

Activity
4.1**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.

Activity
4.1**Warm Up**

For use before Activity 4.1

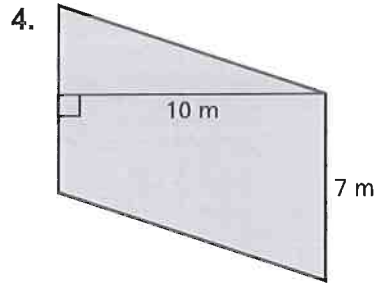
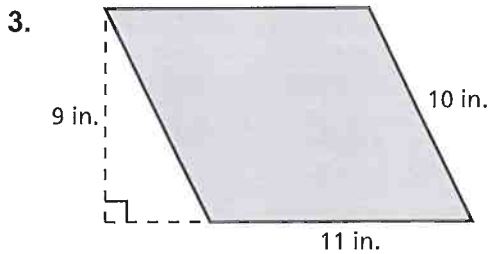
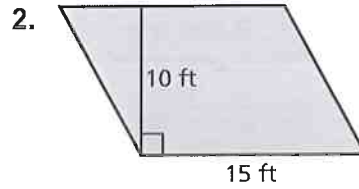
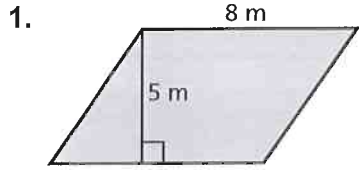
Find the area of the rectangle with the given length ℓ and width w .

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

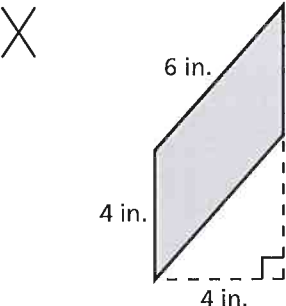
4.1

Practice A

Find the area of the parallelogram.

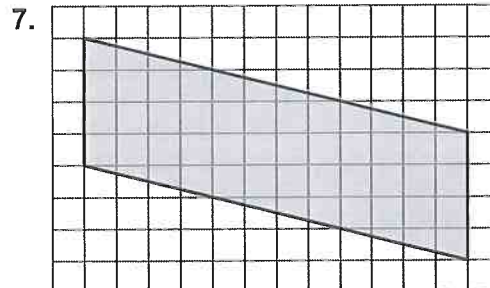
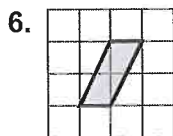


5. Describe and correct the error in finding the area of the parallelogram.



$A = 4(6) = 24 \text{ in.}^2$

Find the area of the parallelogram.



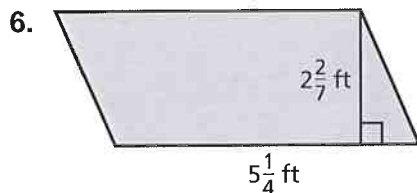
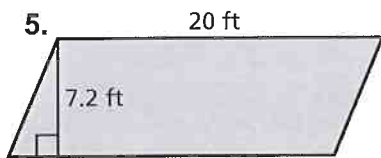
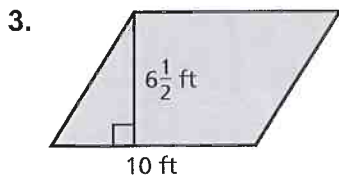
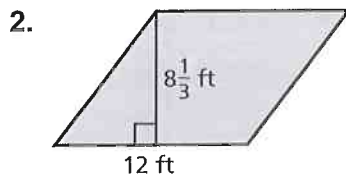
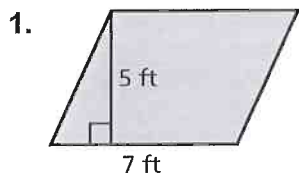
8. A square has side length 6 inches. A parallelogram has a base of 6 inches. The area of the square is equal to the area of the parallelogram. What is the height of the parallelogram?

4.1 Puzzle Time

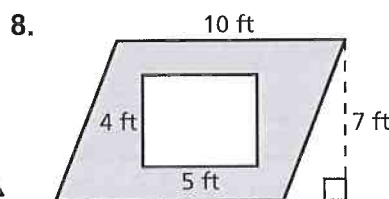
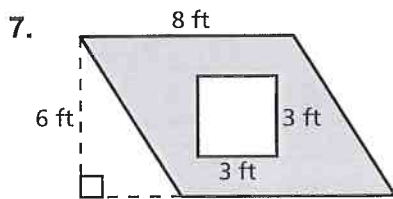
What Is A Teacher's Favorite Ice Cream Flavor?

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

Find the area of the parallelogram.



Find the area of the shaded region.



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

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
					-		-				

Lesson
4.2

Start Thinking!
For use before Lesson 4.2

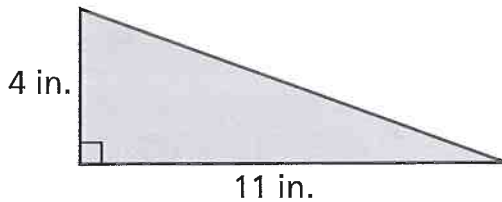
How is finding the area of a triangle similar to finding the area of a parallelogram? How is it different?

