

Dear Family,

During the next few weeks, our math class will be learning about perimeter and area. We will explore the concept that area is a measure of how many square units cover a flat surface. We will also learn the formula for finding the area of a rectangle.

You can expect to see homework that provides practice with finding perimeters and areas of rectangles, and areas of combined rectangles.

Here is a sample of how your child will be taught to use a formula to find the area of a rectangle.



### MODEL Use a Formula to Find Area

This is how we will use a formula to find the area of a rectangle.

#### STEP 1

Identify the base and the height of the rectangle.



base = 9 feet

height = 6 feet

#### STEP 2

Use the formula  
 $A = b \times h$   
to find the area of  
the rectangle.

$$A = 9 \times 6$$

$$= 54$$

The area is 54 square feet.

#### Tips

Remember that any side of a rectangle could be the base. Depending upon the side labeled as the base, the perpendicular side to that base is the height. In the model, the base could have been identified as 6 feet and the height as 9 feet. Because of the Commutative Property of Multiplication, the area does not change.

## Vocabulary

**area** The number of square units needed to cover a flat surface

**base,  $b$**  A polygon's side

**formula** A set of symbols that expresses a mathematical rule

**height,  $h$**  The length 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  $\times$  1 unit

## Appropriate Units

Remember to use the correct *square* units when expressing the area of a shape. A measure of 54 feet would simply be a measure of length, whereas a measure of 54 *square* feet is a measure of area.

# Carta para la casa

Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos acerca del perímetro y el área. Exploraremos el concepto del área como medida de superficie que usa unidades cuadradas. También aprenderemos la fórmula para hallar el área de un rectángulo.

Llevaré a la casa tareas para practicar la manera de hallar los perímetros y las áreas de rectángulos y las áreas de combinaciones de rectángulos.

Este es un ejemplo de la manera como aprenderemos a usar una fórmula para hallar el área de un rectángulo.

## Vocabulario

**área** La cantidad de unidades cuadradas que se necesitan para cubrir una superficie plana

**base,  $b$**  Un lado de un polígono

**fórmula** Un conjunto de símbolos que expresa una regla matemática

**altura,  $h$**  La longitud de un lado perpendicular de una figura bidimensional desde la base hasta la parte superior

**perímetro** La distancia alrededor de una figura

**unidad cuadrada** Una unidad para medir el área que tiene 1 unidad de largo y 1 unidad de ancho

### **MODELO** Usar una fórmula para hallar el área

Así es como usaremos la fórmula del área de un rectángulo.

#### PASO 1

Identifica la base y la altura del rectángulo.



base = 9 pies  
altura = 6 pies

#### PASO 2

Usa la fórmula  
 $A = b \times h$   
para hallar el área del rectángulo.

$$A = 9 \times 6$$

$$= 54$$

El área mide 54 pies cuadrados.

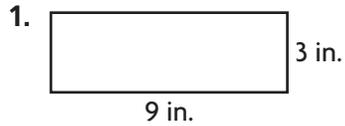
#### Pistas

Recuerda que cualquiera de los lados de un rectángulo puede ser la base. Según el lado que se determine como base, el lado perpendicular a esa base es la altura. En el modelo, la base pudo haber sido identificada como 6 pies y la altura como 9 pies. El área no cambia debido a la propiedad conmutativa de la multiplicación.

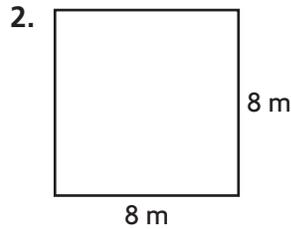
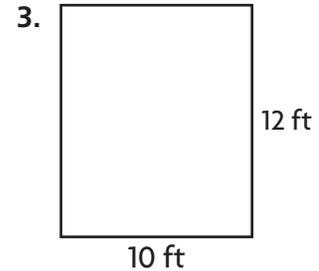
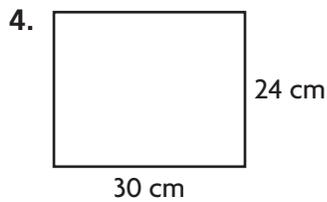
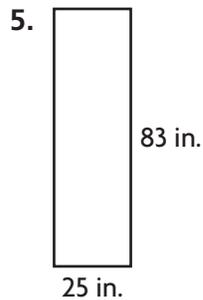
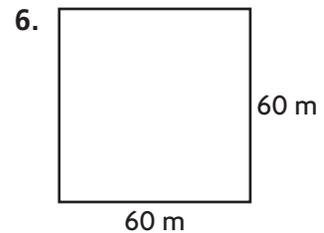
## Unidades adecuadas

Recuerda que se debe utilizar la unidad *cuadrada* correcta cuando se expresa el área de una figura. Una medida de 54 pies sería simplemente una medida del largo, en cambio una medida de 54 pies *cuadrados* es una medida del área.

