School-Home Letter

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 measure of a perpendicular from the base to the top of a two-dimensional shape

square unit (sq un) A unit of area with dimensions of 1 unit × 1 unit

Dear Family,

During the next few weeks, our math class will be learning about area. We will explore the concept that area is a measure of covering through the use of square units. We will also learn the formula for finding the area of a rectangle and relate perimeter and area.

You can expect to see homework that provides practice with finding and estimating the areas of different shapes.

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 the formula for the area of a rectangle.

STEP 1

Identify the base and the height of the rectangle.

6 ft
9 ft
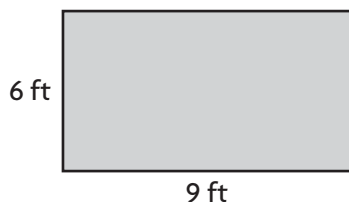
base = 9 feet
height = 6 feet

STEP 2

Use the formula
Area = base × height
to find the area of the rectangle.

Area = 9 × 6, or 54

The area is 54 square feet.

Tips

Remember that either 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.

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

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 medida de un lado perpendicular de una figura bidimensional desde la base hasta la parte superior

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

Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos acerca del 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 y *cómo relacionar el perímetro y el área.*

Llevaré a la casa tareas para practicar la manera de hallar y estimar las áreas de distintas figuras.

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

🔑 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.
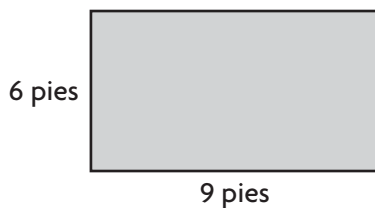
6 pies

9 pies

base = 9 pies
altura = 6 pies

PASO 2

Usa la fórmula del área = base × altura para hallar el área del rectángulo.

área = 9 × 6, ó 54
El área mide 54 pies cuadrados.

Pistas

Recuerde 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.
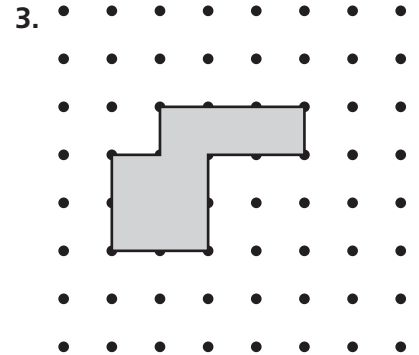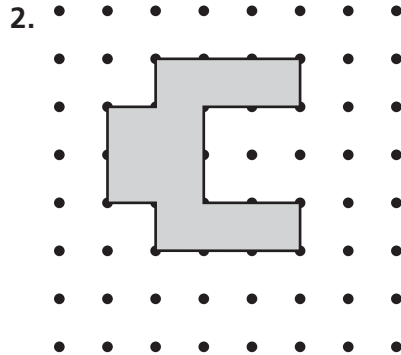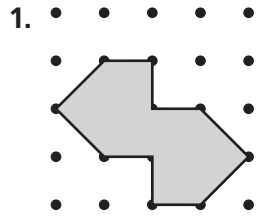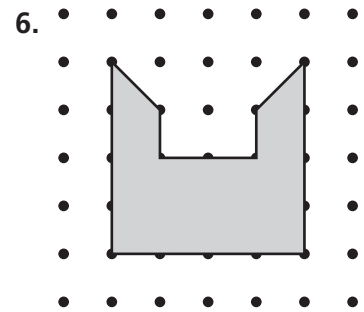
Name _____

Explore Area

Find the area of each shape. Write the area in square units.

1.

Think: ◺ + ◺ = ▢

6 square units

2.

3.

4.

5.

