NAME _____

Lesson 8.1 Metric Conversions

Length	*Weight*	*Volume*
1 kilometer (k) = 1,000 meters (m)	1 kilogram (kg) = 1,000 grams (g)	1 kiloliter (kL) = 1,000 liters (L)
1 meter (m) = 0.001 kilometers (km)	1 gram (g) = 0.001 kilograms (kg)	1 liter (L) = 0.001 kiloliters (kL)
1 meter (m) = 100 centimeters (cm)	1 gram (g) = 100 centigrams (cg)	1 liter = 100 centiliters (cL)
1 centimeter (cm) = 0.01 meters (m)	1 centigram (cg) = 0.01 grams (g)	1 centiliter (cL) = 0.01 liters (L)
1 meter (m) = 1,000 millimeters (mm)	1 gram (g) = 1,000 milligrams (mg)	1 liter (L) = 1,000 milliliters (mL)
1 millimeter (mm) = 0.001 meter (m)	1 milligram (mg) = 0.001 gram (g)	1 milliliter (mL) = 0.001 liters (L)

3 m = _____ cm	6 g = _____ mg	4 kL = _____ L
1 m = 100 cm	1 g = 1,000 mg	1 kL = 1,000 L
3 m = (3 × 100) cm	6 g = (6 × 1,000) mg	4 kL = (4 × 1,000) L
3 m = 300 cm	6 g = 6,000 mg	4 kL = 4,000 L

Complete the following.

	a	b
1.	5 g = _____ mg	17,000,000 mg = _____ kg
2.	4,000 L = _____ kL	51,000 mL = _____ L
3.	600 mm = _____ cm	8 m = _____ mm
4.	4 kL = _____ mL	46,000 L = _____ kL
5.	42 m = _____ mm	12 km = _____ m
6.	2 g 150 mg = _____ mg	4 kg 200 g = _____ g

SHOW YOUR WORK

7. Duane has a pencil 7 centimeters long. Fred has a pencil 64 millimeters long. Whose pencil is longer, and how much longer is it?

_____ pencil is _____ millimeters longer.

7.

8. Pedro has a stack of coins that weighs 85 grams. Conner has a stack of coins that weighs 64,300 milligrams. Whose stack of coins weighs more? How much more?

_____ stack of coins weighs _____ milligrams more.

8.

NAME _____

Lesson 8.2 Standard Measurement Conversions

Length	*Weight*	*Volume*
1 mile (mi.) = 1,760 yards (yd.)	1 gallon (gal.) = 4 quarts (qt.)	1 pound (lb.) = 16 ounces (oz.)
1 mile (mi.) = 5,280 feet (ft.)	1 gallon (gal.) = 8 pints (pt.)	
1 yard (yd.) = 36 inches (in.)	1 quart (qt.) = 2 pints (pt.)	
1 yard (yd.) = 3 feet (ft.)	1 quart (qt.) = 4 cups (c.)	2,000 pounds (lb.) = 1 ton (T.)
1 foot (ft.) = 12 inches (in.)	1 pint (pt.) = 2 cups (c.)	

Complete the following.

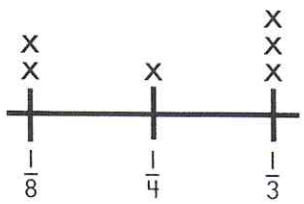
	a	b
1.	12 ft. = _____ yd.	120 in. = _____ ft.
2.	10 pt. = _____ qt.	9 pt. = _____ c.
3.	80 oz. = _____ lb.	1 T. = _____ oz.
4.	7 qt. = _____ c.	2 gal. = _____ pt.
5.	14,000 lb. = _____ T.	8 lb. = _____ oz.
6.	8 ft. 2 in. = _____ in.	18 ft. = _____ yd.
7.	1 T. 5 oz. = _____ oz.	144 oz. = _____ lb.
8.	8 gal. = _____ pt.	2 gal. 8 pt. = _____ pt.
9.	7 yd. = _____ in.	1 yd. 72 in. = _____ yd.
10.	5 qt. = _____ c.	2 qt. 3 c. = _____ c.
11.	2 mi. 3,241 ft. = _____ ft.	3 yd. 1 ft. = _____ ft.
12.	12 lb. 5 oz. = _____ oz.	10 T. 1,344 lb. = _____ lb.
13.	3 yd. = _____ ft.	3 qt. = _____ pt.
14.	1 gal. = _____ c.	1 lb. 5 oz. = _____ oz.
15.	28,000 lb. = _____ T.	3 pt. 6 c. = _____ c.
16.	9 qt. 4 pt. = _____ qt.	1 mi. 4 yd. = _____ yd.

