Name_____ Date _____

Identify the figure.

1.

2.

3.

4.

5. Identify the figure.

6 in.

6 in.   6 in.

6 in.

Chapter 8 **Fair Game Review** (continued)

Find the volume of the rectangular prism.

6.

7.

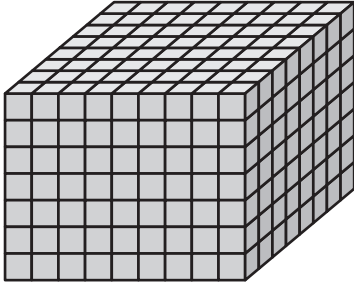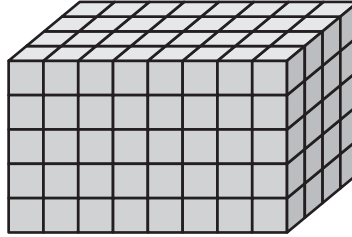8.
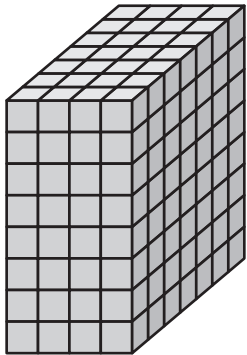
9.

10.

11.

Name_____ Date _____
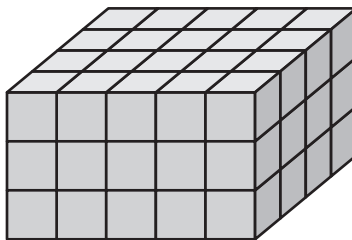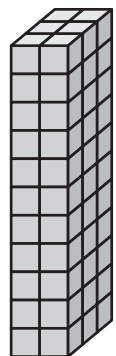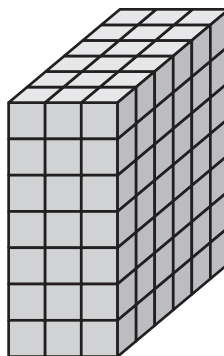
Essential Question How can you draw three-dimensional figures?

Dot paper can help you draw three-dimensional figures, or *solids.*

Square Dot Paper   **Isometric Dot Paper**
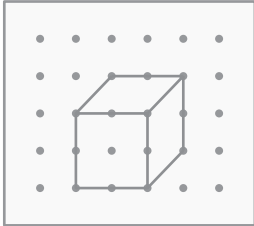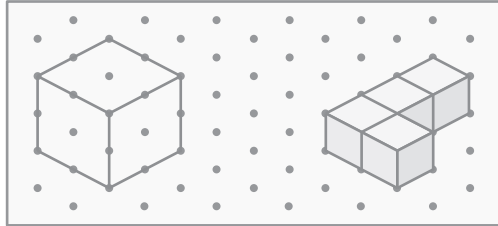
Face-on view   **Corner view**

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1 ACTIVITY: Drawing Views of a Solid

Work with a partner. Draw the front, side, and top views of each stack of cubes. Then find the number of cubes in the stack.

a.

| front | side | top |

Number of cubes: [ ]

b.   **c.**   **d.**

8.1   **Three-Dimensional Figures** (continued)

e.   **f.**   **g.**

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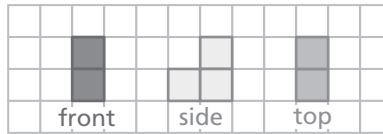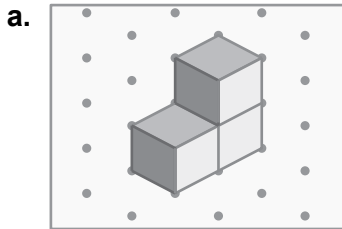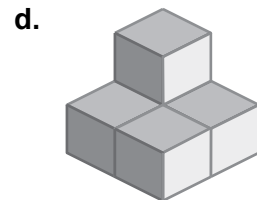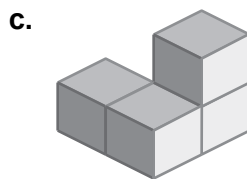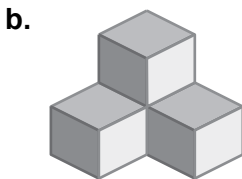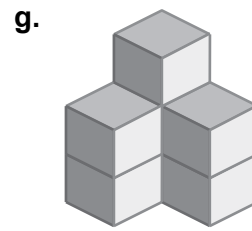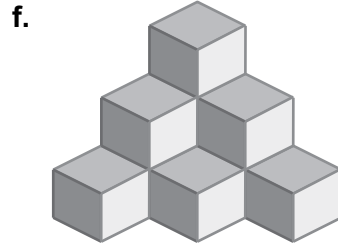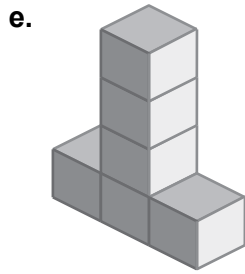
2   **ACTIVITY:** Drawing Solids