Name \_\_\_\_\_

**Perimeter****COMMON CORE STANDARD—4.MD.3**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**Find the perimeter of the rectangle or square.**

$$9 + 3 + 9 + 3 = 24$$

24 inches32 meters44 feet108 centimeters216 inches240 meters**Problem Solving**

7. Troy is making a flag shaped like a square. Each side measures 12 inches. He wants to add ribbon along the edges. He has 36 inches of ribbon. Does he have enough ribbon? **Explain.**

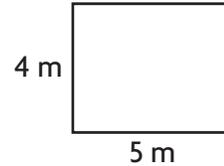
**No. He needs 48 inches of ribbon.**

8. The width of the Ochoa Community Pool is 20 feet. The length is twice as long as its width. What is the perimeter of the pool?

**120 feet**

## Lesson Check (4.MD.3)

1. What is the perimeter of a square window with sides 36 inches long?
2. What is the perimeter of the rectangle below?



**144 inches**

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**18 meters**

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## Spiral Review (4.NF.7, 4.MD.1, 4.MD.5a, 4.MD.5b, 4.G.3)

3. Natalie drew the angle below.



What is the most reasonable estimate for the measure of the angle Natalie drew?

**90°**

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4. Ethan has 3 pounds of mixed nuts. How many ounces of mixed nuts does Ethan have?

**48 ounces**

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5. How many lines of symmetry does the shape below appear to have?



**1**

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6. Janna drank 0.7 liter of water before soccer practice and 0.70 liter of water after practice. Compare the two decimals using  $<$ ,  $=$ , or  $>$ .

**0.7 = 0.70**

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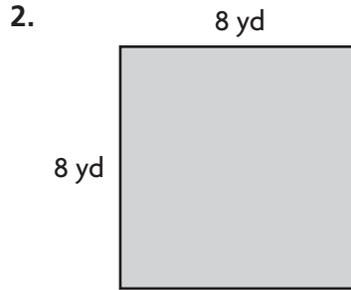
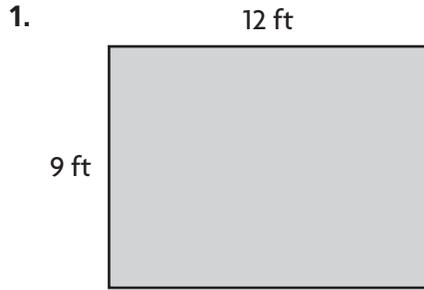
Name \_\_\_\_\_

**Area**



**COMMON CORE STANDARD—4.MD.3**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Find the area of the rectangle or square.



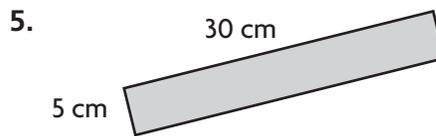
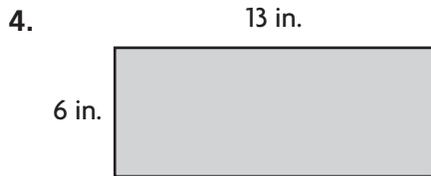
$$A = b \times h$$

$$= 12 \times 9$$

**108 square feet**

**64 square yards**

**45 square meters**



**78 square inches**

**150 square centimeters**

**56 square feet**

**Problem Solving**



7. Meghan is putting wallpaper on a wall that measures 8 feet by 12 feet. How much wallpaper does Meghan need to cover the wall?

**96 square feet**

8. Bryson is laying down sod in his yard to grow a new lawn. Each piece of sod is a 1-foot by 1-foot square. How many pieces of sod will Bryson need to cover his yard if his yard measures 30 feet by 14 feet?

