Chapter 4

Name_____ Date _____

Areas of Polygons

Dear Family,

Does your student help you with projects in the house or yard, perhaps installing floor tiles or spreading grass seed? Many home projects involve finding areas so that you can purchase the correct amount of materials needed for the project. For example, how many bags of mulch would you need to buy to cover your raised garden bed? How many rolls of wallpaper do you need to cover the walls of a room?

You and your student can discuss how to find areas for projects you might tackle around your home. You can ask the student:

- "Suppose we covered a large section of wall with chalkboard paint. How would we find the area we wanted to paint?" Your student might answer, "Measure how high and how far across, then multiply." Then ask, "If one quart of paint covers 65 square feet of wall, how many quarts would we need to paint the blackboard section with 2 coats?" Your student would multiply the area by 2 and compare that number to 65. For example, a blackboard 8 feet wide and 5 feet high is 40 square feet, and 2 coats would be 80 square feet. One can of paint would not be enough.

- "Suppose we put new carpet in your bedroom. How many square feet would we need to buy? How would we figure this out?" Your student might answer, "Measure each wall of the room and multiply. If the room isn't a perfect rectangle, divide it into smaller pieces that are easier to work with."

Getting your student involved with home projects develops useful skills for helping around the house, finding a part-time job, and eventually being responsible for his or her own home.

Enjoy your time working together!

Capítulo 4   Áreas de polígonos

Estimada Familia:

¿Su estudiante lo ayuda con proyectos en la casa o el jardín, quizás instalando baldosas o esparciendo semillas de hierba? Muchos proyectos del hogar incluyen hallar los perímetros y áreas para que pueda comprar la cantidad correcta de materiales necesarios para el proyecto. Por ejemplo, ¿cuántas balsas de abono necesitaría comprar para cubrir su jardín elevado? ¿Cuántos rollos de empapelado necesita para cubrir las paredes de una habitación?

Usted y su estudiante pueden discutir cómo encontrar áreas para proyectos que podría iniciar en casa. Puede preguntar al estudiante:

- "Supongamos que cubrimos una gran sección de pared con pintura de pizarra. ¿Cómo hallaríamos el área que queremos pintar? Su estudiante podría responder: "Medimos la altura y la longitud, luego multiplicamos". Luego pregunte: "Si un cuarto de pintura cubre 65 pies cuadrados de pared, ¿cuántos cuartos necesitaríamos para pintar la sección de la pizarra con 2 capas?" Su estudiante debería multiplicar el area por 2 y comparar ese número con 65. Por ejemplo, una pizarra que mide 8 pies de ancho y 5 pies de alto tiene 40 pies cuadrados, y 2 capas serían para 80 pies cuadrados. Una lata de pintura no sería suficiente.

- "Supongamos que colocamos una alfombra nueva en su habitación. ¿Cuántos pies cuadrados tendríamos que comprar? ¿Cómo hallaríamos esto? Su estudiante podría responder: "Mide cada pared de la habitación y multiplica. Si la habitación no es un rectángulo perfecto, divídela en pedazos más pequeños que sean más fáciles de trabajar".

Si logra que su estudiante se involucre en proyectos caseros, éste desarrollará las habilidades útiles para ayudar en casa, encontrando un trabajo a tiempo parcial, y eventualmente siendo responsable de su propio hogar.

¡Disfruten su tiempo trabajando juntos!

Start Thinking!
For use before Activity 4.1

Consider the concepts of perimeter and area. How are they similar? How are they different?

Describe a real-life situation in which it is important to know the perimeter of something. Then describe a real-life situation in which it is important to know the area of something.

Warm Up
For use before Activity 4.1

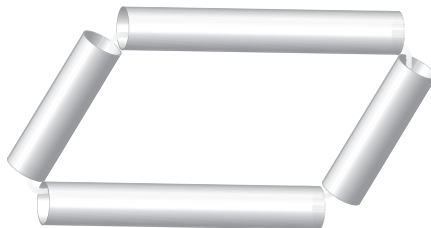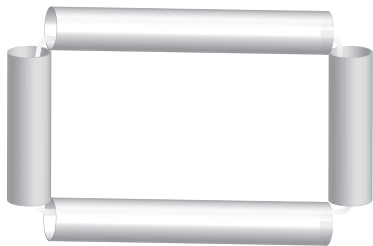**Find the area of the rectangle with the given length ℓ and width *w*.**

1. $\ell = 15$ m, $w = 10$ m

2. $\ell = 2$ ft, $w = 1.5$ ft

3. $\ell = 25$ in., $w = 25$ in.

4. $\ell = 12$ mm, $w = 8$ mm

5. $\ell = 18$ m, $w = 13$ m

6. $\ell = 29$ yd, $w = 17$ yd

You can join drinking straws with string to create a rectangle. If you squish the rectangle, you can form a parallelogram.

Does the parallelogram have the same *perimeter* as the rectangle? Does it have the same *area*? Explain why or why not.
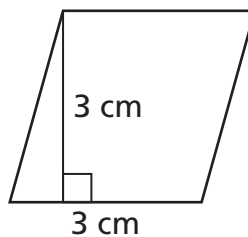
Find the area of the parallelogram.

1.

4 cm

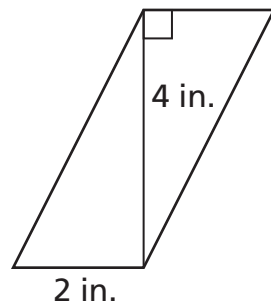6 cm

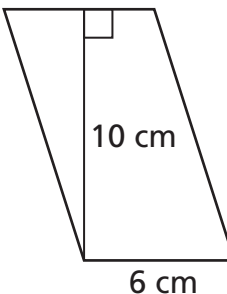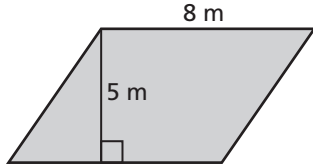**2.**

3 cm

3 cm

3.

4 in.

2 in.

4.

10 cm

6 cm
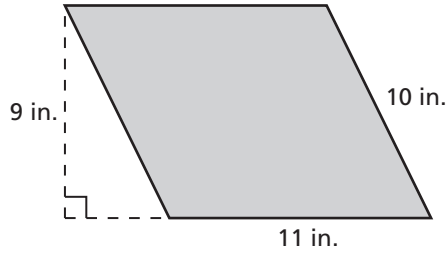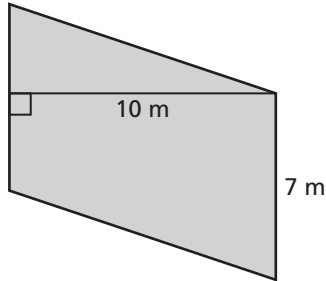
Name_____ Date_____

4.1 Practice A

Find the area of the parallelogram.