Lesson
4.2

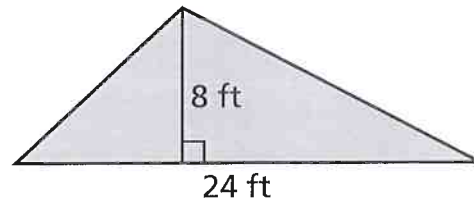
Warm Up
For use before Lesson 4.2

Find the area of the triangle.

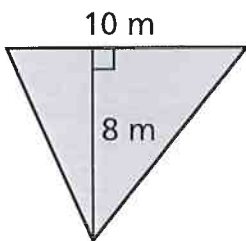
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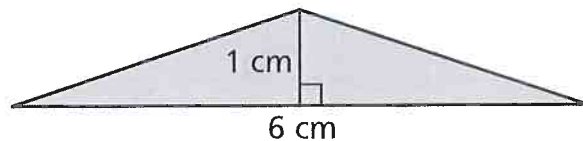
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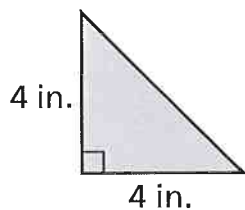
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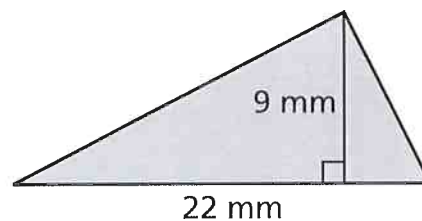
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5.

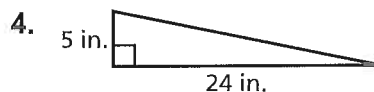
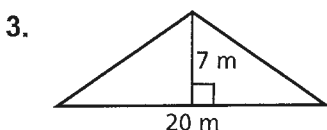
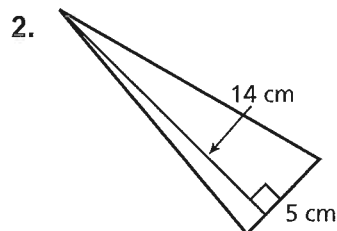
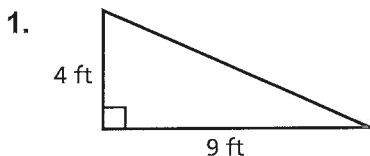


6.

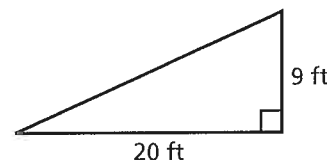


4.2 Practice A

Find the area of the triangle.



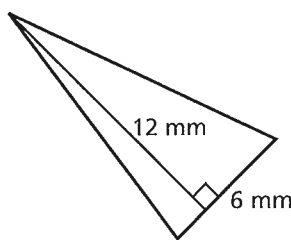
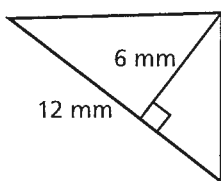
5. Describe and correct the error in finding the area of the triangle.



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

The diagram shows a right-angled triangle with a horizontal base of 20 ft and a vertical height of 9 ft. A right-angle symbol is at the bottom-right vertex. A large 'X' is drawn in the top-left corner of the box, indicating an error in the calculation below.

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



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?

4.2 Puzzle Time

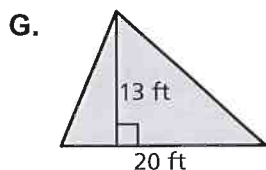
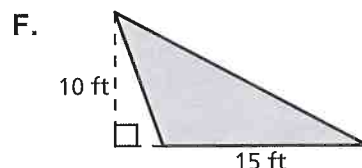
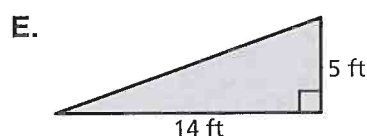
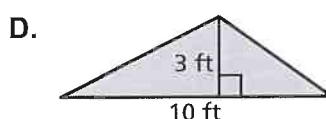
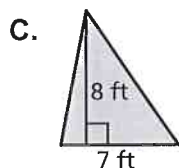
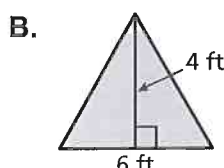
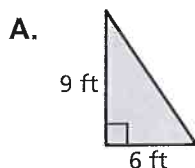
Did You Hear About The...

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 ft ² WITH
14 ft ² PET
35 ft ² WATCH
12 ft ² THAT
75 ft ² AND
29 ft ² TAIL
28 ft ² SWALLOWED
22 ft ² UP
154 ft ² LEASH

Find the area of a triangle.



130 ft ² ENDED
32 ft ² CAT
168 ft ² TICKS
82 ft ² FLEAS
15 ft ² A
140 ft ² WAS
54 ft ² BARKED
60 ft ² WHO
27 ft ² 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?

