Focus on Measurement and Data / Geometry

UNIT 5

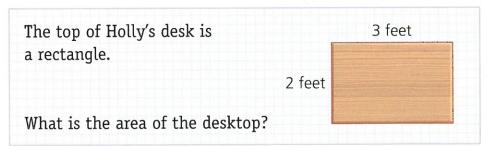
Essential Question:

How can you find the area and perimeter of geometric shapes?

Guided Instruction

In this lesson you will learn about area.

Understand: The meaning of area



Essential Question:

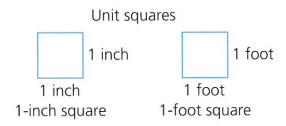
How can you measure the area of plane figures?

3.MD.5a, 3.MD.5b, 3.MD.6

Words to Know:

plane figure unit square area square inch square foot square centimeter square meter

A plane figure is flat. A rectangle is a plane figure. A unit square is a square with sides that are 1 unit long.

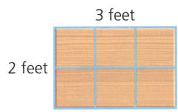


A unit square can be a square with side lengths that represent any unit of measure.

The area of a plane figure is the number of unit squares needed to cover the figure without gaps or overlaps.

The 1-inch square has an area of 1 square inch, which can be written as square in. The 1-foot square has an area of 1 square foot, which can be written as square ft.

Look at Holly's desktop. You can use unit squares that measure 1 square foot each to cover the desktop. Count the number of unit squares that cover the desktop.



6 unit squares cover the desktop.

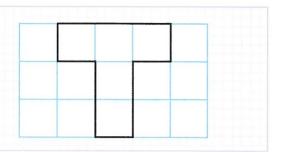
The area of the desktop is 6 square feet.

Guided Instruction

Connect: Measuring the area of figures

Ted drew a figure on grid paper.

What is the area of the figure?



Step 1

Determine the unit square.

Each square in the grid has sides that are 1 centimeter long.

Each centimeter square in the grid has an area of 1 square centimeter, which can be written as square cm.

	1	centimeter
centime	ete	er

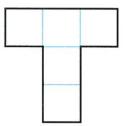
Step 2

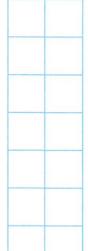
Count the centimeter squares that cover Ted's figure.

____ centimeter squares cover the figure.

The area of the figure is 5 square centimeters.

Draw two different figures, each with an area of 5 square centimeters.



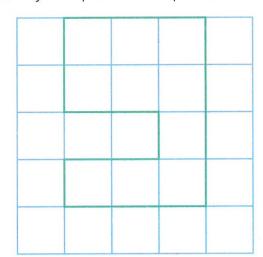


Find the area of each figure. Use a ruler.

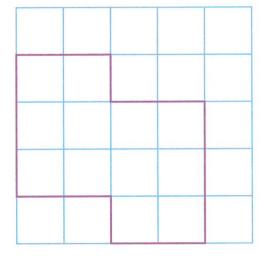
____ square centimeter

____ square inch

Find the area of each figure. Use the key.

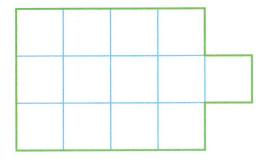


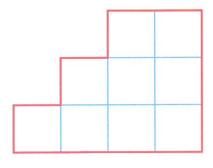
3. Key: 1 square = 1 square cm 4. Key: 1 square = 1 square inch



__ square cm

- __ square in.
- 5. Key: 1 square = 1 square meter6. Key: 1 square = 1 square foot



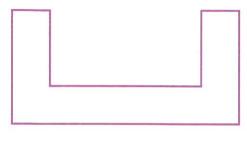


_ square meters

_ square feet

Cut out centimeter squares. Use them to find the area of each figure.

7.

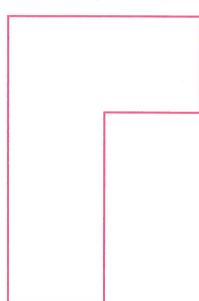


8.

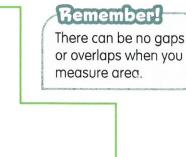
1		

Cut out inch squares. Use them to find the area of each figure.

9.



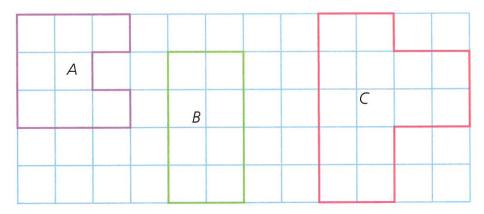
10.



** Think Pair Share

MP3 11. Uma says the area of the square is 1 square unit. Peter says the area of the square is 4 square units. Can both students be right? Explain your reasoning.

Find the area of each figure. Determine the unit square. Use a ruler.

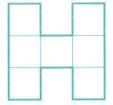


1. Figure A

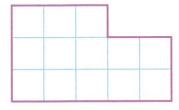
2. Figure B

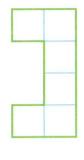
3. Figure C

Find the area of each figure. Use the key.

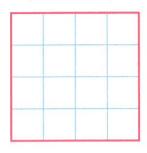


4. Key: 1 square = 1 square foot 5. Key: 1 square = 1 square inch





6. Key: 1 square = 1 square meter **7.** Key: 1 square = 1 square centimeter

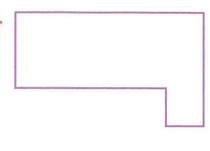


Cut out centimeter squares. Use them to find the area of each figure.

8.

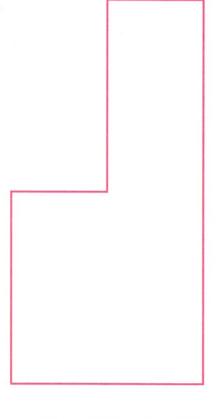


9.

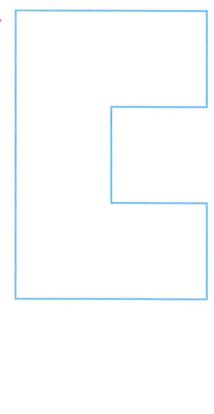


Cut out inch squares. Use them to find the area of each figure.

10.



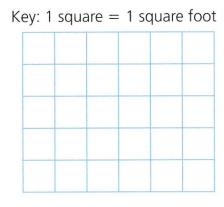
11.



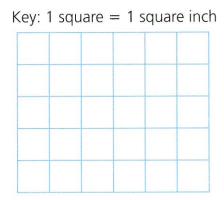
MP7 12. Draw two types of unit squares. How are they alike? How are they different?

MP6 13. Roberta wants to find the area of her bedroom window. She asks you for help. What would you tell her?

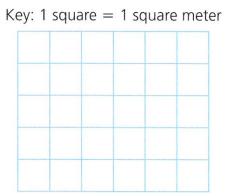
MP4 14. Mike is building a tree house. The floor will have an area of 18 square feet. Draw an outline of a floor Mike could use.



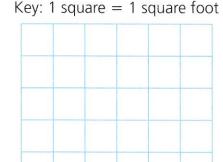
MP5 15. Gina is making a poster for a school fair. She wants to draw a figure with an area of 13 square inches. Draw a figure that Gina could use.



MP4 16. Mr. Davis is planning his summer garden. He decides to make a pumpkin patch with an area of 14 square meters. Draw an outline of a pumpkin patch Mr. Davis could make.



MP4 17. Amanda uses chalk to draw a picture on a sidewalk. She draws a square with sides that are each 3 feet long. What is the area of the square?



Answer

Justify your answer using words, drawings, or numbers.

MP6 18. Richard measures the top of his desk. The desktop is a rectangle with side lengths 4 feet and 2 feet. "My desktop has an area of 6 square feet," he says. Is Richard right?

Key: 1 square = 1 square foot

Answer

Justify your answer using words, drawings, or numbers.

Guided Instruction

In this lesson you will learn about the areas of rectangles.

Essential Question:

How can you use tiling and multiplication to the area of a rectangle?

3.MD.7a, 3.MD.7b

Words to Know:

tiling

Understand: Finding the area of a rectangle

Jamal measures the sides of the top of his workbench.

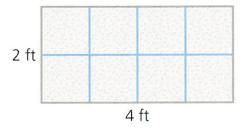
What is the area of the top of the workbench?



Method 1 Tiling

Tile the top of the workbench. To tile, cover the area with unit squares that represent 1-foot squares.

Count the unit squares that cover the top of the workbench.



Eight unit squares cover the top of the workbench. The sides are measured in feet, so the area will be in square feet.

The area of the top of the workbench is 8 square feet.

Method 2 Multiplying

Each unit square has an area of 1 square foot. There are 2 rows of unit squares. Each row has an area of 4 square feet.