1.

8 m

5 m

2.

10 ft

15 ft

3.

9 in.

10 in.

11 in.

4.

10 m

7 m
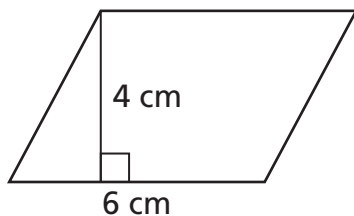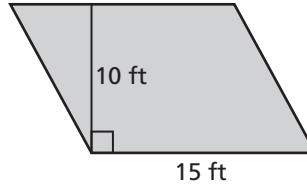
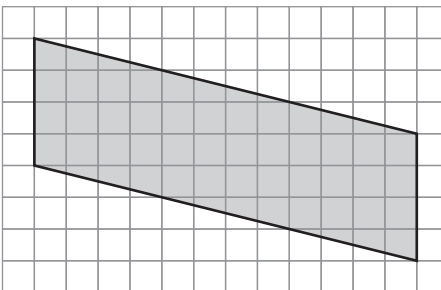**5.** Describe and correct the error in finding the area of the parallelogram.

X

6 in.

4 in.

4 in.

$$A = 4(6) = 24 \text{ in.}^2$$
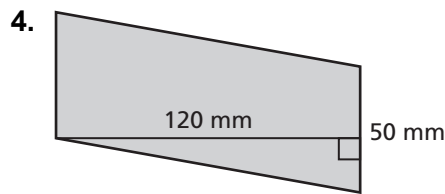
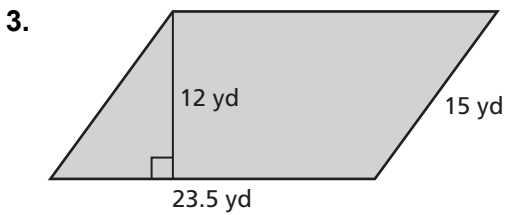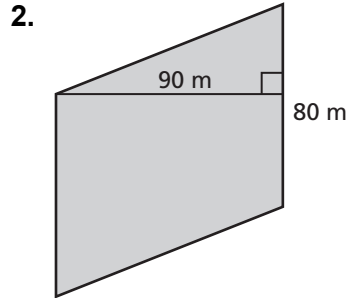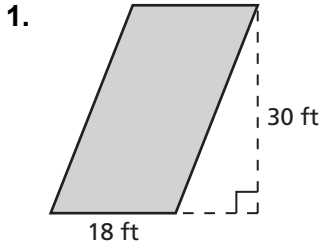**Find the area of the parallelogram.**

6.
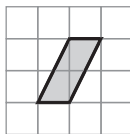
7.

8. A square has side length 6 inches. A parallelogram has a base of 6 inches. The area of the square is equal to the area of the parallelogram. What is the height of the parallelogram?
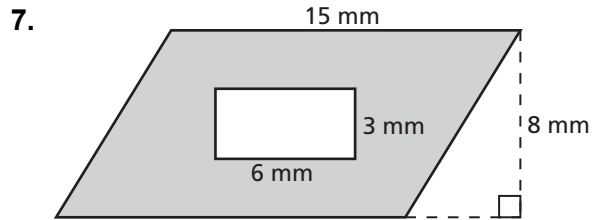
Name _____ Date _____

Find the area of the parallelogram.

1.

30 ft

18 ft

2.

90 m

80 m

3.

12 yd

15 yd

23.5 yd

4.

120 mm

50 mm

5. A billboard is in the shape of a parallelogram. The billboard has a base of 48 feet and a height of 14 feet. Find the area of the billboard.

Find the area of the shaded region.

6.

9 in.

1 in.

2 in.

4 in.

7.

15 mm

3 mm

6 mm

8 mm
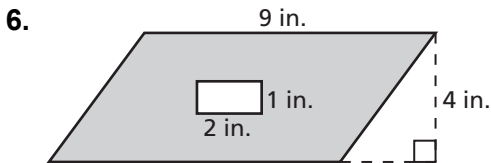
8. The mosaic tile design consists of one square and four parallelograms. Find the area of the design.

3 cm

9 cm

9 cm

3 cm

4 cm
4 cm

3 cm

9 cm

9 cm

3 cm

4.1 Enrichment and Extension
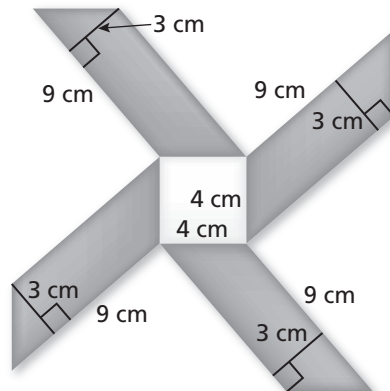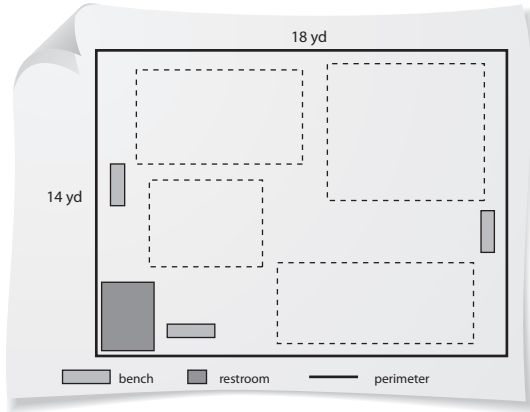
Playground Design

You have been hired to design the layout of a playground. The city needs to purchase land for the playground. They plan to enclose the playground using fencing. The city has previously purchased 64 yards of fencing to be used for this purpose. Use the blueprints to aid your planning.

18 yd

14 yd

bench　　restroom　　——— perimeter

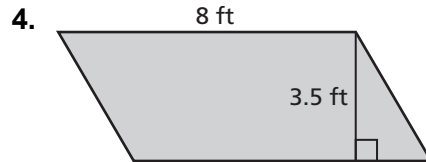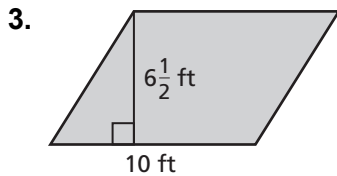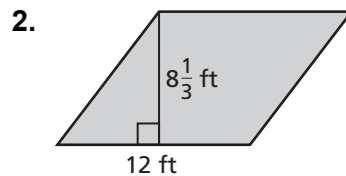**Use your knowledge of the areas of polygons to answer the questions.**

1. How many square yards of land should the city purchase in order to build the playground?

2. The playground plans include a sandbox with an area of 16 square yards. Provide three possible shapes, including dimensions, for the sandbox.

