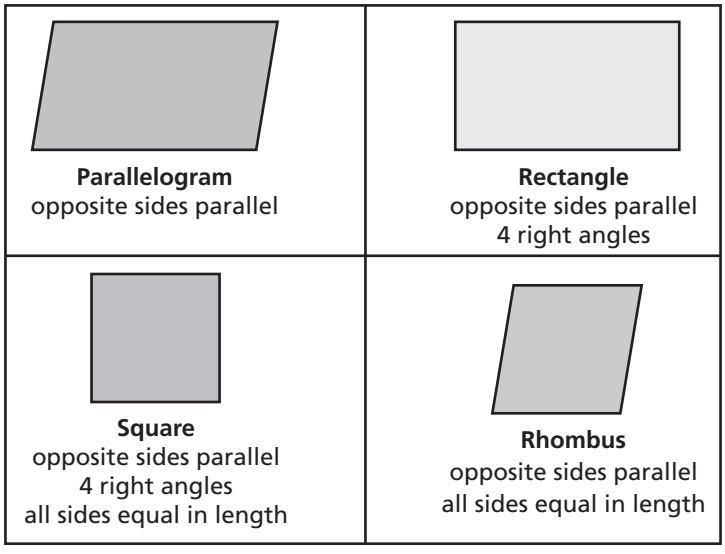
Content Overview

Dear Family,

Your student will be learning about geometry and measurement during this school year. This first part of Unit 6 is about the geometric figures called quadrilaterals. These get their name because they have four (*quad-*) sides (*-lateral*).

Here are some examples of quadrilaterals students will be learning about in this unit.



Students will be able to recognize and describe different quadrilaterals by their sides and angles. Some sides may be of equal length. Some sides may be parallel; they do not meet no matter how far they are extended. Some sides may be perpendicular; where they meet is like the corner of a square.

If you have any questions, please call or write to me.

Thank you.

Sincerely,
Your child's teacher

© Houghton Mifflin Harcourt Publishing Company

CA CC

Unit 6 addresses the following standards from the *Common Core State Standards for Mathematics with California Additions*: **3.G.1, 3.G.2, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.6, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d, 3.MD.8,** and all Mathematical Practices.

Carta a la familia

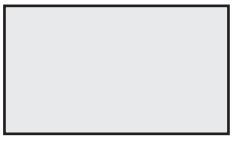
Un vistazo general al contenido

Estimada familia:

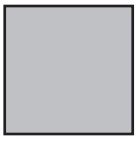
Durante este año escolar, su niño aprenderá acerca de geometría y medición. La primera parte de la Unidad 6 trata sobre las figuras geométricas llamadas cuadriláteros. Se llaman así porque tienen cuatro (*quadri-*) lados (*-lateris*).

Aquí se muestran algunos ejemplos de cuadriláteros que los estudiantes estudiarán en esta unidad.

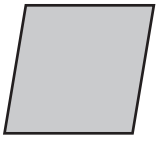
Paralelogramo
lados opuestos paralelos



Rectángulo
lados opuestos paralelos
4 ángulos rectos



Cuadrado
lados opuestos paralelos
4 ángulos rectos
todos los lados de igual longitud



Rombo
lados opuestos paralelos
todos los lados de igual longitud

Los estudiantes podrán reconocer y describir diferentes cuadriláteros según sus lados y ángulos. Algunos lados pueden tener la misma longitud. Algunos lados pueden ser paralelos; nunca se juntan, no importa cuánto se extiendan. Algunos lados pueden ser perpendiculares; donde se juntan es como el vértice de un cuadrado.

Si tiene alguna pregunta o algún comentario, por favor comuníquese conmigo.

Gracias.

Atentamente,
El maestro de su niño

© Houghton Mifflin Harcourt Publishing Company

CA CC

En la Unidad 6 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: **3.G.1, 3.G.2, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.6, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d, 3.MD.8** y todos los de prácticas matemáticas.

6-1
Class Activity

Name Date

CA CC Content Standards 3.G.1, 3.G.2
Mathematical Practices MP.2, MP.5, MP.7

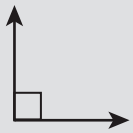
VOCABULARY
ray
angle
right angle

► Types of Angles

A **ray** is part of a line that has one endpoint and continues forever in one direction. To draw a ray, make an arrow to show that it goes on forever.

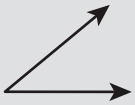
Two line segments or two rays that meet at an endpoint form an **angle**.

An angle that forms a square corner is called a **right angle**.

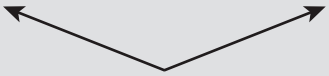


right angle

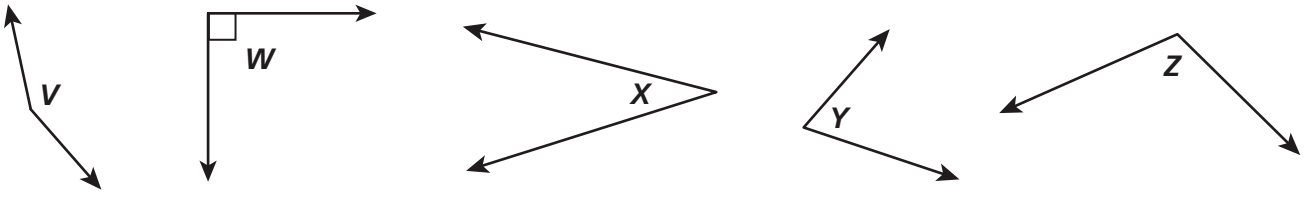
Some angles are smaller than a right angle.



Some angles are larger than a right angle.



These angles are named with a letter in the corner.



1. Which of the angles are right angles? _____

2. Which of the angles are smaller than a right angle? _____

3. Which of the angles are larger than a right angle? _____

© Houghton Mifflin Harcourt Publishing Company

6-1
Class Activity

Name _____ Date _____

VOCABULARY
triangle

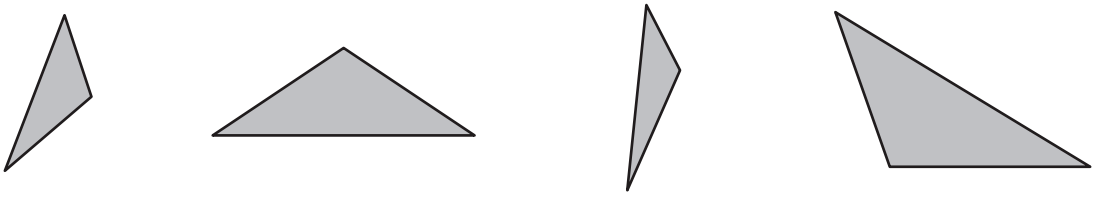
► Describe Triangles by Types of Angles

Triangles can be described by the types of angles they have.

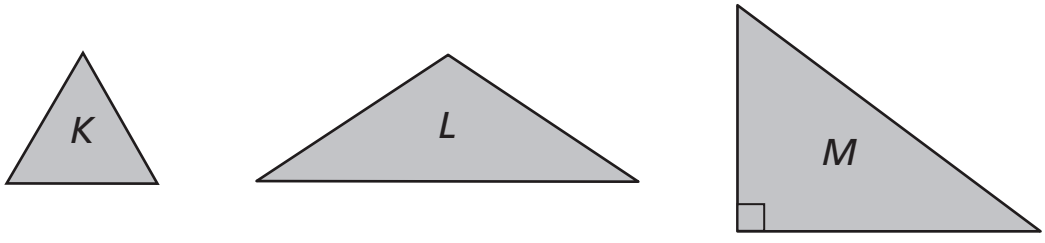
In these triangles, one angle is a right angle.

In these triangles, three angles are smaller than a right angle.

In these triangles, one angle is larger than a right angle.



Use triangles *K*, *L*, and *M* for Exercises 4–6.



4. Which triangle has one right angle?

_____

5. Which triangle has three angles smaller than a right angle?

_____

6. Which triangle has one angle larger than a right angle?

_____

© Houghton Mifflin Harcourt Publishing Company

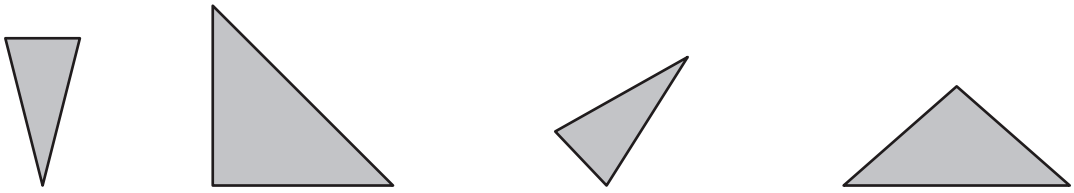
Name _____ Date _____

► Describe Triangles by the Number of Sides of Equal Length

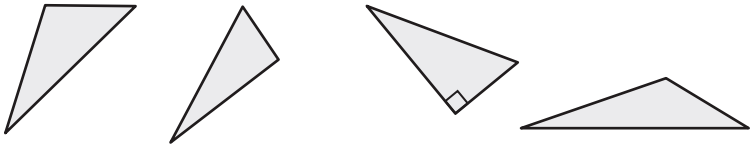
You can also describe triangles by the number of sides that are of equal length.

In these triangles, three sides are equal in length.

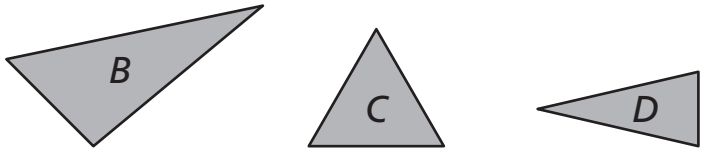
In these triangles, two sides are equal in length.



In these triangles, no sides are equal in length.



Use triangles *B*, *C*, and *D* for Exercises 7–9.



7. Which triangle has 3 sides of equal length?

_____

8. Which triangle has 2 sides of equal length?

_____

9. Which triangle has 0 sides of equal length?

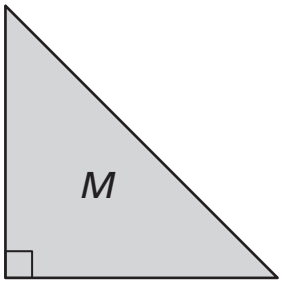
_____

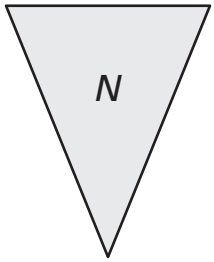
© Houghton Mifflin Harcourt Publishing Company

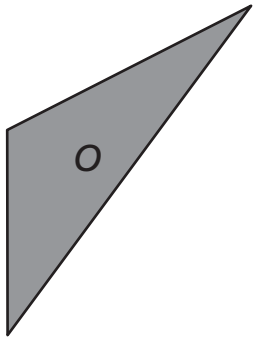
Name _____ Date _____

► Describe Triangles by Types of Angles and Number of Sides of Equal Length

Use triangles *M*, *N*, and *O* for 10–12. Write *M*, *N*, or *O*. Then complete the sentences.





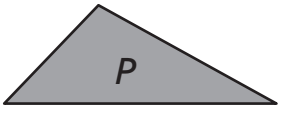


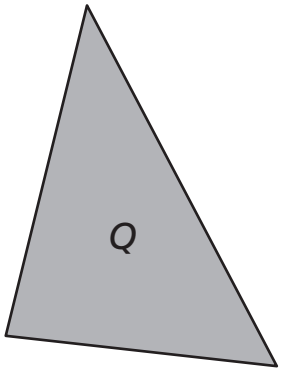
10. Triangle _____ has 1 angle larger than a right angle and has _____ sides of equal length.

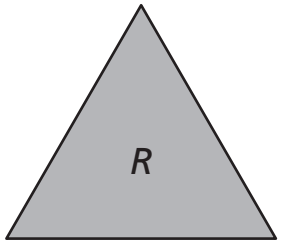
11. Triangle _____ has 1 right angle and has _____ sides of equal length.

12. Triangle _____ has 3 angles smaller than a right angle and has _____ sides of equal length.

Use triangles *P*, *Q*, and *R* for 13–15. Write *P*, *Q*, or *R*. Then complete the sentences.







13. Triangle _____ has 3 angles smaller than a right angle and has _____ sides of equal length.

14. Triangle _____ has 3 angles smaller than a right angle and has _____ sides of equal length.

15. Triangle _____ has 1 angle larger than a right angle and has _____ sides of equal length.

© Houghton Mifflin Harcourt Publishing Company

6-1
Class Activity

Name Date

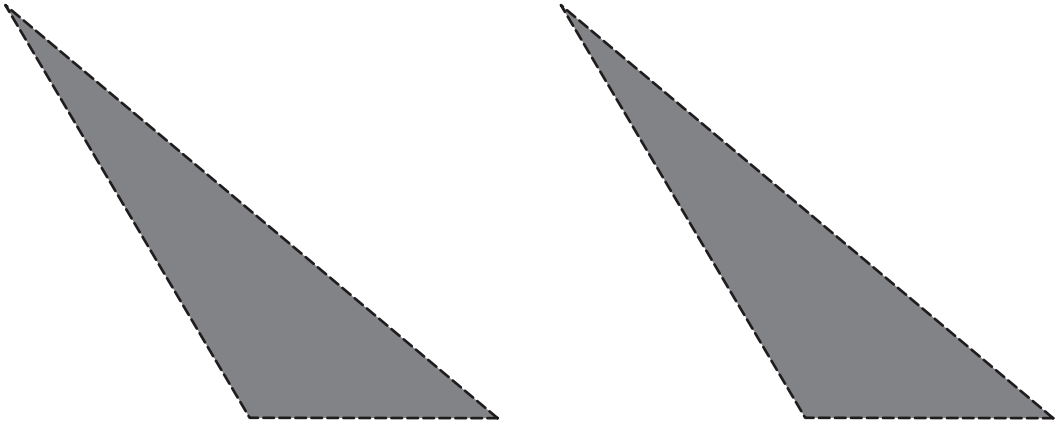
VOCABULARY
quadrilateral

► Build Quadrilaterals from Triangles

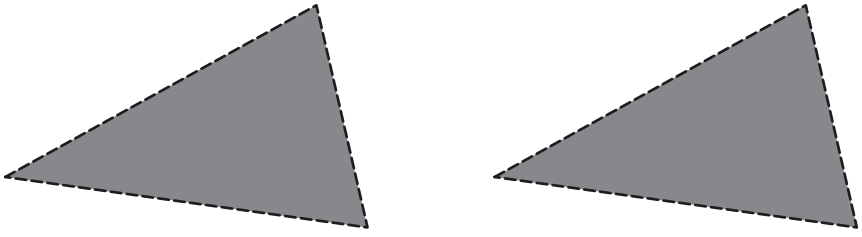
A **quadrilateral** is a figure with 4 sides.

Cut out each pair of triangles. Use each pair to make as many different quadrilaterals as you can. You may flip a triangle and use the back. On a separate piece of paper, trace each quadrilateral that you make.

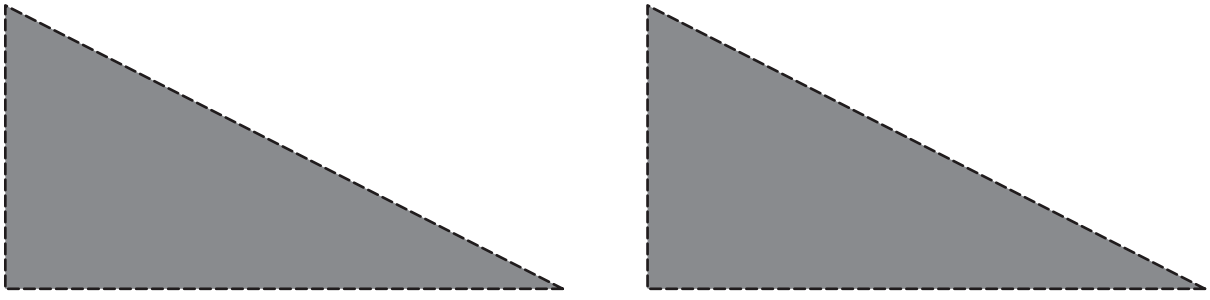
Triangles with One Angle Larger Than a Right Angle



Triangles with Three Angles Smaller Than a Right Angle



Triangles with One Right Angle



© Houghton Mifflin Harcourt Publishing Company

© Houghton Mifflin Harcourt Publishing Company

6-1
Class Activity

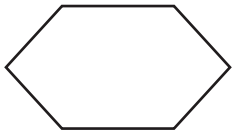
Name _____ Date _____

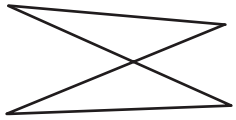
VOCABULARY
polygon
concave
convex

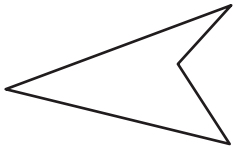
► Polygons

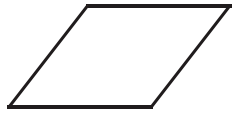
A **polygon** is a flat, closed figure made up of line segments that do not cross each other.

