

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

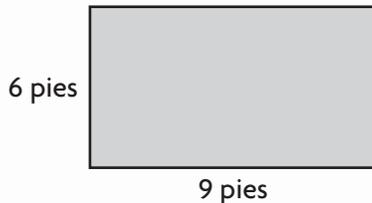
unidad cuadrada Una unidad para medir el área que tiene 1 unidad de largo y 1 unidad de ancho

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 _____

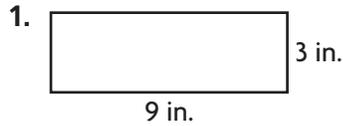
Perimeter



COMMON CORE STANDARD MACC.4.MD.1.3

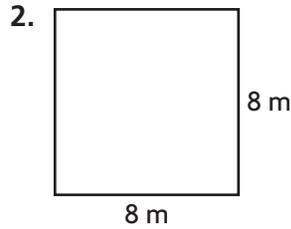
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Find the perimeter of the rectangle or square.

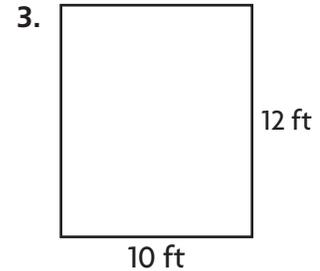


$$9 + 3 + 9 + 3 = 24$$

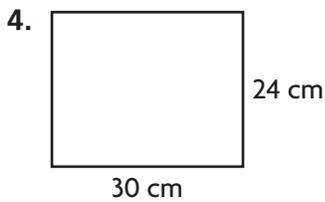
24 inches



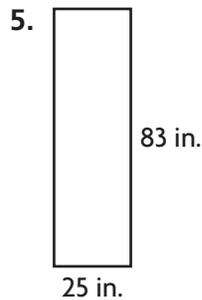
_____ meters



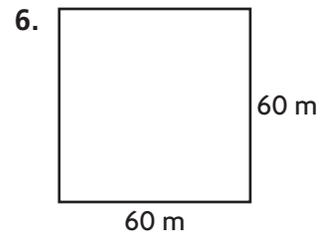
_____ feet



_____ centimeters



_____ inches



_____ meters

Problem Solving REAL WORLD

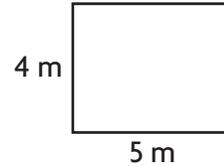
7. Troy is making a flag shaped like a square. Each side measures 12 inches. He wants to add ribbon along the edges. He has 36 inches of ribbon. Does he have enough ribbon? **Explain.**

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?

Lesson Check (MACC.4.MD.1.3)

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

- (A) 40 inches
- (B) 72 inches
- (C) 144 inches
- (D) 1,296 inches



- (A) 11 meters
- (B) 14 meters
- (C) 18 meters
- (D) 400 meters

Spiral Review (MACC.4.NF.3.7, MACC.4.MD.1.1, MACC.4.MD.3.5a, MACC.4.MD.3.5b, MACC.4.G.1.3)

3. Natalie drew the angle below.



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

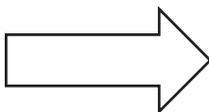
(Lesson 11.2)