6.
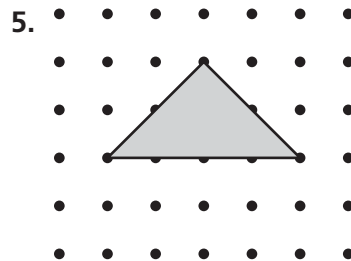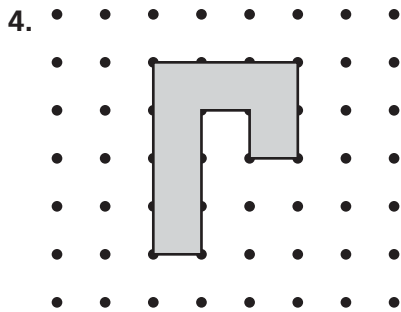
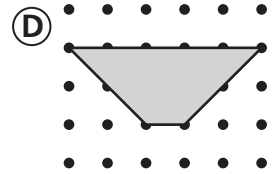## Problem Solving REAL WORLD
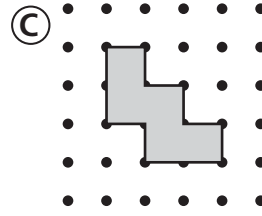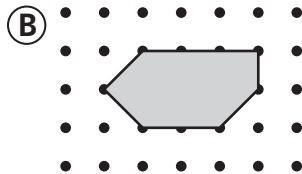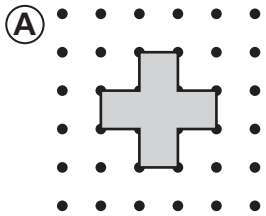
Use the shapes below to solve 7 and 8.
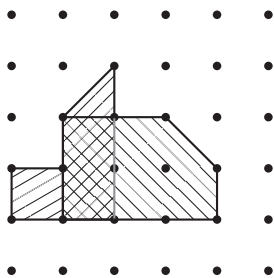
7. What is the area of the parts of the shapes that do not overlap?

_____

8. What is the area of the shape made by the overlap of the two shapes?

_____

Lesson Check (MA.4.G.3.1)

1. Damien drew a shape on dot paper that has an area of 6 square units. Which of the following could be Damien's shape?

(A)

(B)

(C)

(D)

Review Grade 4 (MA.4.A.6.1)

2. In 2007, the population of the United States was estimated to be 301,139,947. What digit is in the hundred millions place of 301,139,947?

(F) 0

(G) 1

(H) 3

(I) 8

3. Which of the following is equivalent to 406,072,003?

(A) 406 + 72 + 3

(B) 400,000,000 + 6,000,000 + 70,000 + 2,000 + 3

(C) 400,000,000 + 600,000 + 70,000 + 2,000 + 3

(D) 46,000,000 + 72,000 + 3

Look Back (MA.3.G.5.3)

4. What time does the clock show?

(F) 3:15   (H) 5:30

(G) 4:25   (I) 6:30

5. What time will it be in 3 hours?
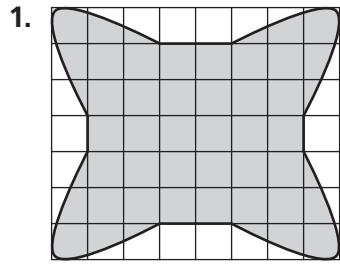

(A) 10:45   (C) 11:25

(B) 11:15   (D) 12:15

Estimate Area

MA.4.G.3.1 Describe and determine area as the number of same-sized units that cover a region in the plane, recognizing that a unit square is the standard unit for measuring area.

Estimate the area of the shaded shape. 1 square = 1 square yard

1.

Think: Be sure to count groups of partial squares that are about 1 whole square.

42 square yards

2.

_____

3.

_____

4.

_____

5.

_____

6.

_____
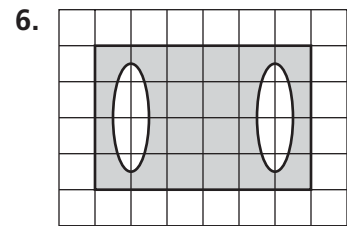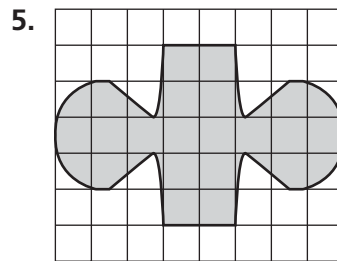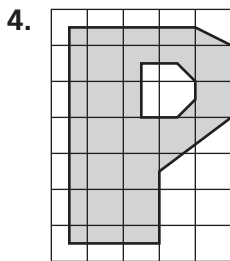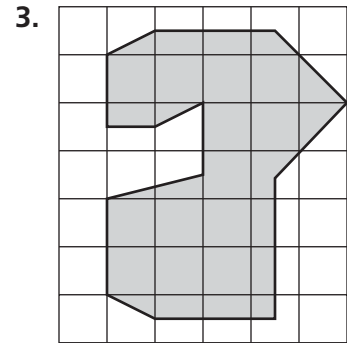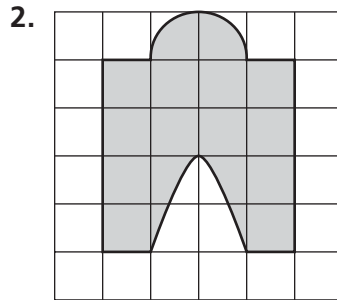
Problem Solving REAL WORLD

Use the diagram below to solve 7 and 8.