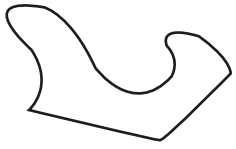
Circle the figures that are polygons.

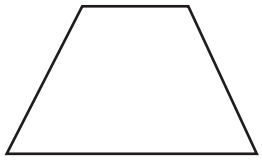
16. 

17. 

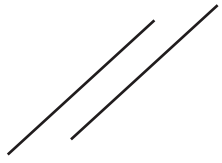
18. 

19. 

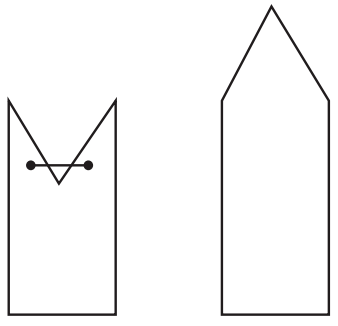
20. 

21. 

22.

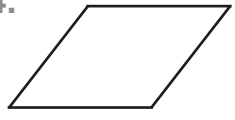
23. 

A figure can be **concave** or **convex**. In concave polygons, there exists a line segment with endpoints inside the polygon and a point on the line segment that is outside the polygon. A convex figure has no such line segment.



concave **convex**

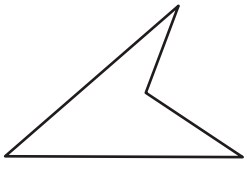
Which figures are convex and which are concave?

24. 

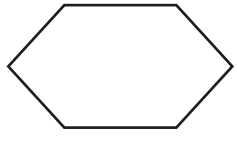
_____

25.

_____

26. 

_____

27. 

_____

© Houghton Mifflin Harcourt Publishing Company

6-1
Class Activity

Name _____ Date _____

VOCABULARY
pentagon **hexagon**
octagon **decagon**

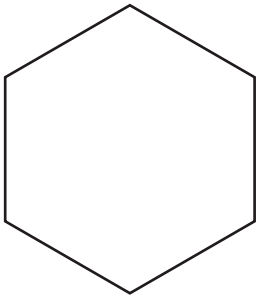
► Name Polygons

Polygons are named according to how many sides they have.

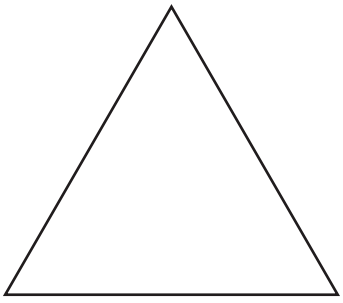
3 sides – **tri**angle 4 sides – **quad**rilateral 5 sides – **penta**gon

6 sides – **hexa**gon 8 sides – **octa**gon 10 sides – **deca**gon

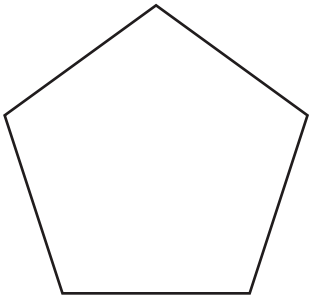
Name each figure.

28. 

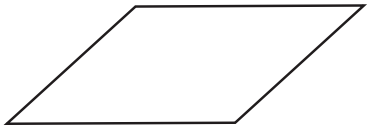
_____

29. 

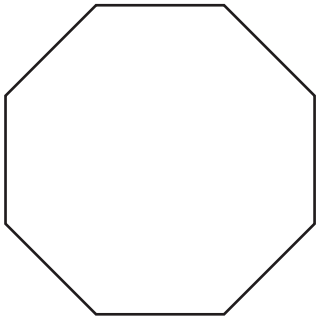
_____

30. 

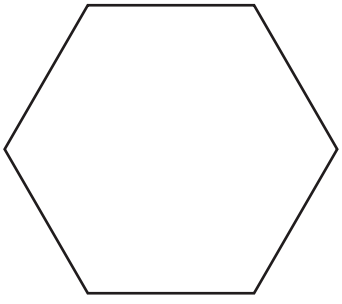
_____

31. 

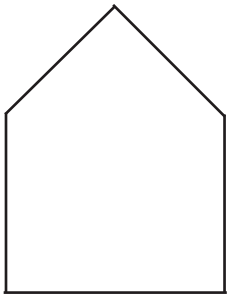
_____

32. 

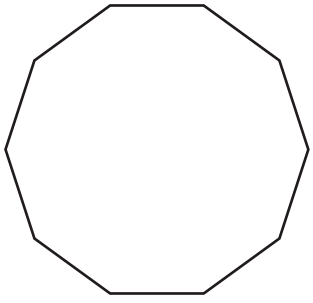
_____

33. 

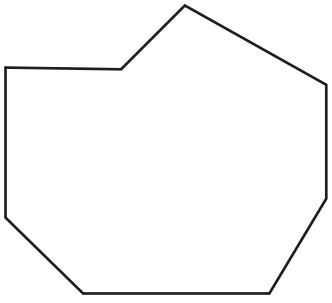
_____

34. 

_____

35. 

_____

36. 

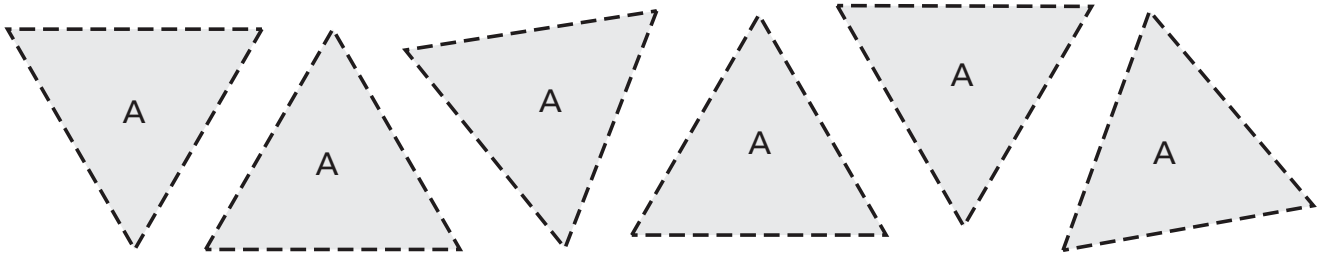
_____

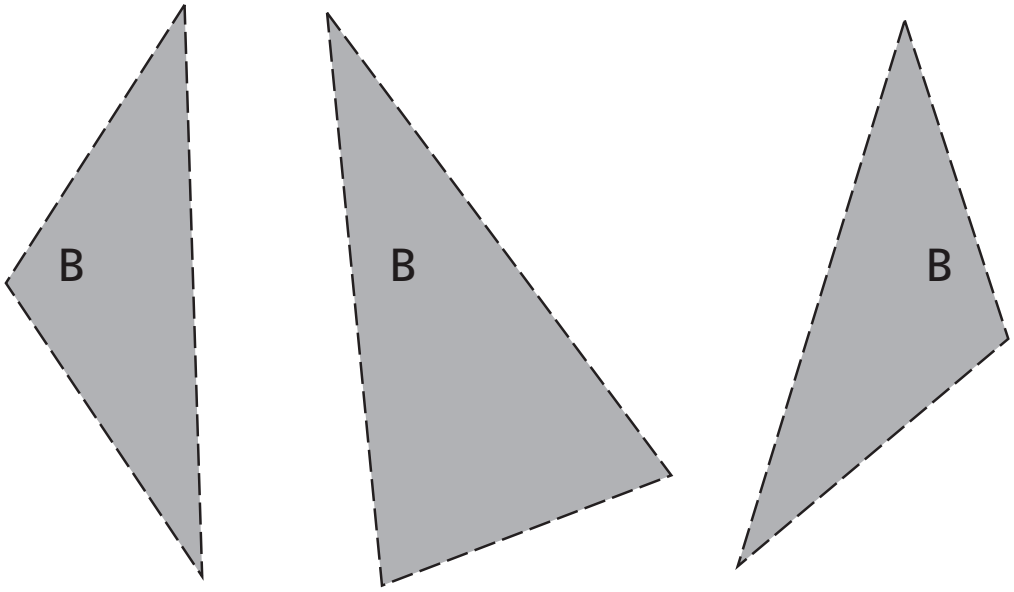
© Houghton Mifflin Harcourt Publishing Company

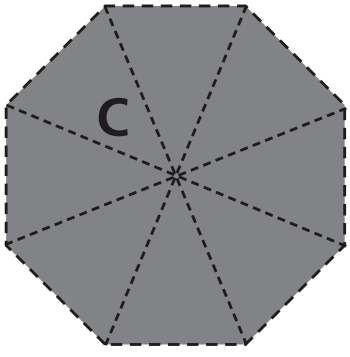
6-1
Class Activity

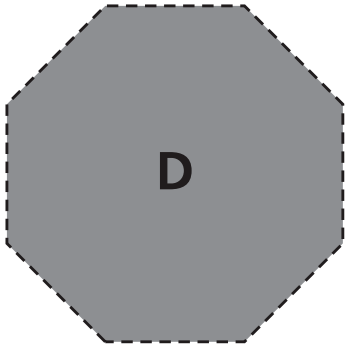
Name _____ Date _____

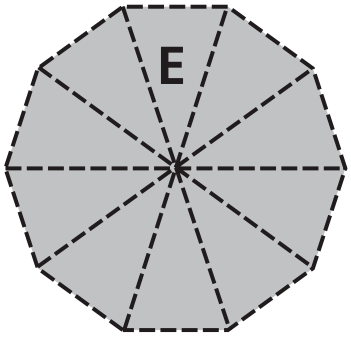
► Build Polygons from Triangles

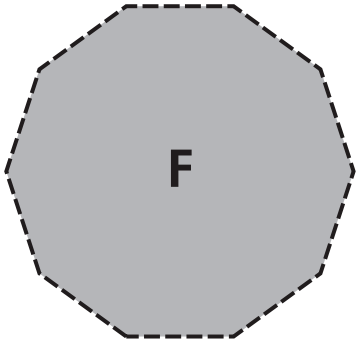












© Houghton Mifflin Harcourt Publishing Company

© Houghton Mifflin Harcourt Publishing Company

6-2
Class Activity

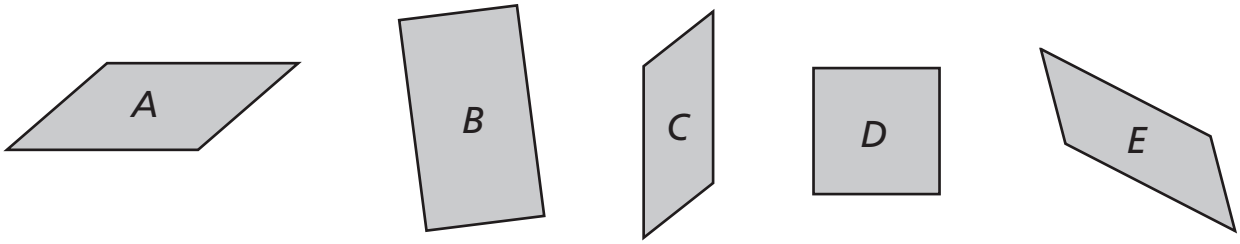
Name _____ Date _____

CA CC Content Standards 3.G.1
Mathematical Practices MP.6, MP.7

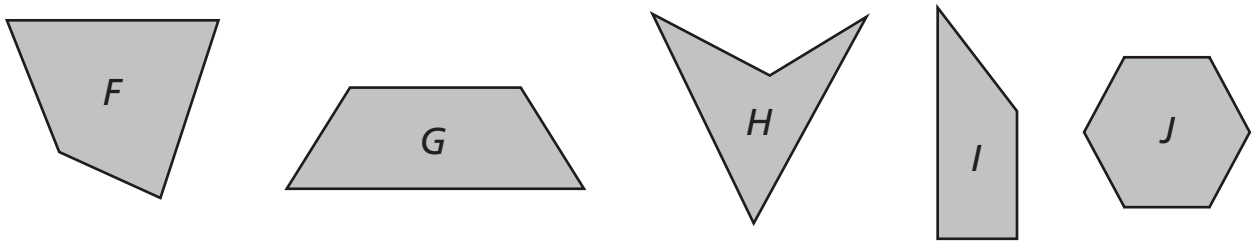
VOCABULARY
parallelogram

► Describe Parallelograms

All of these figures are **parallelograms**.



These figures are not parallelograms.



Complete the sentence.

1. A parallelogram is a quadrilateral with _____

_____

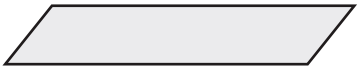
► Measure Sides of Parallelograms

For each parallelogram, measure the sides to the nearest cm and label them with their lengths.

2.

3.

4.



5. Look at the lengths of the sides. What patterns do you notice? _____

_____

© Houghton Mifflin Harcourt Publishing Company

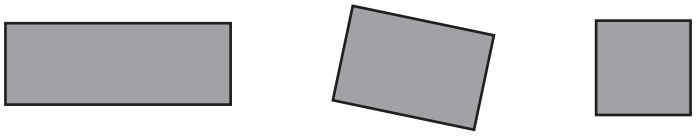
6-2
Class Activity

Name _____ Date _____

VOCABULARY
rectangle
square
rhombus

► Describe Rectangles

All of these figures are **rectangles**.



Adel said, "Rectangles are special kinds of parallelograms."

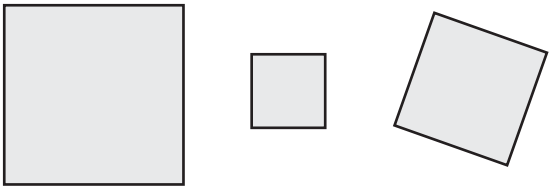
Complete the sentence.

6. A rectangle is a parallelogram with _____

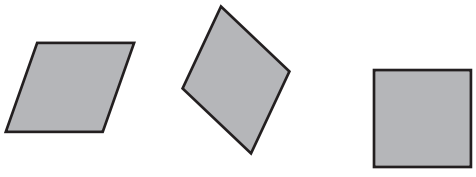
_____

► Explore Squares and Rhombuses

These figures are **squares**.



These figures are **rhombuses**.



Takeshi said, "Squares are special kinds of rectangles."

Cora said, "Rhombuses are special kinds of parallelograms."

Complete the sentence.

7. A square is a rectangle with _____

_____

8. A rhombus is a parallelogram with _____

_____

© Houghton Mifflin Harcourt Publishing Company

6-2
Class Activity

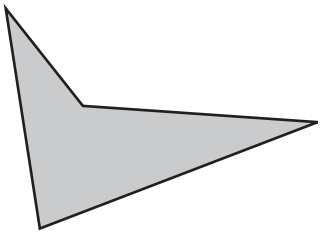
Name _____ Date _____

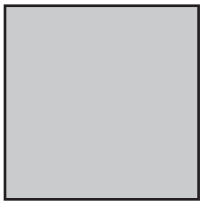
► Describe Quadrilaterals

Use as many words below as possible to describe each figure.

quadrilateral	parallelogram	rectangle	square

9.

10. 

11. 

12.