Work with a partner.

a. Use isometric dot paper to draw three different
solids that use the same number of cubes as the
solid at the right.
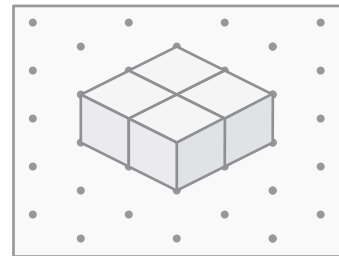
b. Use square dot paper to draw a different solid
that uses the same number of *prisms* as the solid
at the right.
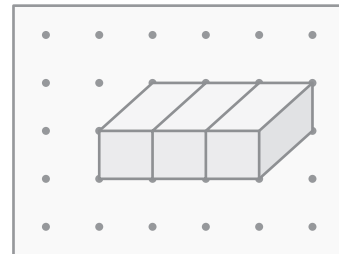
8.1 **Three-Dimensional Figures** (continued)

3 **ACTIVITY:** Exploring Faces, Edges, and Vertices

Work with a partner. Use the solid shown.

a. Match each word to the figure. Then write a definition for each word.

face   *edge*   *vertex*

b. Identify the number of faces, edges, and vertices in a rectangular prism.
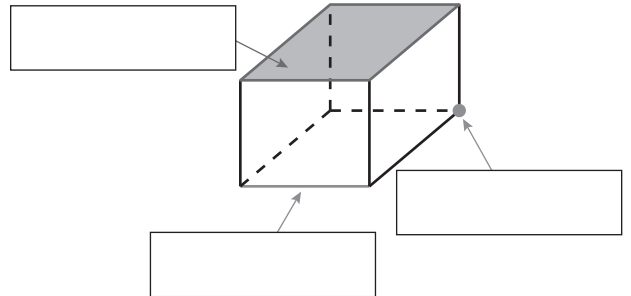
c. When using dot paper to draw a solid, what represents the vertices? How do you draw edges? How do you draw faces?

d. What do you think it means for lines or planes to be parallel or perpendicular in three dimensions? Use drawings to identify one pair of each of the following:

- parallel faces
- perpendicular faces

- parallel edges
- perpendicular edges

- edge parallel to a face
- edges perpendicular to a face

What Is Your Answer?

4. IN YOUR OWN WORDS How can you draw three-dimensional figures?

Name _____ Date _____

Practice
For use after Lesson 8.1

Draw the solid.

1. Pentagonal pyramid

2. Square prism

Draw the front, side, and top views of the solid.

3.

4.
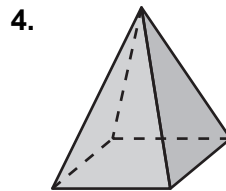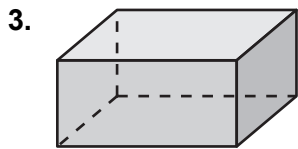
5. Draw a solid with the following front, side, and top views.

Front   Side   Top
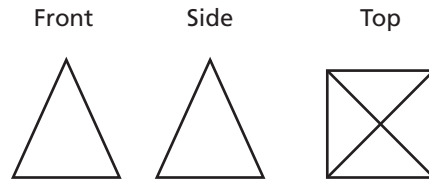
8.2 Surface Areas of Prisms

For use with Activity 8.2

Essential Question   How can you find the area of the entire surface of a prism?

> **1   ACTIVITY:** Identifying Prisms

Work with a partner. Label one of the faces as a "base" and the other as a "lateral face." Use the shape of the base to identify the prism.

a.

