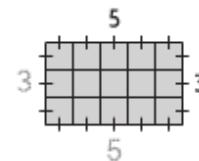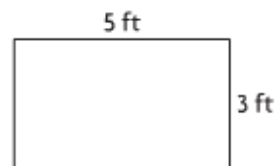**How many feet of ribbon are needed to go around the bulletin board?**

Step 1 On grid paper, draw a rectangle that has a length of **5** units and a width of **3** units.

Step 2 Find the length of each side of the rectangle. Mark each unit of length as you count.

Step 3 Add the side lengths. 5 + 3 + 5 + 3 = 16

The perimeter is __16__ feet.

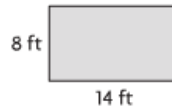So, __16 feet__ of ribbon are needed to go around the bulletin board.

More information on this strategy is available on Animated Math Model #54.

Lesson 13.2

Area

Area is the number of **square units** needed to cover a flat surface.

Find the area of the rectangle at the right.
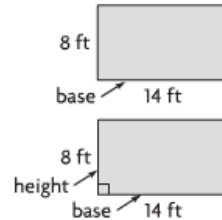
8 ft

14 ft

You can use the formula **Area = base × height**.

8 ft

base   14 ft

Step 1 Identify one side as the base.

The base is __14__ feet.

Step 2 Identify a perpendicular side as the height.

8 ft

height

base   14 ft

The height is __8__ feet.

Step 3 Use the formula to find the area.

Area = base × height
= 14 × 8
= 112
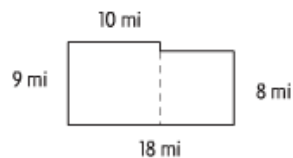
So, the area of the rectangle is 112 square feet.

More information on this strategy is available on Animated Math Models #55, 56, 57.

Lesson 13.3

Area of Combined Rectangles

Find the area of the combined rectangles.

10 mi

9 mi   8 mi

18 mi

Step 1 First, find the area of each section of the shape.

LEFT	RIGHT	
$A = b \times h$	$A = b \times h$	
$= 10 \times 9$	$= 8 \times 8$	**Think:** $18 - 10 = 8$
$= 90$	$= 64$	

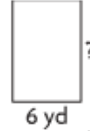**Step 2** Add the two areas. $90 + 64 = 154$

So, the total area is __154__ square miles.

More information on this strategy is available on Animated Math Model #58.

Lesson 13.4

Find Unknown Measures

Fred has 30 yards of fencing to enclose a rectangular vegetable garden. He wants it to be 6 yards wide. How long will his vegetable garden be?

?

6 yd

Step 1 Decide whether this problem involves area or perimeter.

Think: The fencing goes *around the outside* of the garden. This is a measure of perimeter.

Step 2 Use a formula for perimeter. The width is 6. The perimeter is 30. The length is unknown.

$$P = (2 \times l) + (2 \times w)$$
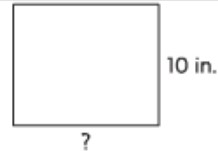$$30 = (2 \times l) + (2 \times 6)$$
$$30 = 2 \times l + 12$$

Step 3 Find the value of *l*.

$18 = 2 \times l$, so the value of *l* is 9.

The length of Fred's garden will be 9 yards.

Carol has 120 square inches of wood. The piece of wood is rectangular and has a height of 10 inches. How long is the base?

10 in.

?

Step 1 Decide whether this problem involves area or perimeter.

Think: *Square inches* is a measure of area.

Step 2 Use a formula for area. The height is 10. The area is 120. The length is unknown.

$$A = b \times h$$
$$120 = b \times 10$$

Step 3 Find the value of *b*.

Since $120 = 12 \times 10$, the value of *b* is 12.

The base of Carol's piece of wood is 12 inches.

Lesson 13.5

Problem Solving • Find the Area

Use the strategy *solve a simpler problem.*

Marilyn is going to paint a wall in her bedroom. The wall is 15 feet long and 8 feet tall. The window takes up an area 6 feet long and 4 feet high. How many square feet of the wall will Marilyn have to paint?

Read the Problem	Solve the Problem
What do I need to find? I need to find how many <u>square feet of the wall</u> Marilyn will paint.	First, find the area of the wall. $A = b \times h$ $\quad = 15 \times \underline{8}$ $\quad = \underline{120}$ square feet
What information do I need to use? The paint will cover the wall. The paint will not cover the <u>window</u>. The base of the wall is 15 feet and the height is <u>8 feet</u>. The base of the window is 6 feet and the height is <u>4 feet</u>.	Next, find the area of the window. $A = b \times h$ $\quad = \underline{6} \times \underline{4}$ $\quad = \underline{24}$ square feet Last, subtract the area of the window from the area of the wall.
How will I use the information? I can solve simpler problems. Find the area of the <u>wall</u>. Then, find the area of the window. Last, <u>subtract</u> the area of the <u>window</u> from the area of the wall.	$\begin{array}{r} 120 \\ -\ 24 \\ \hline 96 \text{ square feet} \end{array}$ So, Marilyn will paint <u>96 square feet</u> of her bedroom wall.

Vocabulary

Area – the number of square units needed to cover a flat surface

Base – any side of a two-dimensional figure

Formula – a set of symbols that expresses a mathematical rule

Height – the measure of a perpendicular from the base to the top of a two-dimensional figure

Perimeter – the distance around a figure

Square unit – a unit of area, with dimensions of 1 unit x 1 unit