© Houghton Mifflin Harcourt Publishing Company

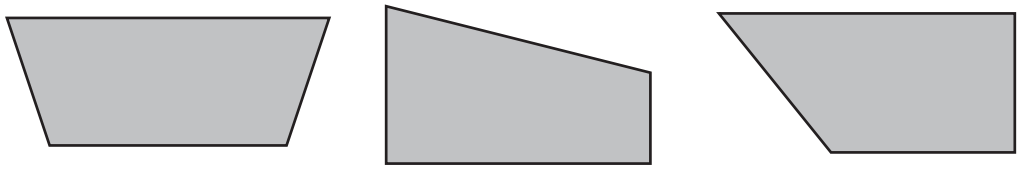
6-2
Class Activity

Name _____ Date _____

VOCABULARY
trapezoid
opposite sides

► Describe Trapezoids

The quadrilaterals below are **trapezoids**.

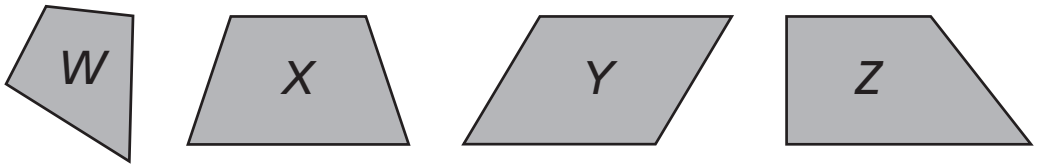


13. Write what you know about the **opposite sides** of a trapezoid.

_____

_____

14. Circle the quadrilaterals that are trapezoids.



15. Explain why the figures you did not circle are not trapezoids.

_____

_____

_____

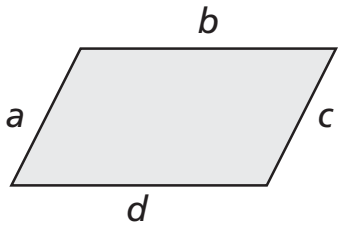
© Houghton Mifflin Harcourt Publishing Company

6-3
Class Activity

Name _____ Date _____

CA CC Content Standards **3.G.1**
Mathematical Practices **MP.5, MP.7**

► Draw Parallelograms



1. Write what you know about the opposite sides of a parallelogram.

_____

_____

2. Draw three different parallelograms.

© Houghton Mifflin Harcourt Publishing Company

6-3
Class Activity

Name _____ Date _____

VOCABULARY
adjacent sides

► Draw Rectangles

3. Write everything you know about the opposite sides of a rectangle.

_____

4. What do you know about the **adjacent sides** of a rectangle?

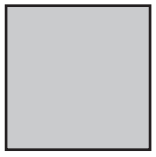
_____

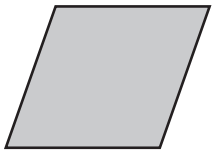
5. Draw three different rectangles.

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Draw Squares and Rhombuses





6. Write everything you know about squares.

_____

7. Write all you know about rhombuses.

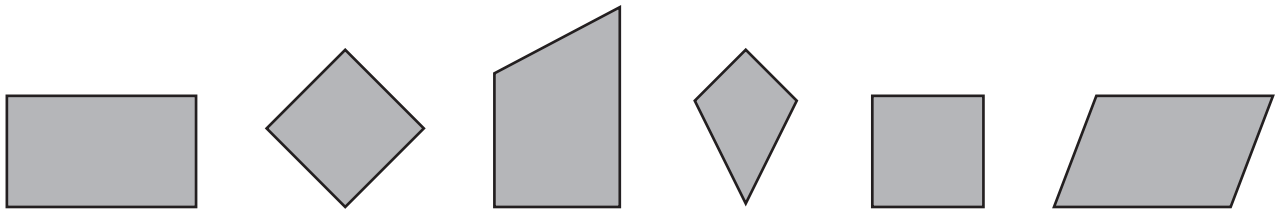
_____

8. Draw two different squares and two different rhombuses.

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Draw Quadrilaterals That Are Not Squares, Rectangles, or Rhombuses



9. What is a quadrilateral?

_____

10. Name all the quadrilaterals that have at least one pair of parallel sides.

_____

11. Draw three different quadrilaterals that are not squares, rectangles, or rhombuses.

© Houghton Mifflin Harcourt Publishing Company

6-4
Class Activity

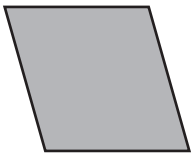
Name _____ Date _____

CA CC Content Standards **3.G.1**
Mathematical Practices **MP.3, MP.6, MP.7, MP.8**

► Name Quadrilaterals

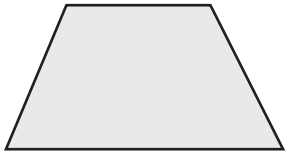
Place a check mark beside every name that describes the figure.

1.



- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

2.

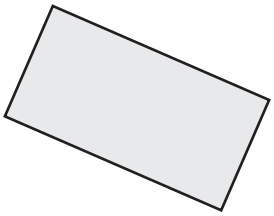


- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ trapezoid

3.

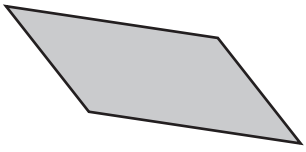
- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

4.



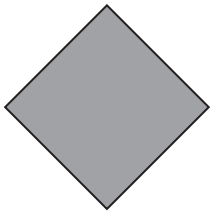
- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

5.



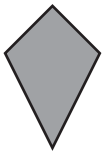
- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

6.



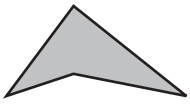
- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

7.



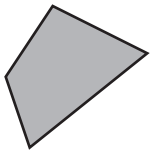
- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

8.



- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

9.



- ☐ quadrilateral
- ☐ parallelogram
- ☐ rhombus
- ☐ rectangle
- ☐ square

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Analyze Quadrilaterals

10. For each figure, put Xs under the descriptions that are always true.

	Four sides	Both pairs of opposite sides parallel	Both pairs of opposite sides the same length	Four right angles	All sides the same length
Quadrilateral					
Trapezoid					
Parallelogram					
Rhombus					
Rectangle					
Square					

Use the finished chart above to complete each statement.

11. Parallelograms have all the features of quadrilaterals *plus*

_____

_____

12. Rectangles have all the features of parallelograms *plus*

_____

13. Squares have all the features of quadrilaterals *plus*

_____

_____

14. Trapezoids have all the features of quadrilaterals *plus*

_____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Draw Quadrilaterals from a Description

Draw each figure.

15. Draw a quadrilateral that is *not* a parallelogram.

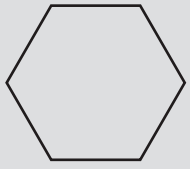
16. Draw a parallelogram that is *not* a rectangle.

17. Draw a rectangle that is *not* a square.

► What's the Error?

Dear Math Students,

Today I had to draw a quadrilateral with parallel sides that is not a rectangle, square, or rhombus. This is my drawing.



Is my drawing correct? If not, please help me understand why it is wrong.

Your friend,
Puzzled Penguin

18. Write an answer to Puzzled Penguin.

_____

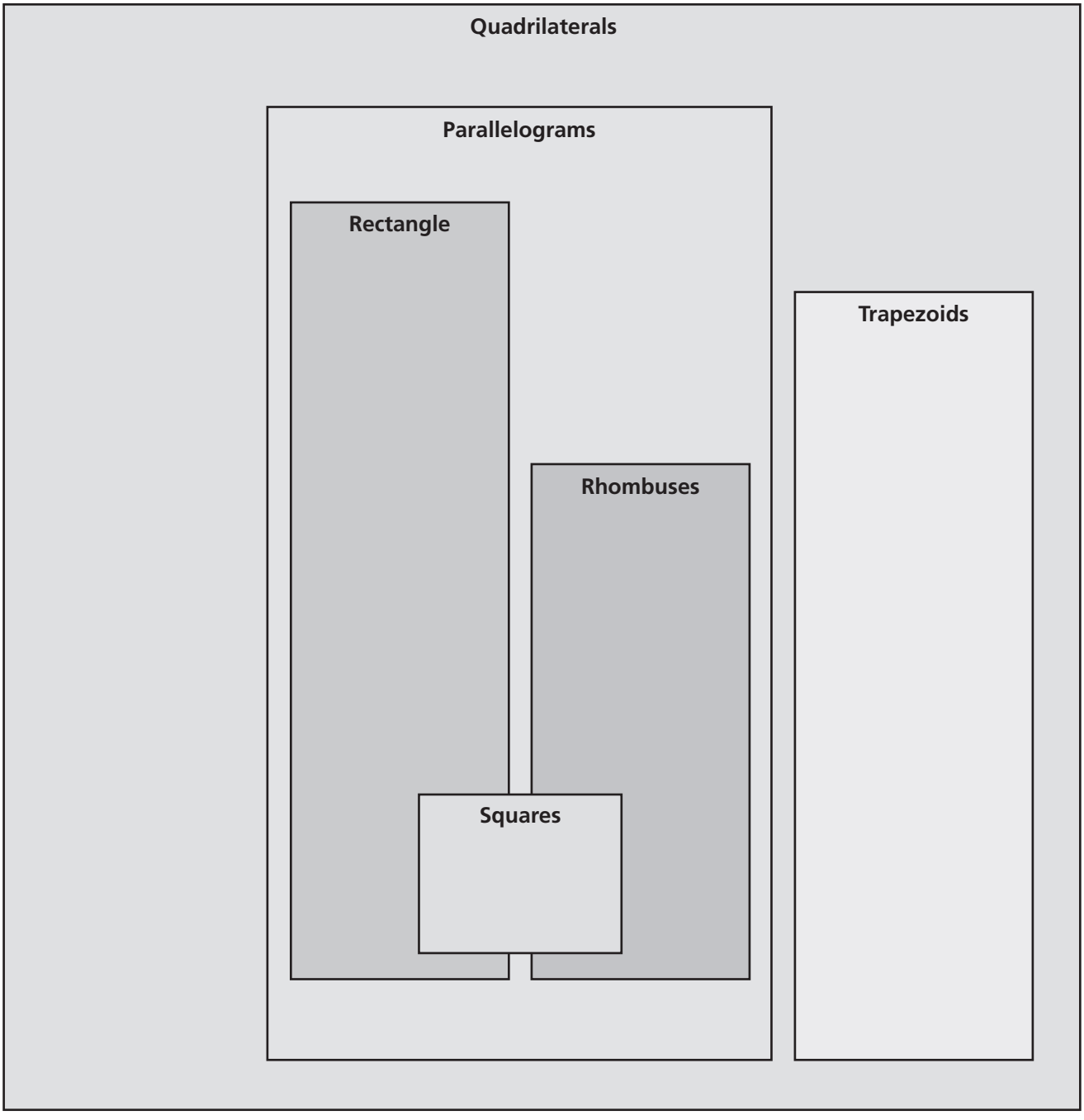
_____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Sort and Classify Quadrilaterals

Use the category diagram to sort the figures you cut out from Student Book page 333A. Write the letter of the figure in the diagram to record your work.



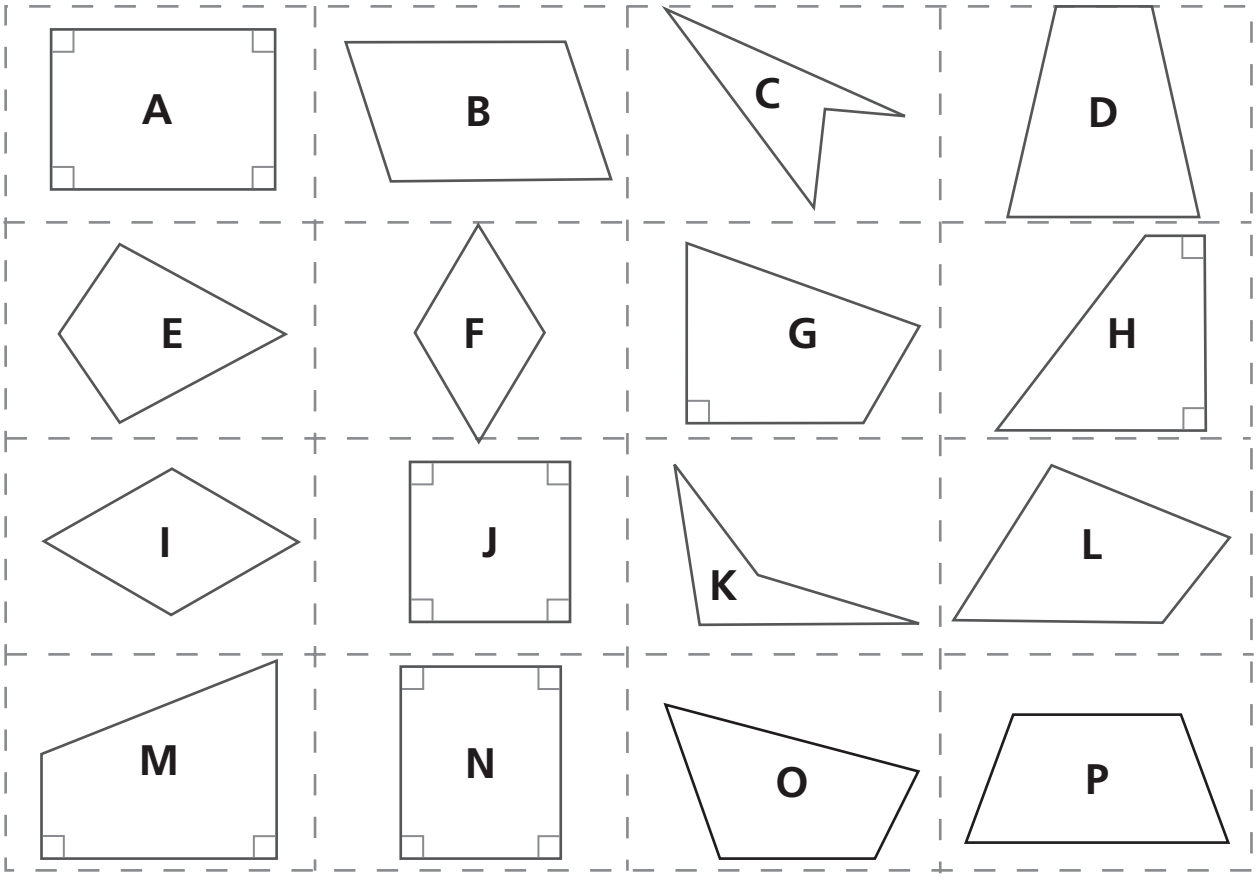
© Houghton Mifflin Harcourt Publishing Company

6-4
Class Activity

Name Date

► Quadrilaterals for Sorting

Cut along the dashed lines.



© Houghton Mifflin Harcourt Publishing Company

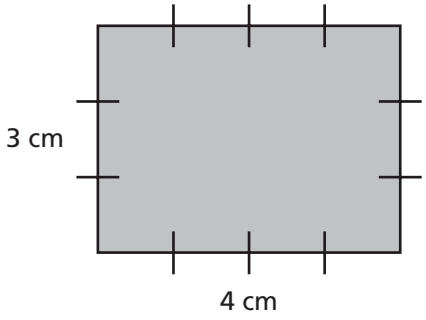
© Houghton Mifflin Harcourt Publishing Company

Content Overview

Dear Family,

Your child is currently learning about perimeter and area. Students begin to investigate the area of a rectangle by counting the number of square units inside the figure. Students also find the perimeter of a rectangle by counting linear units around the outside of the figure.

Students develop methods to find the perimeter and area of a rectangle, as shown below.

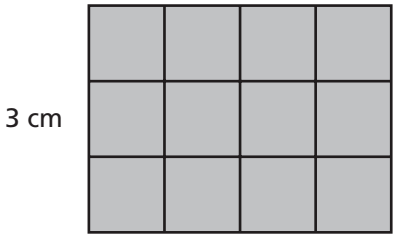


Perimeter = distance around the rectangle

Perimeter = *side length* + *side length* + *side length* + *side length*

$P = 4 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 3 \text{ cm}$

$P = 14 \text{ cm}$



Area = square units inside the rectangle

Area = side length × side length

$A = 4 \text{ cm} \times 3 \text{ cm}$

$A = 12 \text{ sq cm}$

Students draw rectangles that have the same perimeter but different areas and rectangles that have the same area but different perimeters. They discover relationships between perimeter and area, such as that for a given area, the longest, skinniest rectangle has the greatest perimeter and the rectangle with sides closest to the same length or the same length has the least perimeter.