Pool

Garden

Lawn

Driveway

Patio
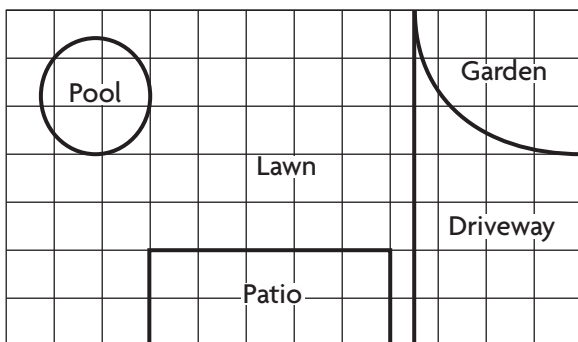
7. Estimate the area of the garden.
(1 square = 1 square meter)

_____

8. Estimate the area of the lawn.

_____

_____

Lesson Check

1. Which is the best estimate of the area of the shaded part of the grid below?

⬜ = 1 square foot
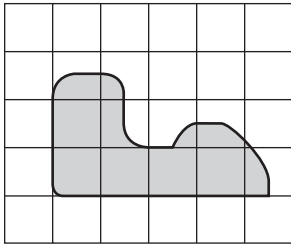
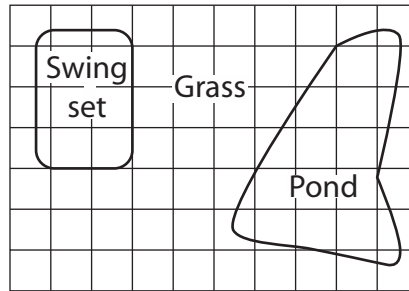- **(A)** 4 square feet
- **(C)** 7 square feet
- **(B)** 5 square feet
- **(D)** 11 square feet

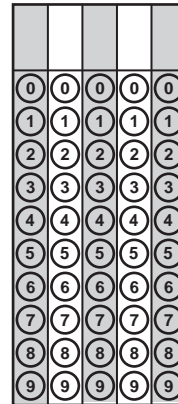**2.** Jaylen drew a diagram of the park near his house. ⬜ = 1 square yard

Which is the best estimate of the area of grass at the park?

- **(F)** 70 square yards
- **(H)** 48 square yards
- **(G)** 56 square yards
- **(I)** 34 square yards

Review Grade 4

3. Kyra saw 4 times as many birds as squirrels in her backyard. She saw a total of 15 birds and squirrels. How many birds did Kyra see in her backyard?

Look Back

4. Scott adds 3 pennies at a time to his bank. He adds pennies at 6 different times today. Which expression represents the total number of pennies Scott added today?

- **(A)** 3×3
- **(C)** 6×3
- **(B)** $3 + 6$
- **(D)** 6×6

5. Which expression is modeled by the following area model?

- **(F)** $4 + 6$
- **(H)** 4×4
- **(G)** $4 + 4 + 4$
- **(I)** 4×6

Find Area

Find the area of the shape. 1 square = 1 square meter

1.

Think: There are 5 rows of 12 squares.

$5 \times 12 = \blacksquare$

60 square meters

2.

3.

4.

5.

6.

Problem Solving REAL WORLD
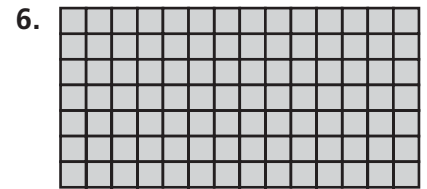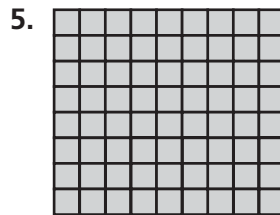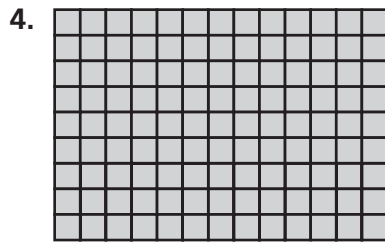
Use the model below to solve 7 and 8.

Serenity is making a mosaic with glass tiles with an area of 1 square inch. The shaded section represents blue tiles.
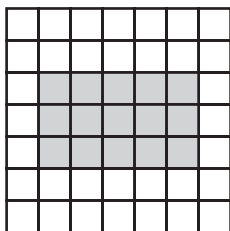
7. What is the area of the entire mosaic Serenity is making?