Prism

b.
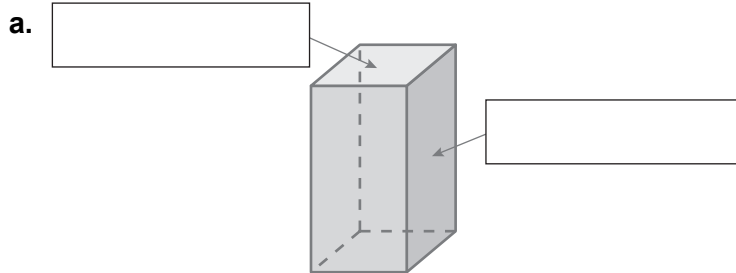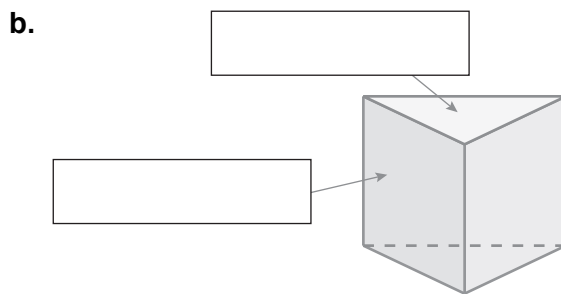
Prism

8.2 **Surface Areas of Prisms** (continued)

2 **ACTIVITY:** Using Grid Paper to Construct a Prism

Work with a partner.

a. Copy the figure shown below onto grid paper.*

b. Cut out the figure and fold it to form a prism. What type of prism does it form?
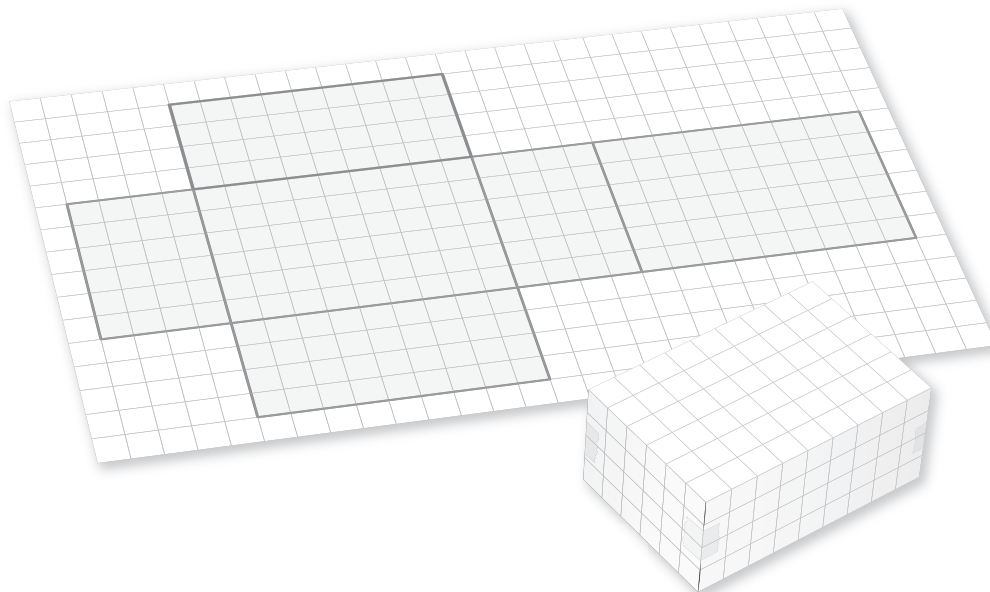
3 **ACTIVITY:** Finding the Area of the Entire Surface of a Prism

Work with a partner. Label each face in the two-dimensional representation of the prism as a "base" or a "lateral face." Then find the area of the entire surface of each prism.