3. For safety reasons, the entire ground of the new playground must be covered in mulch. Mulch costs $25 per square yard. How much money should the city budget for the purchase of mulch?

4. A jungle gym will consume half of the total area of the playground. How much space will the jungle gym occupy?

5. The plans for the playground also include a swing set and a picnic area. A member of the city's planning committee suggests the purchase of a life-sized chess set. The chess set requires 60 square yards to set up. Should the city purchase the chess set? Explain your reasoning.

6. Use the information to sketch blueprints for the playground. Be sure to include each of the features described above.

Name _____ Date _____

4.1 Puzzle Time

What Is A Teacher's Favorite Ice Cream Flavor?

Write the letter of each answer in the box containing the exercise number.

Find the area of the parallelogram.

1.

5 ft

7 ft

2.

$8\frac{1}{3}$ ft

12 ft

3.

$6\frac{1}{2}$ ft

10 ft

4.

8 ft

3.5 ft

5.

20 ft

7.2 ft

6.

$2\frac{2}{7}$ ft

$5\frac{1}{4}$ ft
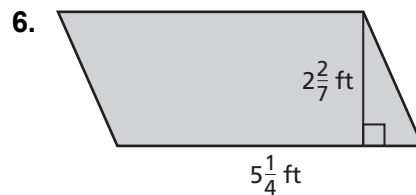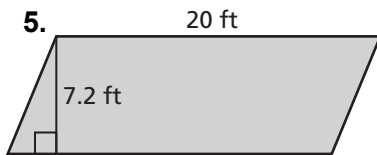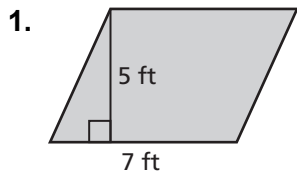
Answers
L. 100 ft^2
A. 144 ft^2
O. 35 ft^2
L. 12 ft^2
T. 50 ft^2
H. 39 ft^2
A. 65 ft^2
K. 108 ft^2
E. 28 ft^2
C. 44 ft

Find the area of the shaded region.

7.

8 ft

6 ft   3 ft

3 ft

8.

10 ft

4 ft   7 ft

5 ft
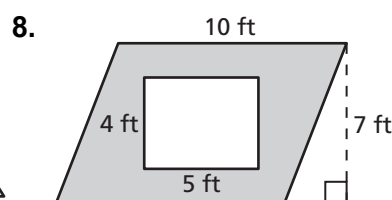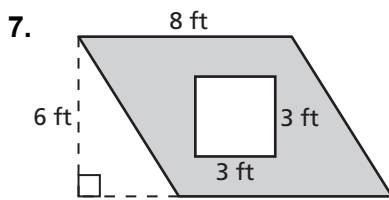
9. A badminton court has an area of 880 square feet. The width of the court is 20 feet. What is the length of the badminton court?

10. You are playing the game Four Square on a 12-foot by 12-foot court. Your square is 6-foot by 6-foot. What is the area of the Four Square court not including your square?

9	7	3	6	10		1		2	5	8	4
						_		_			

Activity 4.2

Start Thinking!
For use before Activity 4.2

You are planning on tiling your bathroom floor using triangular tiles. How can you figure out how many tiles you need to order?

Activity 4.2

Warm Up
For use before Activity 4.2

Simplify.

1. $\frac{1}{2}(9)(4)$

2. $\frac{1}{2}(28)(1)$

3. $\frac{1}{2}(22)(2)$

4. $\frac{1}{2}(2)(23)$

5. $\frac{1}{2}(6)(3)$

6. $\frac{1}{2}(6)(6)$

How is finding the area of a triangle similar to finding the area of a parallelogram? How is it different?
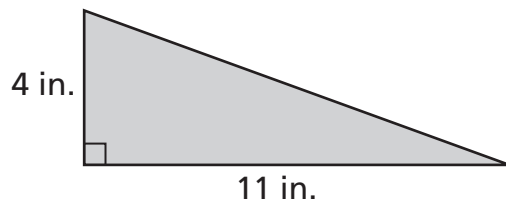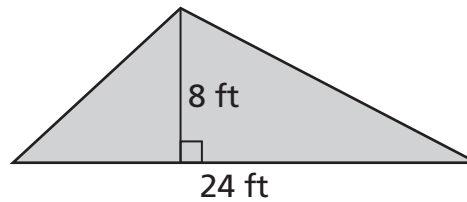
Find the area of the triangle.

1.

4 in.

11 in.

2.

8 ft

24 ft

3.

10 m

8 m

4.

1 cm

6 cm

5.

4 in.

4 in.

6.

9 mm

22 mm

Name_____ Date _____

Find the area of the triangle.

1.

4 ft

9 ft

2.

14 cm

5 cm

3.

7 m

20 m

4.

5 in.

24 in.
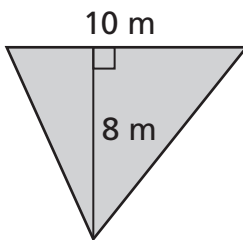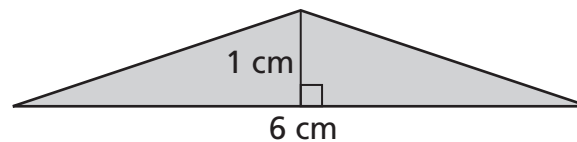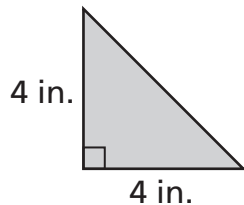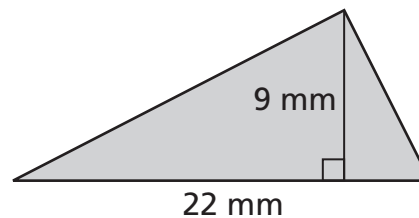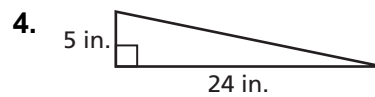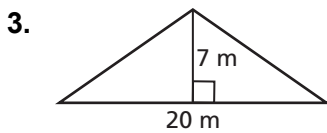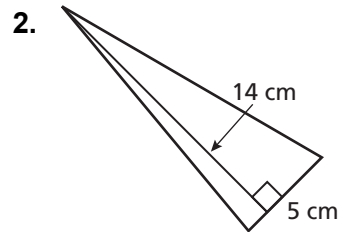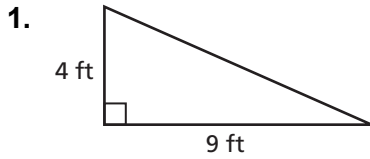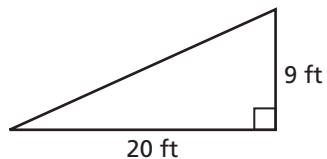
5. Describe and correct the error in finding the area of the triangle.