Multiply the side lengths of the top of the workbench.

$$2 \times 4 = 8$$

The area of the top of the workbench is 8 square feet.

Tiling and multiplying give the same answer. You can use either method to find the area of a rectangle.

Guided Instruction

Connect: Solving problems about the area of rectangles.

Ms. Walker has a picture of her dog.

What is the area of the picture?

3 in.

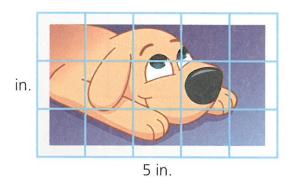


5 in.

Method 1 Tiling

Tile with unit squares to find the area.

Count the unit squares that will cover the picture.



15 unit squares cover the picture.

The sides are measured in inches, so the area will be in square inches. Each square represents an area of 1 square inch.

The area of the picture is 15 square inches.

Method 2 Multiplying

Multiply the side lengths of the picture to find the area.

$$3 \times 5 =$$

The area of the picture is 15 square inches.

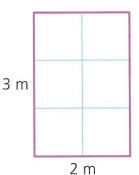
Multiplying and tiling give the same answer.

> Write another multiplication sentence you could use to find the area of the picture.

1. Use tiling to find the area of the rectangle.

____ meter squares cover the rectangle.

Area: ____ square meters



2. Use multiplication to find the area of the rectangle.

___ × ___ = ___

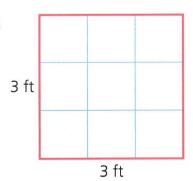
Area: ____ square meters

Use tiling to find the area of each rectangle. Then use multiplication to check your answer.

3. 1 cm

4 cm

4.



____ centimeter squares cover the rectangle.

____ × ___ = ____

Area: ____ square centimeters

____ foot squares cover the rectangle.

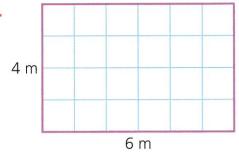
____ × ___ = ___

Area: ____ square feet

5.



6.



____ inch squares cover the rectangle.

____ × ___ = ____

Area: ____ square inches

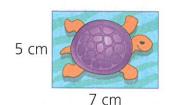
____ meter squares cover the rectangle.

____ × ___ = ___

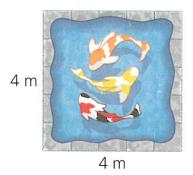
Area: ____ square meters

Multiply to solve each problem.

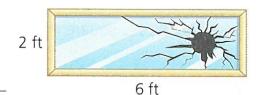
7. Tina measures one of her animal stickers. What is the area of the sticker?



8. Mr. Smith's class makes a square wall mural of a fish pond. What is the area of the mural?



9. Waldron hits a baseball. The ball breaks his bedroom window. What is the area of the original window?



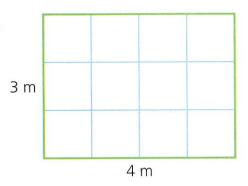
- 10. The Berners are getting a new kitchen floor. The floor is a rectangle. One side length is 6 feet. The other side length is 10 feet. What is the area of the floor?
- 11. Charles has a music box. The top of the box is a rectangle. One side measures 7 inches. The other side measures 8 inches. What is the area of the music box top?

₩ Think•Pair•Share

MP3 12. Maria draws two rectangles with different side lengths. She says that both rectangles have the same area: 20 square centimeters. Can she be right? Explain your reasoning.

Use tiling to find the area of each rectangle. Then use multiplication to check your answer.

1.





____ meter squares cover the rectangle.

___ × ___ = ___

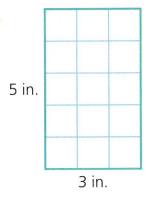
Area: ____ square meters

____ foot squares cover the rectangle.

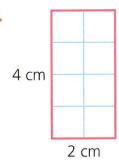
___ × ___ = ___

Area: ____ square feet

3.



4.



____ inch squares cover the rectangle.

____ × ___ = ____

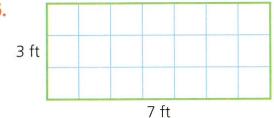
Area: ____ square inches

____ centimeter squares cover the rectangle.

____ × ___ = ____

Area: ____ square centimeters

5.



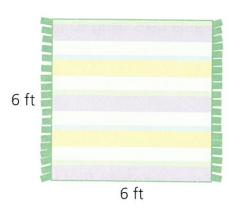
____ foot squares cover the rectangle.

____ × ___ = ____

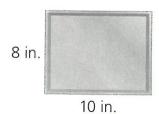
Area: ____ square feet

Multiply to solve each problem.

6. Sarah buys a rug for her cat. What is the area of the rug?



7. Gilberto measures a cookie sheet. What is the area of the cookie sheet?



Circle the letter with the correct answer for exercises 8-11.

- 8. Andrea makes a birthday card for her dad. The card is a rectangle. One side length is 8 inches. The other side length is 6 inches. What is the area of the card?
 - a. 14 square in. **b.** 24 square in.
 - c. 28 square in. d. 48 square in.
- 10. Ellen measures her family's driveway. The driveway is a rectangle. One side is 10 meters long. The other side is 5 meters long. What is the area of the driveway?
 - a. 30 square m **b.** 50 square m
 - c. 60 square m d. 65 square m

- 9. Stanley is making a table. The table's top is a rectangle. One side measures 3 feet. The other side measures 8 feet. What is the area of the top of the table?
 - **a.** 11 square ft
- b. 22 square ft
- c. 24 square ft
- d. 36 square ft
- 11. José puts together a dinosaur picture puzzle. The puzzle is a rectangle. One side measures 9 centimeters. The other side measures 8 centimeters. What is the area of the puzzle?
 - a. 17 square cm b. 34 square cm
 - c. 72 square cm d. 81 square cm

MP7 12. Paula uses tiling to find the area of a rectangle. Zoe multiplies to find the area of the same rectangle. Which method is better?

MP6 13. Steve wants to find the area of a poster board that is 3 feet long. He asks you for help. What would you tell him?

Solve the problems.

- MP4 14. Mr. Baker paints a picture. The picture is a rectangle. One side of the picture is 7 inches long. The other side is 4 inches long. What is the area of the picture?
 - Show your work.

Answer	

- MP1 15. Jen has a postcard that shows her town one hundred years ago. The card is a rectangle. One side measures 6 centimeters. The other side measures 9 centimeters. What is the area of the card?
 - Show your work.

Answer _____

- MP2 16. The floor of a school hallway is a rectangle. One side length is 4 meters. The other side length is 20 meters. What is the area of the hallway floor?
 - Show your work.

A	
Answer	

MP7 17. Eric's favorite rug is a rectangle. The area of the rug is 60 square feet. If one side of the rug measures 10 feet, what is the length of the other side?

A	
Answer	

Justify your answer using words, drawings, or numbers.

MP1 18. Mark's closet floor is a rectangle. One side length is 3 feet. The other side length is 6 feet. His sister's closet is bigger. One side is the same length as a side of Mark's closet floor. The other side is 3 feet longer than a side of Mark's closet floor. What is the area of the floor in Mark's sister's closet?

Answer	
A TIII DA A CI	

Justify your answer using words, drawings, or numbers.

Find Areas of Rectangles: **Use the Distributive Property**

Essential Question:

How can you use area models to show the **Distributive Property?**

3.MD.7c

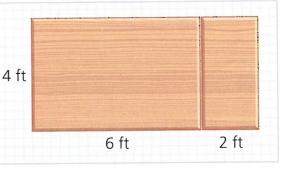
Guided Instruction

In this lesson you will learn to use area models to show the Distributive Property.

Understand: Using tiling to show the Distributive Property

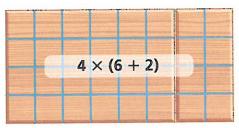
Sue invites guests for dinner. She opens the extension of her dining table.

What is the area of the full table?



Method 1

Tile the table with unit squares. Find one side length of the full table. Find the other side length of the full table. Multiply to find the area.



One side length of the table is 4. The other side length of the table is 6 + 2.

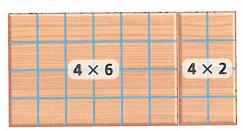
$$4 \times (6 + 2)$$

= $4 \times 8 = 32$

The area of the full table is 32 square feet.

Method 2

Tile the table with unit squares. Find the area of the original table. Find the area of the extension. Add the two areas.



The area of the original table is 4×6 .

The area of the extension is 4×2 .

$$= (4 \times 6) + (4 \times 2) = 24 + 8 = 32$$

The area of the full table is 32 square feet.