a.
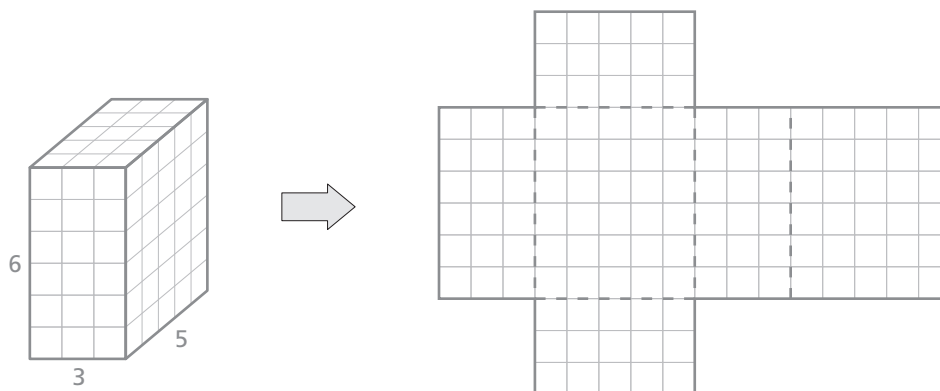
*Cut-outs are available in the back of the Record and Practice Journal.

8.2 **Surface Areas of Prisms** (continued)

b.
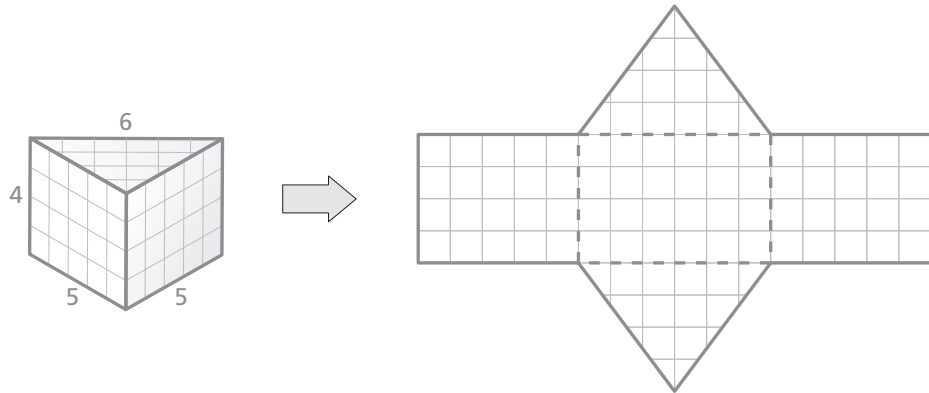
4 **ACTIVITY:** Drawing Two-Dimensional Representations of Prisms

Work with a partner. Draw a two-dimensional representation of each prism. Then find the area of the entire surface of each prism.
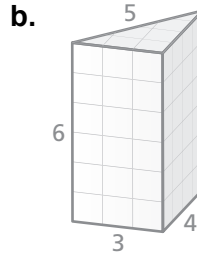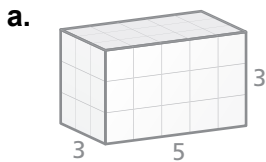
a.

b.

What Is Your Answer?

5. **IN YOUR OWN WORDS** How can you find the area of the entire surface of a prism?

**8.2** **Practice**
For use after Lesson 8.2

Find the surface area of the prism.

1.

8 m
7 m
2 m

2.

6 m
6 m
10 m
7.2 m   4.8 m

3.

6 cm
8 cm   12 cm
10 cm

4.

3 in.
10 in.
9 in.
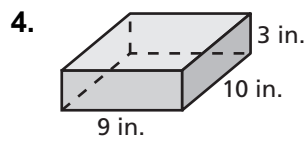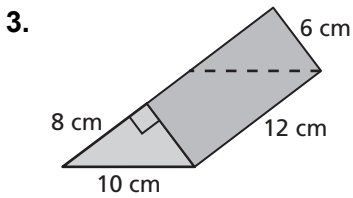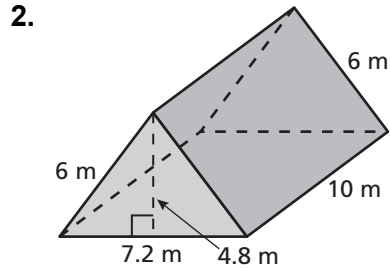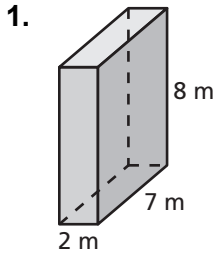
5. You buy a ring box as a birthday gift that is in the shape of a triangular prism. What is the least amount of wrapping paper needed to wrap the box?