_____

8. What is the area of the mosaic that will be made using a tile color other than blue?

_____

Lesson Check (MA.4.G.3.1)

1. What is the area of the shape below if 1 square is equal to 1 square centimeter?

(A) 40 square centimeters

(B) 86 square centimeters

(C) 92 square centimeters

(D) 96 square centimeters

2. Which of the following shapes does not have an area of 36 square feet? (1 square = 1 square foot)

(F) (H) (G) (I)
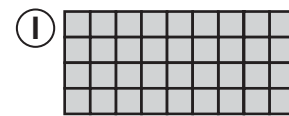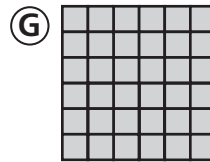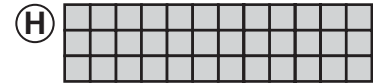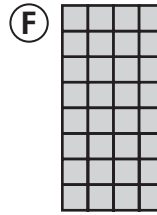
Review Grade 4 (MA.4.A.4.3)

3. What is a possible rule for the table?

Input	x	4	5	6	7
Output	y	16	18	20	22

(A) Divide 4 by x, then subtract 1.

(B) Add 4 to y, then divide by 2.

(C) Add 4 to x, then multiply by 2.

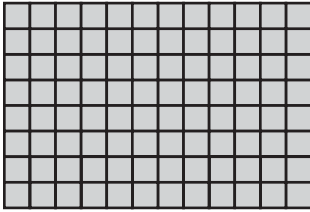(D) Multiply x by 2, then add 1.

4. Andy used the rule $2x + 3$ to make the table below.

Which numbers will complete Andy's table?

Input	x	1	3	5	7	9
Output	y	5	9	13	?	?

(F) 29 and 37

(G) 17 and 21

(H) 11 and 13

(I) 14 and 15

Look Back (MA.3.G.5.3, MA.4.G.3.3)

5. Which time is shown on the clock below?

(A) 1:45

(B) 2:03

(C) 2:15

(D) 9:08

6. Which time shows half past six using numbers?

(F) 6:50

(G) 6:30

(H) 6:20

(I) 6:12

Use a Formula

Find the area.

1.   12 ft

9 ft
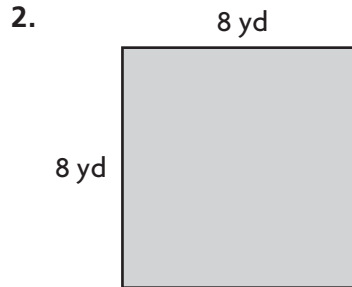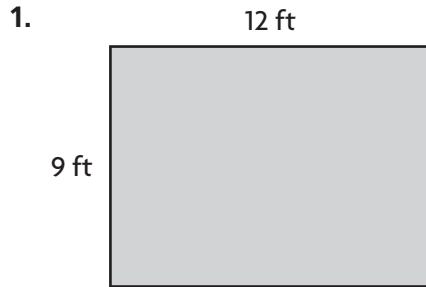
**Area = base ×
     height
Area = 12 × 9
108 square feet**

2.   8 yd

8 yd

3.   15 m

3 m

4.   13 in.

6 in.

5.   30 cm

5 cm

6.   14 ft

4 ft

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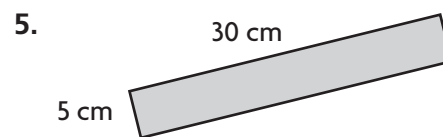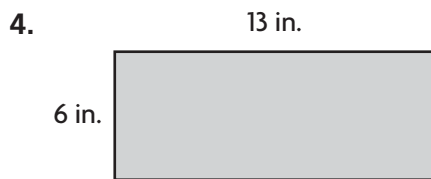
7. Meghan is putting wallpaper on a wall that measures 8 feet by 12 feet. How much wallpaper does Meghan need to cover the wall?

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 (MA.4.G.3.2)

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. Who drew the floor model with the greater area? How much greater?

   Ⓐ Ellie; 138 square feet

   Ⓑ Heather; 24 square feet

   Ⓒ Ellie; 300 square feet

   Ⓓ Heather; 324 square feet

2. Tyra is laying down square carpet pieces in her dance studio. Each square carpet piece is 1 yard by 1 yard. If Tyra's dance studio is 7 yards long and 4 yards wide, how many pieces of square carpet will Tyra need?

   Ⓕ 10

   Ⓖ 11

   Ⓗ 22

   Ⓘ 28

Review Grade 4 (MA.4.A.1.2)

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?

