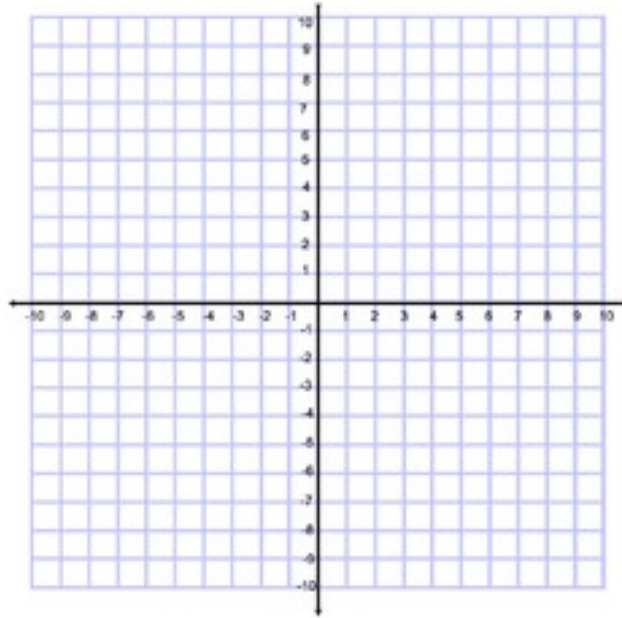# Lesson 7-1
Represent Rational Numbers on the Coordinate Plane

Label the four quadrants, x-axis, y-axis, and origin on the coordinate plane below.

Steps for graphing ordered pairs.
1. Start at the _____.
2. Use the x-coordinate to move _____ or _____ from the origin.
3. Use the y-coordinate to move _____ or _____ from the x-coordinate.

Remember- you slide the ladder over BEFORE you climb up or down!
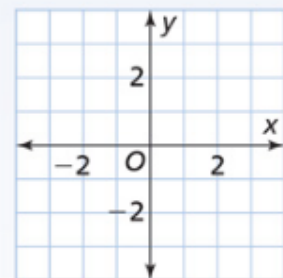
☑ **Try It!** Graph point P(−2, −3) on the coordinate plane shown.

Start at the origin (☐ , ☐).

The x-coordinate is negative, so move ☐ units to the left.

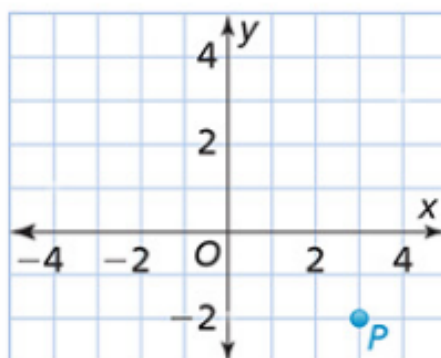Then use the y-coordinate to move ☐ units down.

Draw and label the point.

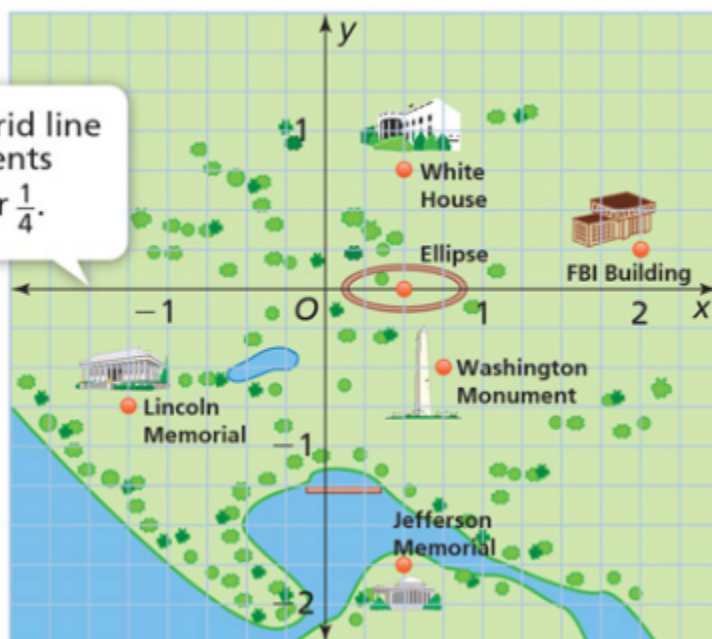In 5–7, graph and label each point on the coordinate plane.

5. A(−4, 1)

6. B(4, 3)

7. C(0, −2)

8. What ordered pair gives the coordinates of point P above?

Each grid line represents 0.25, or $\frac{1}{4}$.