**420 pieces**

## Lesson Check (4.MD.3)

1. Ellie and Heather drew floor models of their living rooms. Ellie's model represented 20 feet by 15 feet. Heather's model represented 18 feet by 18 feet. Whose floor model represents the greater area? How much greater?
2. Tyra is laying down square carpet pieces in her photography studio. Each square carpet piece is 1 yard by 1 yard. If Tyra's photography studio is 7 yards long and 4 yards wide, how many pieces of square carpet will Tyra need?

**Heather; 24  
square feet**

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**28 pieces**

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## Spiral Review (4.NBT.5, 4.NF.4c, 4.MD.3)

3. Typically, blood fully circulates through the human body 8 times each minute. How many times does blood circulate through the body in 1 hour?
4. Each of the 28 students in Romi's class raised at least \$25 during the jump-a-thon. What is the least amount of money the class raised?

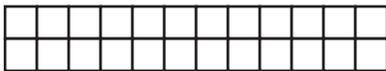
**480 times**

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**\$700**

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5. What is the perimeter of the shape below if 1 square is equal to 1 square foot?



6. Ryan is making small meat loaves. Each small meat loaf uses  $\frac{3}{4}$  pound of meat. How much meat does Ryan need to make 8 small meat loaves?

**28 feet**

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**6 pounds**

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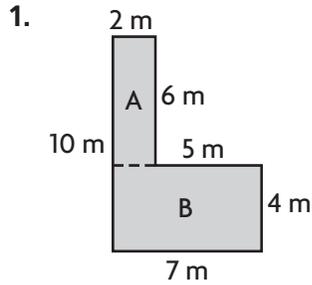
Name \_\_\_\_\_

## Area of Combined Rectangles



**COMMON CORE STANDARD—4.MD.3**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Find the area of the combined rectangles.

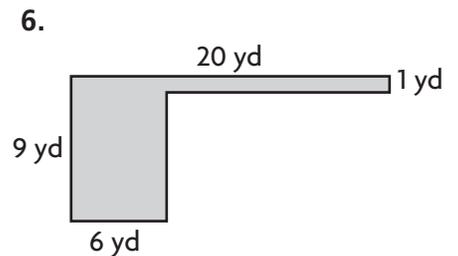
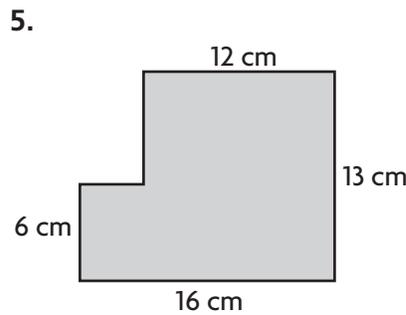
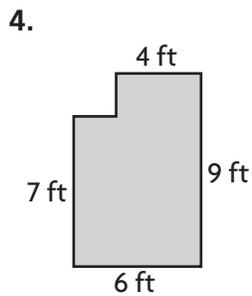
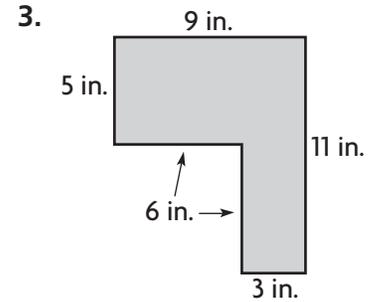
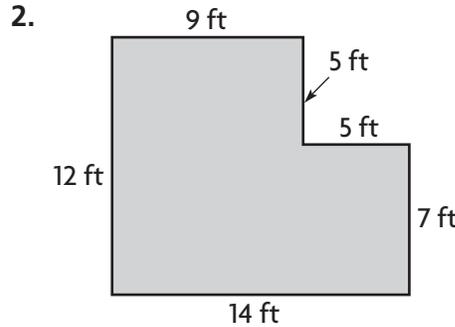


Area A =  $2 \times 6$ ,

Area B =  $7 \times 4$

$12 + 28 = 40$

40 square meters **143 square feet** **63 square inches**



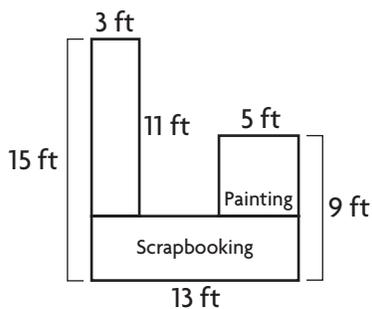
**50 square feet** **180 square cm** **68 square yards**

### Problem Solving



Use the diagram for 7–8.