NAME _____

Lesson 8.3 Using Line Plots to Solve Measurement Problems

A **line plot** is used to mark how many times something occurs in a data set. Line plots can be used to organize information to solve problems.

A pitcher holds 2 quarts of iced tea. There are several glasses being filled that hold various amounts—2 glasses hold $\frac{1}{8}$ qt., 1 glass holds $\frac{1}{4}$ qt., and 3 glasses hold $\frac{1}{3}$ qt. How much iced tea will be left in the pitcher?



$$2-[(2\times\tfrac{1}{8})+(\tfrac{1}{4})+(3\times\tfrac{1}{3})]=$$

$$2-[(\tfrac{2}{8}+\tfrac{1}{4}+\tfrac{3}{3})=2-(\tfrac{1}{4}+\tfrac{1}{4}+1)=$$

$$2-1\tfrac{1}{2}=\tfrac{1}{2}\text{ qt.}$$

Draw a line plot to organize the information. Then, solve the problems.

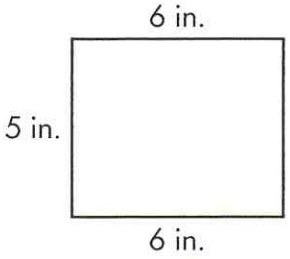
1. Andre needs to get something out of the top of a closet, but cannot reach the shelf. He needs to construct something to stand on to reach the top, which is 3 feet too tall. He has 2 phone books that are each $\frac{1}{4}$ foot tall, 1 step stool that is $\frac{1}{2}$ foot tall, and one chair that is $1\frac{1}{3}$ feet tall. Will Andre's tower make him tall enough to reach the top?

2. Getting ready for a science experiment, Mr. Yip has put water into 8 1-pint beakers. Two beakers hold $\frac{1}{4}$ pint, 3 beakers hold $\frac{3}{8}$ pint, 2 beakers hold $\frac{5}{6}$ pint, and 1 beaker holds $\frac{5}{8}$ pint. If Mr. Yip wants to split the water equally between the 8 beakers, how much water will be in each beaker?

NAME _____

Lesson 8.4 Calculating Perimeter

The **perimeter** is the sum of the sides of a figure.



$$\begin{array}{r} 6 \\ 5 \\ 6 \\ +\ 5 \\ \hline 22 \end{array}$$

or

$$\begin{array}{r} 6 \times 2 = 12 \\ 5 \times 2 = 10 \\ \\ 12 \\ +\ 10 \\ \hline 22 \end{array}$$

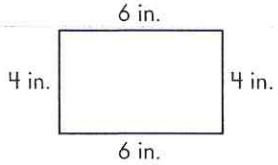
To find the perimeter, add the length of the sides.

The perimeter of the rectangle is 22 in.

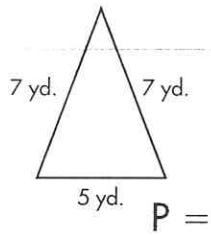
Find the perimeter of each figure.

a **b** **c**

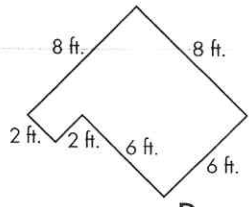
1.



P = _____ in.

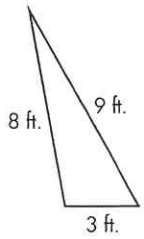


P = _____ yd.

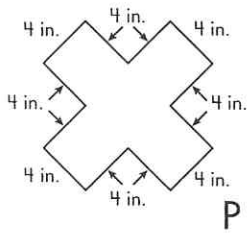


P = _____ ft.

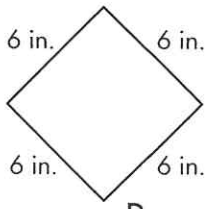
2.



P = _____ ft.

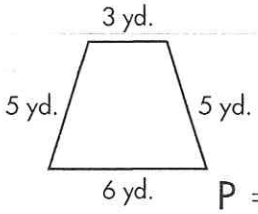


P = _____ in.

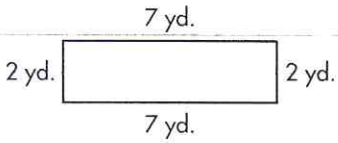


P = _____ in.

