

Name _____

Polygon Practice

In 1–11, write the number of sides and the number of angles that each polygon has. Then match each description to one of the polygons drawn below. Label the polygon with the exercise number of the description that matches the polygon.

1. regular decagon

10 sides and angles

3. regular hexagon

6 sides and angles

5. regular octagon

8 sides and angles

7. regular pentagon

5 sides and angles

9. regular quadrilateral

4 sides and angles

11. regular triangle

3 sides and angles

2. decagon that is not regular

10 sides and angles

4. hexagon that is not regular

6 sides and angles

6. octagon that is not regular

8 sides and angles

8. pentagon that is not regular

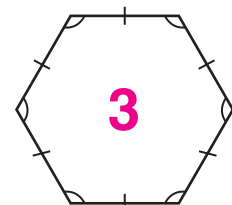
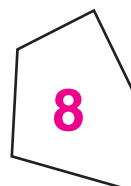
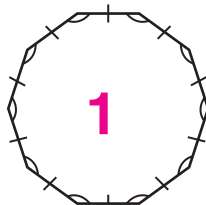
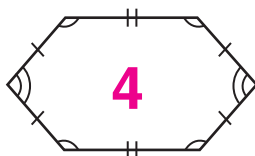
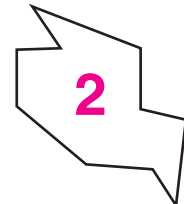
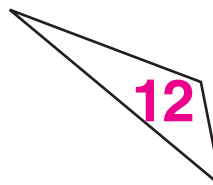
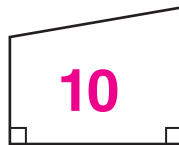
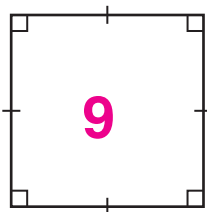
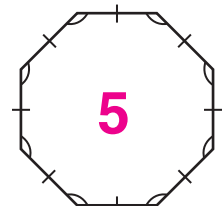
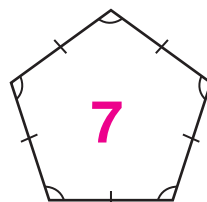
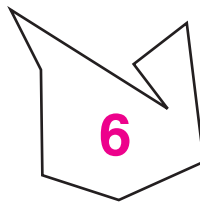
5 sides and angles

10. quadrilateral that is not regular

4 sides and angles

12. triangle that is not regular

3 sides and angles



Name _____

A Triangular Challenge

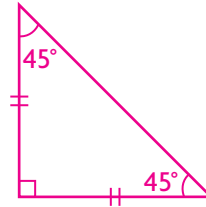
Classify each triangle as *isosceles*, *scalene*, or *equilateral* and as *acute*, *right*, or *obtuse*. The sum of the angle measures in a triangle is always 180° . You can use a protractor to help you draw the triangle in the space provided.

Drawings may vary.

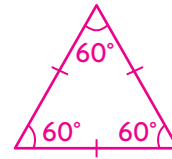
Who Am I?

1. I have two congruent sides. I also have two congruent angles that measure 45° each.
I am a(n) right, isosceles triangle.

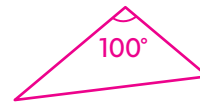
Draw Me



2. I have three congruent sides. I also have three congruent angles.
I am a(n) acute, equilateral triangle.



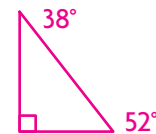
3. I have no congruent sides. One of my angles has a measure of 100° .
I am a(n) obtuse, scalene triangle.



4. Two of my angles measure 30° each. My two shorter sides are congruent.
I am a(n) obtuse, isosceles triangle.



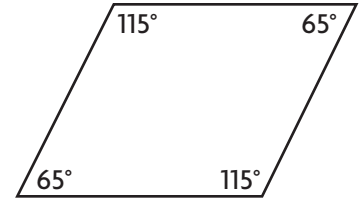
5. My 3 angles have measures of 38° , 52° , and 90° . My 3 sides are all different lengths.
I am a right, scalene triangle.