Activity
4.3**Start Thinking!**

For use before Activity 4.3

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

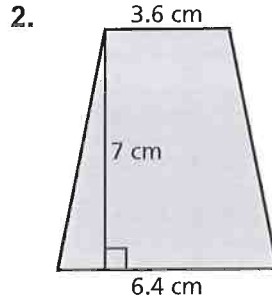
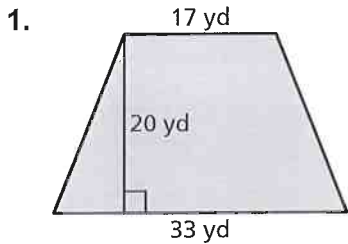
Find the area of the figure.

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 $s = 21$

4.3

Practice B

Find the area of the trapezoid.



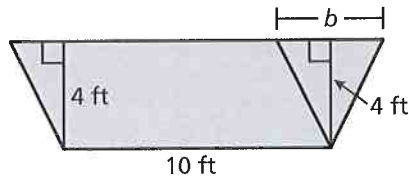
Find the area of a trapezoid with height h and bases b_1 and b_2 .

3. $h = 14$ cm
 $b_1 = 5$ cm
 $b_2 = 11$ cm

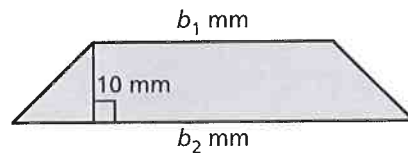
4. $h = 6$ ft
 $b_1 = 6.5$ ft
 $b_2 = 2.5$ ft

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.



7. The area of the trapezoid is 40 square millimeters.
- Find two possible values for each base length.
 - Is it possible for b_2 to equal 9 millimeters? Explain.



4.3 Puzzle Time

Did You Hear About...

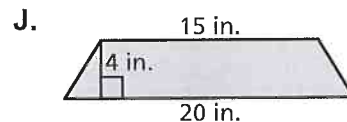
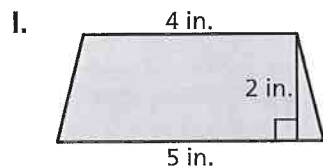
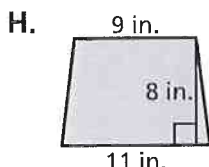
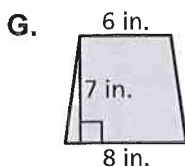
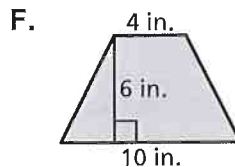
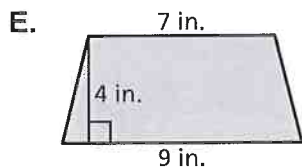
A	B	C	D	E	F
G	H	I	J	K	

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.



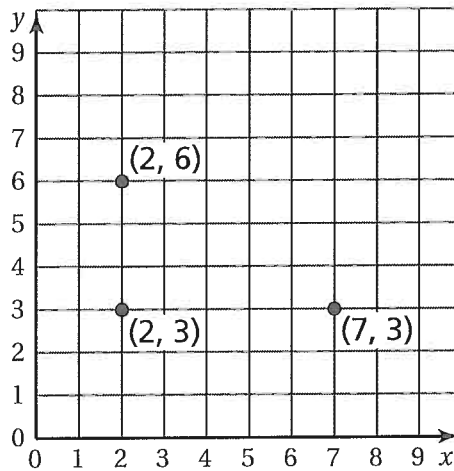
9 in. ² IT
96 in. ² THAT
100 in. ² DID
50 in. ² THE
90 in. ² WOULD
21 in. ² MEMORY
30 in. ² CRASHING
18 in. ² BOOTING
32 in. ² ALLOWED

- 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?

Lesson
4.4

Start Thinking!
For use before Lesson 4.4

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?



Lesson
4.4

Warm Up
For use before Lesson 4.4

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 B

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

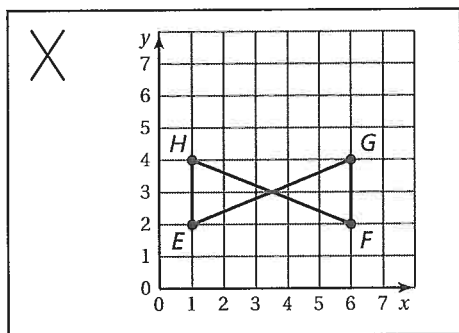
1. $D(5, 4), E(5, 10)$ 2. $L(2, 3), M(8, 3)$ 3. $U(2, 5), V(9, 5)$

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

4. $A\left(\frac{1}{2}, 3\right), B(2, 5), C(4, 4)$ 5. $D(2, 4), E\left(2, 5\frac{1}{2}\right), F\left(7, 5\frac{1}{2}\right), G(7, 4)$
6. $J(5, 3), K(8, 3), L(8, 1), M(5, 1)$ 7. $M\left(1\frac{1}{2}, 5\right), N(4, 7), P(7, 3), Q(7, 1), R(4, 0)$

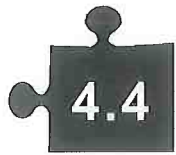
Find the perimeter and area of the polygon with the given vertices.

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.



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