- (A) 30°
- (B) 90°
- (C) 180°
- (D) 210°

4. Ethan has 3 pounds of mixed nuts. How many ounces of mixed nuts does Ethan have? (Lesson 12.3)

- (A) 30 ounces
- (B) 36 ounces
- (C) 48 ounces
- (D) 54 ounces

5. How many lines of symmetry does the shape below appear to have? (Lesson 10.5)



- (A) 0
- (B) 1
- (C) 2
- (D) more than 2

6. Which of the following comparisons is correct? (Lesson 9.7)

- (A) $0.70 > 7.0$
- (B) $0.7 = 0.70$
- (C) $0.7 < 0.70$
- (D) $0.70 = 0.07$

Name _____

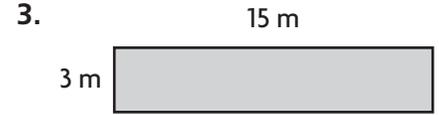
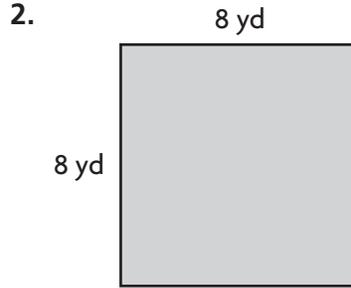
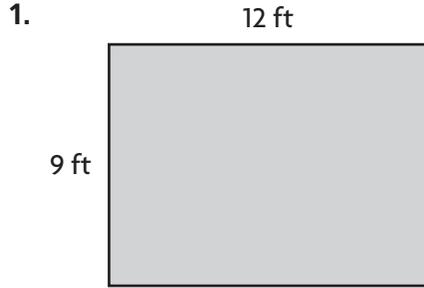
Area



COMMON CORE STANDARD MACC.4.MD.1.3

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

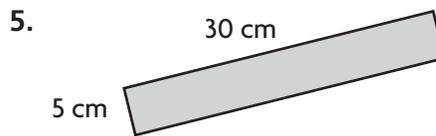
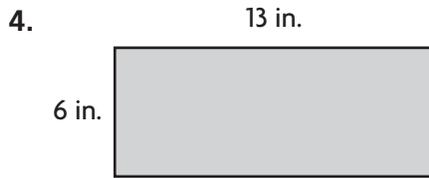
Find the area of the rectangle or square.



$$A = b \times h$$

$$= 12 \times 9$$

108 square feet



Problem Solving REAL WORLD

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?

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?

Lesson Check (MACC.4.MD.1.3)

- 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?
 - (A) Ellie; 138 square feet
 - (B) Heather; 24 square feet
 - (C) Ellie; 300 square feet
 - (D) Heather; 324 square feet
- 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?
 - (A) 10
 - (B) 11
 - (C) 22
 - (D) 28

Spiral Review (MACC.4.NBT.2.5, MACC.4.NF.2.4c, MACC.4.MD.1.3)

- Typically, blood fully circulates through the human body 8 times each minute. How many times does blood circulate through the body in 1 hour? (Lesson 3.1)
 - (A) 48
 - (B) 240
 - (C) 480
 - (D) 4,800
- 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? (Lesson 3.5)
 - (A) \$5,200
 - (B) \$700
 - (C) \$660
 - (D) \$196
- What is the perimeter of the shape below if 1 square is equal to 1 square foot? (Lesson 13.1)



 - (A) 12 feet
 - (B) 14 feet
 - (C) 24 feet
 - (D) 28 feet
- 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? (Lesson 8.4)
 - (A) 4 pounds
 - (B) 6 pounds
 - (C) 8 pounds
 - (D) $10\frac{2}{3}$ pounds

Name _____

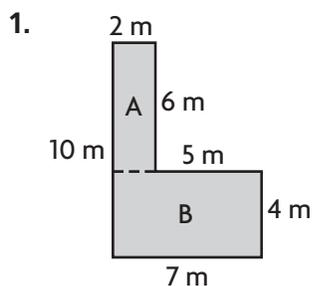
Area of Combined Rectangles



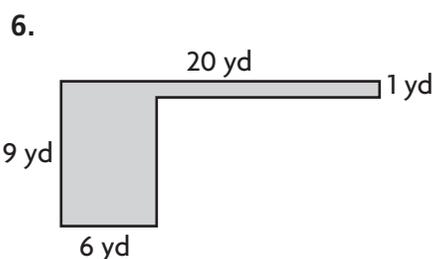
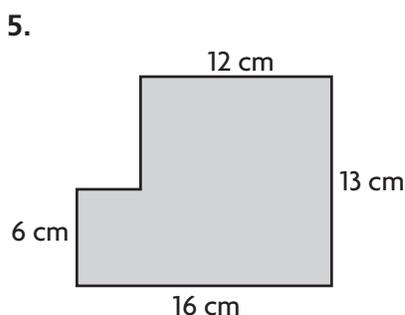
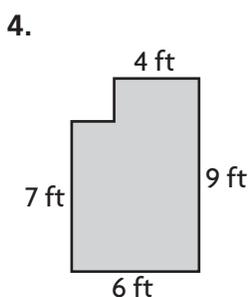
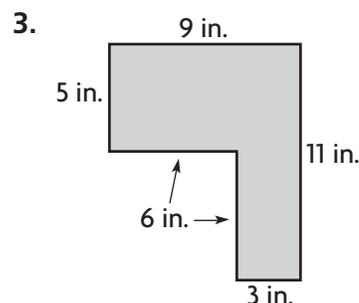
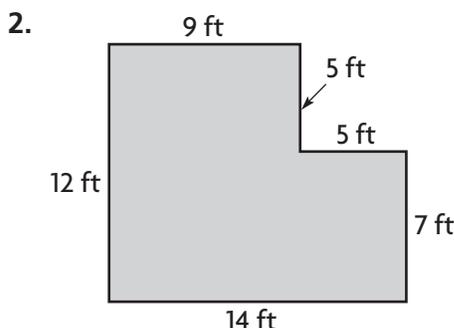
COMMON CORE STANDARD MACC.4.MD.1.3