Name _____

A Quadrilateral Challenge

The sum of the angle measures in a quadrilateral is always 360° . You can use subtraction to find unknown angle measures. Each set of angle measures below represents three known angle measures in a quadrilateral. Write and solve an equation to find the unknown measure of the fourth angle.



$$65^\circ + 115^\circ + 65^\circ + 115^\circ = 360^\circ$$

	Known Angle Measures	Unknown Angle Measure
1.	90° 90° 90°	Add the given angle measures. $90^\circ + 90^\circ + 90^\circ = 270^\circ$ Subtract the sum from 360° . $360^\circ - 270^\circ = 90^\circ$
2.	112° 56° 84°	$112^\circ + 56^\circ + 84^\circ = 252^\circ$ <hr/> $360^\circ - 252^\circ = 108^\circ$
3.	120° 90° 90°	$120^\circ + 90^\circ + 90^\circ = 300^\circ$ <hr/> $360^\circ - 300^\circ = 60^\circ$
4.	55° 55° 125°	$55^\circ + 55^\circ + 125^\circ = 235^\circ$ <hr/> $360^\circ - 235^\circ = 125^\circ$
5.	135° 45° 135°	$135^\circ + 45^\circ + 135^\circ = 315^\circ$ <hr/> $360^\circ - 315^\circ = 45^\circ$
6.	90° 55° 135°	$90^\circ + 55^\circ + 135^\circ = 280^\circ$ <hr/> $360^\circ - 280^\circ = 80^\circ$
7.	85° 90° 130°	$85^\circ + 90^\circ + 130^\circ = 305^\circ$ <hr/> $360^\circ - 305^\circ = 55^\circ$

Name _____

Triangle Quick Draw Match-Up

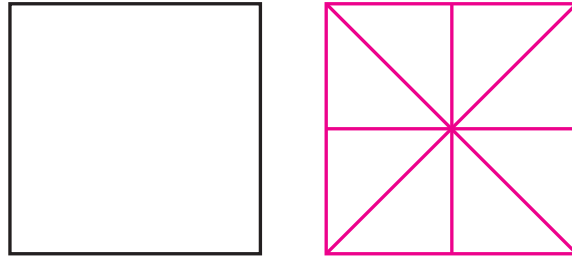
Divide each regular polygon into the given number of congruent triangles. The first one has been done for you.

Check students' drawings.

1.



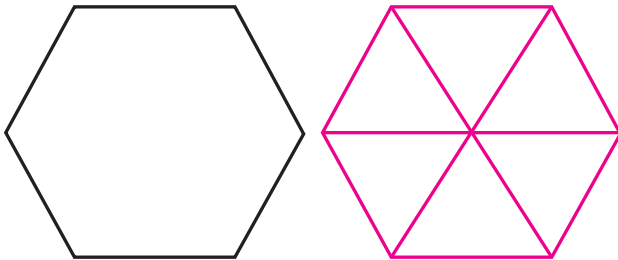
2.



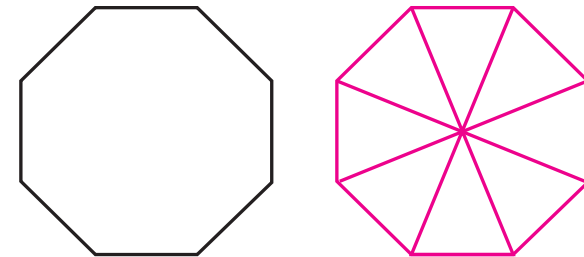
4 congruent triangles

8 congruent triangles

3.



4.



6 congruent triangles

8 congruent triangles

5. **Write Math** How can you determine whether the triangles you drew inside each figure above are congruent?

Possible answer: I act it out by cutting out the shapes and folding them to see if the triangles match each other.