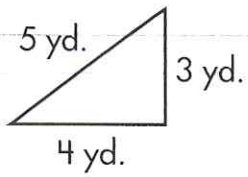
3.



P = _____ yd.

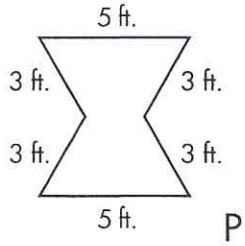


P = _____ yd.

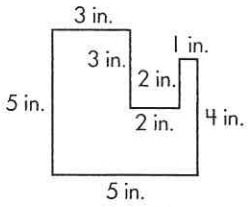


P = _____ yd.

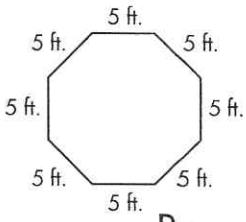
4.



P = _____ ft.



P = _____ in.

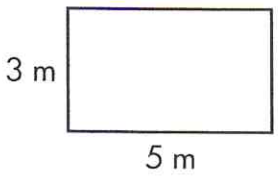
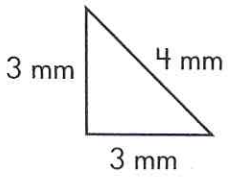
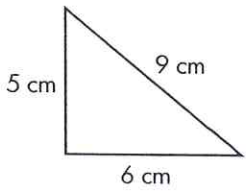
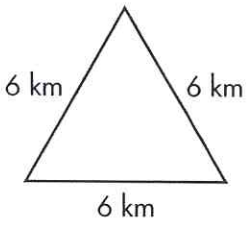
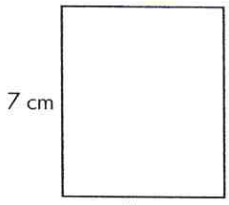
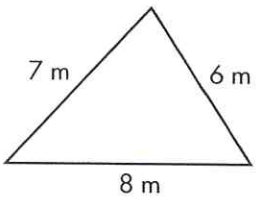
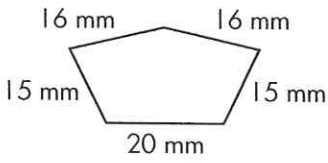
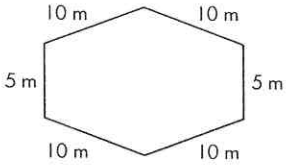
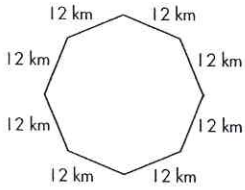
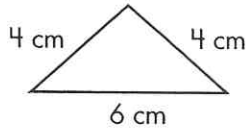
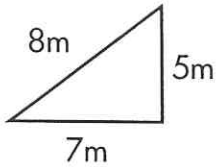
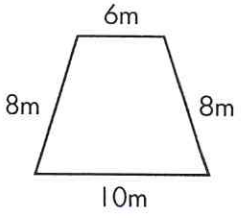


P = _____ ft.

NAME _____

Lesson 8.4 Calculating Perimeter

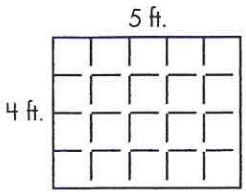
Find the perimeter of each figure.

	a	b	c
1.	 P = _____ m	 P = _____ mm	 P = _____ cm
2.	 P = _____ km	 P = _____ cm	 P = _____ m
3.	 P = _____ mm	 P = _____ m	 P = _____ km
4.	 P = _____ cm	 P = _____ m	 P = _____ m

NAME _____

Lesson 8.5 Calculating Area

Area is the number of square units needed to cover a surface.



Length: 5 ft.
Width: 4 ft.

$$\begin{array}{r} 5 \text{ ft.} \\ \times\ 4 \text{ ft.} \\ \hline 20 \text{ square feet} \end{array}$$

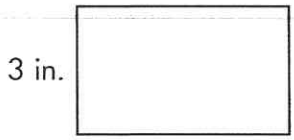
To calculate the area of a square or rectangle, multiply the measure of the length by the measure of the width.

The area of a rectangle 5 feet in length and 4 feet in width is <u>20 square feet</u>.

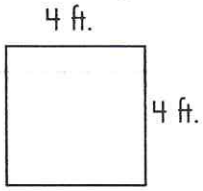
Find the area of each figure.

a **b** **c**

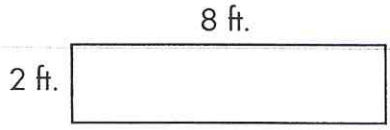
1.