Students create shapes with tangrams, explore area relationships among the tangram shapes, and use the shapes as improvised units to measure area.

Throughout the unit students apply what they have learned about perimeter and area to real world problems.

If you have any questions or comments, please call or write to me.

Thank you.

Sincerely,
Your child's teacher

CA CC

Unit 6 addresses the following standards from the *Common Core State Standards for Mathematics with California Additions*: **3.G.1, 3.G.2, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.6, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d, 3.MD.8,** and all Mathematical Practices.

© Houghton Mifflin Harcourt Publishing Company

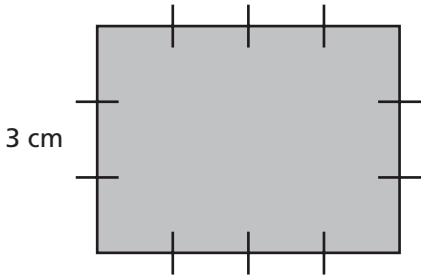
Carta a la familia

Un vistazo general al contenido

Estimada familia:

Su niño está aprendiendo acerca de perímetro y área. Los estudiantes comenzarán a investigar el área de un rectángulo contando las unidades cuadradas que caben en la figura. También hallarán el perímetro de un rectángulo contando las unidades lineales alrededor de la figura.

Los estudiantes desarrollarán métodos para hallar el perímetro y el área de un rectángulo, como se muestra a continuación.

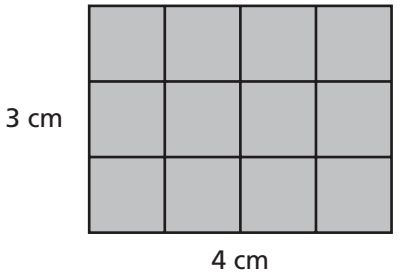


Perímetro = distancia alrededor del rectángulo

Perímetro = *largo del lado* + *largo del lado* + *largo del lado* + *largo del lado*

$P = 4 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 3 \text{ cm}$

$P = 14 \text{ cm}$



Área = unidades cuadradas dentro del rectángulo

Área = *largo del lado* × *largo del lado*

$A = 4 \text{ cm} \times 3 \text{ cm}$

$A = 12 \text{ cm cuad}$

Los estudiantes dibujarán rectángulos con el mismo perímetro pero diferentes áreas y rectángulos con la misma área pero diferentes perímetros. Descubrirán cómo se relacionan el perímetro y el área, por ejemplo, para un área determinada, el rectángulo más largo y angosto tiene el perímetro mayor y el rectángulo con lados de igual o casi igual longitud, tiene el perímetro menor.

Los estudiantes crearán figuras con tangramas, explorarán la relación entre el área de esas figuras y las usarán como medidas improvisadas para medir área.

Durante esta unidad los estudiantes aplicarán a problemas cotidianos lo que han aprendido acerca del perímetro y el área.

Si tiene alguna duda o algún comentario, por favor comuníquese conmigo.

Atentamente,
El maestro de su niño

© Houghton Mifflin Harcourt Publishing Company

CA CC

En la Unidad 6 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: **3.G.1, 3.G.2, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.6, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d, 3.MD.8** y todos los de prácticas matemáticas.

6-5
Class Activity

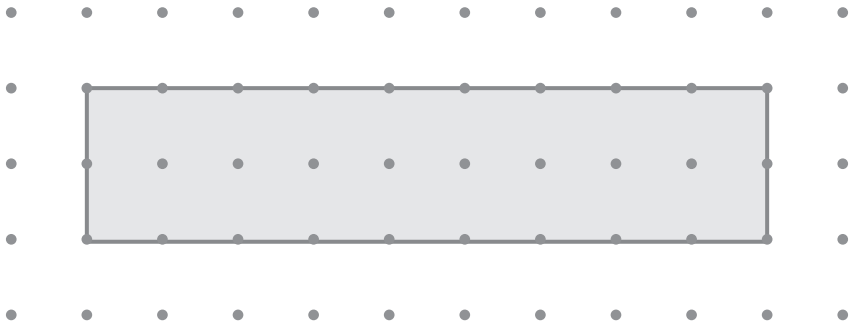
Name _____ Date _____

CA CC Content Standards 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.6, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.8
Mathematical Practices MP.2, MP.5

VOCABULARY
perimeter
area
unit square

► Recognize Perimeter and Area

On this page, the dots on the dot paper are 1 cm apart. Use the rectangle for Exercises 1–4.



1. What part of the rectangle is its **perimeter**?

_____

2. What part of the rectangle is its **area**?

_____

3. Find the perimeter. Draw tick marks to help.

_____

4. Find the area. Draw **unit squares** to help.

_____

5. Draw a rectangle 5 cm long and 3 cm wide on the dot paper. Find the perimeter and area.

Perimeter _____

Area _____

6. Explain how you found the area of the rectangle in Exercise 5.

_____

_____

_____

_____

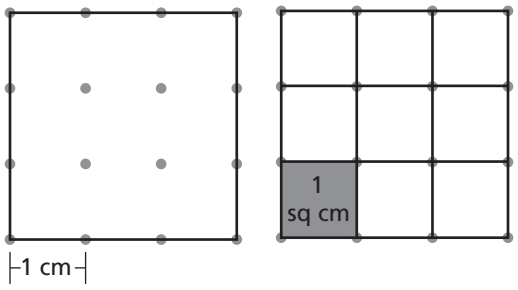
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Find Perimeter and Area

Find the perimeter and area of each figure.
Remember to include the correct units in your answers.

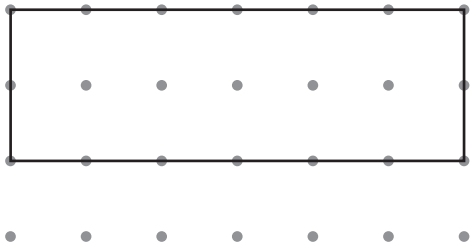
7. perimeter area



Perimeter = _____

Area = _____

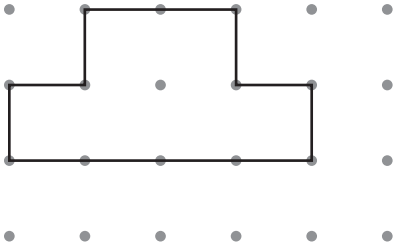
8.



Perimeter = _____

Area = _____

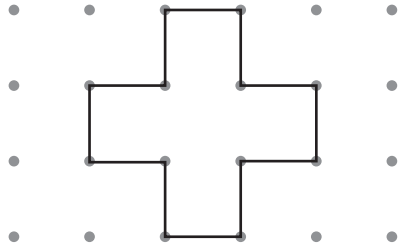
9.



Perimeter = _____

Area = _____

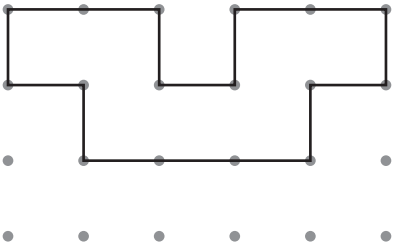
10.



Perimeter = _____

Area = _____

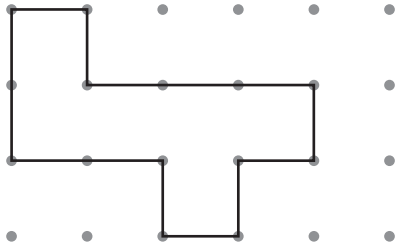
11.



Perimeter = _____

Area = _____

12.



Perimeter = _____

Area = _____

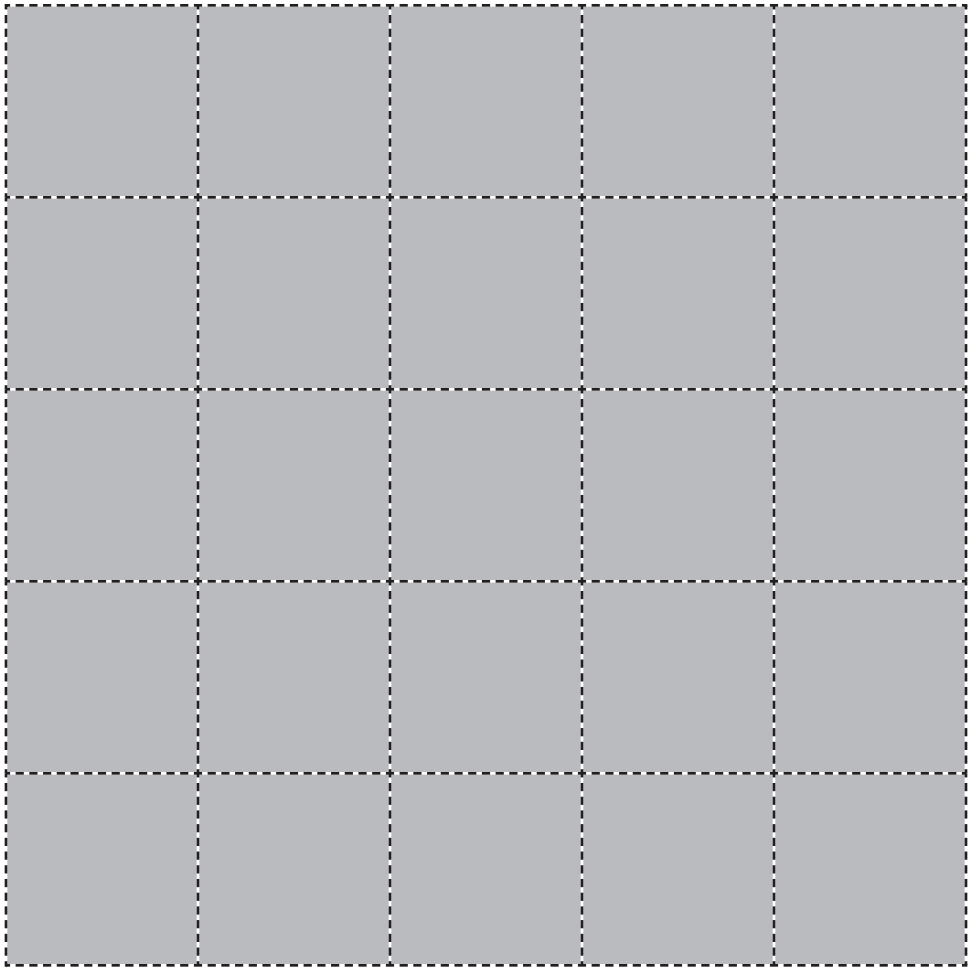
© Houghton Mifflin Harcourt Publishing Company

6-5
Class Activity

Name _____ Date _____

► Tile a Rectangle

Cut out the 1-inch unit squares along the dashed lines. Try to cut as carefully and as straight as you can.



© Houghton Mifflin Harcourt Publishing Company

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Tile a Rectangle

13. Use the 1-inch unit squares from page 337A to cover the rectangle below.

14. Check whether there are any gaps between the unit squares.

_____

15. Check whether any unit squares overlap.

_____

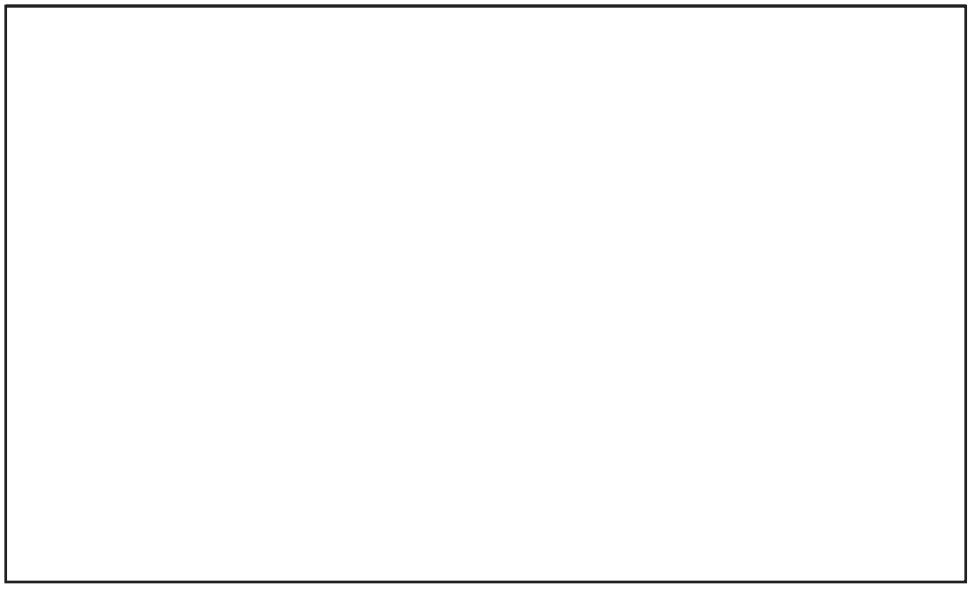
16. Draw lines to show the unit squares. The number of unit squares is the area in square inches. What is the area?

_____

17. Use an inch ruler to measure the side lengths of the rectangle. Label the length and the width.

_____

_____



18. Write a multiplication equation to show the area.

_____

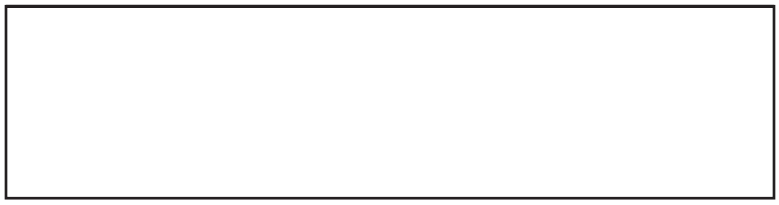
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Tile a Rectangle (continued)

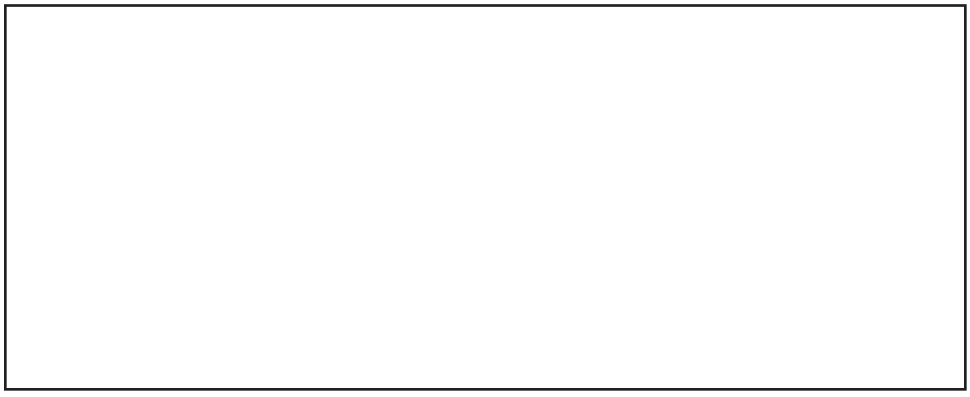
Cover each rectangle with 1-inch unit squares. Count the squares to find the area. Then write an equation to show the area.

19.



The area is _____ The equation is _____

20.



The area is _____ The equation is _____

21. How many 1-inch unit squares are needed to cover a rectangle that is 7 inches long and 4 inches wide?

_____

22. What is the area of a rectangle that is 7 inches long and 4 inches wide?

_____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

CA CC Content Standards **3.MD.7, 3.MD.7b, 3.MD.7c, 3.MD.7d, 3.MD.8**
Mathematical Practices **MP.1, MP.2, MP.4**

► Write Different Equations for Area

1. Use the drawings. Show two ways to find the area of a rectangle that is 10 units long and 6 units wide.

2. Write equations for your two rectangle drawings.

_____ _____

3. Suppose the rectangle is 10 feet long and 6 feet wide. What is its area?

_____

4. Suppose the rectangle is 10 meters long and 6 meters wide. What is its area?

_____

5. Use drawings and write equations to show two ways to find the area of a rectangle that is 9 yards long and 5 yards wide.