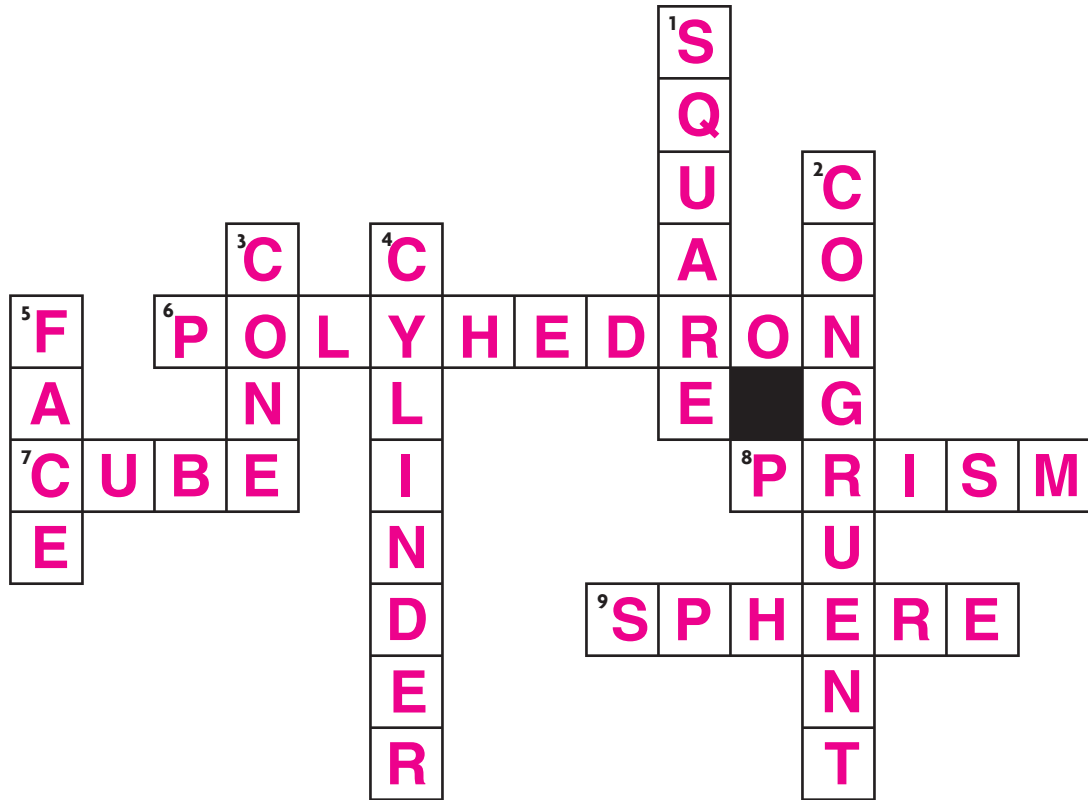
6. **Stretch Your Thinking** Is it possible to divide the triangle in Exercise 1 into 16 congruent triangles? **Explain.**

Yes. I can divide each of the 4 small triangles into 4 smaller triangles, for a total of 16 congruent triangles.

Name _____

In Fit Shape

Complete the crossword puzzle by filling in the correct term for each clue.



ACROSS

6. A solid figure with faces that are polygons.
7. This solid figure has three pairs of parallel faces, and all faces are congruent.
8. A solid figure that has two congruent polygons as bases and lateral faces that are rectangles.
9. A solid figure without any bases and with only one curved surface.

DOWN

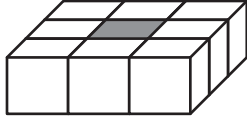
1. A cube has six congruent faces that are all _____.
2. Polygons that have the same shape and size are _____.
3. A solid figure with one circular base and one curved surface.
4. A solid figure that has two circular bases and one curved surface.
5. A flat surface of a solid figure.

Name _____

Unit Cubes

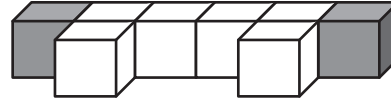
For each solid figure, write the fraction of unit cubes that are shaded. Write each fraction in simplest form. Assume that cubes you cannot see are not shaded.

1.



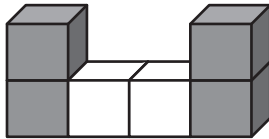
$$\frac{1}{9}$$

2.



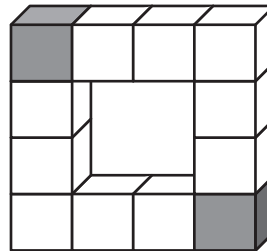
$$\frac{1}{4}$$

3.