A = ____ sq. in.

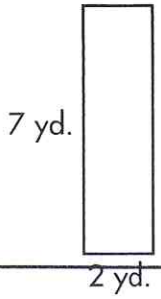


A = ____ sq. ft.

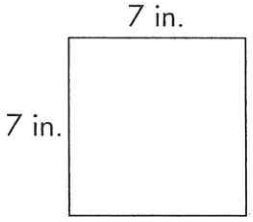


A = ____ sq. ft.

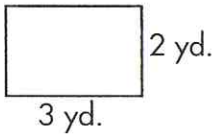
2.



A = ____ sq. yd.

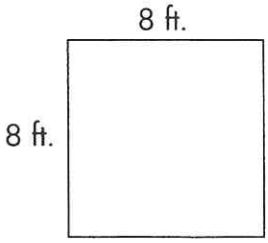


A = ____ sq. in.

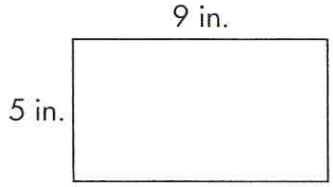


A = ____ sq. yd.

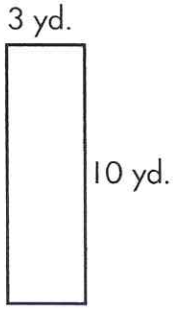
3.



A = ____ sq. ft.



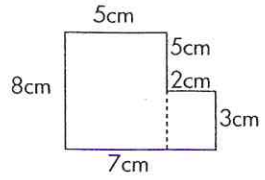
A = ____ sq. in.



A = ____ sq. yd.

NAME _____

Lesson 8.5 Calculating Area



To calculate the area of an irregular shape, you must first divide the shape into smaller rectangles or squares.

$$\begin{array}{r} 8 \\ \times\ 5 \\ \hline 20 \text{ sq. cm} \end{array} \qquad \begin{array}{r} 2 \\ \times\ 3 \\ \hline 6 \text{ sq. cm} \end{array}$$

Next, you must find the area of each individual rectangle or square.

$$\begin{array}{r} 20 \\ +\ 6 \\ \hline 26 \text{ sq. cm} \end{array}$$

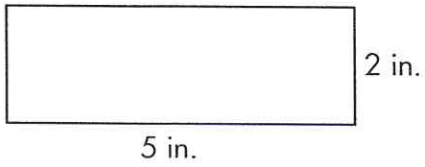
Then, add the area of each rectangle and square together to find the total area of the irregular shape.

The area of this shape is 26 square centimeters.

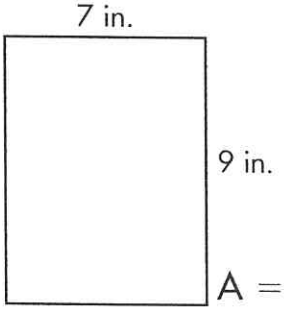
Find the area of each figure.

a **b** **c**

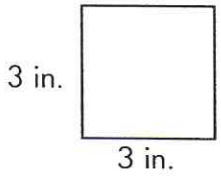
1.



A = ____ sq. in.

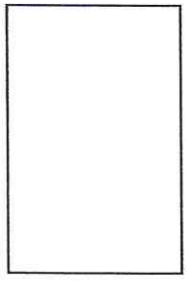


A = ____ sq. in.

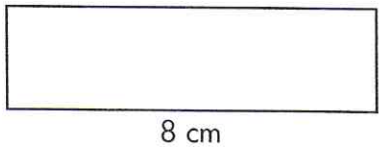


A = ____ sq. in.

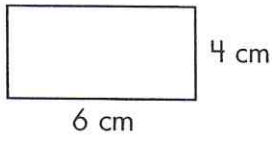
2.



A = ____ sq. cm

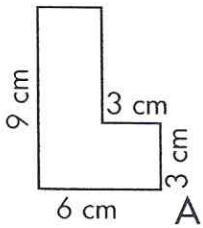


A = ____ sq. cm

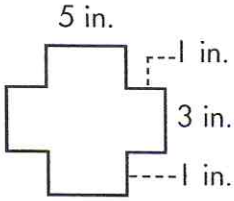


A = ____ sq. cm

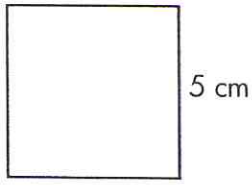
3.



A = ____ sq. cm



A = ____ sq. in.