In 9 and 10, use the map in Example 2 and write the ordered pair of each location.
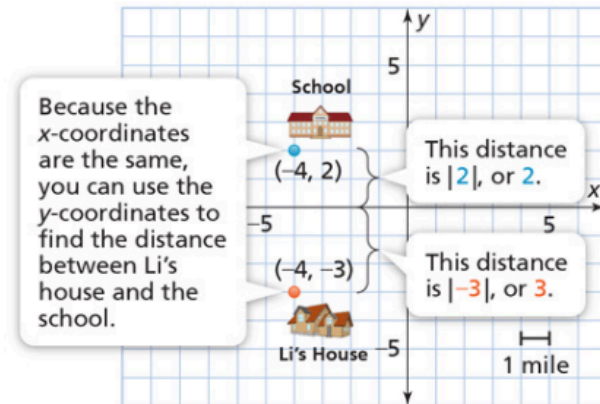
9. White House

10. Lincoln Memorial
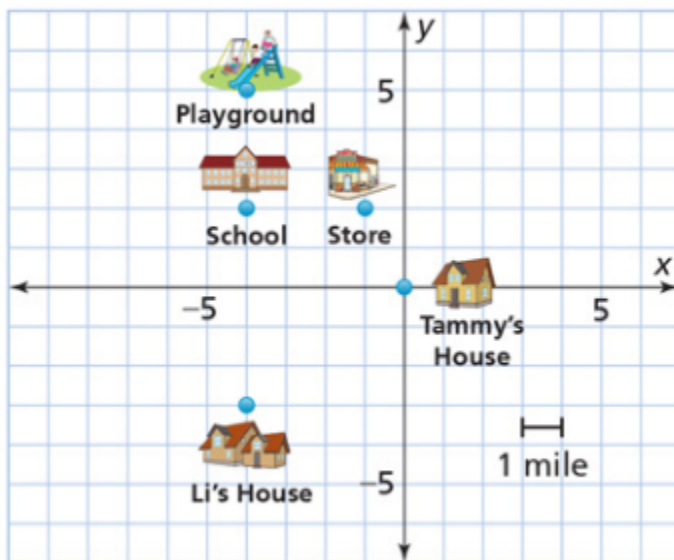
Lesson 7-2
Solve Problems on the Coordinate Plane

Find the coordinates of Li's house and the school.

- The coordinates for Li's house are (−4, −3).

- The coordinates for the school are (−4, 2).

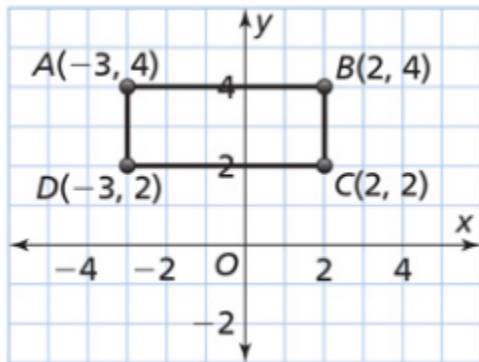The absolute values of the y-coordinates tell you the distance between each point and the x-axis.

School

Because the x-coordinates are the same, you can use the y-coordinates to find the distance between Li's house and the school.

(−4, 2)

This distance is |2|, or 2.

(−4, −3)

This distance is |−3|, or 3.

Li's House

1 mile

The distance from Li's house to school is
|2| + |−3| = 2 + 3 = 5 miles.

Playground

School   Store

−5   5

Tammy's
House

1 mile

Li's House   −5

What is the distance from the playground to Li's house?

You can find the perimeter and area in the coordinate plane.

Perimeter (distance around):

Area (space inside):

_____

Find the perimeter and area of a rectangle with the following coordinates.

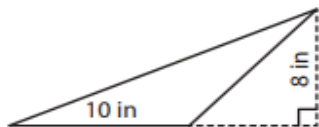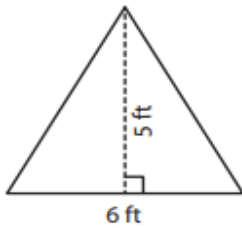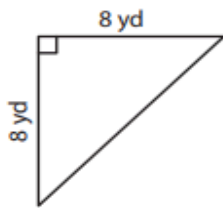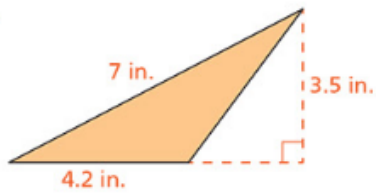J(-3, 8)   K(-3, -1)   L(4, -1)   M(4, 8)

Lesson 7-3
Area of a Triangle

Formula: A = ½bh

The base of a triangle can be any of its sides (although mostly it sits on its base)
The height of a triangle must meet the base and form a _____ _____.