The two methods show the Distributive Property.

$$4 \times (6 + 2) = (4 \times 6) + (4 \times 2)$$

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Guided Instruction

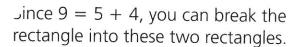
Understand: Using area models to represent the **Distributive Property**

Lenny wants to solve the multiplication problem 4×9 . Mary says, "You can use the Distributive Property. Since 9 = 5 + 4, multiply 4×5 and 4×4 and then add the products."

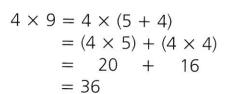
Use an area model to show why Mary's method works.

Draw an area model. One side length is 4. The other side length is 9.

You can use any unit of length for your area model.

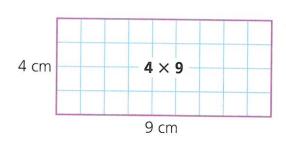


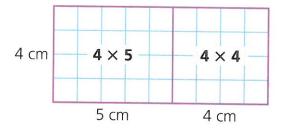
Find the area of the first rectangle. Find the area of the second rectangle. Add the two areas.



So,
$$4 \times 9 = 36$$

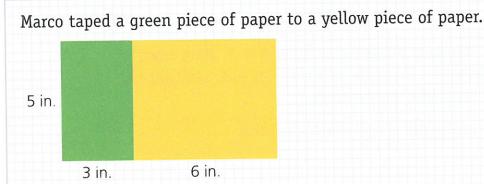
The area models above show that the Distributive Property works, since $4 \times 9 = (4 \times 5) + (4 \times 4)$.





Guided Instruction

Connect: Solving area problems using the Distributive Property



What is the area of the complete paper?

Use the Distributive Property to find the area.

Step 1

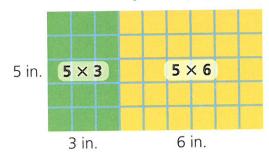
Tile the figure with unit squares.

Find the area of the green paper.

Find the area of the yellow paper.

The area of the green paper is 5×3 .

The area of the yellow paper is 5×6 .



Step 2

Add the two areas.

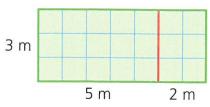
$$5 \times (3 + 6) = (5 \times 3) + (5 \times 6)$$

= 15 + 30

The area of the complete paper is 45 square inches.

The rectangles are tiled with unit squares. Use the Distributive Property to find the total area.

1.



 $3 \times (5 + 2)$

= ___+___

= ____

____ square meters

2.



 $2 \times (7 + 4)$

= ___ + ___

____ square ft

Draw an area model to represent each problem. Use your area model to solve the problem.

3.
$$5 \times (2 + 6)$$

4.
$$6 \times (4 + 3)$$

$$5 \times (2 + 6) =$$

$$6 \times (4 + 3) =$$



** Think-Pair-Share

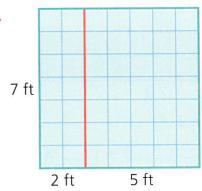
MP7 5. Bob and Rick are trying to find the area of the rectangle. Bob writes $3 \times (6 + 3)$. Rick writes $3 \times (4 + 5)$. Explain why both students are right.

3 in.

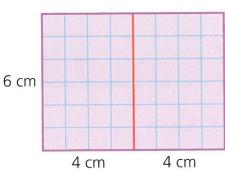
9 in.

The rectangles are tiled with unit squares. Use the Distributive Property to find the total area.

1.



2.



$$7 \times (2 + 5)$$

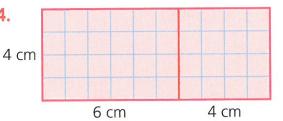
____ square feet

 $6 \times (4 + 4)$

____ square centimeters

3.

3 in. 3 in. 5 in. 4.



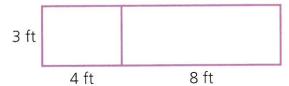
$$3 \times (3 + 5)$$

____ square inches

$$4 \times (6 + 4)$$

____ square meters

5. Which answer represents the area model?



$$a. (3 + 4) \times (3 + 8)$$

b.
$$(3 \times 4) + (3 \times 8)$$

c.
$$3 + 4 \times 8$$

d.
$$(3 \times 4) \times (3 \times 8)$$

Draw an area model to represent each problem. Use your area model to solve the problem.

6.
$$3 \times (2 + 6)$$

7.
$$4 \times (5 + 7)$$

8.
$$6 \times (5 + 2)$$

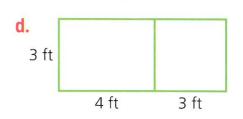
9.
$$7 \times (3 + 3)$$

10. Which area model represents $3 \times (4 + 3)$?

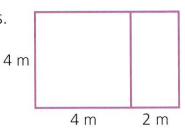
a.3 ft
5 ft 4 ft

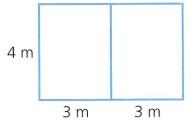
b. 4 ft 5 ft 3 ft

C. 3 ft 4 ft 2 ft



MP1 11. Compare the two area models.
How are they alike?
How are they different?



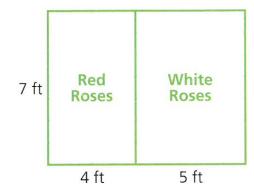


MP6 12. Heather wants to use the Distributive Property to find 8×12 . She draws an area model. One side length is 8 inches. What could Heather use for the other side length? Explain.

Solve the problems.

MP7 13. Andy grows red roses and white roses in his garden. Use the Distributive Property to find the total area of Andy's rose garden.

Show your work.



Answer_

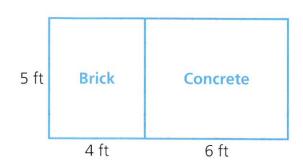
MP4 14. Ines wants to find the area of her backyard. The yard is a rectangle. She measures the yard in meters. Then she writes $6 \times (8 + 4)$. Draw an area model for the backyard. Use your model to find the area of the yard.

Show your work.

-					
A	n	S	W	/e	r

MP4 15. The Wilsons' porch floor is a rectangle.
Part is brick, and part is concrete.
Use the Distributive Property to find the total area of the porch floor.

Show your work.



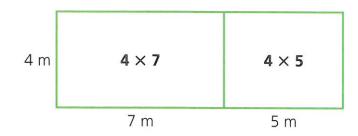
Answer

MP8 16. Kendra tapes red, blue, and yellow paper strips together to make a flag. Each strip has one side 8 inches long. The red strip has a side 3 inches long, the blue strip has a side 4 inches long, and the yellow strip has a side 5 inches long. What is the area of the flag that Kendra makes?

Answer_

Justify your answer using words, drawings, or numbers.

for 4 × 11. He decides to use the Distributive Property. He draws this area model. "The product is 48," says Jed. Is Jed right?



Answer

Justify your answer using words, drawings, or numbers.

Guided Instruction

In this lesson you will learn to decompose a figure into rectangles so that you can find the area.

Essential Question:

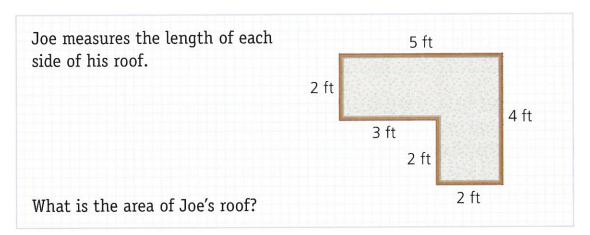
How can you find the area of a figure by decomposing it into rectangles?

3.MD.7d

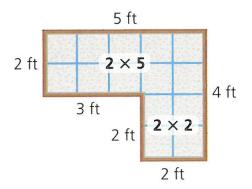
Words to Know:

decompose

Understand: Decomposing figures into rectangles to find their areas



Decompose, or break down, Joe's roof into two rectangles that do not overlap.



Remember!

To find the area of a rectangle, you can count unit squares, or you can multiply side lengths.

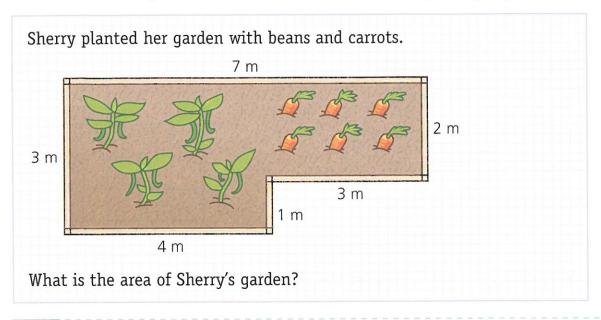
Find the area of one rectangle. $2 \times 5 = 10$ square feet Find the area of the other rectangle. \rightarrow 2 \times 2 = 4 square feet \longrightarrow 10 + 4 = 14 square feet Add the two areas. -

The area of Joe's roof is 14 square feet.

Show another way to decompose the figure into two rectangles.