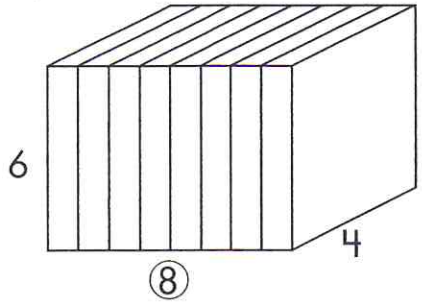


A = ____ sq. cm

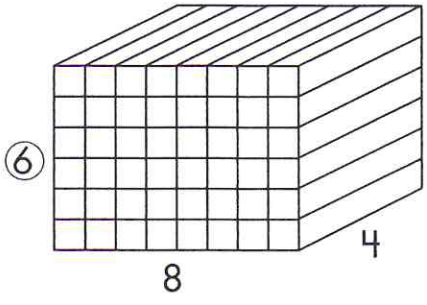
NAME _____

Lesson 8.6 Models of Volume

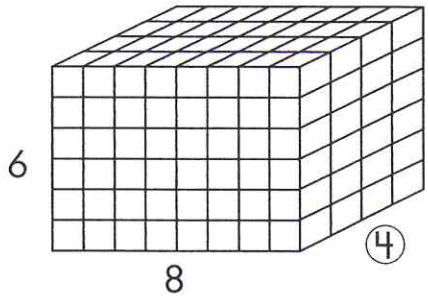
The **volume** of a rectangular solid can be found by figuring out how many cubes of a particular unit size will fit inside the shape.



First, divide the figure into given length units.



Next, divide the figure into given height units.

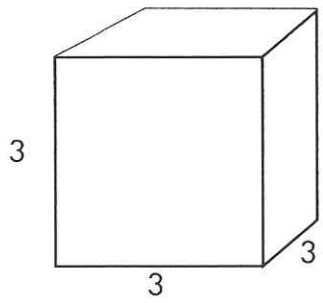


Last, divide the figure into given width units.

8 × 6 × 4 = 192 cubic units

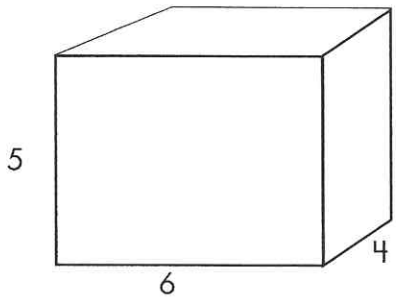
Use the figures to find out how many units are in each figure.

1.



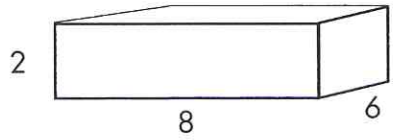
____ × ____ × ____ = ____ cubic units

2.



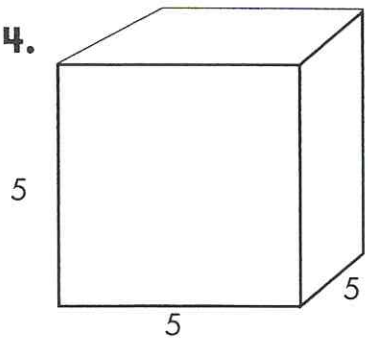
____ × ____ × ____ = ____ cubic units

3.



____ × ____ × ____ = ____ cubic units

4.

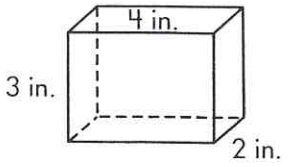


____ × ____ × ____ = ____ cubic units

NAME _____

Lesson 8.7 Calculating Volume

Volume is the number of cubic units needed to fill a given solid.



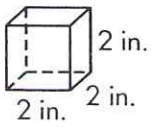
Length: 4 in.
Width: 2 in.
Height: 3 in.

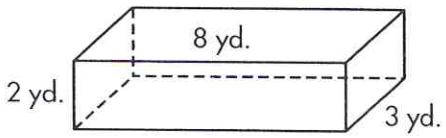
Volume = length × width × height
Volume = (4 in.) × (2 in.) × (3 in.)
Volume = 24 cubic inches

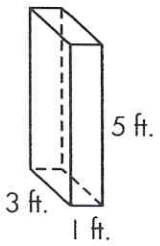
Find the volume of each rectangular solid.

a **b** **c**

1.