9 ft

20 ft

$$A = 20(9) = 180 \text{ ft}^2$$

6. Find the area of each triangle. Are the areas the same? Explain.

6 mm

12 mm

12 mm

6 mm
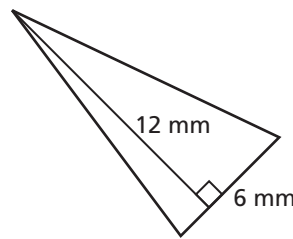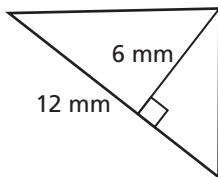
7. Triangle A and Triangle B have the same base. The height of Triangle B is twice the height of Triangle A. How many times greater is the area of Triangle B?

Name _____ Date _____

Find the area of the triangle.

1.

42 m 5 m

2.

50 in.

60 in.

3.

10 ft

45 ft

4.

14 cm

14 cm
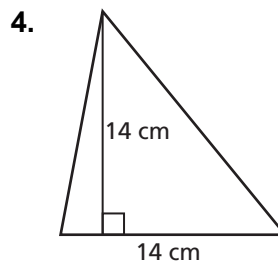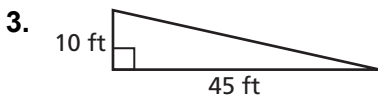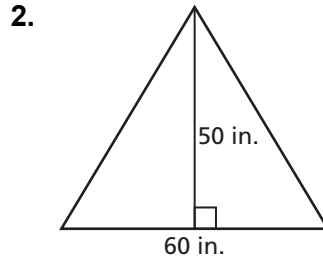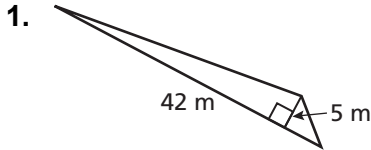
5. A sign is in the shape of a triangle with a base of 12 inches and a height of 8 inches. Find the area of the sign.

Find the area of the triangle.

6.

9 m

16 m

7.

19 in.

22 in.
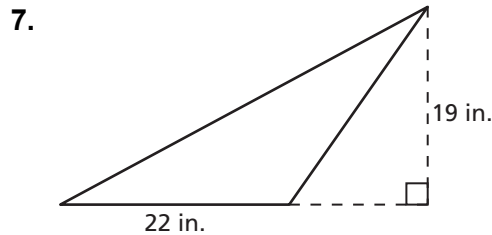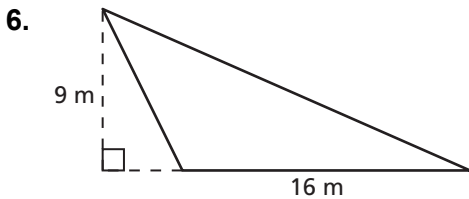
8. The shaded triangle in the sign has a base of 750 millimeters and a height of 650 millimeters. The white triangle in the sign has a base of 375 millimeters and a height of 325 millimeters. Find the area of the shaded portion of the sign.

YIELD
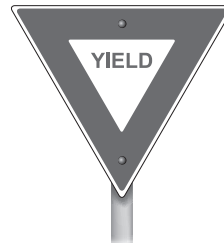
9. You live on a triangular piece of land with a base of 121 yards and a height of 80 yards. One acre of land is equal to 4840 square yards. Find the area of your piece of land in acres.

Name_____ Date _____

4.2 Enrichment and Extension

Goalie's Trapezoid

National Hockey League games are played on hockey rinks with specific
dimensions. The rink is roughly the shape of a rectangle, with rounded corners.
The area in the center of the rink is known as the neutral zone. The area behind
each goal is called the goalie's trapezoid. This is the only area in which the
goalie is allowed to play the puck during a hockey game.
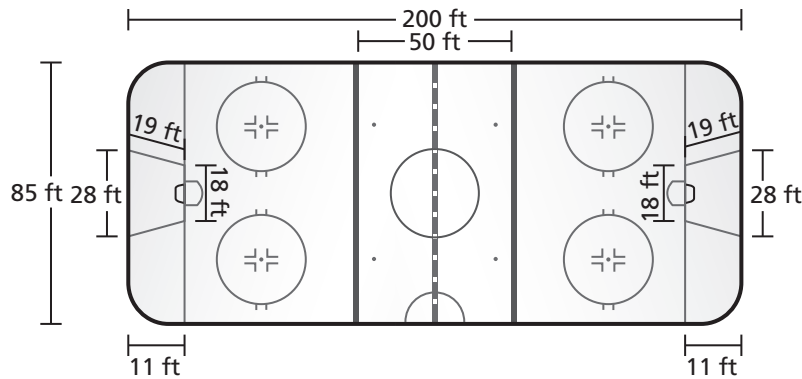
In Exercises 1–8, use the figure.

1. Assuming that the shape of the rink is approximately rectangular, what is
   the area of the ice?

2. Would the actual area of a hockey rink be greater than, less than, or equal
   to the area you calculated in Exercise 1? Explain your reasoning.

3. What is the area of the neutral zone?

4. Would the actual area of the neutral zone be greater than, less than, or equal
   to the area you calculated in Exercise 3? Explain your reasoning.

5. Each goalie's trapezoid is outlined using regulation red paint. What is the
   total distance around the outside of the trapezoid?

6. How much area does each goalie's trapezoid occupy? $\Big[$ Hint: The area A of
   of a trapezoid is one-half the product of its height h and the sum of its bases
   b_1 and b_2; $A = \dfrac{1}{2}h(b_1 + b_2).\Big]$

7. How much area do both trapezoids occupy?

8. About how many times larger is the neutral zone than one goalie's trapezoid?

4.2 Puzzle Time

Did You Hear About The…

A	B	C	D	E	F
G	H	I	J		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

16 ft² WITH
14 ft² PET
35 ft² WATCH
12 ft² THAT
75 ft² AND
29 ft² TAIL
28 ft² SWALLOWED
22 ft² UP
154 ft² LEASH

Find the area of a triangle.

A.

9 ft
6 ft

B.

4 ft
6 ft

C.