14.5 cm
8 cm
10 cm   10.5 cm

Name_____ Date _____
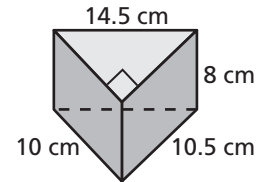
Essential Question How can you use a net to find the surface area of a pyramid?

1 ACTIVITY: Identifying Pyramids

Work with a partner. Label one of the faces as a "base" and the other as a "lateral face." Use the shape of the base to identify the pyramid.

a.

b.
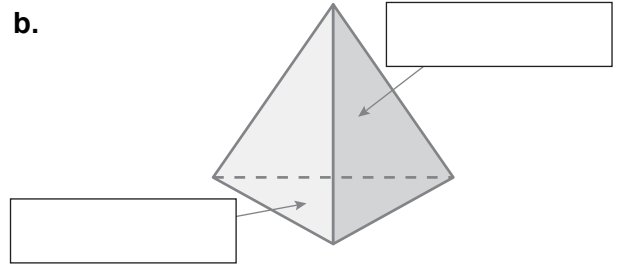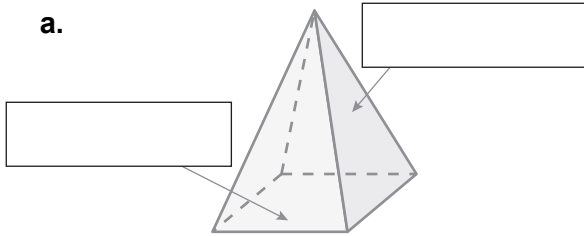
[_____] Pyramid

[_____] Pyramid

2 ACTIVITY: Using a Net

Work with a partner.

  a. Copy the net shown below onto grid paper.*

  b. Cut out the net and fold it to form a pyramid. What type of rectangle is the base? Use this shape to name the pyramid.

  c. Find the surface area of the pyramid.
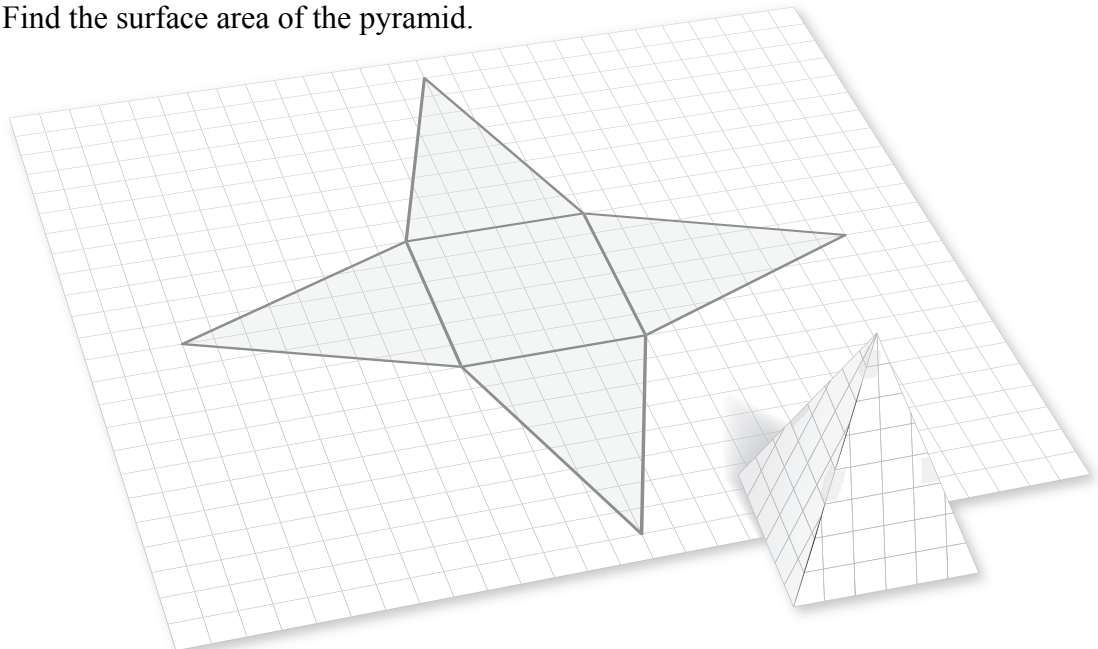
*Cut-outs are available in the back of the Record and Practice Journal.