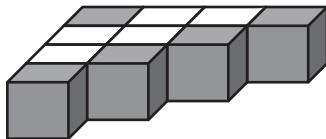
$$\frac{2}{3}$$

4.



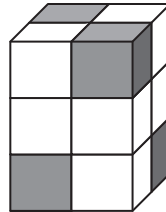
$$\frac{1}{6}$$

5.



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

6.



$$\frac{1}{3}$$

7. **Stretch Your Thinking** In the fraction you wrote for Exercise 1, what does the denominator represent?

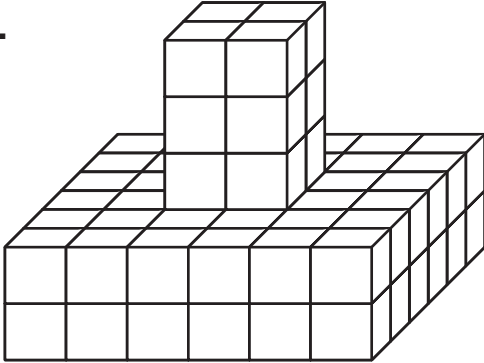
It represents the total number of cubes used to build the solid figure.

Name _____

Volume of Irregular Figures

Use the unit given. Find the volume.

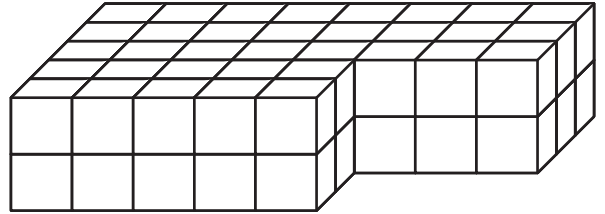
1.



Each cube = 1 cu cm

Volume = 84 cu cm

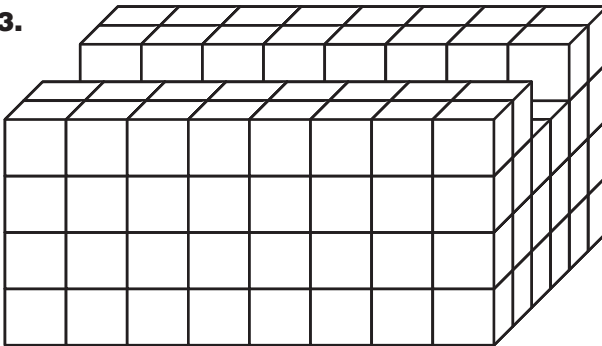
2.



Each cube = 1 cu in.

Volume = 68 cu in.

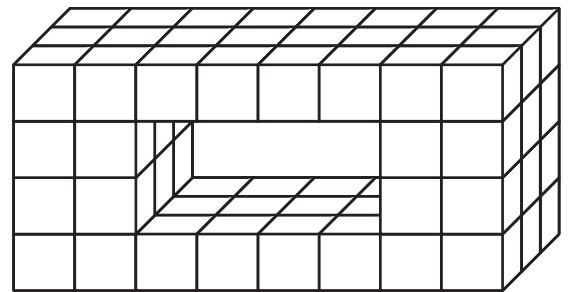
3.



Each cube = 1 cu ft

Volume = 176 cu ft

4.



Each cube = 1 cu yd

Volume = 72 cu yd

5.

Write Math

Explain how you found the volume of the figure in Exercise 4.

Possible explanation: I found the volume of a prism that is 8 units long, 3 units wide, and 4 units high. From that volume, I subtracted the volume of a figure that is 4 units long, 3 units wide, and 2 units high. The subtracted volume represents the “hole” in the prism.

Name _____

What Will Fit?

A cubic centimeter is 1 cm long on each edge. A cubic decimeter is 10 cm long on each edge. A cubic meter is 1 m long on each edge.

Estimate the smallest unit cube that will hold each object. Choose from a cubic centimeter, a cubic decimeter, and a cubic meter. **Possible answers are given.**

1. a grain of rice cubic centimeter
2. an orange cubic decimeter
3. a basketball cubic meter
4. a pebble cubic centimeter
5. a cell phone cubic decimeter
6. a textbook cubic meter
7. a key cubic decimeter
8. a backpack cubic meter
9. a paper clip cubic decimeter
10. a raisin cubic centimeter
11. an iron cubic meter
12. a can of paint cubic meter
13. a crayon cubic decimeter
14. a staple cubic centimeter
15. a stick of gum cubic decimeter

16. **Stretch Your Thinking** How many cubic centimeters do you need to fill a cubic decimeter? How many cubic centimeters do you need to fill a cubic meter?