8 yd

8 yd

5 ft

6 ft

8 in

10 in

5.

7 in.

3.5 in.

4.2 in.

13. The vertices of a triangle are $A(0, 0)$, $B(3, 8)$, and $C(9, 0)$. What is the area of this triangle?

16. The dimensions of the sail for Erica's sailboat are shown. Find the area of the sail.

15 ft

9 ft

Lesson 7-4
Decompose Polygons into Triangles and Rectangles

Steps to solve for area when the shape is complicated.
1. Divide the shape into shapes you _____ and have a _____ you can use.
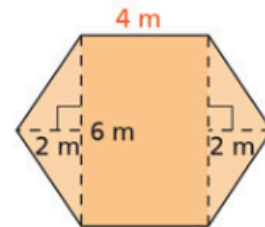2. Find the area of _____ shape and then _____ the areas together.

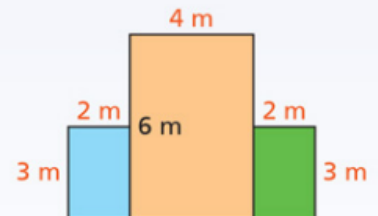---

👁 EXAMPLE 1 **Decompose to Find the Total Area**

Denise is building a patio in her backyard as shown in the diagram. She needs to know the area before she orders patio tiles. What is the area of the patio?

Choose Efficient Methods How can you use shapes you know to help you find the area?

4 m
6 m
2 m
2 m

☑ Try It! Emilio found the area of the patio by composing the shapes as shown at the right. How is Emilio's strategy different?

4 m
2 m
6 m
2 m
3 m
3 m

What if the shape has a hole in it?
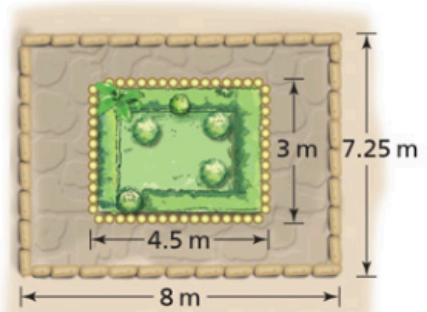1. _____ the area of the whole shape.
2. _____ the area of the hole.

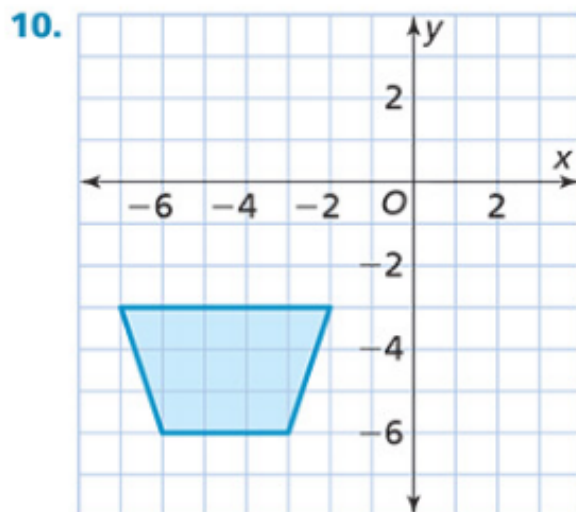**EXAMPLE 2** Subtract to Find the Total Area

The Robinsons are planning to resurface the path that surrounds their garden, as shown. What is the area of the path?

Analyze and Persevere The area of the path can be found by subtracting the area of the garden from the total area of the garden and the path.

3 m   7.25 m

4.5 m

8 m

What if the shape is on the coordinate plane?
1. Each square is _____ unit.
2. Count to find the lengths and then solve using the correct

   _____.
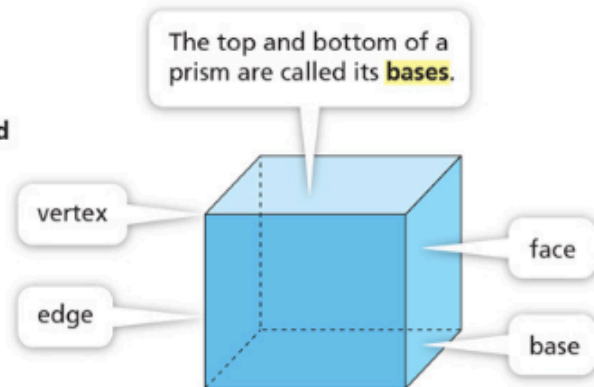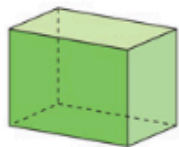
10.

Lesson 7-5
Represent Solid Figures Using Nets
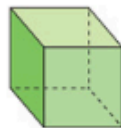
How can you classify a polyhedron?