8.3 **Surface Areas of Pyramids** (continued)

3 **ACTIVITY:** Estimating the Surface Area of a Triangular Pyramid

Work with a partner. Label each face in the net of the triangular pyramid as a "base" or a "lateral face." Then estimate the surface area of the pyramid.

6   6
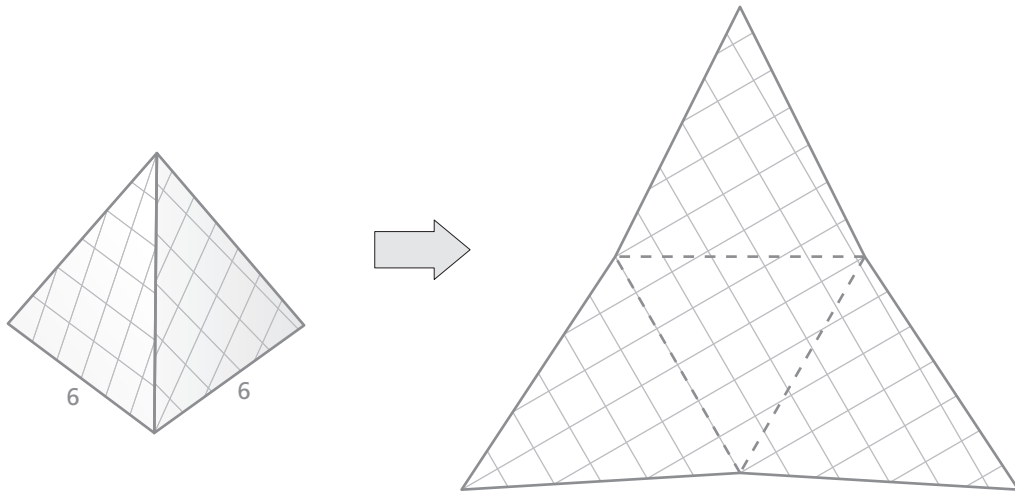
4 **ACTIVITY:** Finding the Surface Area of a Square Pyramid

Work with a partner. Draw a net for each square pyramid. Use the net to find the surface area of the pyramid.

a.

3

3
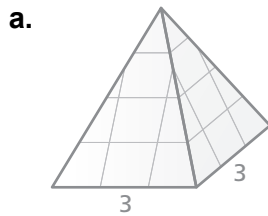
8.3 **Surface Areas of Pyramids** (continued)

b.
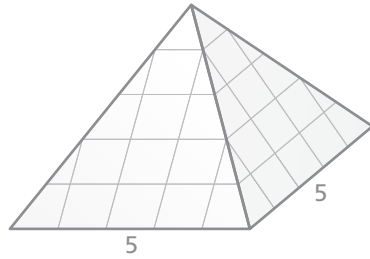
What Is Your Answer?

5. **IN YOUR OWN WORDS** How can you use a net to find the surface area of a pyramid?

6. **CONJECTURE** Make a conjecture about the lateral faces of a pyramid when the side lengths of the base have the same measure. Explain.

Name _____ Date _____

Find the surface area of the pyramid. The side lengths of the base are equal.

1.

7 cm

4 cm

2.

9 ft

6 ft

3.

7 ft

8.7 ft

10 ft

4.

15 in.

5.2 in.

6 in.
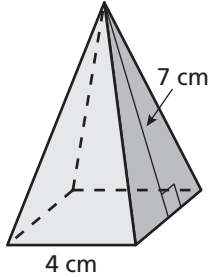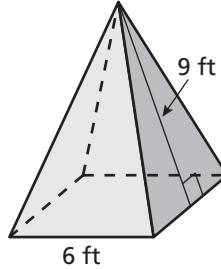
5. A candle is shaped like a triangular pyramid. The side lengths of the base are equal. Find the surface area of the candle.
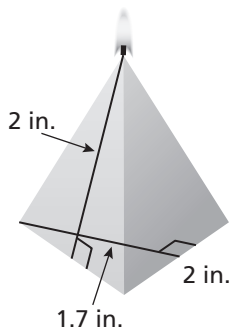
2 in.