1,000 cubic centimeters; 1,000,000 cubic centimeters

Name _____

Unknown Dimensions

Find the unknown dimensions. Use whole numbers only.

1. A rectangular prism has a volume of 96 ft^3 . The area of the base is 24 ft^2 . What is the height of the prism?

4 ft

2. A rectangular prism has a volume of 729 ft^3 . The length, width, and height are all the same. What is the length of each side of the prism?

9 ft

3. A rectangular prism has a volume of 175 in^3 . The height of the prism is 7 in. The base is a square. What is the length of a side of the base?

5 in.

4. A rectangular prism has a volume of 144 cm^3 . The base is a square with a length of 4 cm. What is the height of the prism?

9 cm

5. A rectangular prism has a volume of 189 cm^3 . The height of the prism is 3 cm. What are the dimensions of the base?

length = 9 cm

width = 7 cm

Possible answers are given.

6. A rectangular prism has a volume of 160 cm^3 . The height of the prism is 5 cm. The length is twice the width. What are the dimensions of the base?

length = 8 cm

width = 4 cm

7. A rectangular prism has a volume of 384 cm^3 . The width is twice the height, and the length is three times the height. What are the dimensions of the prism?

length = 12 cm

width = 8 cm

height = 4 cm

8. A rectangular prism has a volume of 432 in^3 . The height of the prism is 9 in. What are the dimensions of the base?

length = 8 in.

width = 6 in.

Possible answers are given.

9. **Stretch Your Thinking** For Exercise 8, what are other possible dimensions for the base?

Possible answer: 3 in. and 16 in.; 4 in. and 12 in.; 2 in. and 24 in.

Name _____

What Is the Volume?

The dimensions of a rectangular prism are given.

Find the volume of the prism. **Possible answers are given.**

1. length = 2 feet, width = 15 inches, height = 8 inches

$$V = \underline{2,880 \text{ in.}^3}$$

2. length = 4 yards, width = 7 feet, height = 3 feet

$$V = \underline{252 \text{ ft}^3}$$

3. length = 9 centimeters, width = 35 millimeters, height = 7 centimeters

$$V = \underline{220,500 \text{ mm}^3}$$

4. length = 1 yard, width = 2 feet, height = 18 inches

$$V = \underline{15,552 \text{ in.}^3}$$

5. length = 1 meter, width = 3 decimeters, height = 8 centimeters

$$V = \underline{24,000 \text{ cm}^3}$$

6. length = 9 feet, width = 2 yards, height = 36 inches

$$V = \underline{6 \text{ yd}^3}$$

7. **Stretch Your Thinking** What cubic unit did you use in your answer to Exercise 6? Express the volume in a different cubic unit.

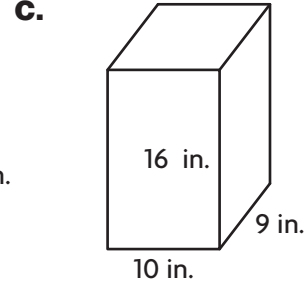
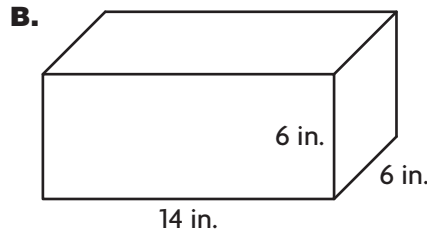
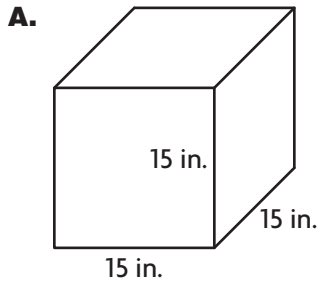
Possible answer: cubic yards; 162 ft³

or 279,936 in.³

Name _____

The Gift of Volume

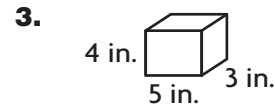
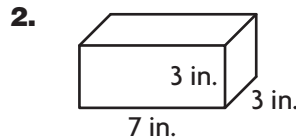
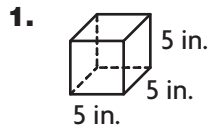
Leah and Wayne are sending presents in the mail. Boxes A, B, and C are shipping boxes. Find the volume of each shipping box. Then solve each problem below.