_____ _____

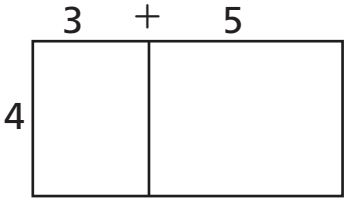
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Rectangle Equations and Drawings

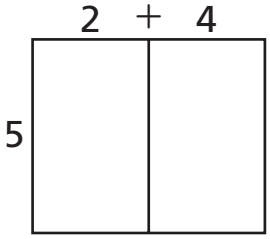
Write an equation for each rectangle.

6.



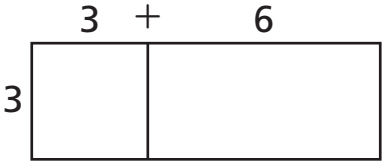
_____

7.



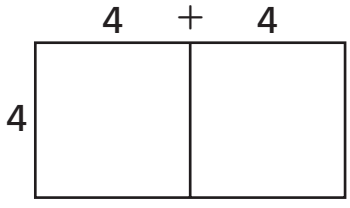
_____

8.



_____

9.



_____

Draw a rectangle for each equation.

10. $(3 \times 3) + (3 \times 5) = 3 \times 8$

11. $(4 \times 5) + (4 \times 3) = 4 \times 8$

12. $(5 \times 3) + (5 \times 6) = 5 \times 9$

13. $(4 \times 6) + (4 \times 4) = 4 \times 10$

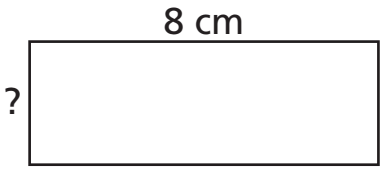
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Find Unknown Side Lengths

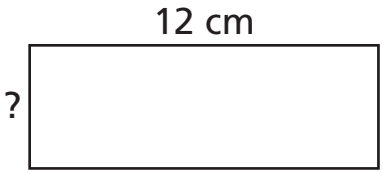
Find the unknown side length in each diagram.

14.



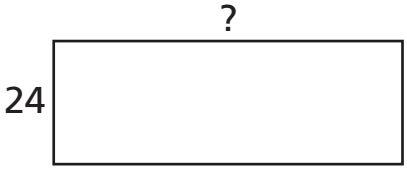
Area = 72 sq cm

15.



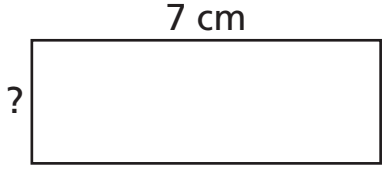
Perimeter = 38 cm

16.



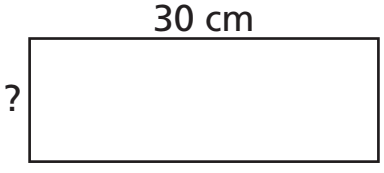
Perimeter = 64 cm

17.



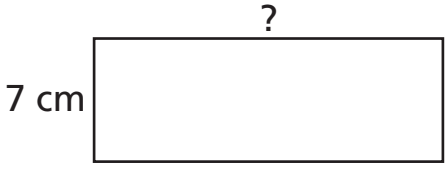
Area = 56 sq cm

18.



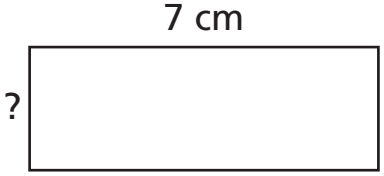
Perimeter = 72 cm

19.



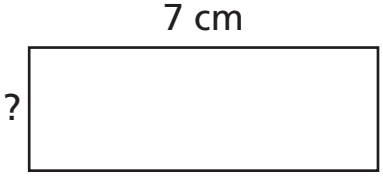
Area = 63 sq cm

20.



Area = 28 sq cm

21.



Perimeter = 28 cm

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Unknown Side Length Problems

Solve. Draw a rectangle to represent the situation. *Show your work.*

22. Alexander and his grandfather are tiling their rectangular kitchen floor. They need to use 42 tiles. They are making rows of 7 tiles. How many rows do they make?

_____

23. Tilly and her mom made a rectangular dog run. They used 12 one-yard long pieces of fencing. They put 2 pieces of fencing on one side. How many pieces did they put on the next side?

_____

24. Martha is making a quilt. She has 63 squares ready to sew together. She wants the quilt to be 9 rows long. How many squares will be in each row?

_____

25. Rick and Roger are painting a mural made up of different sizes of rectangles, with no gaps or overlaps of the rectangles. They have enough paint to cover 15 square yards. They want the mural to be 3 yards long. How wide can the mural be?

_____

26. Mr. Baker wants to use all of a 48-inch strip of oak trim for a box he plans to make. He wants the box to be 14 inches wide. How long will the box be?

_____

© Houghton Mifflin Harcourt Publishing Company

6-7
Class Activity

Name Date

CA CC Content Standards 3.MD.7b, 3.MD.8
Mathematical Practices MP.2, MP.8

► Compare Rectangles with the Same Perimeter

Complete.

1. On a centimeter dot grid, draw all possible rectangles with a perimeter of 12 cm and sides whose lengths are whole centimeters. Label the lengths of two adjacent sides of each rectangle.

2. Find and label the area of each rectangle. In the table, record the lengths of the adjacent sides and the area of each rectangle.

3. Compare the shapes of the rectangles with the least and greatest areas.

Rectangles with Perimeter 12 cm	
Lengths of Two Adjacent Sides	Area

4. On a centimeter dot grid, draw all possible rectangles with a perimeter of 22 cm and sides whose lengths are whole centimeters. Label the lengths of two adjacent sides of each rectangle.

5. Find and label the area of each rectangle. In the table, record the lengths of the adjacent sides and the area of each rectangle.

Rectangles with Perimeter 22 cm	
Lengths of Two Adjacent Sides	Area

6. Compare the shapes of the rectangles with the least and greatest areas.

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Compare Rectangles with the Same Area

Complete.

7. On a centimeter dot grid, draw all possible rectangles with an area of 12 sq cm and sides whose lengths are whole centimeters. Label the lengths of two adjacent sides of each rectangle.

8. Find and label the perimeter of each rectangle. In the table, record the lengths of the adjacent sides and the perimeter of each rectangle.

Rectangles with Area 12 sq cm	
Lengths of Two Adjacent Sides	Perimeter

9. Compare the shapes of the rectangles with the least and greatest perimeter.

_____

_____

10. On a centimeter dot grid, draw all possible rectangles with an area of 18 sq cm and sides whose lengths are whole centimeters. Label the lengths of two adjacent sides of each rectangle.

11. Find and label the perimeter of each rectangle. In the table, record the lengths of the adjacent sides and the perimeter of each rectangle.

Rectangles with Area 18 sq cm	
Lengths of Two Adjacent Sides	Perimeter

12. Compare the shapes of the rectangles with the least and greatest perimeter.

_____

_____

© Houghton Mifflin Harcourt Publishing Company

6-8
Class Activity

Name _____ Date _____

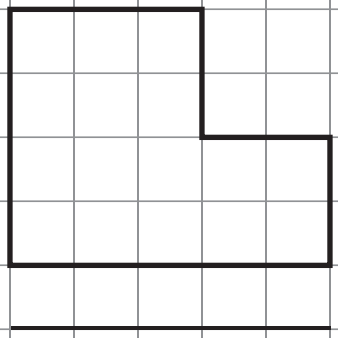
CA CC Content Standards 3.MD.7d
Mathematical Practices MP.3, MP.6, MP.7

VOCABULARY
decompose

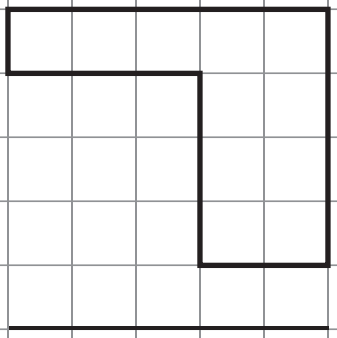
► Find Area by Decomposing into Rectangles

Decompose each figure into rectangles. Then find the area of the figure.

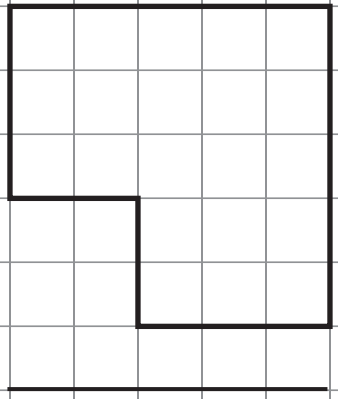
1.



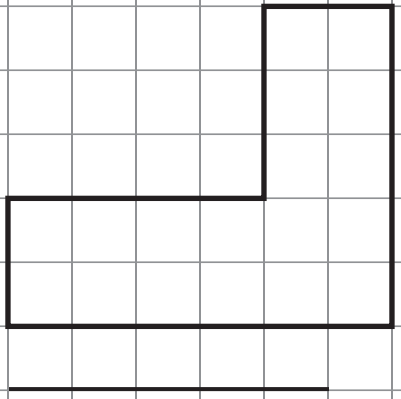
2.



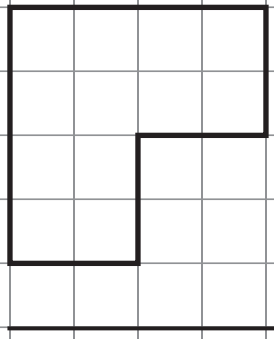
3.



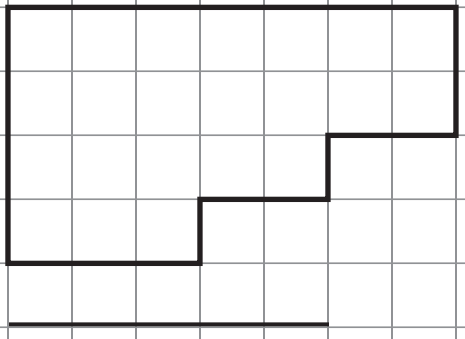
4.



5.



6.



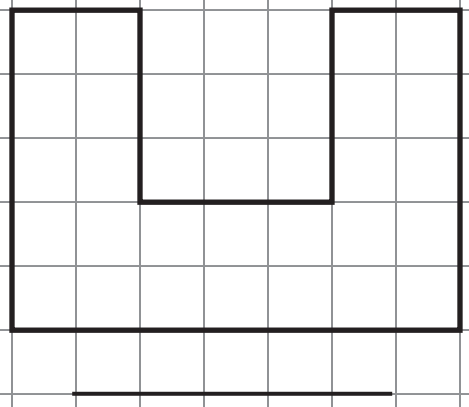
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

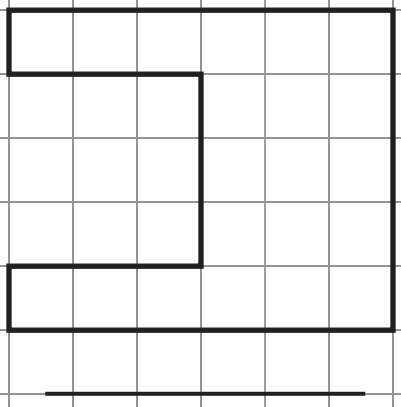
► Find Area by Decomposing into Rectangles (continued)

Decompose each figure into rectangles. Then find the area of the figure.

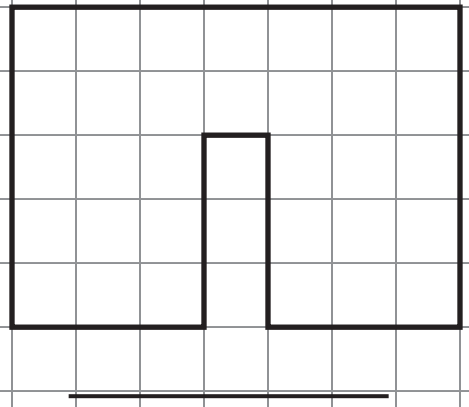
7.



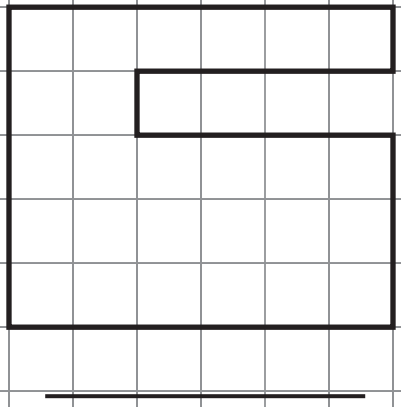
8.



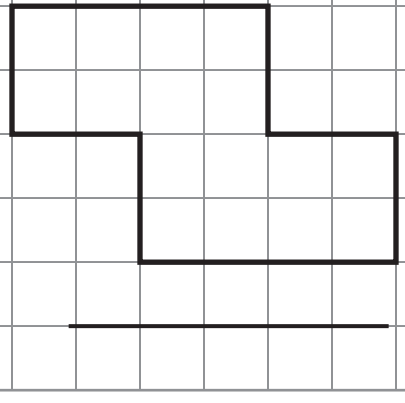
9.



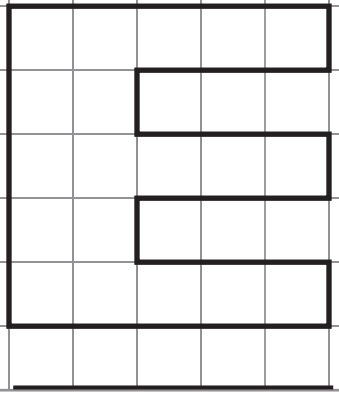
10.



11.



12.



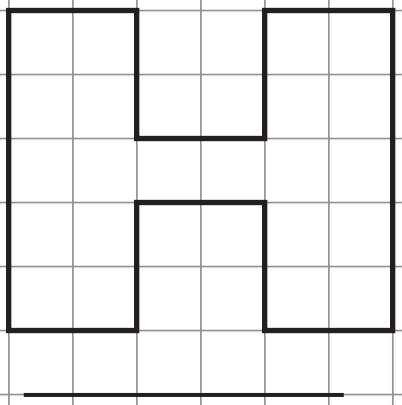
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

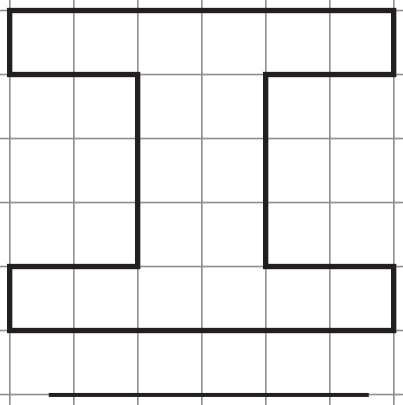
► Find Area by Decomposing into Rectangles (continued)

Decompose each figure into rectangles. Then find the area of the figure.

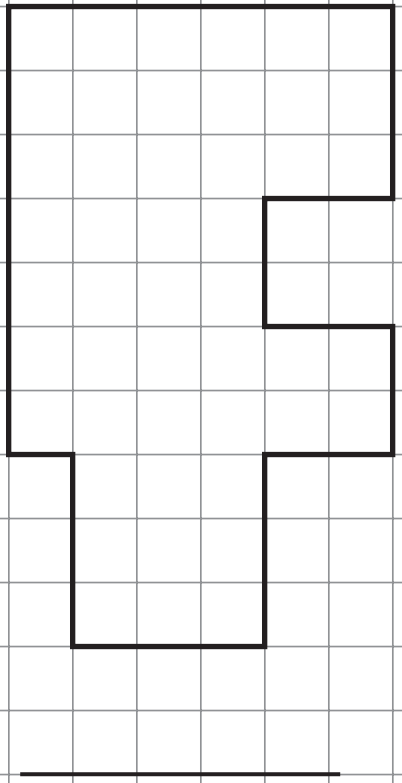
13.