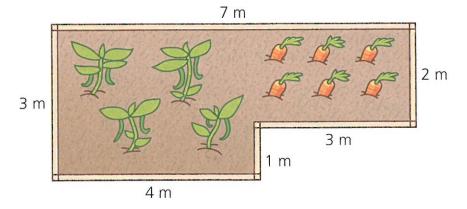
Guided Instruction

Connect: What you know about area and decomposing figures



Step 1

Decompose the figure into two rectangles.



Find the area of the bean rectangle. \rightarrow 3 \times 4 = 12 square meters Find the area of the carrot rectangle. \rightarrow 2 \times 3 = 6 square meters

Step 3

Add the two areas.

12 + 6 = square meters

The area of Sherry's garden is 18 square meters.

For exercises 1–4, use the figure at the right.

- 1. Decompose the figure into two rectangles.
- 2. Find the area of one rectangle.

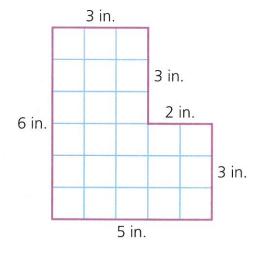
____ × ____ = ____ square in.

3. Find the area of the other rectangle.

 $\underline{\hspace{1cm}}$ × $\underline{\hspace{1cm}}$ = $\underline{\hspace{1cm}}$ square in.

4. What is the area of the figure?

____ + ___ = ___ square in.



For exercises 5–8, use the figure at the right.

- **5.** Decompose the figure into two rectangles.
- 6. Find the area of one rectangle.

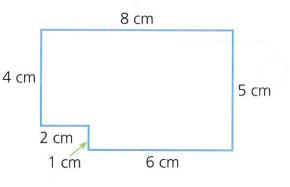
____ square cm

7. Find the area of the other rectangle.

____ square cm

8. What is the area of the figure?

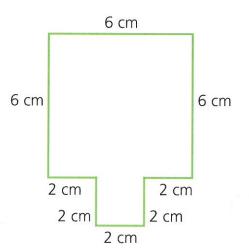
____ square cm



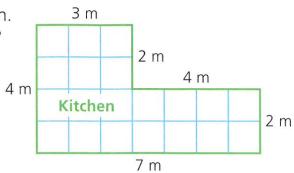
For exercises 9–11, use the figure at the right.

- **9.** Decompose the figure into rectangles.
- **10.** Find the area of each rectangle.
- 11. What is the area of the figure?

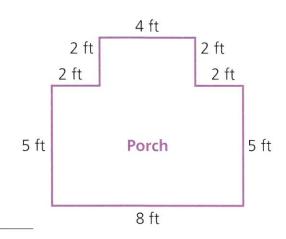
____ square cm



12. Larry measures the floor of his kitchen. What is the area of the kitchen floor?

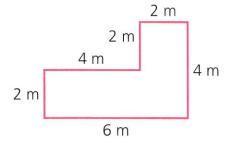


13. Ms. Kim has a front porch. What is the area of the floor of the porch?



** Think Pair Share

MP7 14. Brian wants to find the area of the figure. He cannot decide which way to decompose it. Does it matter? Explain your reasoning.



For exercises 1–4, use the figure at the right.

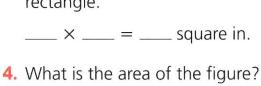
- 1. Decompose the figure into two rectangles.
- 2. Find the area of one rectangle.

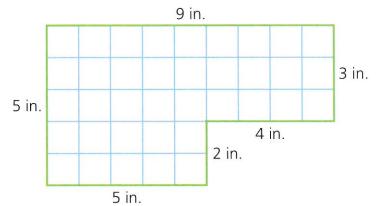
____ × ___ = ___ square in.

3. Find the area of the other rectangle.

 $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$ square in.

 $\underline{}$ + $\underline{}$ = $\underline{}$ square in.





For exercises 5-8, use the figure at the right

Show your work.

5. Decompose the figure into two rectangles.

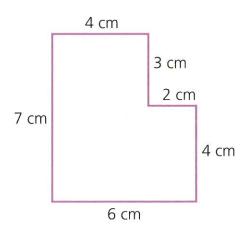
6. Find the area of one rectangle.

_____ square cm

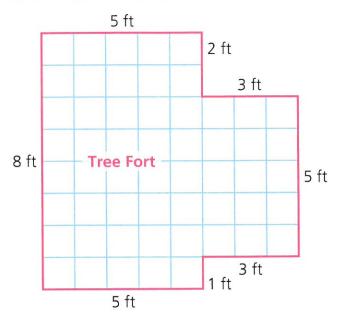
7. Find the area of the other rectangle. _____ square cm

8. What is the area of the figure?

_____ square cm

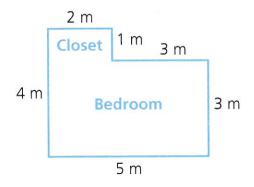


9. Zach built a tree fort in his backyard. He measures the floor of his fort. What is the area of the fort's floor?



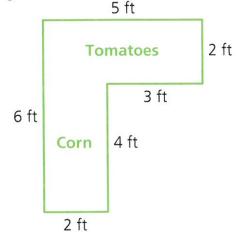
Circle the letter of the correct answer.

10. Dawn measures the floor of her bedroom and closet. What is the total area of the bedroom and closet floor?



- a. 15 square m
- b. 17 square m
- c. 18 square m
- d. 20 square m

11. Bill digs a vegetable garden. What is the area of the garden?



- **a.** 18 square ft
- b. 19 square ft
- c. 20 square ft
- d. 30 square ft

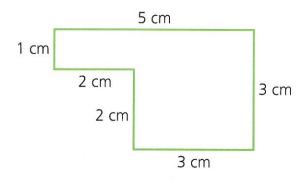
MP2 12. Samantha wants to find the area of the hallway floor but she does not want to multiply 3×14 . How could she use decomposition to find the area?

3 ft Hallway
14 ft

to find its area. He wrote 3 × 3 for the area of one rectangle.

He wrote 1 × 5 for the area of the other rectangle. Daniel says the area of the figure is 14 square centimeters. What mistake did he make?

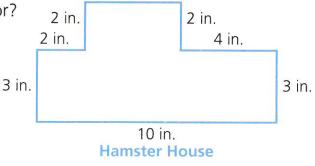
Explain.



Solve the problems.

MP4 14. Sean measures the floor of his hamster's house. What is the area of the floor?

Show your work.

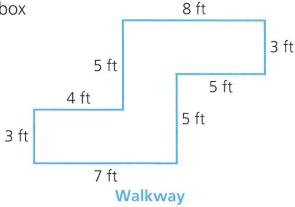


4 in.

Answer

MP1 15. Tim is making a walkway from his mailbox to his house. What is the area of the walkway?

Show your work.

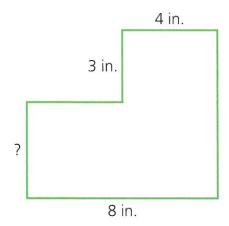


Answer_

MP2 16. Kevin decomposes the figure to find its area. He calculates the area as 44 square inches. What is the missing side length shown by the question mark?

Answer_

Justify your answer using words, drawings, or numbers.



MP7 17. Beth puts 6 square stones in her garden. Each stone is the same size. What is the total area of the tops of the stones Beth put in her garden?



Answer

Justify your answer using words, drawings, or numbers.

Problem Solving: Measurement

Essential Question:

How can you make drawings to solve problems with measurements?

3.MD.2, 3.MD.7, 3.OA.3

Guided Instruction

In this lesson you will learn to make drawings to solve problems about measurement.

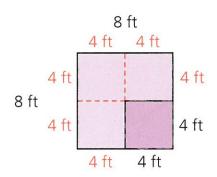
Understand: Using a drawing to help solve a problem

Sharon has a square piece of cloth 8 feet long on each side. From the corner of the cloth, Sharon cuts out a square 4 feet long on each side. Sharon gives the small square piece to her sister. What is the area of the piece Sharon has left?

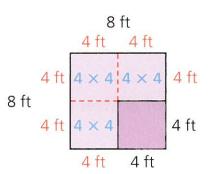
Draw a picture to show the information in the problem.

8 ft 8 ft 4 ft 4 ft

Decompose the piece of cloth that is left into squares. Label the side lengths.



Find the area of each square in the piece Sharon has left.



Add the areas.

$$16 + 16 + 16 = 48$$

The area of the piece of cloth Sharon has left is 48 square feet.

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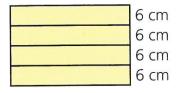
Guided Instruction

Connect: Drawing a picture to solve a problem

Eric stacks 4 books in a pile. Each book is 6 centimeters thick. How high is the stack of books?

Step 1

Make a drawing.