A **polyhedron** is a three-dimensional solid figure made of flat polygon-shaped surfaces called **faces**. The line segment where two faces intersect is called an **edge**. The point where several edges meet is called a **vertex**.

The top and bottom of a prism are called its **bases**.

vertex

edge

face

base

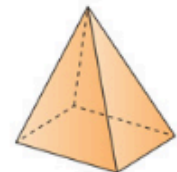
Prisms

Rectangular prism

Square prism, or cube

- Prisms have polygonal faces.
- Prisms have two identical, parallel, polygon-shaped bases.
- Prisms are named by the shape of their bases.

Pyramids

The base of a pyramid is the face opposite the vertex where the triangular faces meet.

Square pyramid

Rectangular pyramid

- Pyramids have one base.
- Pyramids are named by the shape of their bases.
- All other faces of pyramids are triangular.
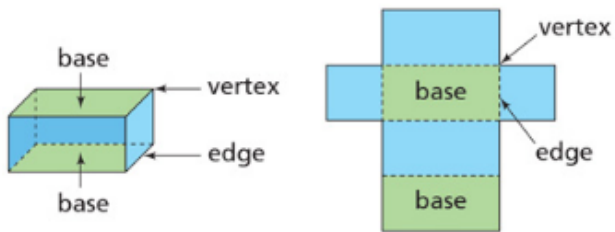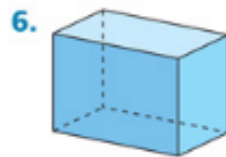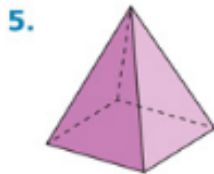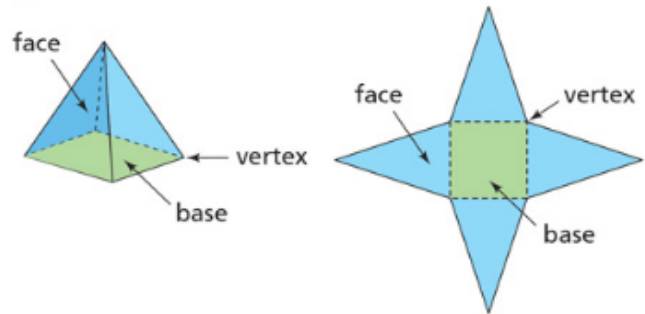

Try It! Classify this solid figure.

Nets and Solids

A net is a flat figure that when _____ makes a solid shape.

You can use nets to represent solid figures.

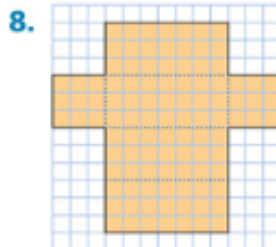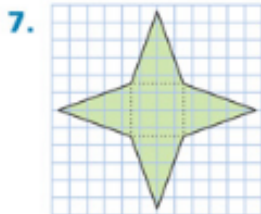**Prism**

base
vertex
edge
base

base
vertex
edge
base

Pyramid

face
vertex
base

face
vertex
base

5.

6.

In 7 and 8, identify each solid from its net.

7.

8.

9. Draw a net of a rectangular prism that has a height of 2 units and bases that are 3 units long and 1 unit wide.
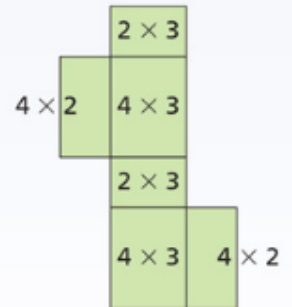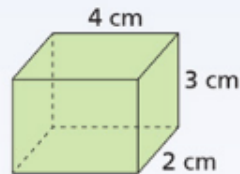
Lesson 7-6
Find Surface Areas of Prisms

Steps to find the surface area of a shape:
1. Find the area of each _____ (side of the shape).
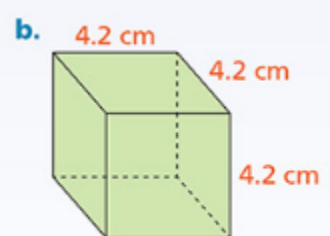2. Add the _____ of each face together.