2 in.

1.7 in.

Name_____ Date _____

Essential Question How can you find the volume of a rectangular prism with fractional edge lengths?

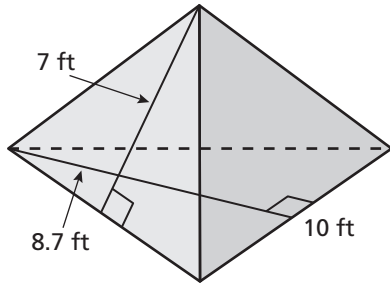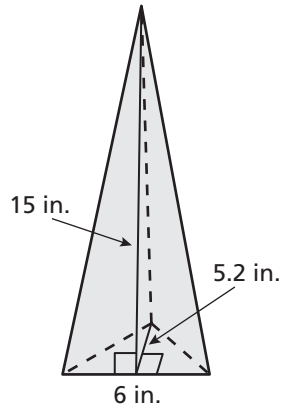Recall that the **volume** of a three-dimensional figure is a measure of the amount of space that it occupies. Volume is measured in *cubic units*.

A *unit cube* is a cube with an edge length of 1 unit.

1 unit

1 unit

1 unit
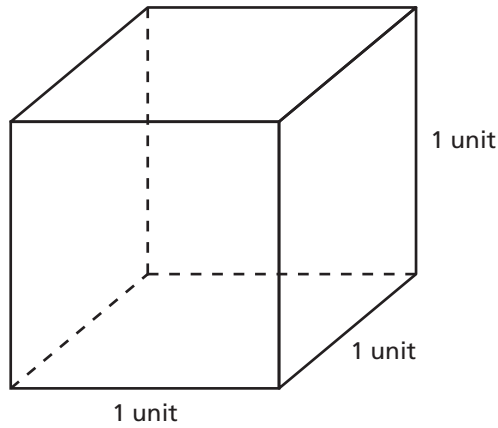
1 **ACTIVITY:** Using a Unit Cube

Work with a partner. The parallel edges of the unit cube have been divided into 2, 3, and 4 equal parts to create smaller rectangular prisms that are identical.

4 equal parts

3 equal parts

2 equal parts
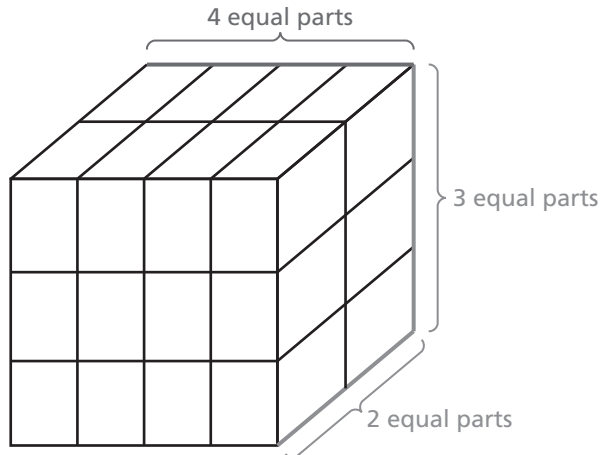
8.4 **Volumes of Rectangular Prisms** (continued)

a. Draw one of these identical prisms and label its dimensions.

b. What fraction of the volume of the unit cube does one of these identical prisms represent? Use this value to find the volume of one of the identical prisms. Explain your reasoning.

2 ACTIVITY: Finding the Volume of a Rectangular Prism

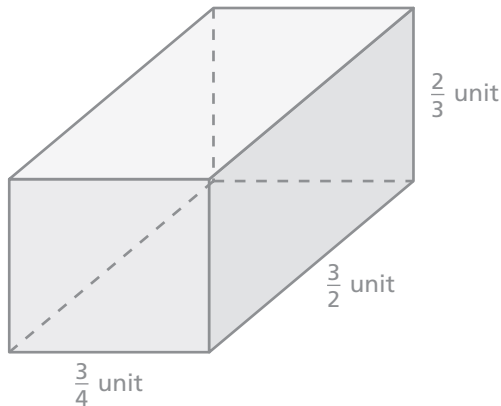**Work with a partner.**

a. How many of the identical prisms in Activity 1(a) does it take to fill the rectangular prism below? Support your answer with a drawing.