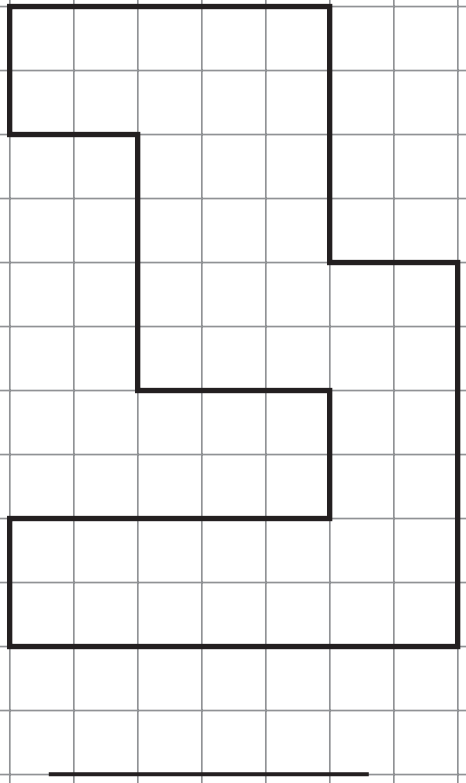
14.



15.



16.



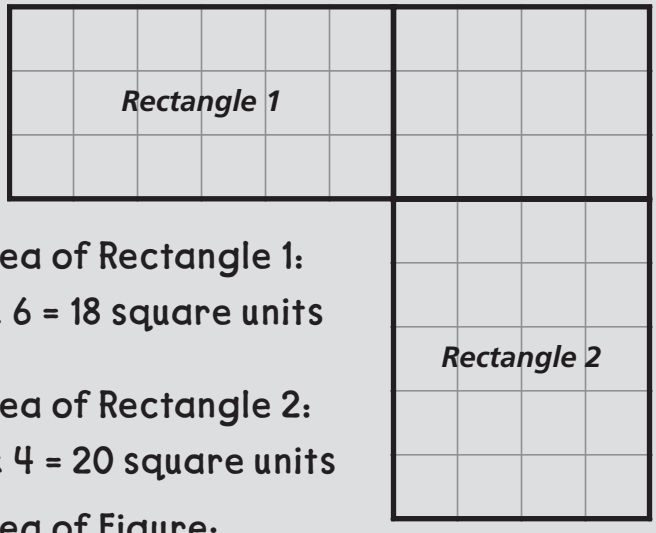
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► What's the Error?

Dear Math Students,

Today my teacher asked me to find the area of a figure. I knew that I could decompose the figure into rectangles. This is what I did.



Area of Rectangle 1:
3 x 6 = 18 square units

Area of Rectangle 2:
5 x 4 = 20 square units

Area of Figure:
18 + 20 = 38 square units

Is my work correct? If not, please correct my work and tell me what I did wrong. How do you know my answer is wrong?

Your friend,
Puzzled Penguin

17. Write an answer to Puzzled Penguin.

_____

_____

_____

_____

© Houghton Mifflin Harcourt Publishing Company

6-9
Class Activity

Name Date

CA CC Content Standards 3.MD.7b, 3.MD.8
Mathematical Practices MP.1, MP.4

► Solve Perimeter and Area Problems

Solve. Circle whether you need to find a perimeter, an area, or an unknown side length. Draw a diagram to represent each situation.

Show your work.

1. The dimensions of a rectangular picture frame are 9 inches and 6 inches. What is the area of a picture that would fit in the frame?

   Perimeter Area Side Length

2. A garden has the shape of a hexagon. Each side of the garden is 5 feet long. How much fence is needed to go around the garden?

   Perimeter Area Side Length

3. The length of a water slide is 9 yards. The slide is 2 yards wide. How much of the surface of the slide must be covered with water?

   Perimeter Area Side Length

4. Mr. Schmidt is installing 32 cubbies in the hallway. He puts 8 cubbies in each row. How many rows of cubbies can he make?

   Perimeter Area Side Length

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Solve Perimeter and Area Problems (continued)

Solve. Circle whether you need to find a perimeter, an area, or an unknown side length. Draw a diagram to represent each situation.

Show your work.

5. The floor of a delivery van has an area of 56 square feet and is 8 feet long. How many rows of 8 boxes that measure 1 foot by 1 foot can be put in the delivery van?

Perimeter Area Side Length

_____

6. Zack is planning to make a flower garden. He has 24 one-yard sections of fence that he plans to place around the garden. He wants the garden to be as long as possible. What is the longest length he can use for the garden? How wide will the garden be?

Perimeter Area Side Length

_____

7. A spa is 9 yards long and 7 yards wide. A locker room 8 yards long and 6 yards wide is at one end of the spa. How much floor space do the spa and the locker room take up?

Perimeter Area Side Length

_____

8. Rosa's dog Sparky is 24 inches long. One side of Sparky's doghouse is 36 inches long and the other side is twice as long as Sparky. What is the distance around Sparky's doghouse?

Perimeter Area Side Length

_____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Solve Perimeter and Area Problems (continued)

Solve. Circle whether you need to find a perimeter, an area, or an unknown side length. Draw a diagram to represent each situation.

Show your work.

9. Joanne made 16 fruit bars in a square pan. The fruit bars are 2 inches by 2 inches. What are the dimensions of the pan she used to bake the fruit bars?

Perimeter Area Side Length

_____

10. A scout troop is making triangular pennants for their tents. Two sides of each pennant are 2 feet long and the third side is 1 foot long. How much binding tape is needed to go around 4 pennants?

Perimeter Area Side Length

_____

11. A rectangular quilt is 5 feet wide and 7 feet long. How many feet of lace are needed to cover the edges of the quilt?

Perimeter Area Side Length

_____

12. Amy has a piece of fleece fabric that is 4 feet wide and 6 feet long. How many squares of fleece fabric that are 1 foot wide and 1 foot long can she cut from the fabric?

Perimeter Area Side Length

_____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Solve Perimeter and Area Problems (continued)

Solve. Circle whether you need to find a perimeter, an area, or an unknown side length. Draw a diagram to represent each situation.

Show your work.

13. Leighanne has 23 tiles with dimensions of 1 foot by 1 foot. She wants to tile a hallway that is 8 feet long and 3 feet wide. Does she have enough tiles? If not, how many more does she need?

Perimeter Area Side Length

14. Mrs. Brown has 48 one-foot pieces of garden fence for her new vegetable garden. She wants to have as much room as possible to plant the vegetables. What dimensions should she use for the garden?

Perimeter Area Side Length

15. Martha has 27 quilt patches with animals and 27 patches with flowers. She wants her quilt to have rows of 6 patches. How many rows will the quilt have?

Perimeter Area Side Length

16. A park in the shape of a triangle has a 20-mile bike path going along the sides. Donald rode 6 miles on the first side and 8 miles on the second side. How long is the third side of the park?

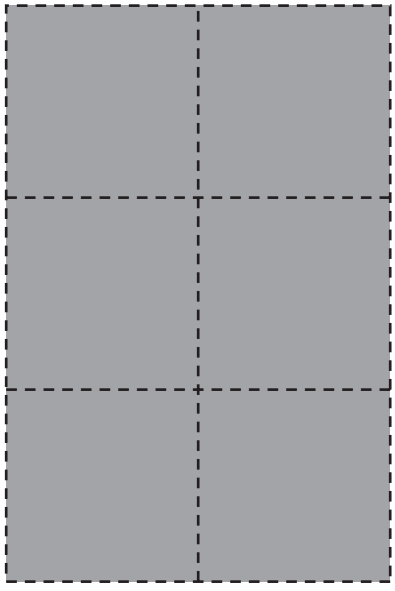
Perimeter Area Side Length

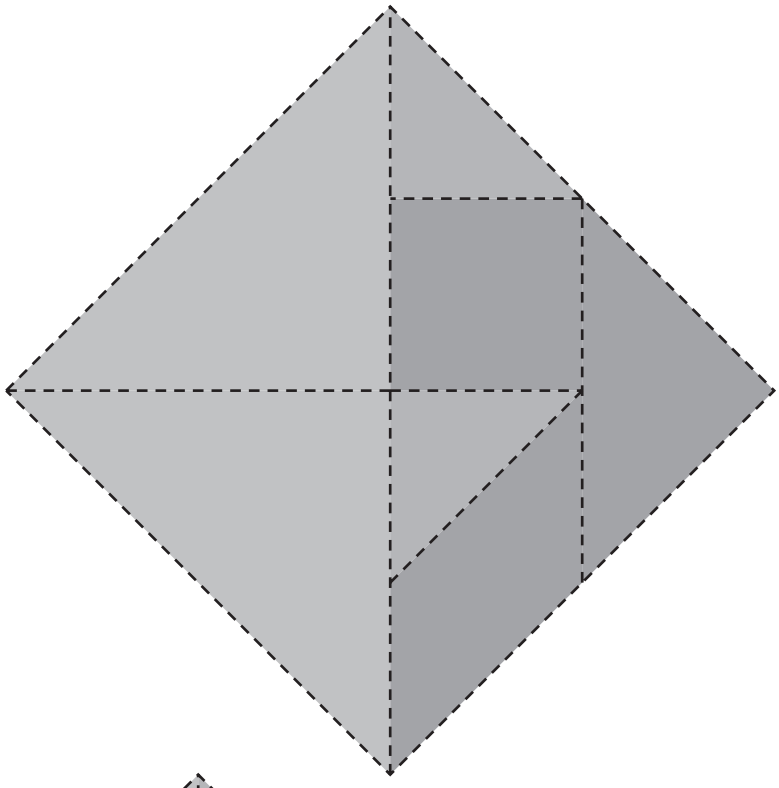
© Houghton Mifflin Harcourt Publishing Company

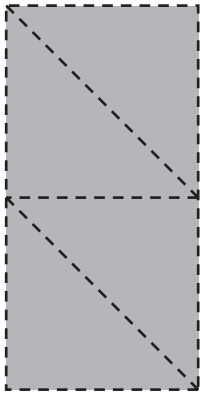
Name Date

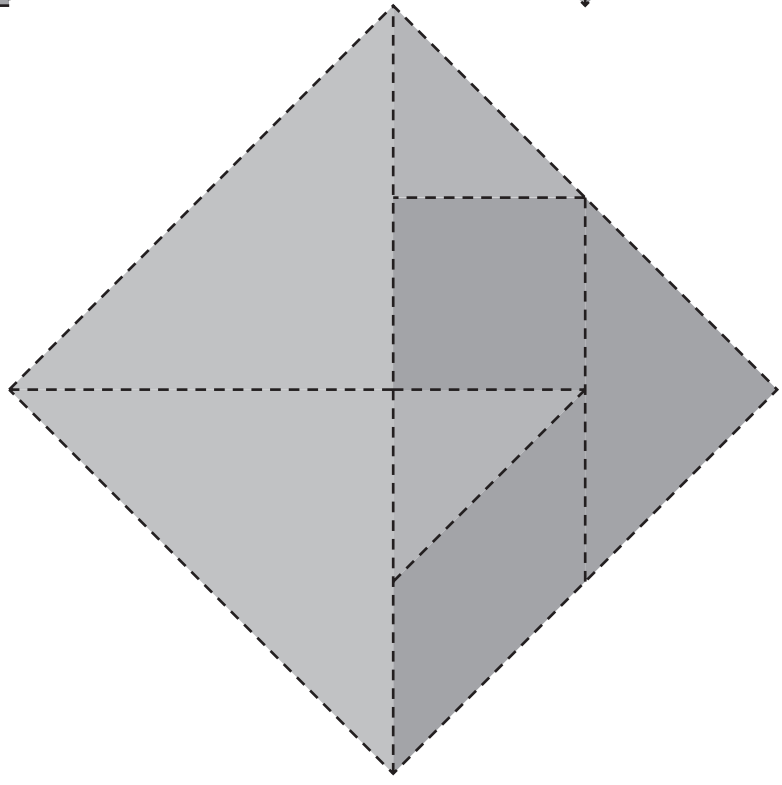
► Explore Tangrams

Cut one tangram figure into pieces along the dotted lines. Try to cut as carefully and as straight as you can. Save the other figures to use later.





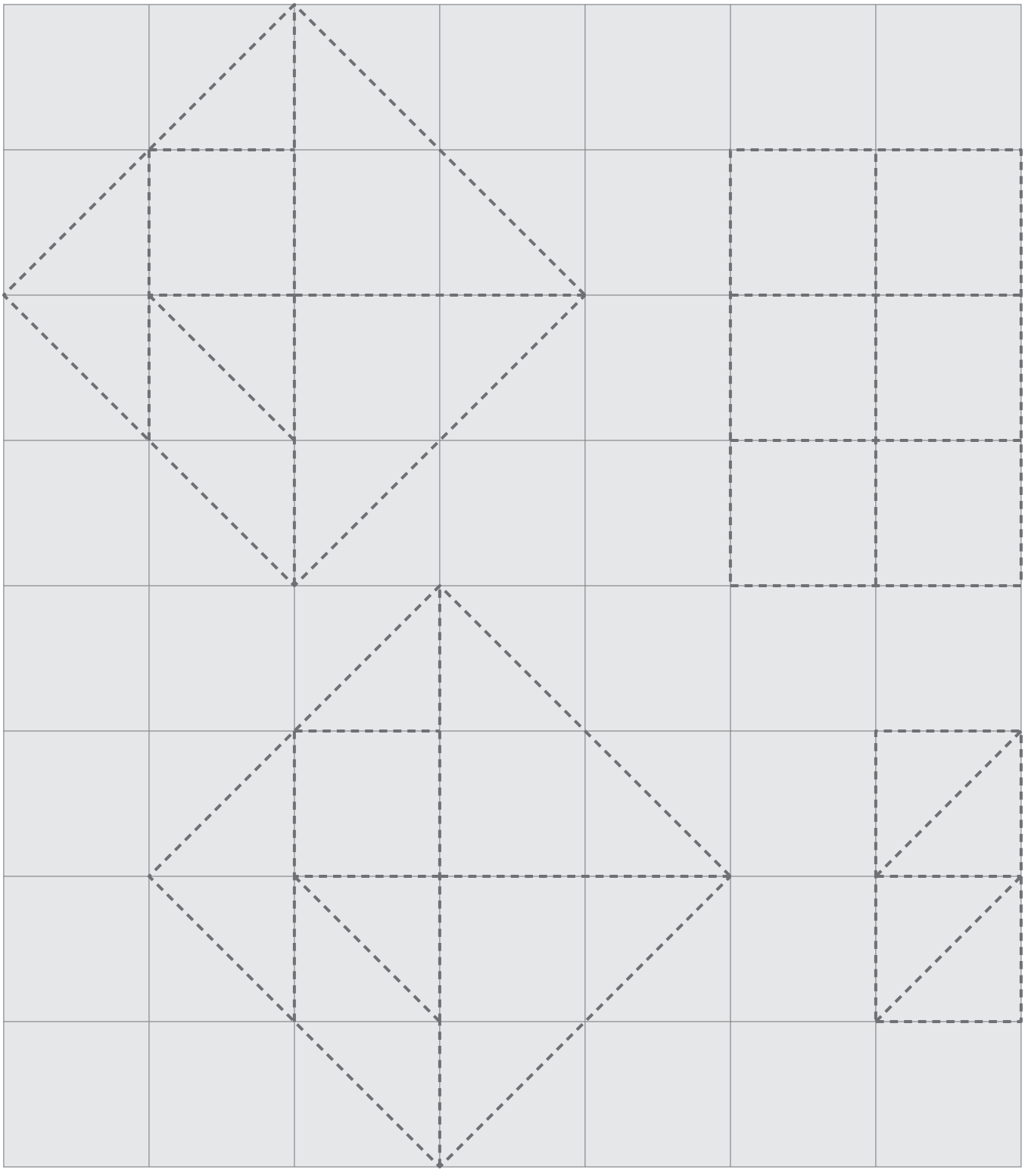




© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Explore Tangrams (continued)