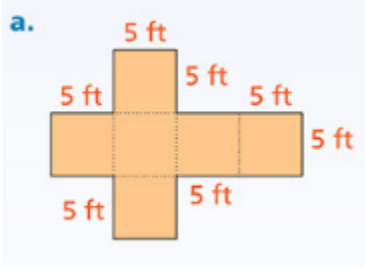☑ **Try It!** Use the net and apply the formula to find the surface area of the prism.
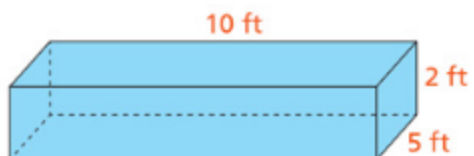
$SA = 2(\ell w) + 2(wh) + 2(\ell h)$

4 cm

3 cm

2 cm

		2 × 3
	4 × 2	4 × 3
		2 × 3
	4 × 3	4 × 2

Convince Me! Why are ℓw, wh, and ℓh each multiplied by 2 in the formula?

_____

Find the surface area of each cube.

a.
5 ft
5 ft
5 ft   5 ft
5 ft
5 ft
5 ft

b.   4.2 cm
4.2 cm
4.2 cm

In 5–7, find the surface area of each prism.

5.

10 ft

2 ft

5 ft

6.

7 cm

7 cm

7 cm

7.

9 cm

6 cm

6 cm

7 cm

7 cm
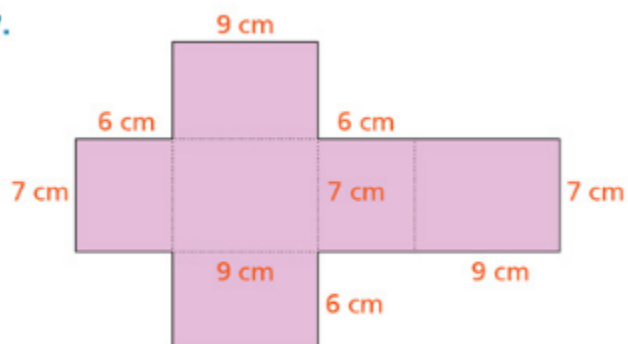
7 cm

9 cm

9 cm

6 cm

Lesson 7-7
Find the Surface Areas of Pyramids

Steps to find the surface area of a shape:
1. Find the area of each _____ (side of the shape).
2. Add the _____ of each face together.

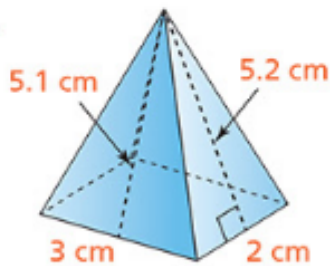****Remember to use the triangle formula for triangle sides!****

Formula: A = ½bh

> ☑ **Try It!** Find the surface area of the square pyramid. Draw a net to find the areas of the base and each face of the pyramid.

7.

5.1 cm   5.2 cm

3 cm   2 cm

Area of base, B: ⬚ × 3 = ⬚

Area of each large triangular face, T:

$\frac{1}{2}$ × ⬚ × ⬚ = ⬚

Area of each small triangular face, t:

$\frac{1}{2}$ × ⬚ × ⬚ = ⬚

SA = 2(T + t) + B

SA = 2(⬚ + ⬚) + ⬚

SA = ⬚

The surface area is ⬚ cm².

8 cm

6 cm 6 cm

---

5. The faces of this square pyramid are equilateral triangles. Draw a net of the pyramid and use it to find the surface area.
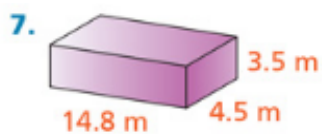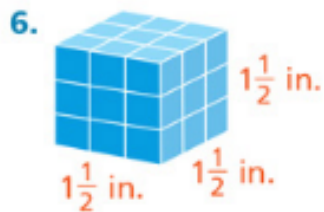

10.4 ft

12 ft 12 ft

Lesson 7-8
Find Volume with Fractional Edge Lengths

V=lwh

1. _____ the values into the formula.

2. _____ for volume.

_____

Find the volume of each rectangular prism.

6.

$1\frac{1}{2}$ in.

$1\frac{1}{2}$ in. $1\frac{1}{2}$ in.

_____

7.

3.5 m

14.8 m   4.5 m

Find the missing edge length when given the volume.

Steps:

1. _____ the values you are given into the formula.
2. _____ for the missing value.

a.

4.5 cm

← $V = 40.32$ cm^3

3.2 cm

ℓ

_____

10.

1.2 m

6.5 m

w

← $V = 31.2$ m^3