Step 2

Use the drawing to write and solve an equation for the problem.

$$4 \times 6 = \square$$

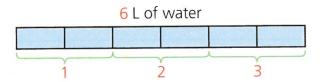
$$4 \times 6 =$$

The stack of books is 24 centimeters high.

Ben has a container with 6 liters of water. He uses the water to fill 2-liter bottles. How many bottles can he fill?

Step 1

Make a drawing.



Step 2

Use the drawing to solve the problem.

The drawing shows equal groups of 2 liters.

There are ____ equal groups of 2 liters.

Ben can fill 3 bottles.

What equation can you use to solve this problem?

Make a drawing. Solve the problem.

- 1. Jeff tapes together small paper squares that are 3 inches on each side to make a large square 6 inches on each side. How many small squares does he use?
 - Show your work.

Answer	

- 2. Ginger makes 15 liters of fruit punch. She pours all of the punch into some bowls. If each bowl has 3 liters of punch, how many bowls does Ginger fill?
 - Show your work.

•	
Answer	

- 3. Ben uses 1 liter of water to fill 5 paper cups. How many liters of water will he use to fill 20 paper cups?
 - Show your work.

Guided Practice

- 4. Fluffy the cat has a mass of 8 kilograms. This is 2 kilograms more than the mass of Frisky the cat. What is the mass of Frisky the cat?
 - Show your work.

Answer		
MIIDAACII		

- 5. Henry buys a sack of gravel. The mass is 900 grams. Henry pours 524 grams of the gravel into his turtle's tank. How much gravel is left in the sack?
 - Show your work.

Answer	

** Think Pair Share

MP3 6. Ann says that sometimes you can find the answer to a word problem by just using a drawing, but sometimes the drawing just helps you decide how to solve the problem. Do you agree? Explain your reasoning.

Make a drawing for each problem. Solve the problem.

1. Sam has a rectangular sheet of cardboard with side lengths 11 inches and 9 inches. He cuts off a piece with side lengths 2 inches and 9 inches and uses that piece to make a bookmark. What is the area of the piece of cardboard left over?

Show your work.

	Answer	
MP4	2. How many 2-liter bottles can Glen fill from a container holding 18 liters of water?	
	Show your work.	

Answer _____

3. How many books each 3 centimeters thick do you need to make a stack 9 centimeters high?

Show your work.

Answer _____

- MP4 4. Thomas cuts a 32-inch piece of rope into 4 equal length pieces.
 What is the length of each piece?
 - ► Show your work.

Answer	
MIIDAAGI	

- MP1 5. Five potatoes have a mass of 1 kilogram. What is the mass of 30 potatoes of the same size?
 - Show your work.

Answer	
71134461	

- 6. Adam's packed suitcase has a mass of 10 kilograms. This is 2 kilograms more than the mass of his sister's packed suitcase. What is the mass of his sister's packed suitcase?
 - Show your work.

Answer _____

- 7. A nickel has a mass of 5 grams. Ben and Sarah want to know the mass of 3 nickels. Ben says the way to find out is by making a drawing. Sarah says you can just write and solve an equation. Who is right?
- MP7 8. The two drawings below both show a ribbon 12 feet long cut into 3 equal pieces.

Drawing A:

Drawing B: 12 ft

How are the drawings different? How can you use each drawing to find the length of one of the pieces of ribbon?

Solve the problems.

- MP2 9. Latisha's fish tank holds 65 liters of water. Pam's fish tank holds 48 liters of water. How much more water does Latisha's tank hold than Pam's tank?
 - Show your work.

Answer

- MP5 10. An egg has a mass of 50 grams. What is the mass of 6 eggs that are the same size?
 - Show your work.

Answer_

MP6 11. Maria uses 2 cuts to cut a piece of yarn 18 feet long into pieces with equal lengths. How long is each piece?

Show your work.

Answer				

MP1 12. Ginger makes a craft project. She starts with a rectangular mirror with side lengths 6 inches and 4 inches. She glues 1-inch square tiles on the mirror along the edge to make a frame. What is the area of the mirror that is not covered with tiles?

Answer

Justify your answer using words, drawings, or numbers.

MP7 13. Look back at exercise 12. Ginger does the project again using a larger mirror and the same 1-inch tiles. This mirror has side lengths 12 inches and 10 inches. What is the area of the mirror that is not covered with tiles?

Answer_

Justify your answer using words, drawings, or numbers.

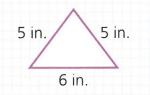
Guided Instruction

In this lesson you will learn about the perimeter of a polygon.

Understand: The meaning of perimeter

William drew this triangle.

What is the perimeter of the triangle?



Essential Question:

How can you solve problems about the perimeters of polygons?

Words to Know:

closed figure polygon

perimeter quadrilateral

3.MD.8

A closed figure has no breaks in its sides.

A polygon is a plane closed figure with straight sides.

The perimeter of a polygon is the sum of the lengths of its sides.

Add the side lengths to find the perimeter of the triangle.

$$5 + 5 + 6 = P$$

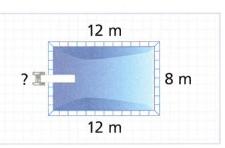
 $10 + 6 = 16$

The perimeter of the triangle is 16 inches.

Understand: Finding an unknown side length of a polygon

The perimeter of the swimming pool is 40 meters.

What is the unknown side length?



Find the sum of the known side lengths.

$$12 + 8 + 12 = 10$$
 \downarrow
 \downarrow
 $20 + 12 = 32$

Subtract the sum of the known side lengths from the perimeter.

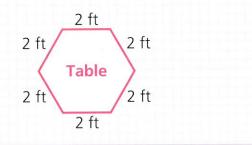
$$40 - 32 = 8$$

The unknown side length is 8 meters.

Guided Instruction

Connect: What you know about side lengths and perimeter

Mr. Green is making a table. This is a model of the tabletop. What is the perimeter of the tabletop?



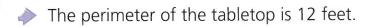
Write and solve an addition equation.

$$2 + 2 + 2 + 2 + 2 + 2 = P$$

$$2 + 2 + 2 + 2 + 2 + 2 = 12$$

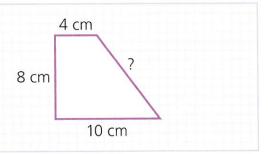
Or, since all side lengths are the same length, you can multiply to find the perimeter.

$$6 \times 2 = 12$$



Sophia drew a quadrilateral, a polygon with four sides, with a perimeter of 32 centimeters.

What is the unknown side length?



Step 1

Find the sum of the known side lengths.

Step 2

Subtract the sum of the known side lengths from the perimeter.

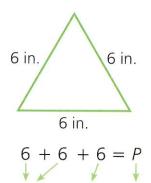
$$32 - 22 =$$

The missing side length is ____ centimeters.

Guided Practice

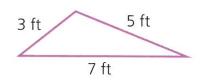
Find the perimeter of each figure.

1.



Perimeter: ____ inches

2.

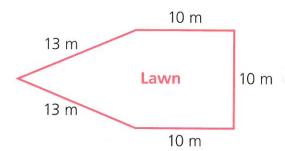


Perimeter: ____ feet

Solve the problems.

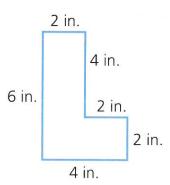
3. The model shows the shape of Mason's front lawn. Mason measures the side lengths of his front lawn. What is the perimeter?

The perimeter is ____ meters.



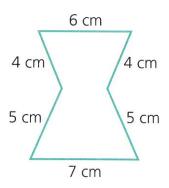
4. Linda draws this "L." She wants to glue gold ribbon on the outline of the letter. How much gold ribbon does Linda need? How do you know?

Linda needs ____ inches of ribbon.



5. Stanley is painting a design on his wall that looks like an hourglass. He wants to outline the figure with tape before he paints. How much tape will he need?

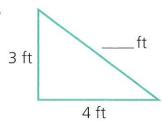
Stanley needs ____ centimeters of tape.



Guided Practice

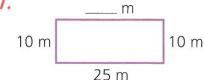
Find each unknown side length.

6.



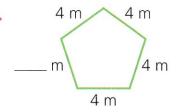
Perimeter: 12 feet

7.



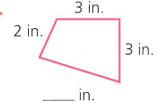
Perimeter: 70 meters

8.



Perimeter: 20 meters

9.

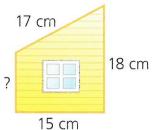


Perimeter: 12 inches

Solve the problem.

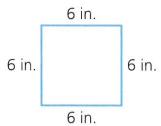
10. Lisa measures a wall of her doll house. The perimeter of the wall is 60 centimeters. What is the unknown side length?

The unknown side length is ____ centimeters.