© Houghton Mifflin Harcourt Publishing Company

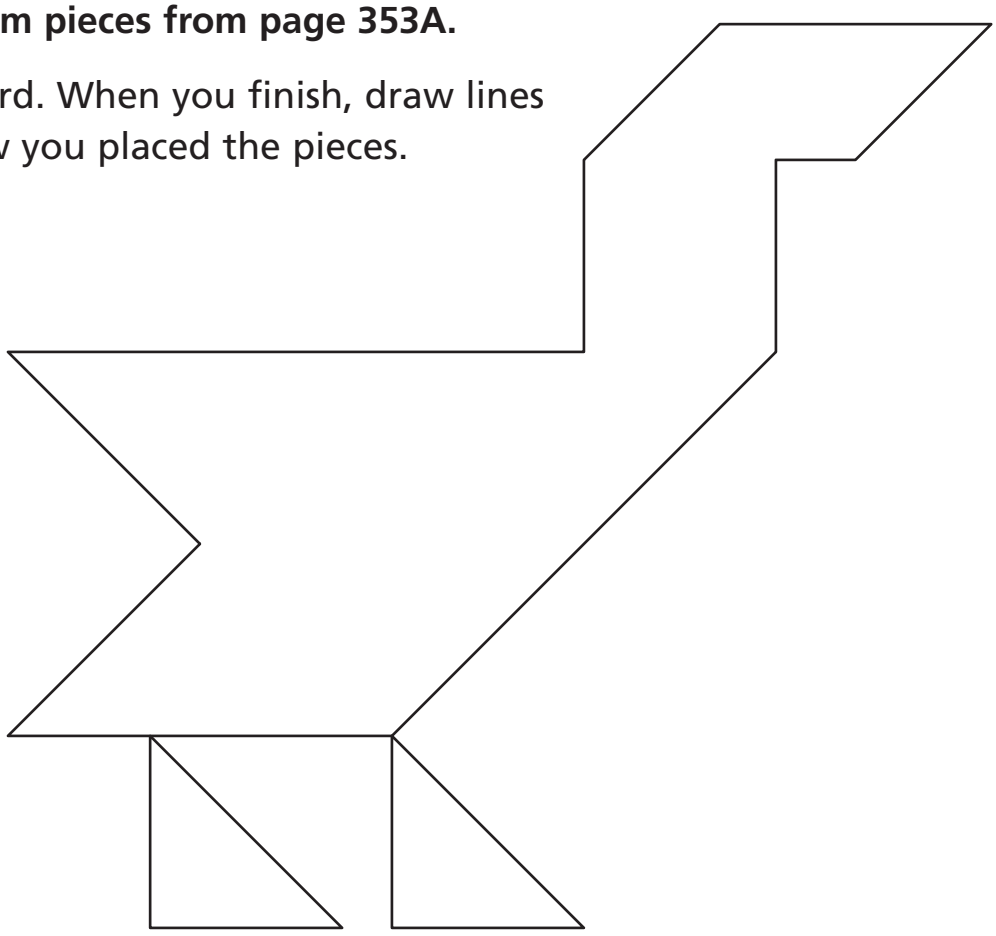
Name Date

CA CC Content Standards **3.MD.6**
Mathematical Practices **MP.7**

► Solve Tangram Puzzles

Use the tangram pieces from page 353A.

1. Make this bird. When you finish, draw lines to show how you placed the pieces.



2. Make this rectangle. Draw lines to show how you placed the pieces. Hint: You do not need all the pieces.

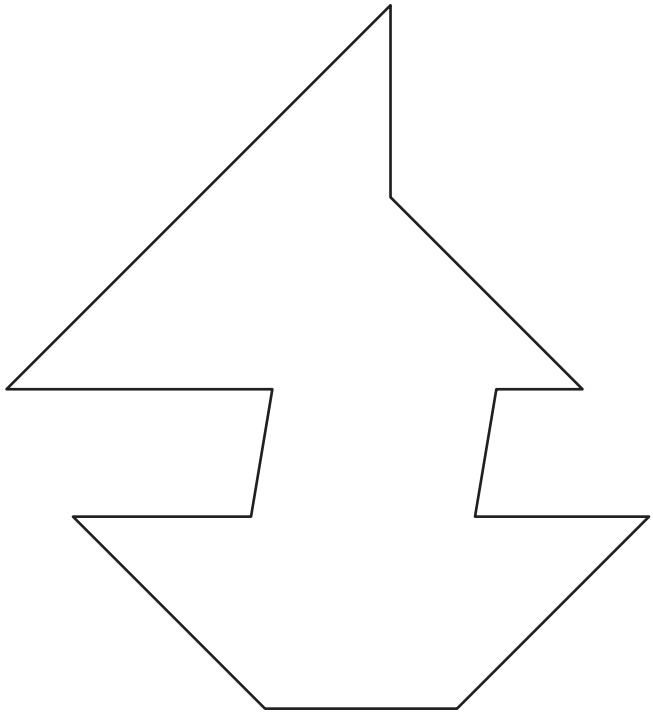
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

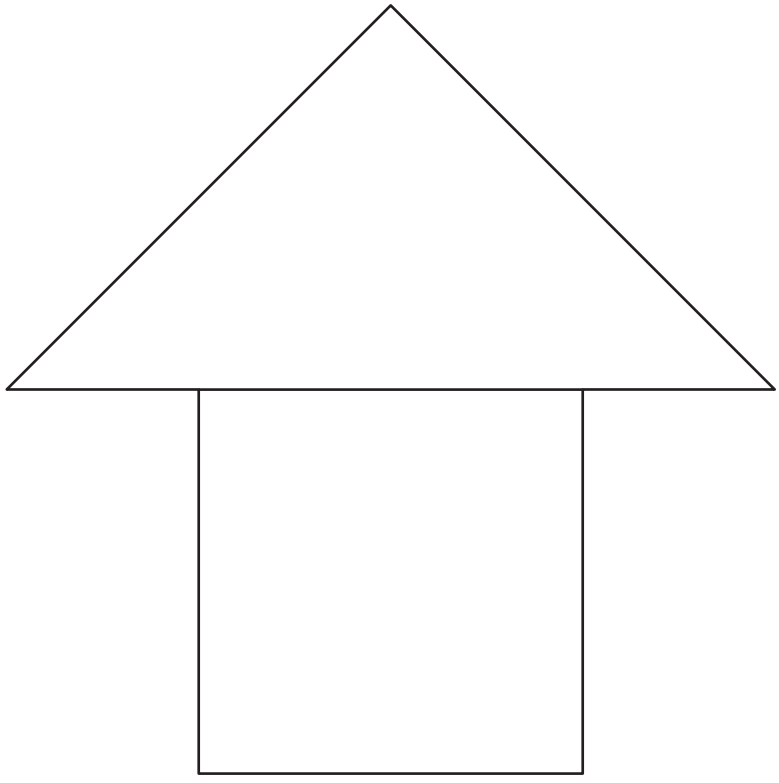
► Solve Tangram Puzzles (continued)

Use the tangram pieces. Draw lines to show how you placed the pieces.

3. Make this boat.



4. Make this tree.

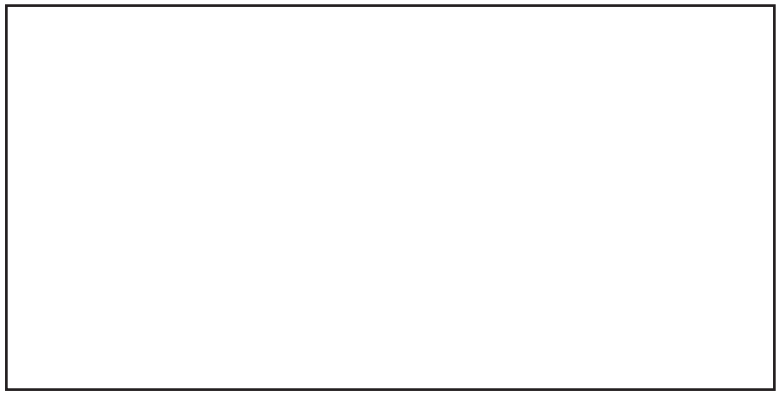


© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Use Tangram Pieces to Find Area

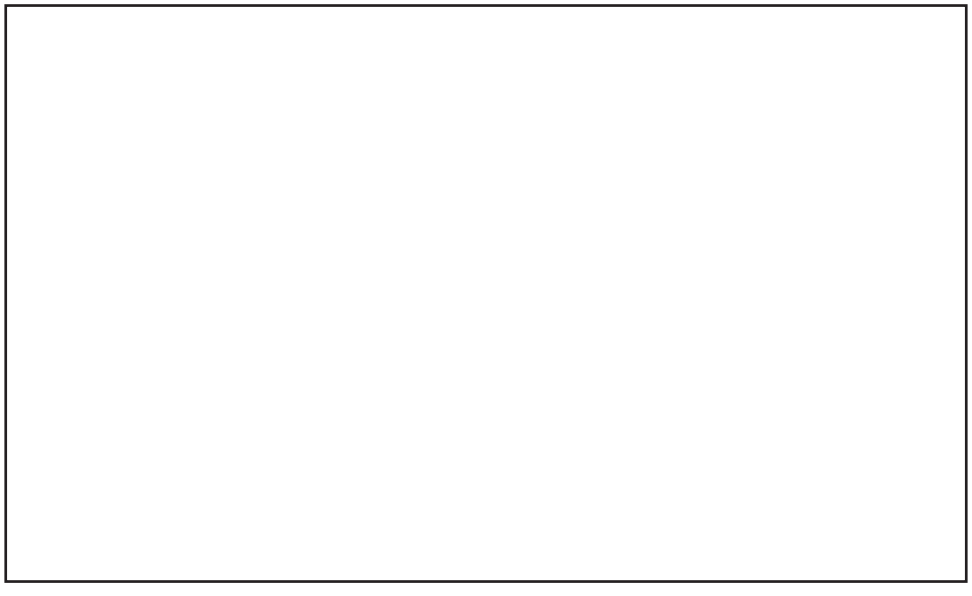
5. Use the seven tangram pieces. Cover this rectangle.



6. What is the area of the rectangle?

_____

7. Use any tangram pieces. Cover this rectangle.



8. What is the area of the rectangle?

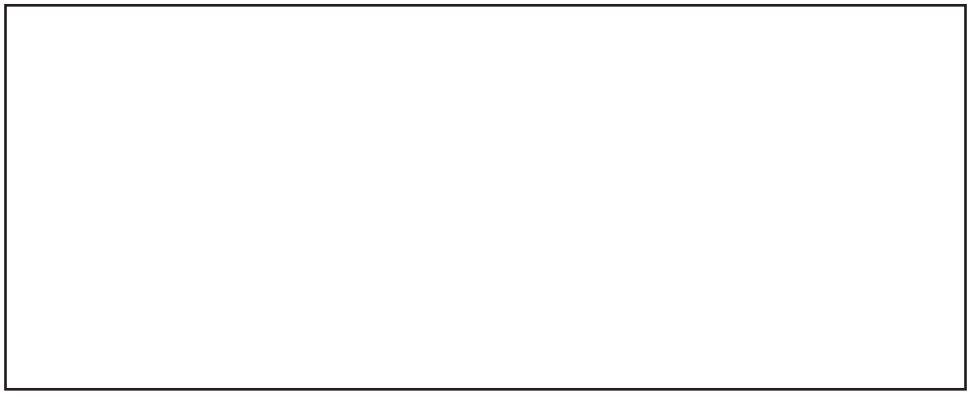
_____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

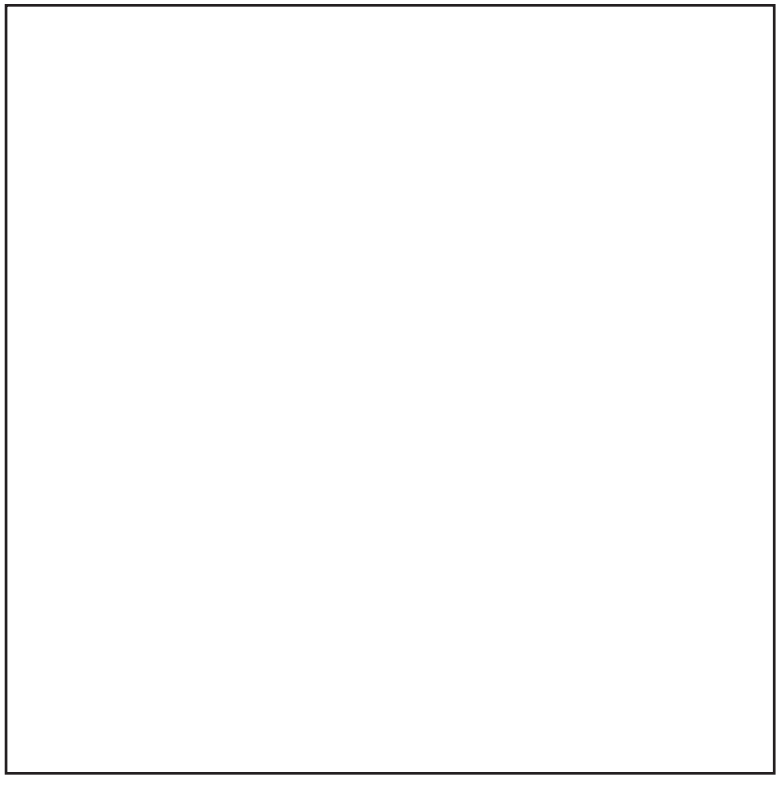
► Use Tangram Pieces to Find Area (continued)

Use any tangram pieces. Cover each rectangle.

9. 

What is the area of the rectangle?

_____

10. 

What is the area of the square?

_____

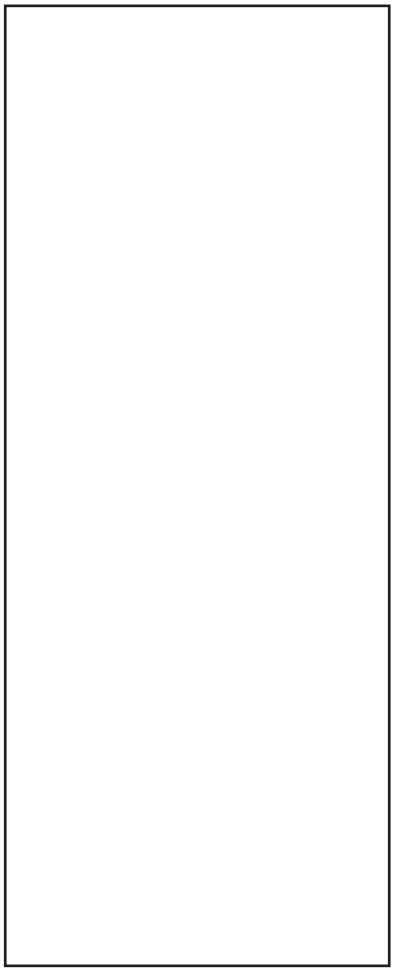
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Use Tangram Pieces to Find Area (continued)

Use any tangram pieces. Cover each figure.

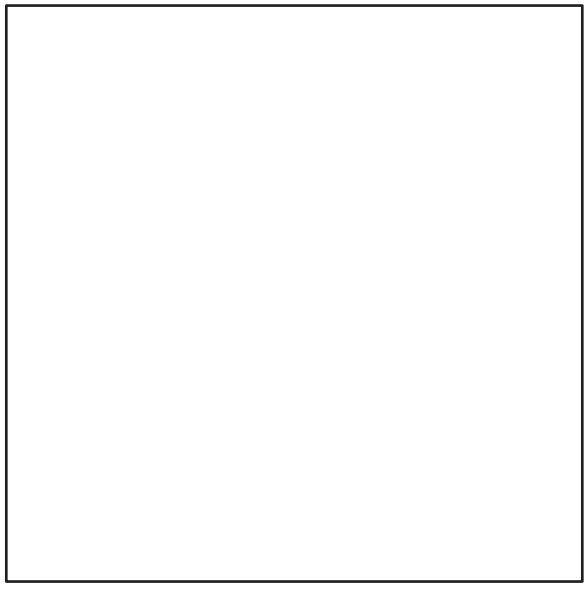
11.