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Find the area of the combined rectangles.



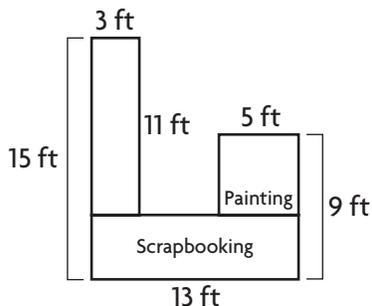
Area A = 2×6 ,
 Area B = 7×4
 $12 + 28 = 40$
 40 square meters



Problem Solving **REAL WORLD**

Use the diagram for 7–8.

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

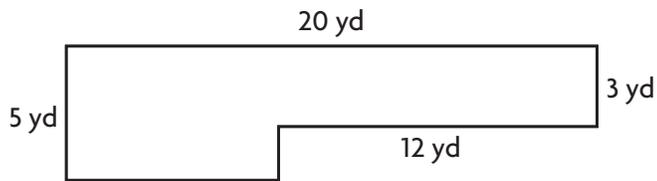


7. What is the area of the space that Nadia has shown for scrapbooking?

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

Lesson Check (MACC.4.MD.1.3)

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



- (A) 136 square yards
- (B) 100 square yards
- (C) 76 square yards
- (D) 64 square yards

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

- (A) how much space should be in a storage box
- (B) what length of wood is needed for a shelf
- (C) the amount of paint needed to cover a wall
- (D) how much water will fill up his new aquarium

Spiral Review (MACC.4.OA.2.4, MACC.4.MD.1.1, MACC.4.MD.1.3)

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?

(Lesson 12.2)

- (A) 2 feet
- (B) 6 feet
- (C) 12 feet
- (D) 18 feet

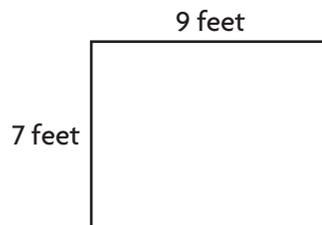
4. Drew purchased 3 books for \$24. The cost of each book was a multiple of 4. Which of the following could be the prices of the 3 books? (Lesson 5.4)

- (A) \$4, \$10, \$10
- (B) \$4, \$8, \$12
- (C) \$5, \$8, \$11
- (D) \$3, \$7, \$14

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? (Lesson 13.1)

- (A) 3 inches
- (B) 7 inches
- (C) 9 inches
- (D) 12 inches

6. What is the area of the rectangle below? (Lesson 13.2)



- (A) 63 square feet
- (B) 32 square feet
- (C) 18 square feet
- (D) 16 square feet

Name _____

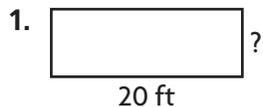
Find Unknown Measures



COMMON CORE STANDARD MACC.4.MD.1.3

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

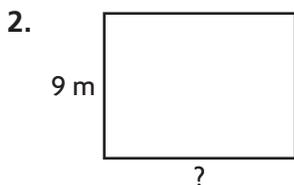
width = 7 feet

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

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

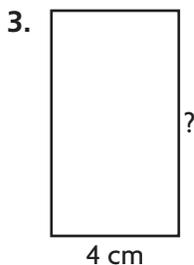
$$54 = 40 + (2 \times w)$$

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



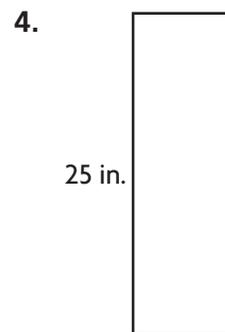
Perimeter = 42 meters

length = _____



Area = 28 square centimeters

height = _____



Area = 200 square inches

base = _____

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?