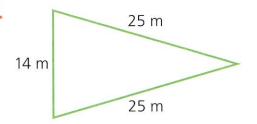
₩ Think•Pair•Share

11. Paul uses addition to find the perimeter of the square. Barbara uses multiplication to find the perimeter. Explain why both methods work.

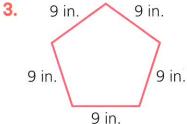


Find the perimeter of each figure.

1.

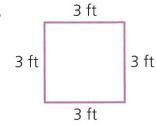


Perimeter: ____ meters



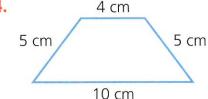
Perimeter: ____ inches

2.



Perimeter: ____ feet

4.



Perimeter: ____ centimeters

Solve the problems.

MP1 5. Rabbits are eating Mrs. Gianni's lettuce. She decides to put a fence around her lettuce patch. How much fencing should she buy?

Mrs. Gianni should buy ____ feet of fencing.

8 ft 5 ft

8 ft

5 ft

6. Michael builds a frog pond. What is the perimeter of the pond?

The perimeter of the pond is ____ meters.

6 m 8 m Pond 4 m 10 m

7. Emily is helping to build a platform for the school play. It is in the shape of a square with one side equal to 5 feet. The students plan to put a piece of fabric around the sides of the square. What length of fabric will they need?

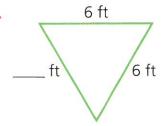
The students will need a length of fabric ____ feet long.

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Independent Practice

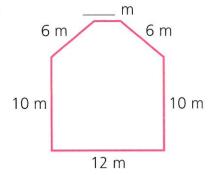
Find each unknown side length.

8.



Perimeter: 18 feet

10.



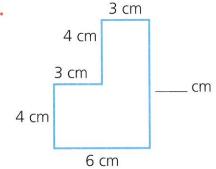
Perimeter: 47 meters

9.



Perimeter: 20 inches

11.



Perimeter: 28 centimeters

Solve the problems.

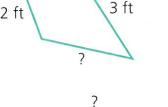
MP1 12. This is the shape of the kite that Stan makes. The perimeter of the kite is 10 feet. What is the unknown side length?

The length of the unknown side is ____ feet.

2 ft 3 ft 2 ft

MP6 13. This is the shape of Mr. Dean's deck. He measured the deck and found that the perimeter is 22 meters. What is the unknown side length?

The unknown side length is ____ meters.



Deck

5 m

MP4 14. Jasman is cutting out stars for a science poster. The perimeter of each star is 30 centimeters and all the sides are equal. What is the length of each side?

The length of each side is ____ centimeters.

MP6 15. Mr. Peters wants to put weather stripping around a door. Explain how Mr. Peters can find out how much weather stripping he needs.

MP3 16. Sharon knows the perimeter of a quadrilateral. She also knows three side lengths of the quadrilateral. Sharon says that she can find the unknown side length just by subtracting. Is she right?

Answer _____

Justify your answer using words, drawings, or numbers.

Solve the problems.

- MP4 17. Ave drew this model of a soccer field. The perimeter of the real soccer field is 190 meters. What is the unknown side length?
 - Show your work.

35 m Soccer Field ?

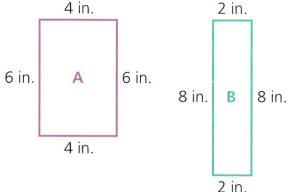
Answer _____

Solve the problems.

MP5 18. Compare the perimeter of Rectangle A with the perimeter of Rectangle B.

Show your work.

Write <, >, or =.



The perimeter of Rectangle A ____ the perimeter of Rectangle B.

MP7 19. Jill has two windows in her bedroom. The height of each window is 3 feet. The left window is 4 feet wide. The right window is 5 feet wide. How much greater is the perimeter of the right window than the perimeter of the left window?

Answer _____

Justify your answer using words, drawings, or numbers.

MP4 20. Jack bought 30 feet of fencing. He uses all of the fencing to make a pen for his goat. The pen is shaped like a triangle. Each of two sides is 9 feet long. What is the length of the third side?

Answer _____

Justify your answer using words, drawings, or numbers.

Problem Solving: Compare Perimeter and Area

Guided Instruction

In this lesson you will learn more about using perimeter and area to solve problems.

Understand: Areas of different rectangles with the same perimeter

Angela has 14 feet of fencing. She wants to make a pen for her guinea pigs. She draws two models of rectangles that have a perimeter of 14 feet.

5 ft

Pen A

1 ft

2 ft

Which pen will have the greater area?

Find the area of Pen A.

$$1 \times 6 = 6$$

The area of Pen A is 6 square feet.

Find the area of Pen B.

$$2 \times 5 = 10$$

The area of Pen B is 10 square feet.

Compare the areas of the two pens.

6 square feet < 10 square feet

Pen B will have the greater area.

Draw a rectangle with a perimeter of 14 feet that has an area greater than Pen B's area.

Essential Question:

How can you compare different rectangles with the same perimeter or the same area?

3.MD.8

Remember!

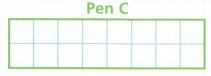
To find the area of a rectangle, you can multiply side lengths, or count unit squares.

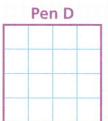
Guided Instruction

Understand: Perimeters of different rectangles with the same area

Pedro is making a pen for his turtle. He wants the area of the floor of the pen to be 16 square feet. He draws two models.

Key: 1 square = 1 square foot





Which pen will need less fencing?

Find the perimeter of Pen C.

$$2 + 8 + 2 + 8 = ?$$

 $10 + 10 = 20$



To find the perimeter of a polygon, add the side lengths.

The perimeter of Pen C is 20 feet.

Find the perimeter of Pen D.

$$4 + 4 + 4 + 4 = 16$$

The perimeter of Pen D is 16 feet.

Compare the perimeters of the two pens.

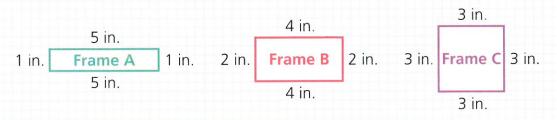
Pen D will need less fencing.

Can you draw a rectangle with an area of 16 square feet that would use less fencing than Pen D?

Guided Instruction

Connect: What you know about perimeter and area to solve problems

Ms. Gonzalez has 12 inches of wood to make a picture frame. She draws three models. Which frame has the least area?



Step 1

Find the area of each frame.

Frame A

$$1 \times 5 = 5$$

The area of Frame A is 5 square inches.

Frame B

$$2 \times 4 = 8$$

The area of Frame B is 8 square inches.

Frame C

$$3 \times 3 = 9$$

The area of Frame C is 9 square inches.

Step 2

Compare the areas of the frames.

5 square inches ____ 8 square inches ____ 9 square inches

Frame A has the least area.

Compare the perimeters of the frames.

Frame A Frame B Frame C

Perimeter: ____ in. ____ in. ____ in.

Compare perimeters: Frame A ____ Frame B ____ Frame C

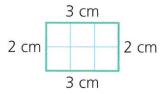
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Guided Practice

In exercises 1 and 2, draw a different rectangle with the same perimeter. Then find the area of each rectangle.

1. Perimeter: 10 centimeters

Key: 1 square = 1 square centimeter



Area: ____ square cm

Area: ____ square cm

2. Perimeter: 16 inches

Key: 1 square = 1 square inch



Area: ____ square in.

Area: ____ square in.

Draw a different rectangle with the same area. Then find the perimeter of each rectangle.

3. Area = 12 square meters

Key: 1 square = 1 square meter



Perimeter: ____ meters

Perimeter: ____ meters

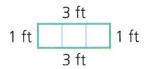
** Think Pair Share

MP2 4. Manuel says that if two rectangles have the same area, they must have the same perimeter. Is he right? Explain your reasoning.

In exercises 1 and 2, draw a different rectangle with the same perimeter. Then find the area of each rectangle.

1. Perimeter = 8 feet

Key: 1 square = 1 square foot

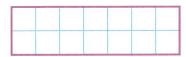


Area: ____ square feet

2. Perimeter: 18 inches

Area: ____ square feet

Key: 1 square = 1 square inch

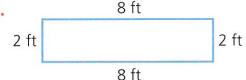


Area: ____ square inches

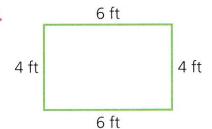
Area: ____ square inches

3. Fatima wants to grow strawberries. She has 20 feet of fencing to protect the plants. She draws four models of gardens with a perimeter of 20 feet. Choose the model for the garden that will let Fatima grow the most strawberries.

a.



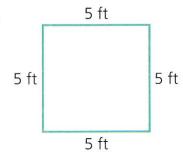
b.



C.



d.