8 ft
7 ft

D.

3 ft
10 ft

E.

5 ft
14 ft

F.

10 ft
15 ft

G.

13 ft
20 ft

H.

4 ft 11 ft
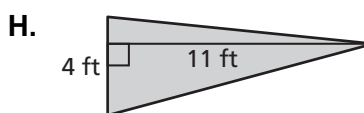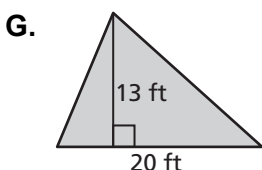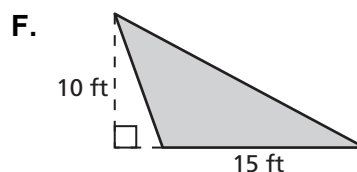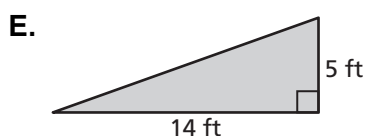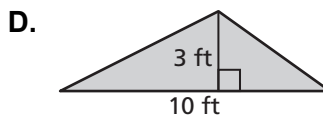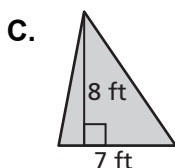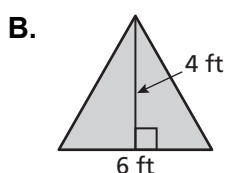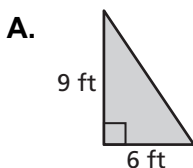
130 ft² ENDED
32 ft² CAT
168 ft² TICKS
82 ft² FLEAS
15 ft² A
140 ft² WAS
54 ft² BARKED
60 ft² WHO
27 ft² DOG

I. Your neighbor adds a triangular section to his driveway with a base of 4 feet and a height of 8 feet. What is the area of the new section of driveway?

J. A triangular flower bed has a base of 12 feet and a height of 28 feet. What is the area of the flower bed?

Find three examples of trapezoids that you have come across in your day-to-day life. Would it be helpful to know the area of these trapezoids?

Activity 4.3 **Warm Up**
For use before Activity 4.3

Find the area of the figure.

1. triangle with $b = 3$ and $h = 6$

2. square with $s = 12$

3. parallelogram with $b = 5$ and $h = 20$

4. rectangle with $b = 4$ and $h = 11$

5. triangle with $b = 8$ and $h = 5$

6. square with $s = 21$

Start Thinking!
For use before Lesson 4.3

Another way to derive the formula for the area of a trapezoid is to cut the trapezoid in half along a line parallel to the bases. Then use the two pieces to form a parallelogram.
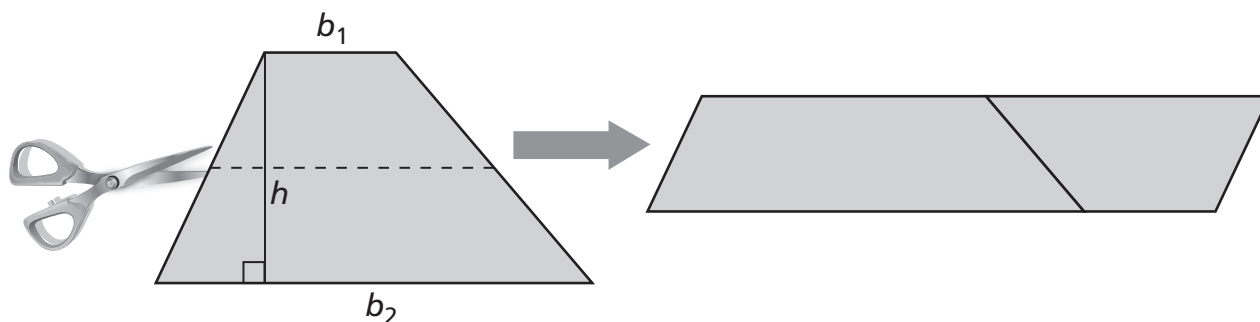
Write expressions for the height, base, and area of the parallelogram formed from the two pieces of the trapezoid.

What is the area of the original trapezoid?

Which method do you prefer to use to derive the formula for the area of a trapezoid: the method in Activity 4.3 or the method above? Why?

Lesson 4.3

Warm Up
For use before Lesson 4.3

Find the area of the trapezoid.

1. $b_1 = 4, b_2 = 6, h = 4$ **2.** $b_1 = 8, b_2 = 12, h = 3$

3. $b_1 = 3, b_2 = 5, h = 2$ **4.** $b_1 = 11, b_2 = 2, h = 10$

5. $b_1 = 6, b_2 = 12, h = 1$ **6.** $b_1 = 7, b_2 = 3, h = 5$

Name_____ Date _____

4.3 Practice A
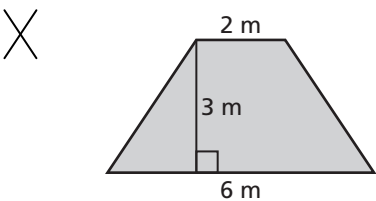
Find the area of the trapezoid.

1. $b_1 = 10,\ b_2 = 7,\ h = 4$

2. $b_1 = 3,\ b_2 = 8,\ h = 6$

3.

6 in.

5 in.

12 in.

4.

5 m

8 m

11 m
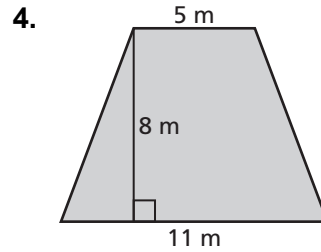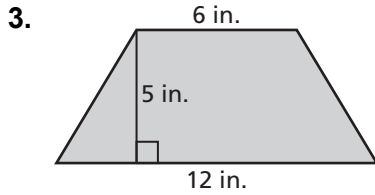
5. Describe and correct the error in finding the area of the trapezoid.

2 m

3 m

6 m

$$A = \frac{1}{2}(3)(2)(6) = 18 \text{ m}^2$$

Find the area of the trapezoid.

6.

7.
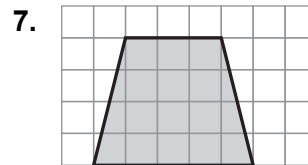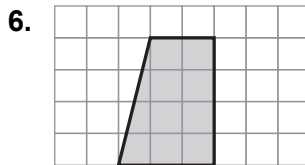
8. The triangle and the trapezoid have the same area. What is the length ℓ of the triangle?

7 cm

ℓ

10 cm

7 cm

12 cm

Name _____ Date _____

Find the area of the trapezoid.

1.