$\frac{2}{3}$ unit

$\frac{3}{2}$ unit

$\frac{3}{4}$ unit

b. Use the volume of one of the identical prisms in Activity 1(a) to find the volume of the rectangular prism above. Explain your reasoning.
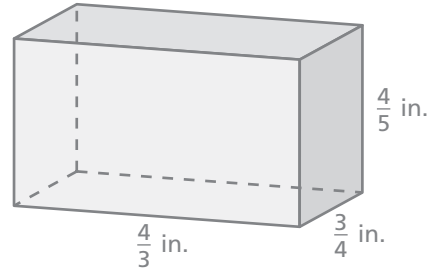
Name_____ Date _____

3 **ACTIVITY:** Finding the Volumes of Rectangular Prisms

Work with a partner. Explain how you can use the procedure in Activities 1 and 2 to find the volume of each rectangular prism. Then find the volume of each prism.

a.

$\frac{3}{4}$ m

$\frac{1}{2}$ m $\frac{1}{2}$ m

b.

$\frac{4}{5}$ in.

$\frac{4}{3}$ in. $\frac{3}{4}$ in.
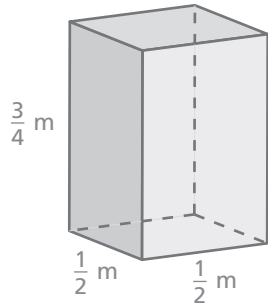
What Is Your Answer?

4. You have used the formulas $V = Bh$ and $V = \ell wh$ to find the volume V of a rectangular prism with whole number edge lengths. Do you think the formulas work for rectangular prisms with fractional edge lengths? Give examples with your answer.

5. **IN YOUR OWN WORDS** How can you find the volume of a rectangular prism with fractional edge lengths?
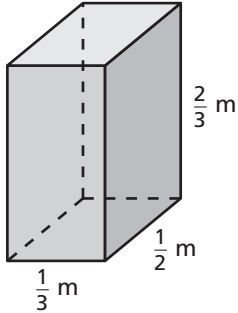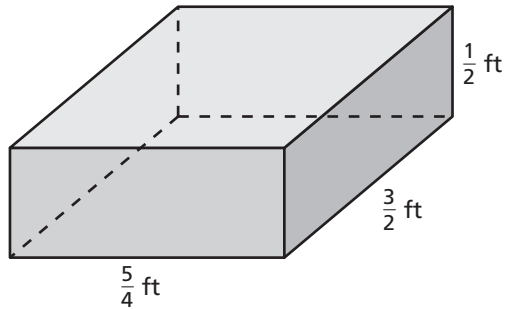
Name _____ Date _____

Find the volume of the prism.

1.

$\frac{2}{3}$ m

$\frac{1}{2}$ m

$\frac{1}{3}$ m

2.

$\frac{1}{2}$ ft

$\frac{3}{2}$ ft

$\frac{5}{4}$ ft

Write and solve an equation to find the missing dimension of the prism.

3. Volume = 18,000 in.^{3}

30 in.

x

30 in.

4. Volume = 55 in.^{3}

11 in.

ℓ

0.5 in.
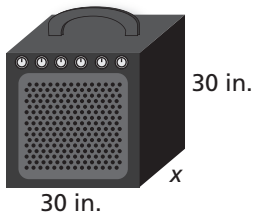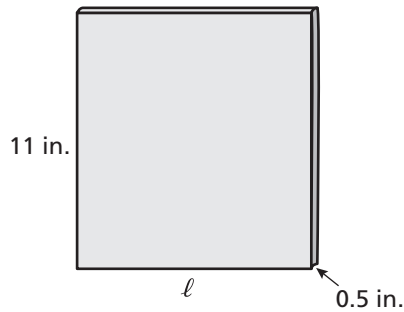
5. You are mailing a birthday present to a friend. You have a box that has a length of $2\frac{1}{2}$ feet, a height of 2 feet, and a width of $1\frac{1}{2}$ feet. The present has a volume of 3 cubic feet. What is the volume of the empty space in the box?