Volume of A: 3,375 in.³

Volume of B: 504 in.³

Volume of C: 1,440 in.³



Volume: 125 in.³

Volume: 63 in.³

Volume: 60 in.³

How many of these boxes can fit into Box A?

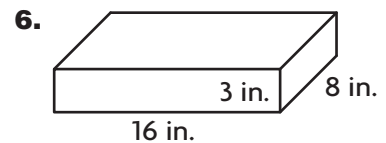
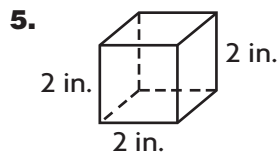
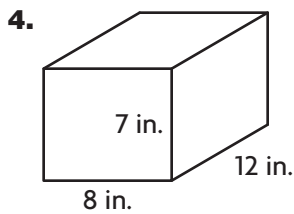
How many of these boxes can fit into Box B?

How many of these boxes can fit into Box C?

27 boxes

8 boxes

24 boxes



Volume: 672 in.³

Volume: 8 in.³

Volume: 384 in.³

After Leah packs this present in Box A, what is the volume left to pack other presents?

After Leah packs 10 of these presents in Box B, what is the volume left to pack other presents?

After Wayne packs 3 of these presents in Box C, what is the volume left to pack other presents?

2,703 in.³

424 in.³

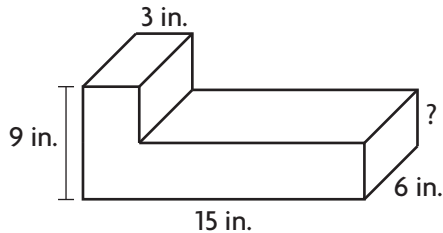
288 in.³

Name _____

Finding Unknown Side Lengths

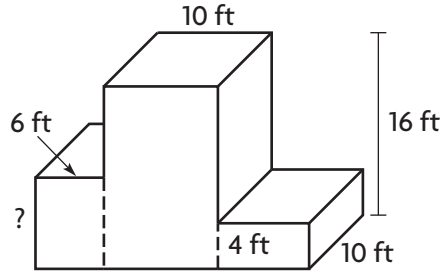
The volume of each composite figure is given. Find the unknown side length.

1. Volume = 378 in.^3



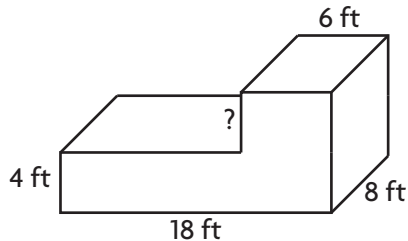
3 in.

2. Volume = $2,400 \text{ ft}^3$



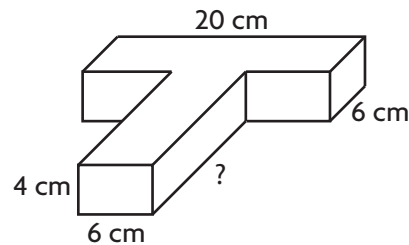
8 ft

3. Volume = 768 ft^3



4 ft

4. Volume = 864 cm^3



16 cm

5. **Write Math** Explain how you found the unknown side length of the composite figure in Exercise 3.

Possible answer: I broke apart the composite

figure into two rectangular prisms. The

dimensions of the larger prism are 18 ft, 8 ft,

and 4 ft, so its volume is $18 \times 8 \times 4$, or 576 ft^3 .

So, the volume of the smaller prism must be

$768 - 576$, or 192 ft^3 . I know its length is 6 ft,

and its width is 8 ft. Its height is $192 \div (6 \times 8)$,

or $192 \div 48$. The quotient is 4. So the height of

the smaller prism is 4 ft.



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