Nadia makes the diagram below to represent the counter space she wants to build in her craft room.



7. What is the area of the space that Nadia has shown for scrapbooking?

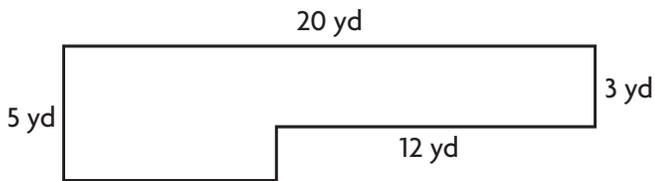
**52 square feet**

8. What is the area of the space she has shown for painting?

**25 square feet**

## Lesson Check (4.MD.3)

1. What is the area of the combined rectangles below?



**76 square yards**

2. Marquis is redecorating his bedroom. What could Marquis use the area formula to find?

**Possible answer:  
the amount of paint  
needed to cover a wall.**

## Spiral Review (4.OA.4, 4.MD.1, 4.MD.3)

3. Giraffes are the tallest land animals. A male giraffe can grow as tall as 6 yards. How tall would the giraffe be in feet?

**18 feet**

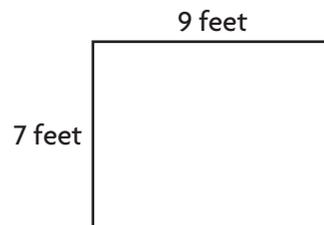
4. Drew purchased 3 books each with a different price, for \$24. The cost of each book was a multiple of 4. What could be the prices of the 3 books?

**\$4, \$8, \$12**

5. Esmeralda has a magnet in the shape of a square. Each side of the magnet is 3 inches long. What is the perimeter of her magnet?

**12 inches**

6. What is the area of the rectangle below?



**63 square feet**

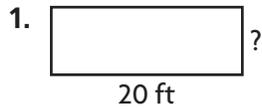
Name \_\_\_\_\_

## Find Unknown Measures



**COMMON CORE STANDARD—4.MD.3**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Find the unknown measure of the rectangle.



Perimeter = 54 feet

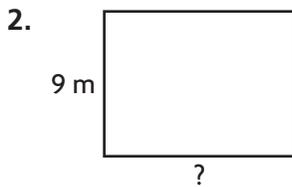
width = 7 feet

**Think:**  $P = (2 \times l) + (2 \times w)$

$$54 = (2 \times 20) + (2 \times w)$$

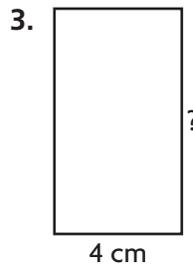
$$54 = 40 + (2 \times w)$$

Since  $54 = 40 + 14$ ,  $2 \times w = 14$ , and  $w = 7$ .



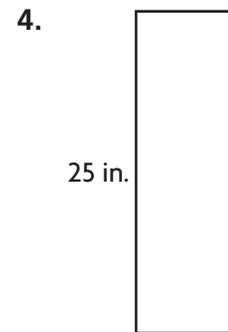
Perimeter = 42 meters

length = 12 meters



Area = 28 square centimeters

height = 7 centimeters



Area = 200 square inches

base = 8 inches

## Problem Solving



5. Susie is an organic vegetable grower. The perimeter of her rectangular vegetable garden is 72 yards. The width of the vegetable garden is 9 yards. How long is the vegetable garden?

27 yards

6. An artist is creating a rectangular mural for the Northfield Community Center. The mural is 7 feet tall and has an area of 84 square feet. What is the length of the mural?

12 feet

## Lesson Check (4.MD.3)

1. The area of a rectangular photograph is 35 square inches. If the width of the photo is 5 inches, how tall is the photo?
2. Natalie used 112 inches of blue yarn as a border around her rectangular bulletin board. If the bulletin board is 36 inches wide, how long is it?