In exercises 4 and 5, draw a different rectangle with the same area. Then find the perimeter of each rectangle.

4. Area: 10 square centimeters

Key: 1 square = 1 square centimeter



Perimeter: ____ centimeters

Perimeter: ____ centimeters

Area: 18 square inches

Key: 1 square = 1 square inch



Perimeter: ____ inches

Perimeter: ____ inches

- 6. Harry wants to make a corral for his toy dinosaur with an area of 24 square inches. He draws the model shown below. Draw another model of a corral that has a smaller perimeter. Then find the perimeter of each corral.



Perimeter: _

Perimeter: _____

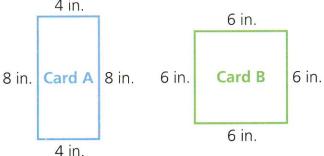
- MP5
- 7. Draw a model for the coral floor from exercise 6 that will have a greater perimeter than Harry's model. Then find the perimeter of your model.

Perimeter: _

- 8. Compare the dinosaur corrals in exercise 6. How are they alike? How are they different?
- MP4 9. Andrew draws a rectangle with side lengths of 1 inch and 5 inches. How can Andrew draw a different rectangle with the same perimeter?
- MP6 10. Cheryl has 24 inches of ribbon. She wants to paste the ribbon around a birthday card for her mother. Cheryl draws two models of the card. Which card has the lesser area?

 4 in

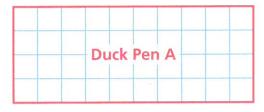
Show your work.



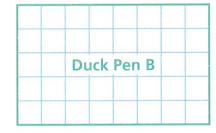
Answer_

11. Ms. Hansen is making a pen for her ducks. She wants the area of the floor of the pen to be 40 square meters. Ms. Hansen draws two models. Which model will need less fencing? How much less fencing will it need?

Show your work.



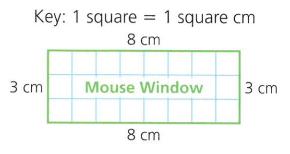
Key: 1 square = 1 square meter



Answer_

MP4 12. Cindy reads that the mouse family home is very dark with just one window. Draw a window with the same perimeter that will let in more light. How much greater is the area of your window than the area of the old window?

Show your work.



Answer

MP2 13. Abel has two desks in his attic. Each desktop is a different rectangle shape with an area of 6 square feet. If Abel puts glow-in-the-dark tape around the edges of both desktops, how much tape will he need?

Answer

Justify your answer using words, drawings, or numbers.

MP7 14. Vicky has 20 inches of wire. She uses all the wire to make a rectangle. What is the least possible area of the rectangle? What is the greatest possible area?

Answer

• Justify your answer using words, drawings, or numbers.

Understand: Using number of sides and number of vertices to identify polygons

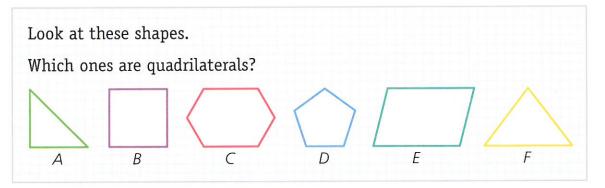
Essential Question:

How do you use attributes to identify shapes?

3.G.1

Words to Know:

vertex (vertices) angle right angle rhombus



Two sides of a polygon meet at a vertex and form an angle.

You can identify a polygon by counting its sides and its vertices.



A quadrilateral is a polygon that has 4 straight sides and 4 vertices. Count the number of sides and vertices of each shape above. Shapes B and E each have 4 sides and 4 vertices. They are quadrilaterals.

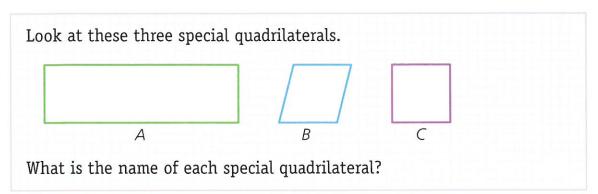
Shapes B and E are quadrilaterals.

Name each shape if you can. Tell how many sides and vertices each has.

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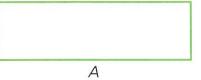
Guided Instruction

Understand: Using lengths of sides and right angles to identify special quadrilaterals



Look at the sides and the angles.

Quadrilateral A has opposite sides that are the same length. It has 4 angles that are square corners. Each of these angles is called a right angle.



Juadrilateral A is a rectangle.

All 4 sides of Quadrilateral B are the same length.

Quadrilateral *B* is a rhombus.



All 4 sides of Quadrilateral C are the same length. It has 4 right angles.

Since Quadrilateral C has the attributes of both a rhombus and a rectangle, Quadrilateral C is a square.



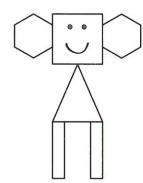
- Quadrilateral A is a rectangle; Quadrilateral B is a rhombus; Quadrilateral C is a square.
- Draw a quadrilateral that is NOT a rectangle, a rhombus, or a square.

Guided Instruction

Connect: What you know about attributes of polygons

Clara used polygons to make this drawing. What polygons did Clara use?

To identify the polygons, first count the number of sides and vertices. If the polygon is a quadrilateral, check to see if it is a special quadrilateral.



Step 1

The head has 4 sides and 4 vertices. The head is a quadrilateral.

Check to see if the quadrilateral is a special quadrilateral.

The head has 4 equal sides and 4 right angles.

The head is a _____

Step 2

Each ear has 6 sides and 6 vertices.

Each ear is a ______.

Remember!

A polygon with 6 sides and 6 vertices is a hexagon.

Step 3

The body has 3 sides and 3 vertices.

The body is a _____

Step 4

Each leg has 4 sides and 4 vertices.

Each leg is a quadrilateral.

Each leg has opposite sides that are equal and 4 right angles.

Each log is a

Remember!

Check if the quadrilateral is a special quadrilateral.

Lacii	leg	13 (a .		

	To make	the	drawing,	Clara	used	-	9
--	---------	-----	----------	-------	------	---	---

_, _____, and _____

For each polygon, write the number of sides and the number of vertices. Write triangle, quadrilateral, pentagon, or hexagon to name each figure.

1.



sides

___ vertices

2.



_ sides

__ vertices



sides

__ vertices

Use the quadrilateral at the right for exercises 4-7.

4. Are the opposite sides the same length? _

5. Are all 4 sides the same length? _____



6. Does the quadrilateral have 4 right angles?

7. Is the quadrilateral a rectangle, rhombus, or square? _

Solve the problem.

8. Orlando has a garden in the shape of a quadrilateral. Each side of the garden is 6 feet long. The garden has four right angles. Draw and label a picture to show Orlando's garden. What is the best name for the shape of the garden?



MP3 9. Irene says that a rectangle is always a quadrilateral. Jamie says that a rectangle is sometimes a square. Are both students correct? Explain your reasoning.

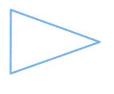
Write the name for the figure. Choose triangle, quadrilateral, rectangle, rhombus, square, pentagon, or hexagon.



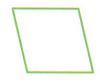


3.





5.





7. Are any of the quadrilaterals in exercises 1–6 special quadrilaterals? If so, write the problem number and the special name.

Draw each figure.

8. rectangle

9. rhombus

10. square

11. quadrilateral that is not a rectangle, a rhombus, or a square

12. Which figure is a rectangle?

a.



C.



b.



d.



13. Which figure is a rhombus?

a.

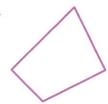




b.



d.



14. Which figure is NOT a quadrilateral?

a.



C.



b.



d.



MP7 15. Draw two different quadrilaterals.

How are the quadrilaterals you drew alike? How are they different?

MP6 16. A window has 6 panes of glass.

What is the shape of the window? What is the shape of each pane of glass? How did you identify the shapes?



MP4 17. Lance made this drawing of his kite.

What is the shape of the kite? How do you know?



MP6 18. Christine thinks that both of these figures are quadrilaterals.



Is she correct?

Answer.

Justify your answer using words, drawings, or numbers.

MP3 19. Juan says that any square is also a rhombus. Clay says that any rhombus is also a square. Who is correct?

Answer.

Justify your answer using words, drawings, or numbers.

MP6 20. Victoria says that a quadrilateral can have more than one name. Is she correct?

Answer

Justify your answer using words, drawings, or numbers.

Essential Question:

How do you partition shapes to make equal areas?

3.G.2

Guided Instruction

In this lesson you will learn how to partition shapes to make equal areas.

Understand: Partitioning a circle into 4 parts with equal area

Amos has a pizza that he wants to cut into 4 slices. He wants each slice to have the same area. How can Amos cut the pizza? What fraction or part of the pizza does each slice represent?