   Ⓐ 48   Ⓒ 480

   Ⓑ 240   Ⓓ 4,800

4. Each of the 325 students at Lincoln Elementary raised at least $25 during the jump-a-thon. What is the least amount of money the school raised?

   Ⓕ $8,125   Ⓗ $6,500

   Ⓖ $7,905   Ⓘ $2,275

Look Back (MA.3.A.2.1)

5. Which fraction or mixed number is represented by the shaded part of the model?

   Ⓐ $\frac{1}{4}$ Ⓒ $1\frac{1}{4}$

   Ⓑ $\frac{5}{8}$ Ⓓ $\frac{5}{2}$

6. What fraction represents the part of the set of letters below that has curved paths?

   A, B, C, D, E, F, G, H, I, J, K, L

   Ⓕ $\frac{5}{12}$ Ⓗ $\frac{5}{7}$

   Ⓖ $\frac{1}{2}$ Ⓘ $\frac{12}{5}$

Name _____

Area of Complex Shapes

MA.4.G.3.3 Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world problems.

Find the area of the shape.

1.

2 m
6 m
10 m
5 m
4 m
7 m
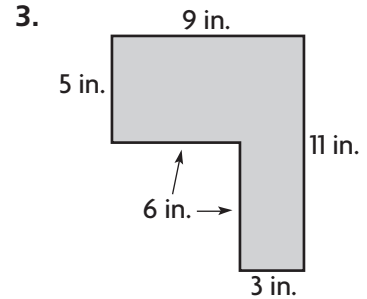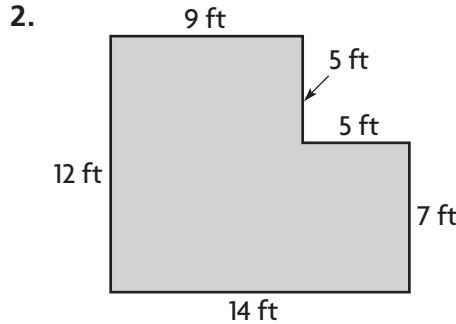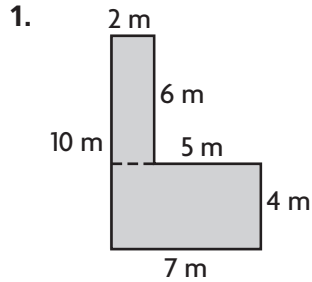
Area 1 = 7 × 4,
Area 2 = 2 × 6
28 + 12 = ■
40 square meters

2.

9 ft
5 ft
5 ft
12 ft
7 ft
14 ft

3.

9 in.
5 in.
6 in. →
11 in.
3 in.

4.

4 ft
7 ft
9 ft
6 ft

5.

12 cm
6 cm
13 cm
16 cm

6.

20 yd
1 yd
9 yd
6 yd
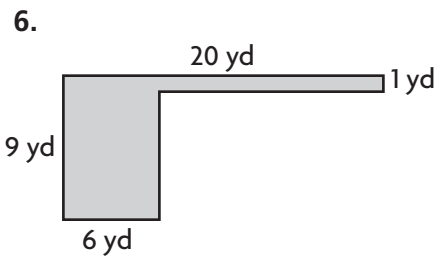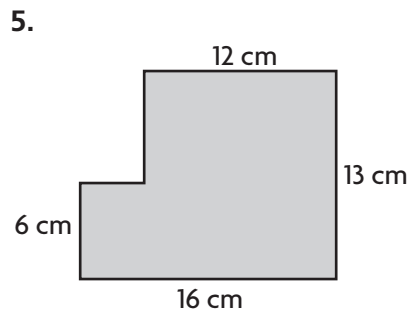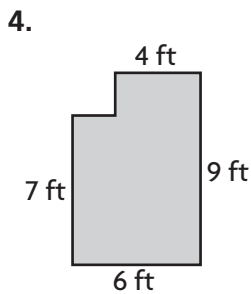
Problem Solving REAL WORLD

Use the diagram below for 7–8.
Nadia makes the diagram below to represent the counter space she wants to build in her craft room.

3 ft
15 ft
11 ft
5 ft
Painting
9 ft
Scrapbooking
13 ft
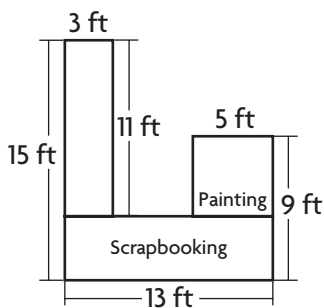
7. What is the area of the space that Nadia has shown for scrapbooking?