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?

Lesson Check (MACC.4.MD.1.3)

- The area of a rectangular photograph is 35 square inches. If the width of the photo is 5 inches, how tall is the photo?
 - 5 inches
 - 7 inches
 - 25 inches
 - 30 inches
- 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?
 - 20 inches
 - 38 inches
 - 40 inches
 - 76 inches

Spiral Review (MACC.4.NF.2.3d, MACC.4.MD.1.2, MACC.4.MD.1.3, MACC.4.MD.3.5a, MACC.4.MD.3.5b)

- A professional basketball court is in the shape of a rectangle. It is 50 feet wide and 94 feet long. A player ran one time around the edge of the court. How far did the player run? (Lesson 13.1)
 - 144 feet
 - 194 feet
 - 238 feet
 - 288 feet
- 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? (Lesson 11.2)
 - 45°
 - 60°
 - 90°
 - 180°
- 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 of the frog's three jumps? (Lesson 12.10)
 - 189 centimeters
 - 225 centimeters
 - 486 millimeters
 - 585 millimeters
- 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? (Lesson 7.10)
 - $\frac{1}{8}$
 - $\frac{1}{4}$
 - $\frac{1}{2}$
 - $\frac{3}{4}$

Name _____

Problem Solving • Find the Area



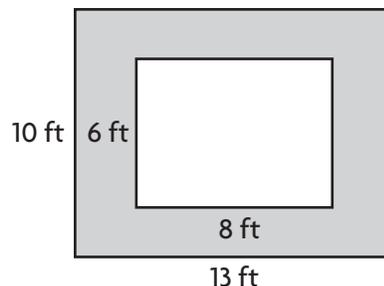
COMMON CORE STANDARD MACC.4.MD.1.3

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

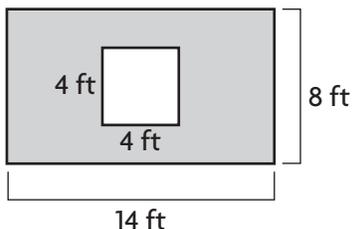


Area of the floor: $13 \times 10 = 130$ square feet

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

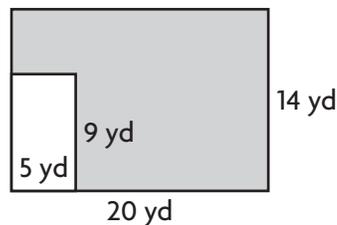
Subtract to find the area of the floor still showing: $130 - 48 = 82$ square feet

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



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

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?

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?

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?

Lesson Check (MACC.4.MD.1.3)

- 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?
 - 16 square feet
 - 34 square feet
 - 35 square feet
 - 46 square feet
- 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?
 - 22 square feet
 - 70 square feet
 - 80 square feet
 - 81 square feet

Spiral Review (MACC.4.OA.2.4, MACC.4.NF.1.2, MACC.4.MD.1.2, MACC.4.MD.1.3)

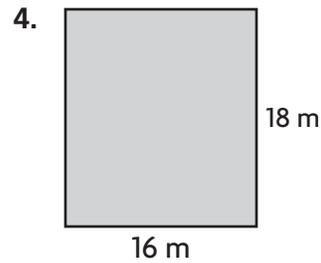
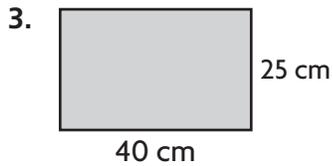
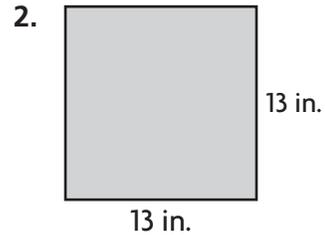
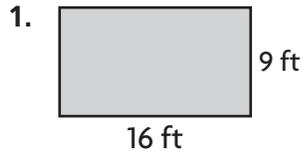
- Kate baked a rectangular cake for a party. She used 42 inches of frosting around the edges of the cake. If the cake was 9 inches wide, how long was the cake?
(Lesson 13.4)
 - 5 inches
 - 12 inches
 - 24 inches
 - 33 inches
- Larry, Mary, and Terry each had a full glass of juice. Larry drank $\frac{3}{4}$ 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?
(Lesson 6.6)
 - Larry
 - Mary
 - Mary and Terry
 - Larry and Terry
- Which of the following statements is NOT true about the numbers 7 and 9?
(Lesson 5.5)
 - 7 is a prime number.
 - 9 is a composite number.
 - 7 and 9 have no common factors other than 1.
 - 27 is a common multiple of 7 and 9.
- 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?
(Lesson 12.9)
 - 1 hour 35 minutes
 - 1 hour 45 minutes
 - 1 hour 55 minutes
 - 2 hours 15 minutes