What is the area of the rectangle?

_____

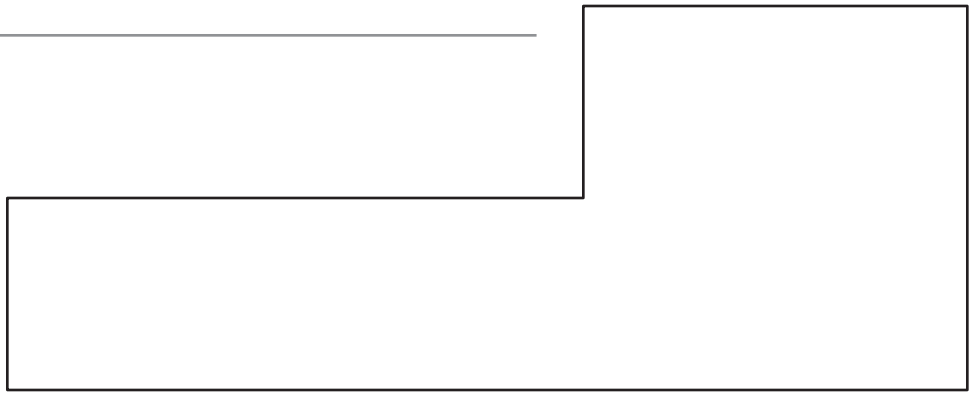
12.



What is the area of the square?

_____

13.



What is the area of the figure?

_____

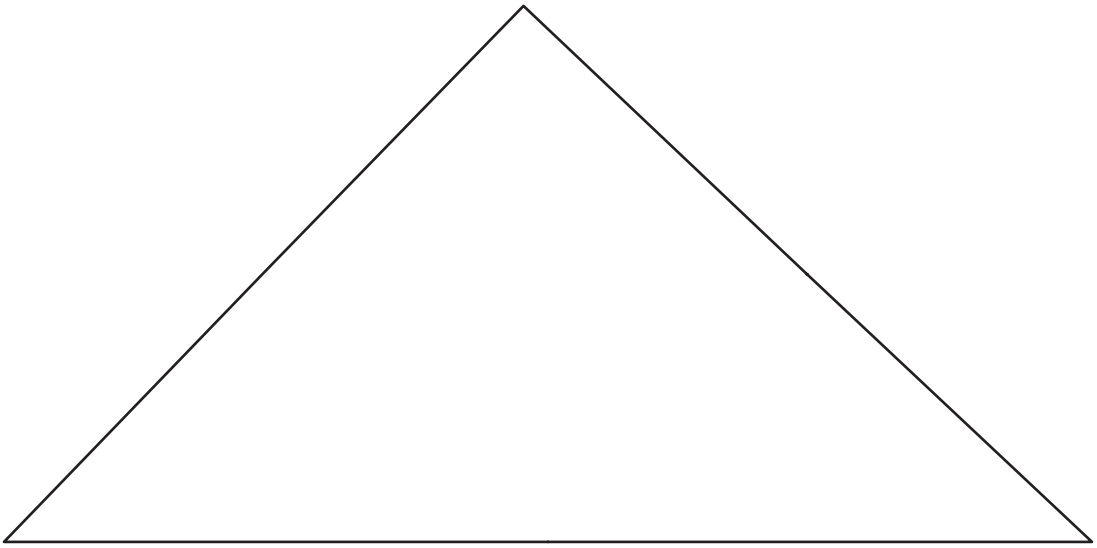
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Use Tangram Pieces to Find Area (continued)

Use any tangram pieces. Cover each figure.

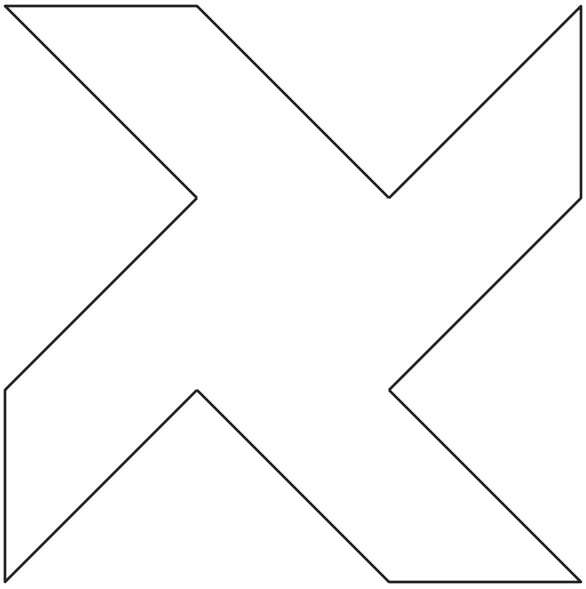
14.



What is the area of the triangle?

_____

15.



What is the area of the figure?

_____

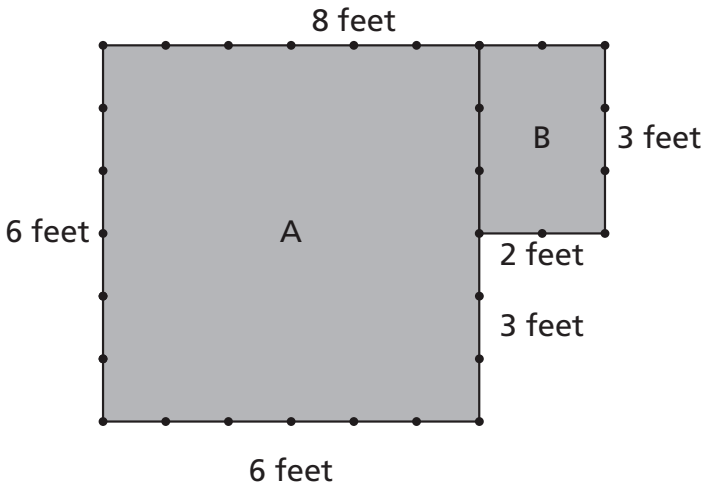
© Houghton Mifflin Harcourt Publishing Company

6-11
Class Activity

Name _____ Date _____

CA CC Content Standards **3.MD.7d, 3.MD.8**
Mathematical Practices **MP.1, MP.2, MP.4**

► Math and Gardening



Look at the drawing of Yoakim's garden.
It is divided into two quadrilaterals.

1. What is the perimeter of part A? _____

   What is the perimeter of part B? _____

2. What is the perimeter of the combined garden? _____

3. Will Yoakim need more fencing to enclose the two parts of his garden separately or to enclose the combined garden?

   _____

4. What is the area of part A? _____

   What is the area of part B? _____

5. What is the area of the combined garden?

   _____

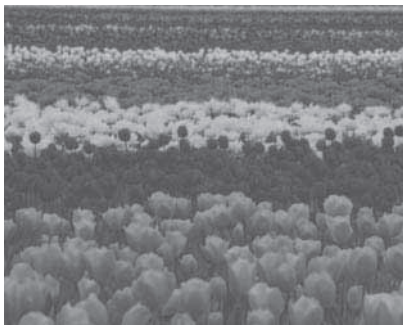
6. How does the total area of the two parts of the garden compare to the area of the combined garden?

   _____

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

► Design a Garden



Use the dot paper below to draw a different garden that has the same perimeter as Yoakim's combined garden. Beside it, draw a different garden that has the same area as Yoakim's garden.

1 ft

7. What is the area of your garden that has the same perimeter as Yoakim's garden?

_____

8. What is the perimeter of your garden that has the same area as Yoakim's garden?

_____

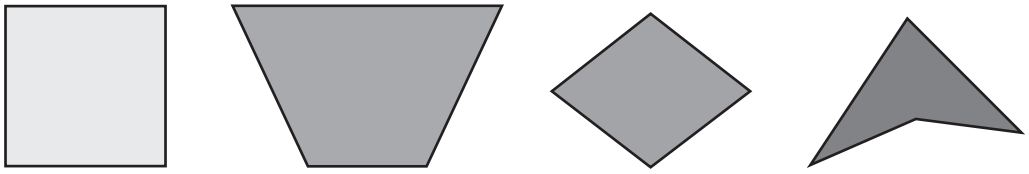
9. Use the centimeter dot paper at the right to draw separate areas within a garden where you would plant corn, beans, and tomatoes.

   The area for corn is 12 square feet.
   The area for beans is 25 square feet.
   The area for tomatoes is 20 square feet.

© Houghton Mifflin Harcourt Publishing Company • Image Credits: ©PHOTO 24/Getty Images

Name _____ Date _____

1. Write the letter for each shape in the box that describes the shape.



Ⓐ Ⓑ Ⓒ Ⓓ

Quadrilateral	Parallelogram	Four right angles	All sides the same length

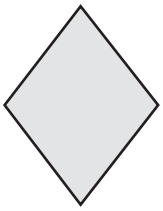
2. Draw two different parallelograms that are not squares or rhombuses.

How did you decide which figures to draw?

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

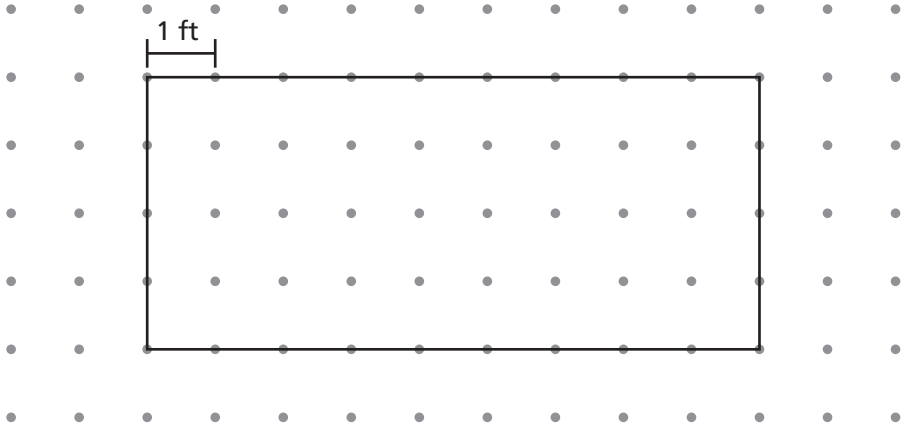
3. Emily draws this figure.



For numbers 3a–3e, choose Yes or No to tell whether the name describes the figure.

3a. quadrilateral	○ Yes	○ No
3b. rectangle	○ Yes	○ No
3c. parallelogram	○ Yes	○ No
3d. rhombus	○ Yes	○ No
3e. square	○ Yes	○ No

4. Mr. Gomez hangs a mural on the classroom wall. Find the perimeter and area of the mural.



Perimeter: _____ feet

Area: _____ square feet

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

5. Liana plants a vegetable garden in two sections. She plants corn in a section that is 5 meters long and 6 meters wide. She plants squash in a section that is 3 meters long and 6 meters wide.

Part A

Describe one way to find the area of the garden. Then find the area.

Area: _____ square meters

Part B

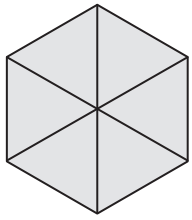
Draw a picture of the garden to show your answer is correct.

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

6. A park ranger has 32 feet of fencing to fence four sides of a rectangular recycling site. What is the greatest area of recycling site that the ranger can fence? Explain how you know.

7. This hexagon has been divided into triangles with equal areas. What part of the area of the hexagon is the area of each triangle?



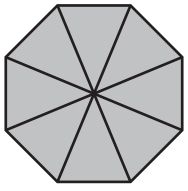
Ⓐ $\frac{1}{2}$

Ⓑ $\frac{1}{5}$

Ⓒ $\frac{1}{6}$

Ⓓ $\frac{6}{6}$

8. The octagon has been divided into triangles with equal areas. The area of each triangle is 2 square units.



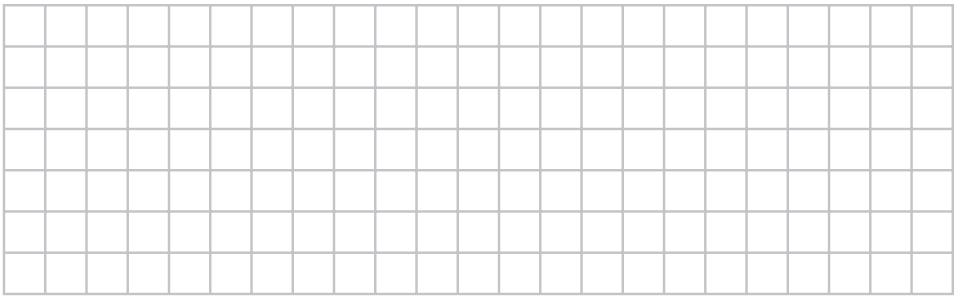
Choose the number that completes the sentence.

The area of the octagon is [2 / 8 / 16 / 18] square units.

© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

9. Steve makes a banner with an area of 8 square feet. On the grid, draw all possible rectangles with an area of 8 square feet and sides whose lengths are whole feet. Label the lengths of two adjacent sides of each rectangle. Label each rectangle with its perimeter.



Compare the perimeters of the banners. What do you notice about their shapes?

10. Zack uses 64 inches of wood to build a rectangular picture frame. The length of one side is 25 inches. What is the length of the other side?

What do you need to find to solve the problem? Choose the word that completes the sentence.

I need to find the | area
perimeter
side length | of the picture frame.

_____

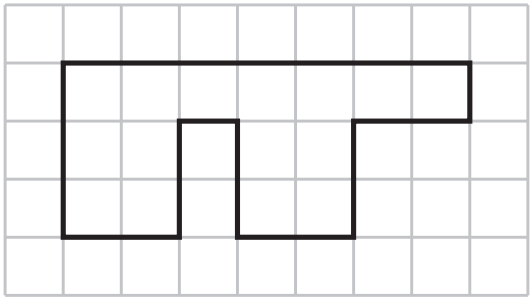
11. Hailey's patio is 9 feet long. If the area of the patio is 90 square feet, how wide is the patio?

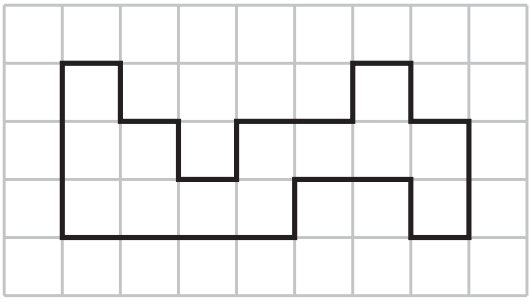
_____ feet

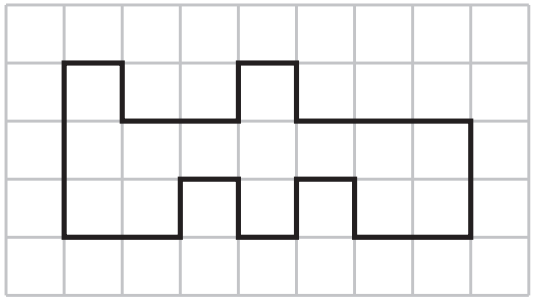
© Houghton Mifflin Harcourt Publishing Company

Name _____ Date _____

12. Draw a line from the figure to the area of the figure.





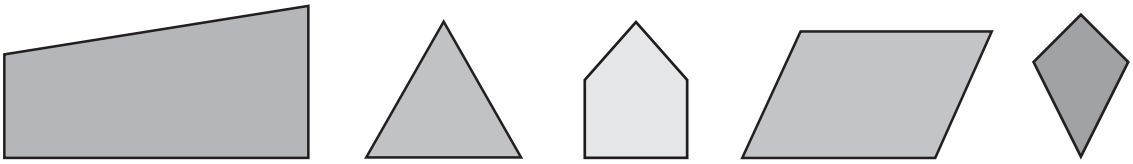


- 13 square units
- 14 square units
- 15 square units

13. Riki cuts two decagons out of cardboard. Then he glues yarn around the edges. How much yarn does Riki use if each edge of the decagon is 8 centimeters?

_____ centimeters

14. Select all the figures that are quadrilaterals.



○ ○ ○ ○ ○

© Houghton Mifflin Harcourt Publishing Company