_____

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

_____

Lesson Check (MA.4.G.3.3)

1. What is the area of the shape below?

20 yd

3 yd

5 yd

12 yd
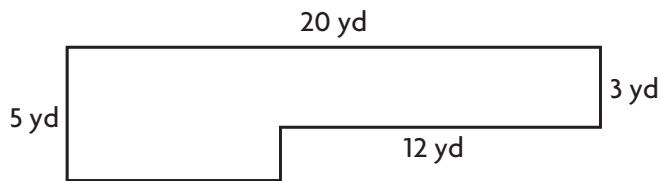
(A) 136 square yards

(B) 100 square yards

(C) 76 square yards

(D) 64 square yards

2. Marquis is redecorating his bedroom. In which of the following situations would Marquis use the area formula?

(F) determining how much space should be in a storage box

(G) determining what length of wood is needed for a shelf

(H) determining the amount of paint needed to cover a wall

(I) determining how much water will fill up his new aquarium

Review Grade 4 (MA.4.A.6.4)

3. Mariana is deciding which box of dog treats to buy for her 3 dogs. She wants to be able to give each dog exactly 1 treat each day and use up the entire box at the end of one of the days. How many treats should be in the box Mariana buys?

(A) 23   (C) 35

(B) 29   (D) 36

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?

(F) $4, $10, $10   (H) $5, $8, $11

(G) $4, $8, $12   (I) $3, $7, $14

Look Back (MA.3.G.5.1, MA.4.G.3.3)

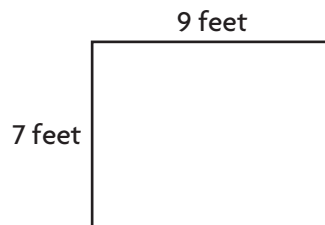5. Esmeralda has a magnet in the shape of a square. Each side of the magnet is 3 inches long. What is the perimeter of her magnet?

(A) 3 inches

(B) 7 inches

(C) 9 inches

(D) 12 inches

6. What is the perimeter of the shape below?

9 feet

7 feet

(F) 64 feet   (H) 18 feet

(G) 32 feet   (I) 16 feet

Name _____

Appropriate Units and Tools

Choose an appropriate unit and tool to find the area. There can be more than one answer.

1. top of a desktop

sq in., sq ft; ruler, tape measure

_____

_____

2. basketball court

_____

_____

_____

3. land for a grocery store

_____

_____

_____

4. photograph

_____

_____

_____

_____

5. patio deck

_____

_____

_____

_____

6. envelope

_____

_____

_____

_____

Underline the better estimate for the area.

7. front of a cereal box

84 square feet

84 square inches

8. baseball trading card

45 square centimeters

450 square centimeters

9. Everglades National Park

6,000 square kilometers

6,000 square feet

Problem Solving REAL WORLD

10. Ms. Childers is finding the area of the class bulletin board. Monica estimates that the area will be about 20 square feet. Oliver estimates that the area will be about 200 square feet. Which student has a better estimate of the area?

_____

11. The school janitor wants to measure the ceiling in a classroom in order to replace the ceiling tiles. Which would be a better tool for the janitor to use to make his measurements—a ruler or a tape measure?

_____

Lesson Check (MA.4.G.3.3)

1. Which is the best estimate for the total amount of carpet needed to cover a bedroom floor?

- Ⓐ 144 square inches
- Ⓑ 144 square feet
- Ⓒ 144 square yards
- Ⓓ 1,440 square feet

2. Which would be the best tool to use to find the area of a computer screen?

- Ⓕ ruler
- Ⓖ meterstick
- Ⓗ yardstick
- Ⓘ trundle wheel

Review Grade 4 (MA.4.A.2.3)

3. Which of the following shows the money amount below as a fraction of a dollar?

- Ⓐ $\frac{77}{1}$
- Ⓒ $\frac{77}{100}$
- Ⓑ $\frac{77}{23}$
- Ⓓ $\frac{1}{77}$

4. Brenda has $\frac{38}{100}$ of a dollar. Which of the following could be the coins Brenda has?

- Ⓕ 3 nickels, 8 pennies
- Ⓖ 38 dimes
- Ⓗ 1 quarter, 1 dime, 3 pennies
- Ⓘ 1 quarter, 1 nickel, 3 pennies

Look Back (MA.3.G.5.1, MA.4.G.3.3)

5. Patty wants to paint a border around her bedroom. She needs to find the perimeter of the room. Which unit should she use to measure the perimeter?