17 yd

20 yd

33 yd

2.

3.6 cm

7 cm

6.4 cm
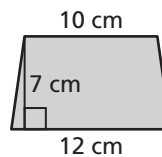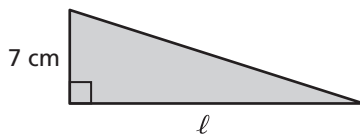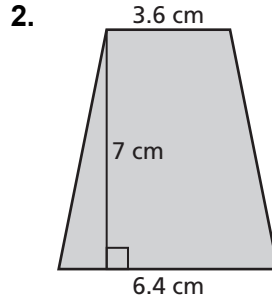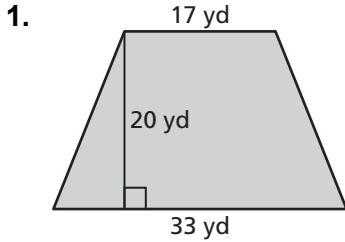
Find the area of a trapezoid with height h and bases b_1 and b_2.

3. $h = 14$ cm

$b_1 = 5$ cm

$b_2 = 11$ cm

4. $h = 6$ ft

$b_1 = 6.5$ ft

$b_2 = 2.5$ ft

5. $h = 22$ m

$b_1 = 9.3$ m

$b_2 = 10.7$ m

6. The trapezoid consists of a triangle and a parallelogram. The area of the trapezoid is 48 square feet. Find the length of the base of the triangle.

$\vdash b \dashv$

4 ft

4 ft

10 ft
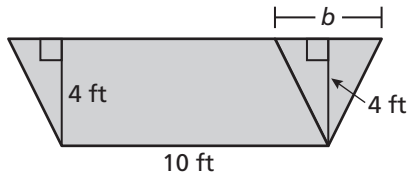
7. The area of the trapezoid is 40 square millimeters.

a. Find two possible values for each base length.

b. Is it possible for b_2 to equal 9 millimeters? Explain.

b_1 mm

10 mm

b_2 mm
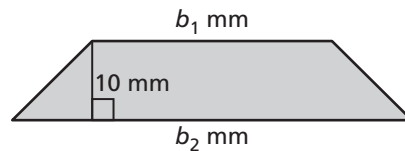
4.3 Enrichment and Extension

Flags

The shape of the flag is referred to as a swallowtail shape. Its unique shape gives the flag some distinct characteristics.
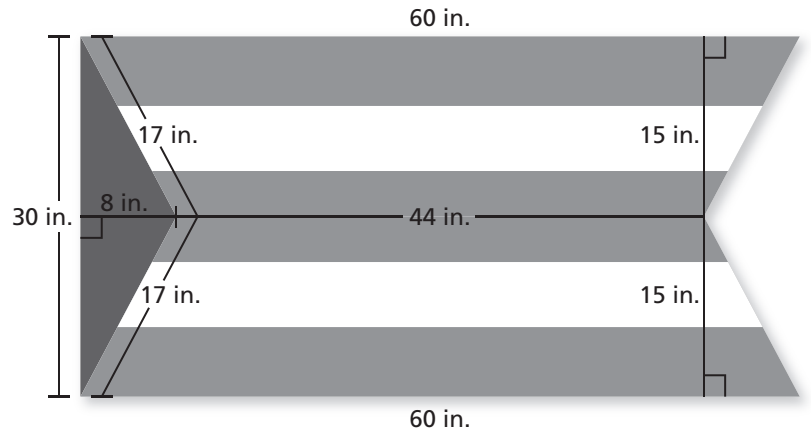
In Exercises 1–4, use the figure.

1. Which polygons compose the shape of the flag?

2. What is the combined area of both trapezoids?

3. Is the triangular portion of the flag an equilateral, isosceles, or scalene triangle? Explain your reasoning.

4. The flag is hanging on a wall. How much of the wall is covered by the flag?

A newly formed group has constructed a flag to help others identify their organization.
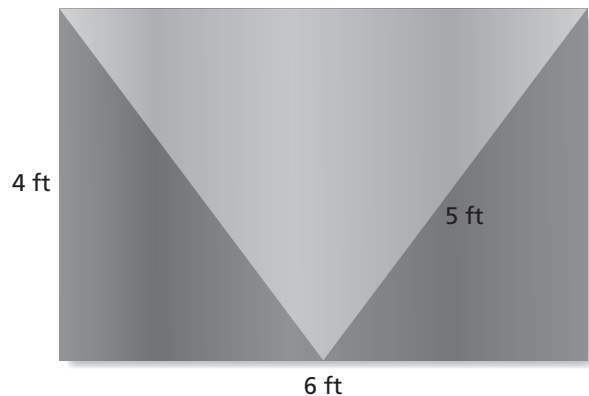
In Exercises 5–9, use the figure.

5. Which polygons compose the shape of the flag?

6. The lengths of the bases of the triangles on the right and left of the flag are equal. How much area is contained in both triangles?

7. What is the area of the large triangular region at the top of the flag?

8. What is the sum of the areas of the three large triangles contained within the flag?

9. Suppose you had found the area of the rectangular flag first. What do you notice about the area of the rectangular flag and your answer to Exercise 8? What conclusion can you draw?

Name _____ Date _____

Did You Hear About…

A	B	C	D	E	F
G	H	I	J	K	

Complete each exercise. Find the answer in the answer column. Write the word
under the answer in the box containing the exercise letter.

42 in.² **TO**	
7 in.² **WAS**	
70 in.² **KEPT**	
49 in.² **DRIVE**	
84 in.² **WASN'T**	
54 in.² **HARD**	
60 in.² **KEYS**	
15 in.² **COMPUTER**	
80 in.² **BECAUSE**	

Find the area of the trapezoid.