You can draw lines to partition a whole into 4 equal parts. Use a horizontal line and a vertical line. Or use two diagonal lines.



Remember!

Write a unit fraction to identify one equal part of the whole. The whole has 4 equal parts. One equal part is $\frac{1}{4}$ of the whole.

The pizza is now cut into four equal parts. Each part of the pizza has the same area. The area of each part is $\frac{1}{4}$ of the area of the whole pizza.

Amos can cut the pizza into fourths as shown above. Each slice of the pizza is $\frac{1}{4}$ the area of the whole pizza.

Draw a rectangle. Partition the whole rectangle into 4 equal parts. What fraction is each part of the whole rectangle?

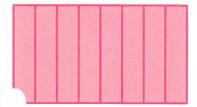
Guided Instruction

Understand: Partitioning a rectangle into 8 parts with equal area

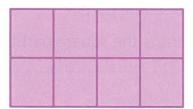
Rachel has a rectangular garden. She wants to partition the garden into 8 equal parts. She will plant different vegetables in each part, including carrots.

How can Rachel partition her garden? What fraction represents the area of each part of the garden? What part of the garden will Rachel plant with carrots?

Partition a rectangle into 8 equal parts.



Partition a rectangle into 8 equal parts in another way.



There are 8 equal parts. Each section of the garden is 1 equal part of the garden. The area of each part of the garden is $\frac{1}{8}$ of the whole garden.

Remember!

Write a unit fraction to show one equal part of the whole.

- Rachel can partition her garden into 8 equal parts as shown above. The area of each part of the garden is $\frac{1}{8}$ the area of the whole garden. She will plant $\frac{1}{8}$ of the garden with carrots.
- Show another way that Rachel could partition her garden into 8 equal parts.



Guided Instruction

Connect: What you know about partitioning shapes to make equal areas

A designer partitions a square stained glass window into equal parts. Each part of the window has a pane of glass that is a different color. What fraction represents the area of each pane of glass?

Stained Glass Window Design

Step 1

The square is partitioned into equal parts.

Count the number of equal parts.

How many equal parts is the square partitioned into? ____

Step 2

A unit fraction shows one equal part of the whole. What unit fraction represents one equal part of the whole window?

Step 3

The area of each pane of glass is one equal part of the area of the window.

What is the area of each pane of glass?

The area of each pane of glass in the stained glass window is _____ of the area of the window.

Draw a square. Show another way to partition your square into six equal parts.

Guided Practice

In exercises 1–3, each shape is partitioned into parts with equal areas. Express the area of one equal part of each as a unit fraction of the whole area.

1.



2



3



Use the circles below for exercises 4-8.



Circle A



Circle B

- 4. Partition each circle into two equal parts in different ways.
- **5.** Look at Circle *A*. What unit fraction represents each equal part of the circle? ____
- **6.** Look at Circle *B*. What unit fraction represents each equal part of the circle?
- 7. What is the area of each part of Circle A?

8. What is the area of each part of Circle B?

₩ Think•Pair•Share

9. Both of these squares are partitioned into equal parts. Are the areas of each part of these squares the same? Explain your reasoning.





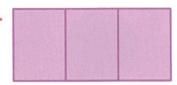
In exercises 1–3, each shape is partitioned into parts with equal areas. Express the area of each part as a unit fraction of the whole area.

1.



2.





4. Which rectangle is partitioned into 6 parts with equal areas?

a.







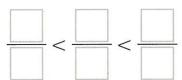


5. What unit fraction represents each equal area of the circle?



- **b.** 1

6. Look at the rectangles in exercises 4 a, b, and c. The rectangles are all the same size and area. Find the unit fraction for one part of each of the rectangles. Write the unit fraction next to the rectangle. Compare the unit fractions here.



In exercises 7–9, show two different ways to partition each figure into the given number of equal parts. Then write the fraction that represents each equal part of the whole area.

7. 4 equal parts

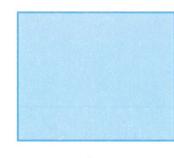


Answer ____

Answer ____

8. 6 equal parts





Answer ____

Answer ____

9. 8 equal parts





Answer ____

Answer ____

10. Draw two matching rectangles. Show two different ways to partition the rectangle into thirds.

MP7 11. Look back at your drawings for exercise 9. Compare your drawings with those of a partner. What can you say about the area of each part in your drawings and in your partner's drawings?

Solve the problems.

- MP4 12. Zach has a piece of carpet. He plans to cut the carpet into 3 equal size pieces. What unit fraction represents each equal size piece of the carpet? What fraction represents the area of each piece of the carpet?
 - Make a drawing.

American				
Answer				

- MP4 13. Jessica has a tablecloth. She folds it into 8 equal parts. What fraction represents each of the folded parts of the tablecloth? What fraction represents the area of each of the folded parts?
 - Make a drawing.

Answei	r		
MIN MARCI			

- MP4 14. Carl has a large piece of cotton fabric. He wants to cut it into 6 equal, smaller pieces. What fraction represents each smaller piece of the fabric? What fraction represents the area of each of the smaller pieces?
 - Make a drawing.

A		
Answer		

Solve the problems.

MP7 15. Ron has a large poster board for a report he is doing. He partitions the poster board into parts with equal-size areas. The area of each part is $\frac{1}{6}$ of the area of the whole poster board. Ron will put a picture of a different animal in each part. How many animals can Ron put on his poster?

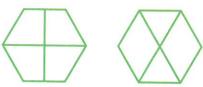
Answer	
Justify your answer using words, drawings, or numbers.	

MP3 16. Mr. Drake cut construction paper into 8 triangles for his students to make flags. Each triangle has an equal area. The area of each triangle is $\frac{1}{4}$ of the area of the whole sheet of construction paper. How many pieces of construction paper did Mr. Drake cut? How many triangles did he make from each piece of construction paper?

Answer	

Justify your answer using words, drawings, or numbers.

MP6 17. Delia has a sheet of plastic shaped like a hexagon. She needs to cut the plastic into pieces with equal areas. She says that she can use both of these patterns to cut the plastic. Do you agree? Explain your reasoning.



Justify your answer using words, drawings, or numbers.

UNIT 5 Common Core Review

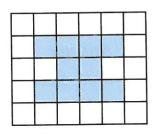
For exercises 1 and 2, draw an example of the shape.

1. rhombus

2. quadrilateral that is not a rectangle or rhombus

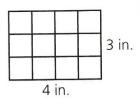
For exercises 3–5, use the figure at the right.

- 3. What is the area of the shaded figure?____ square units
- **4.** What is the area of the part of the figure that is not shaded? ____ square units
- **5.** What is the perimeter of the shaded figure? ____ units



For exercises 6–9, use the rectangle at the right.

6. Shade one unit square in the rectangle. What is the area of the square you shaded? _____



- **7.** How many 1-inch square tiles would you need to cover the rectangle completely? _____
- 8. What is the perimeter of the rectangle? _____
- 9. What is the area of the rectangle? _____

Circle the correct answers.

- 10. A rectangle has side lengths of 6 meters and 14 meters. Wei-Yin wants to use the Distributive Property to find the area of the rectangle. Which equations could Wei-Yin use?
 - **a.** $(6 \times 4) + (6 \times 10)$

b. $(6 \times 4) \times (6 \times 10)$

c. $6 \times (4 + 10)$

d. $(2 \times 14) + (4 \times 14)$

11. Partition the pie into eight equal slices. Write the fraction that represents one slice. 12. This is a model of Kim's garden. What is the area of Kim's garden in square feet? Key: = 1 square foot 13. This is a model of the floor in Delma's room. 5 m What is the area of the floor? 2 m Delma's room Show your work. 6 m Answer ____ 2 m For exercises 14-16, use the model of the closet floor. 14. Mike measures the distance around the floor. What is the distance? Closet 7 ft **15.** What is the area of the floor? 9 ft 16. A carpet tile is 1-foot square. Each box contains 10 tiles. How many boxes of tiles should Mike buy to cover the floor with tiles? Show your work.

UNIT 5 Common Core Review

Solve	the	problems.
20190	600	P. C

		Answer Justify your answer using words, drawings, or numbers.
MP3	17.	Ciro says that a rectangle is always a square. Rewrite his statement to make it correct.

18. Krissa has 24 feet of fencing. She wants to make a pen in the shape of a rectangle for her turtles. What is the least possible area of a rectangle Krissa can make? What is the greatest possible area?

Answer ______ Justify your answer using words, drawings, or numbers.

MP8 19. The tray on Mr. Garth's desk is shaped like a rectangle. The tray has two sections. Mr. Garth measures the tray in inches. He wants to find the area of the tray and writes $9 \times (3 + 5)$. What is the area of the tray?

Answer _____

Justify your answer using words, drawings, or numbers.