- Ⓐ feet
- Ⓑ miles
- Ⓒ kilometers
- Ⓓ centimeters

6. Frank wants to measure the perimeter of his math book. Which of the following would be the best estimate of the perimeter of Frank's book?

- Ⓕ 4 centimeters
- Ⓖ 40 inches
- Ⓗ 400 inches
- Ⓘ 40 feet

Make a Table • Relate Perimeter and Area

MA.4.G.3.3 Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world area problems.

Solve each problem. Use whole numbers for the length and width.

1. Brett wants to use 40 feet of twine to mark off a rectangular area in his yard for a garden. What are the length and width for a garden with the greatest area?

Garden	Length (ft)	Width (ft)	Perimeter (ft)	Area (sq ft)
A	17	3	40	51
B	15	5	40	75
C	10	10	40	100

length: 10 ft, width: 10 ft

2. Amaya has 24 inches of ribbon she can glue around the edge of a rectangular gift box lid. If she wants to use all the ribbon without any overlapping, what are the length and width of a gift box lid with the greatest area?

_____

_____

3. Mallory wants to make a practice dance floor in her garage using 48 square wooden tiles with an area of 1 square foot each. She also wants to add a wood trim around the floor. What is the least amount of trim Mallory will need for her dance floor?

_____

4. Dominick wants to buy an above-ground rectangular pool. He has different choices for the area of the pool, but the less plastic used to make the outside of the pool, the less it costs. Dominick wants the least expensive pool with an area of 180 square feet. What should be the perimeter of the pool Dominick buys?

_____

Lesson Check (MA.4.G.3.3)

1. Ellie has a flower garden that is 6 feet long and 6 feet wide. She wants to increase the length of the garden by 4 feet. What will the area of the new garden be?

(A) 36 feet

(C) 60 feet

(B) 36 square feet

(D) 60 square feet

2. Rafael wants to use 30 centimeters of wood to frame a rectangular photograph. What is the greatest area his photograph could have?

(F) 14 square centimeters

(G) 36 square centimeters

(H) 54 square centimeters

(I) 56 square centimeters

Review Grade 4 (MA.4.A.2.4)

SPIRAL REVIEW

3. Which of the following is less than 3.212?

(A) 3.209

(B) 3.22

(C) 3.301

(D) 3.4

4. Which of the following correctly shows the decimals ordered from least to greatest?

(F) 0.706, 0.076, 0.8, 0.67

(G) 0.076, 0.67, 0.706, 0.8

(H) 0.8, 0.67, 0.076, 0.706

(I) 0.8, 0.706, 0.67, 0.076

Look Back (MA.3.A.6.2)

SPIRAL REVIEW

5. Pedro is ordering a sandwich for lunch. He can choose one of two meats: ham or turkey. Then he can choose one of two cheeses: Swiss or cheddar. Finally, he can choose one of two types of bread: white or wheat. How many different sandwiches can Pedro order with all the choices?

(A) 3

(C) 6

(B) 4

(D) 8

6. Elena, Calvin, and Haley are lining up for recess and are trying to decide who should be first, second, and last in line. In how many ways can the three children line up?

(F) 1

(G) 3

(H) 6

(I) 9

Name _____
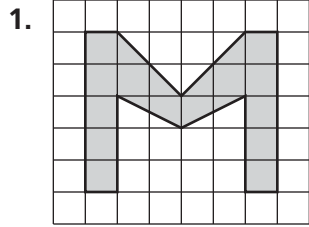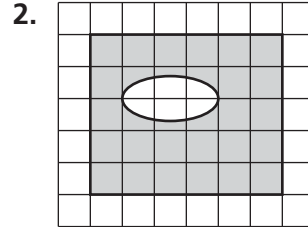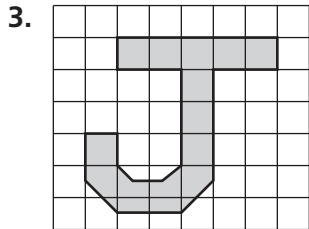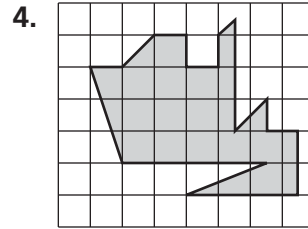
Chapter 10 Extra Practice

Lesson 10.2 (pp. 413–416)

Estimate the area of the shaded shape.
1 square = 1 square foot

1.

_____

2.

_____

3.

_____

4.

_____

Lesson 10.3 (pp. 417–420)

Find the area of the shape. 1 square = 1 square meter

1.