A. $b_1 = 8$ in.; $b_2 = 12$ in.; $h = 5$ in.

B. $b_1 = 3$ in.; $b_2 = 7$ in.; $h = 3$ in.

C. $b_1 = 10$ in.; $b_2 = 14$ in.; $h = 8$ in.

D. $b_1 = 7$ in.; $b_2 = 17$ in.; $h = 7$ in.

E. 7 in. / 4 in. / 9 in.

F. 4 in. / 6 in. / 10 in.

G. 6 in. / 7 in. / 8 in.

H. 9 in. / 8 in. / 11 in.

I. 4 in. / 2 in. / 5 in.

J. 15 in. / 4 in. / 20 in.
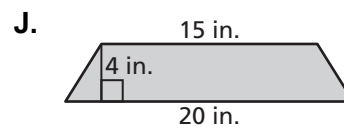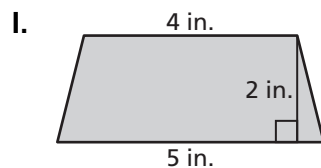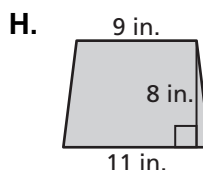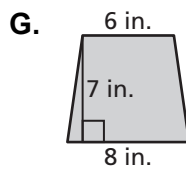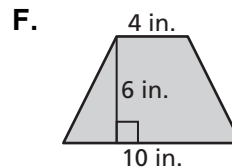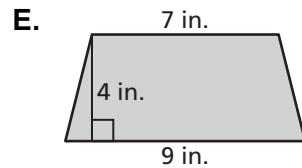
9 in.² **IT**	
96 in.² **THAT**	
100 in.² **DID**	
50 in.² **THE**	
90 in.² **WOULD**	
21 in.² **MEMORY**	
30 in.² **CRASHING**	
18 in.² **BOOTING**	
32 in.² **ALLOWED**	

K. A rearview mirror is in the shape of a trapezoid that is
11 inches long across the bottom, 9 inches long across the
top, and 3 inches high. What is the area of the rearview
mirror?

Start Thinking!

Find at least three examples of figures that are composed of more than one shape that you come across in your day-to-day life. For each figure, would it be helpful to know the area?

Warm Up

Find the area of the figure.

1. triangle with $b = 5$ and $h = 12$

2. rectangle with $b = 4$ and $h = 11$

3. square with $s = 8$

4. parallelogram with $b = 7$ and $h = 14$

5. trapezoid with $b_1 = 10$, $b_2 = 3$, $h = 6$

6. trapezoid with $b_1 = 8$, $b_2 = 14$, $h = 20$

Name _____ Date _____

Find the area of the shaded figure.

1.

2.

3.

4.

Find the area of the figure.

5.

2 ft

10 ft

3 ft

6 ft

6.

4 m

2 m

├─ 4 m ─┼─ 4 m ─┤

7.

15 yd

7 yd

5 yd

8. 1 mm

8 mm

6 mm

2 mm

Explain to a partner how to plot the points
$P(4, 10)$ and $Q(9, 3)$ in a coordinate plane.

Plot and label each point in the same coordinate plane.

1. $A(1, 3)$ **2.** $B(5, 3)$

3. $C(0, 4)$ **4.** $D(2, 6)$

5. $E(4, 2)$ **6.** $F(5, 0)$

The points in the coordinate plane below are three vertices of a rectangle. What is the fourth vertex? What is the area of the rectangle?
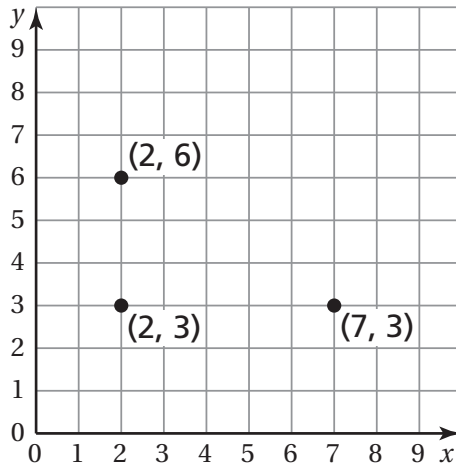
Plot and label each pair of points in a coordinate plane. Find the length of the line segment connecting the points.

1. $X(1, 2)$, $Y(1, 4)$

2. $D(3, 7)$, $E(7, 7)$

3. $M(5, 5)$, $N(5, 0)$

4. $G(1, 1)$, $H(8, 1)$

4.4 Practice A

Find and label each pair of points in a coordinate plane. Find the length of the line segment connecting the points.

1. $F(1, 0), G(6, 0)$

2. $J(3, 1), K(3, 3)$

3. $W(5, 2), X(7, 2)$

Draw the polygon with the given vertices in a coordinate plane.

4. $A(2, 5), B(0, 0), C(3, 2)$

5. $D(3, 1), E\left(2, \dfrac{1}{2}\right), F(6, 2)$

6. $G(4, 1), H(9, 1), J(9, 3), K(4, 3)$

7. $L\left(4, 2\dfrac{1}{2}\right), M(4, 6), P(7, 6), N\left(7, 2\dfrac{1}{2}\right),$

Find the perimeter and area of the polygon with the given vertices.

8. $E(0, 0), F(7, 0), G(7, 2), H(0, 2)$

9. $P(4, 5), Q(4, 9), R(8, 9), S(8, 5)$

10. You design a courtyard using a coordinate plane. You plot the vertices of the courtyard at $F(1, 0), G(5, 8),$ and $H(1, 8)$. The coordinates are measured in yards.

   a. What is the shape of the courtyard?

   b. What is the area of the courtyard?

Draw a polygon with the given conditions in a coordinate plane.

11. a rectangle with a perimeter of 20 units

12. a square with a perimeter of 16 units

13. a square with an area of 25 square units

14. a triangle with an area of 6 square units

15. The coordinate plane shows three vertices of a parallelogram. Find two possible points that could represent the fourth vertex.
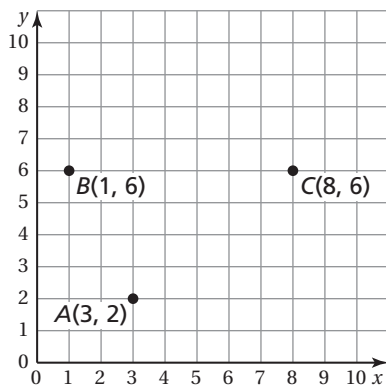
Name _____ Date _____

Plot and label each pair of points in a coordinate plane. Find the length of the line segment connecting the points.

1. $D(5, 4), E(5, 10)$ **2.** $L(2, 3), M(8, 3)$ **3.** $U(2, 5), V(9, 5)$

Draw the polygon with the given vertices in a coordinate plane.

4. $A\left(\dfrac{1}{2}, 3\right), B(2, 5), C(4, 4)$

5. $D(2, 4), E\left(2, 5\dfrac{1}{2}\right), F\left(7, 5\dfrac{1}{2}\right), G(7, 4)$

6. $J(5, 3), K(8, 3), L(8, 1), M(5, 1)$

7. $M\left(1\dfrac{1}{2}, 5\right), N(4, 7), P(7, 3), Q(7, 1), R(4, 0)$

Find the perimeter and area of the polygon with the given vertices.