**7 inches**

**20 inches**

## Spiral Review (4.NF.3d, 4.MD.2, 4.MD.3, 4.MD.5a, 4.MD.5b)

3. A professional basketball court is in the shape of a rectangle. It is 50 feet wide and 94 feet long. A player runs one time around the edge of the court. How far does the player run?
4. On a compass, due east is a  $\frac{1}{4}$  turn clockwise from due north. How many degrees are in a  $\frac{1}{4}$  turn?

**288 feet**

**90°**

5. Hakeem's frog made three quick jumps. The first was 1 meter. The second jump was 85 centimeters. The third jump was 400 millimeters. What was the total length in centimeters of the frog's three jumps?
6. Karen colors in squares on a grid. She colored  $\frac{1}{8}$  of the squares blue and  $\frac{5}{8}$  of the squares red. What fraction of the squares are not colored in?

**225 centimeters**

**$\frac{2}{8}$  or  $\frac{1}{4}$**

Name \_\_\_\_\_

**Problem Solving • Find the Area**



**COMMON CORE STANDARD—4.MD.3**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

**Solve each problem.**

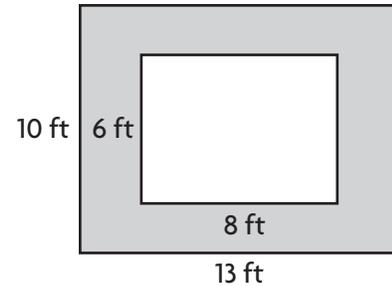
1. A room has a wooden floor. There is a rug in the center of the floor. The diagram shows the room and the rug. How many square feet of the wood floor still shows?

**82 square feet**

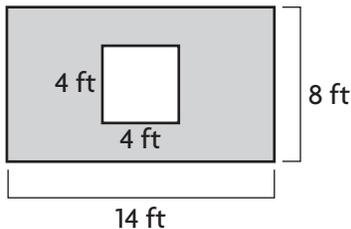
Area of the floor:  $13 \times 10 = 130$  square feet

Area of the rug:  $8 \times 6 = 48$  square feet

Subtract to find the area of the floor still showing:  $130 - 48 = 82$  square feet



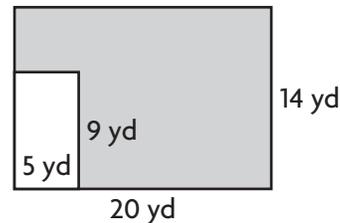
2. A rectangular wall has a square window, as shown in the diagram.



What is the area of the wall NOT including the window?

**96 square feet**

3. Bob wants to put down new sod in his backyard, except for the part set aside for his flower garden. The diagram shows Bob's backyard and the flower garden.



How much sod will Bob need?

**235 square yards**

4. A rectangular painting is 24 inches wide and 20 inches tall without the frame. With the frame, it is 28 inches wide and 24 inches tall. What is the area of the frame not covered by the painting?

**192 square inches**

5. One wall in Jeanne's bedroom is 13 feet long and 8 feet tall. There is a door 3 feet wide and 6 feet tall. She has a poster on the wall that is 2 feet wide and 3 feet tall. How much of the wall is visible?

**80 square feet**

## Lesson Check (4.MD.3)

1. One wall in Zoe's bedroom is 5 feet wide and 8 feet tall. Zoe puts up a poster of her favorite athlete. The poster is 2 feet wide and 3 feet tall. How much of the wall is not covered by the poster?
2. A garage door is 15 feet wide and 6 feet high. It is painted white, except for a rectangular panel 1 foot high and 9 feet wide that is brown. How much of the garage door is white?

**34 square feet**

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**81 square feet**

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## Spiral Review (4.OA.4, 4.NF.2, 4.MD.2, 4.MD.3)

3. Kate made a box to hold her jewelry collection. She used 42 inches of wood to build the sides of the box. If the box was 9 inches wide, how long was the box?
4. Larry, Mary, and Terry each had a full glass of juice. Larry drank  $\frac{3}{4}$  of his. Mary drank  $\frac{3}{8}$  of hers. Terry drank  $\frac{7}{10}$  of his. Who drank less than  $\frac{1}{2}$  of their juice?

**12 inches**

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**Mary**

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5. List all of the numbers between 20 and 30 that are prime.
6. Tom and some friends went to a movie. The show started at 2:30 P.M. and ended at 4:15 P.M. How long did the movie last?

**23, 29**

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**1 hour 45 minutes**

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