Name _____

Chapter 13 Extra Practice

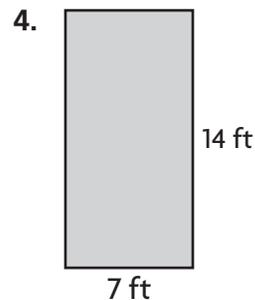
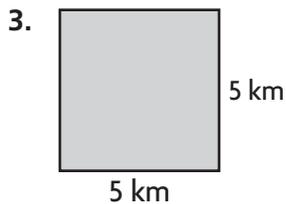
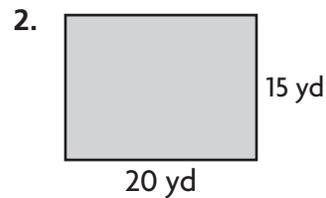
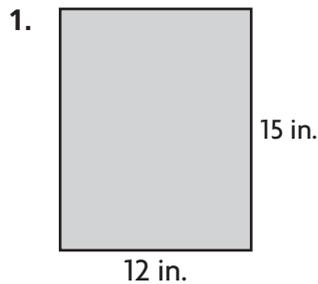
Lesson 13.1

Find the perimeter of the rectangle or square.



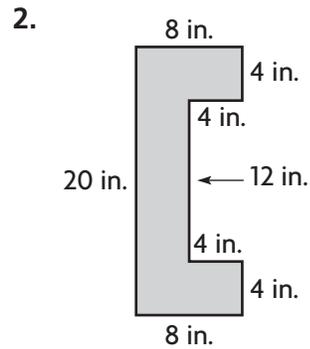
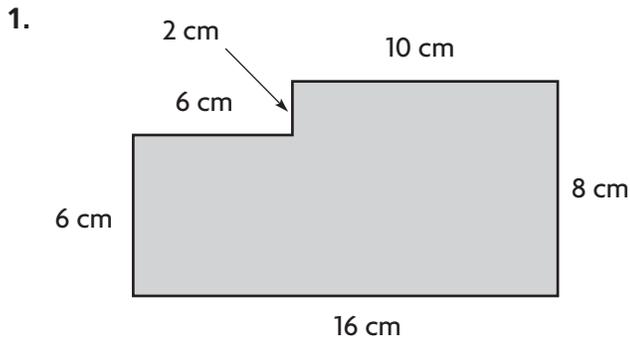
Lesson 13.2

Find the area of the rectangle or square.



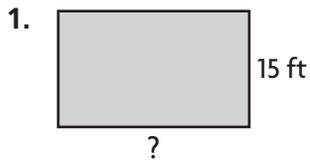
Lesson 13.3

Find the area of the combined rectangles.



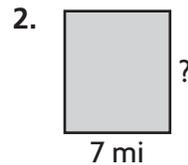
Lesson 13.4

Find the unknown measure of the rectangle.



Perimeter = 80 feet

base = _____



Area = 56 square miles

height = _____

Lesson 13.5

Solve.

1. Jeanette is painting a rectangular wall that is 10 feet long and 8 feet tall. There is a window that is 5 feet wide and 3 feet tall on the wall. What is the area of the wall that Jeanette will paint?
 2. Rob has a combined flower and vegetable garden that is 9 meters long and 11 meters wide. The flower garden is in the center and is a square with sides of 3 meters. How many square meters of the garden is used for vegetables?
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