8. $C(4, 1), D(4, 6), E(9, 6), F(9, 1)$ **9.** $S(8, 4), T(4, 4), U(4, 9), V(8, 9)$

10. Describe and correct the error in drawing a rectangle with vertices $E(1, 2), F(6, 2), G(6, 4), H(1, 4)$.
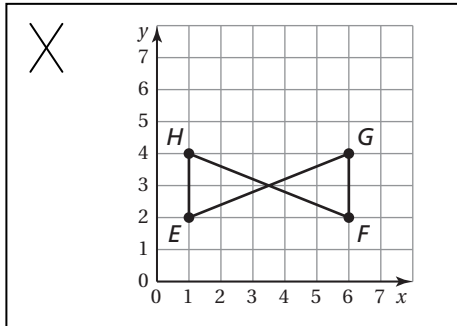
Draw a polygon with the given conditions in a coordinate plane.

11. a rectangle with a perimeter of 24 units

12. a triangle with an area of 21 square units

13. You use a coordinate plane to plot the two bus routes that you can take from your house to your school. You plot your house at $A(5, 5)$ and the school at $C(24, 20)$. The first route includes one bus stop at $B(5, 20)$. The second route includes 3 bus stops at $D(24, 15), E(20, 15),$ and $F(20, 5)$. Which route has the shorter distance? Explain.

4.4 Enrichment and Extension

Using a Blueprint

Blueprints are used when constructing a house. The measurements on a blueprint correspond to the actual measurement the house will be when completed.
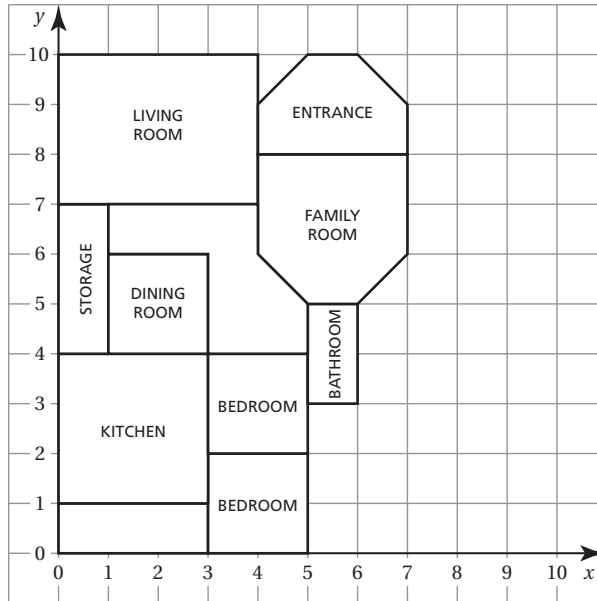
Use the blueprint above for Exercises 1–7.

1. Draw a line by connecting points (4, 9) and (7, 9). Do the same for points (4, 6) and (7, 6). Name the shapes the Entrance and Family Room are now broken into.

2. Which labeled rooms are rectangles?

3. Which labeled rooms are squares?

4. Use the lines you drew in Exercise 1 and your knowledge of shapes to help you find the area of the Family Room.

5. What is the total area of the labeled rooms?

6. The builder wants to order wood trim for the living room and dining room. What are the perimeters of these two rooms?

7. Find the area of the space near the center of the house that is not labeled.

Name _____ Date _____

4.4 Puzzle Time

What Do You Call A Bunch Of Toads Stacked On Top Of Each Other?

Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

Find the length of the line segment connecting the points.

1. $A(1, 2)$, $B(9, 2)$

2. $I(6, 3)$, $J(6, 7)$

3. $O(4, 5)$, $P(4, 10)$

4. $C(3, 3)$, $D(6, 3)$

5. $M(2, 0)$, $N\left(8\frac{1}{2}, 0\right)$

6. $P\left(10\frac{1}{4}, 1\right)$, $Q\left(10\frac{1}{4}, 7\right)$

Find the perimeter of the polygon with the given vertices.

7. $A(2, 3)$, $B(8, 3)$, $C(8, 9)$, $D(2, 9)$

8. $E\left(4\frac{1}{2}, 1\right)$, $F\left(4\frac{1}{2}, 6\right)$, $G\left(8\frac{1}{2}, 6\right)$, $H\left(8\frac{1}{2}, 1\right)$

Find the area of the polygon with the given vertices.

9. $I(2, 2)$, $J(2, 5)$, $K(5, 5)$, $L(5, 2)$

10. $M(1, 0)$, $N(1, 6)$, $O\left(7\frac{1}{2}, 6\right)$, $P\left(7\frac{1}{2}, 0\right)$

11. You design a bean-bag toss board using a coordinate plane. You plot the vertices of the board at $C(3, 2)$, $D(3, 6)$, $E(5, 2)$, and $F(5, 6)$. What is the perimeter of the bean-bag toss board?

M	A	B	I	U	T	W	L	O	G	P	A	F	D	Z	D	Y	E	K
44	24	52	1	60	12	14	61	8	23	20	$6\frac{1}{2}$	16	$4\frac{1}{2}$	62	6	63	18	11

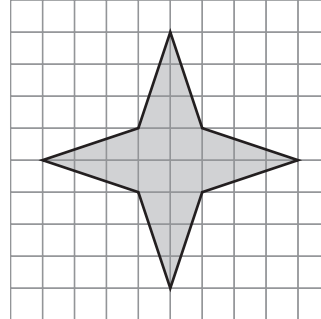| V	J	T	M	S	C	N	P	H	A	Q	O	M	X	L	E	A	E	R
46	53	2	3	54	$3\frac{1}{2}$	45	9	13	10	17	4	$5\frac{1}{2}$	15	39	50	7	5	19

Chapter 4 — Technology Connection
For use after Section 4.3

Finding Areas of Polygons

With dynamic geometry software, you can construct complicated composite polygons and then use the software to compute the area of the figure.

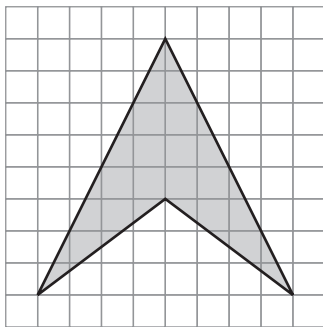**EXAMPLE** Find the area of the composite figure to the right.

SOLUTION

Step 1 Construct the polygon using the POLYGON tool or plot each vertex and connect the vertices with segments.

Step 2 If the interior of the polygon is not shaded, select each vertex holding down the $\boxed{\text{Shift}}$ key and then use the CONSTRUCT → INTERIOR command.

Step 3 Use MEASURE → AREA to find the area of the figure. The area of the polygon is 16 square units.

Use dynamic geometry software to construct and then find the areas of the composite figures below.

1.

2.