_____

2.

_____

3.

_____

4.

_____
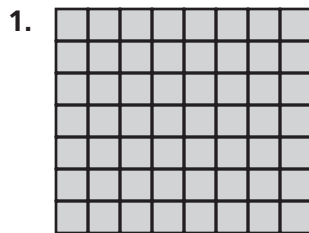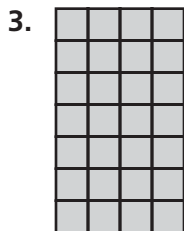
Lesson 10.4 (pp. 421–424)

Find the area.

1.

10 ft

7 ft

_____

2.

8 m

8 m

_____

3.

18 cm

3 cm

_____

4.

16 in.

2 in.

_____

5.

7 m

12 m

_____

6.

19 cm

9 cm

_____

7.

4 ft

18 ft

_____

8.
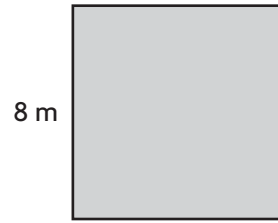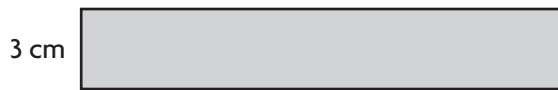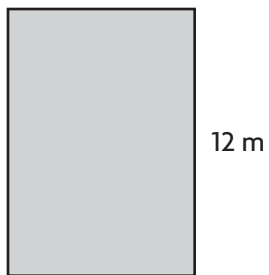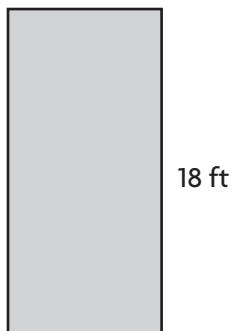
14 yd

14 yd

_____
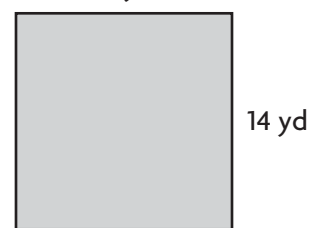
Lesson 10.5 (pp. 427–430)

Find the area of the shape.

1.

2 cm

10 cm

6 cm

6 cm

8 cm

16 cm

_____

2.

8 in.

4 in.

4 in.

20 in.   ← 12 in.

4 in.

4 in.

8 in.

_____
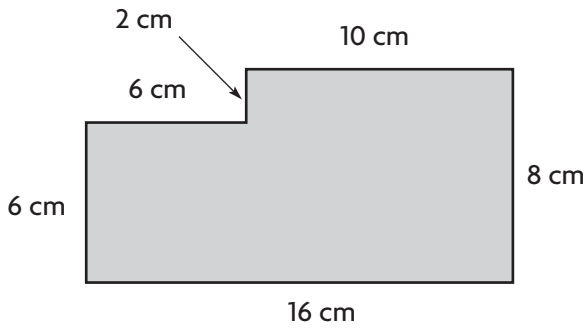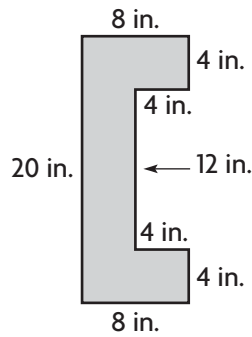
Lesson 10.6 (pp. 431–434)

Choose an appropriate unit and tool to find the area.
There can be more than one answer.

1. blanket

_____

_____

_____

2. a baseball card

_____

_____

_____

3. a local park

_____

_____

_____

4. closet wall

_____

_____

_____

5. magazine cover

_____

_____

_____

6. file folder

_____

_____

_____

7. computer screen

_____

_____

_____

8. bedroom floor

_____

_____

_____

9. driveway

_____

_____

_____

Lesson 10.7 (pp. 435–438)

Complete the table. Use the table for 1–8.

Rectangular Garden	Length (in feet)	Width (in feet)	Perimeter (in feet)	Area (in sq feet)
A		2	28	24
B	8		22	24
C		4	20	24
D		6		24

1. If Garden A has a width of 2 feet and an area of 24 square feet, what is the length of Garden A?

_____

2. Which garden has the shortest width?

_____

3. Which two gardens have the same area and the same perimeter?

_____

4. Which of the gardens has the greatest perimeter?

_____

5. What is the length and width of Garden B?

_____

6. Are any of the gardens in the shape of a square?

_____

7. What is the length and width of Garden D?

_____

8. What is the perimeter of Garden D?

_____