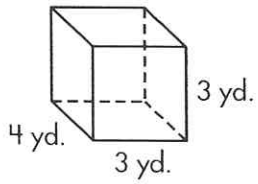


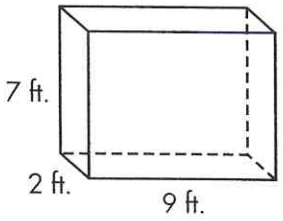


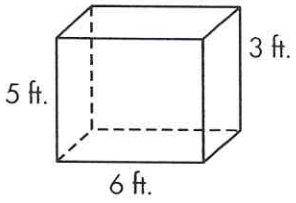


V = ____ cu. in. V = ____ cu. yd. V = ____ cu. ft.

2.

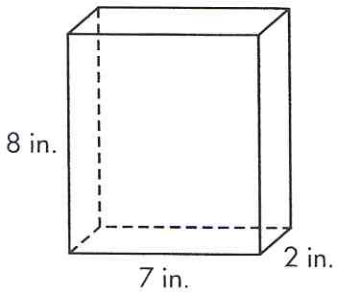


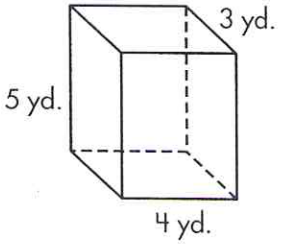


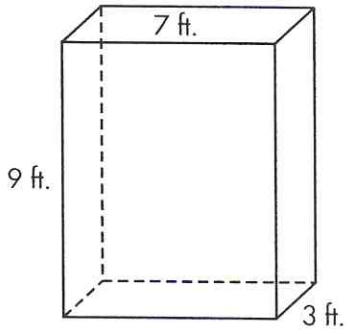


V = ____ cu. yd. V = ____ cu. ft. V = ____ cu. ft.

3.





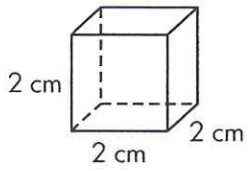
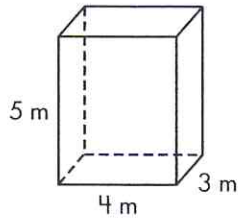
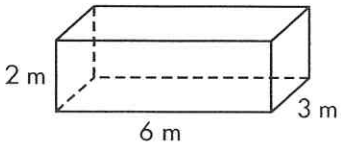
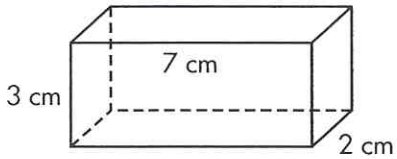
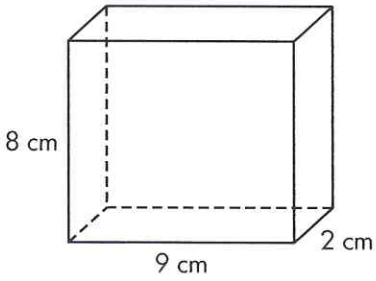
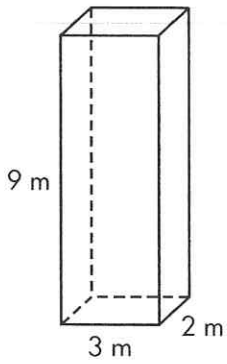
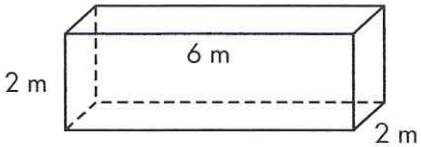
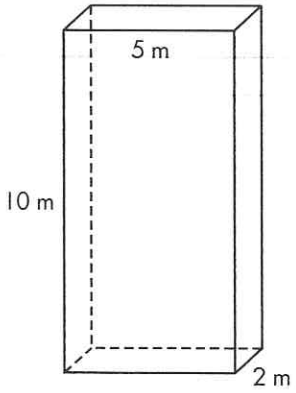
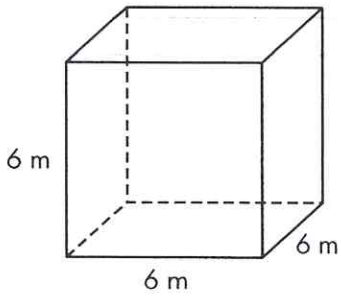


V = ____ cu. in. V = ____ cu. yd. V = ____ cu. ft.

NAME _____

Lesson 8.7 Calculating Volume

Find the volume of each rectangluar solid.

	a	b	c
1.			
	V = ____ cu. cm	V = ____ cu. m	V = ____ cu. m
2.			
	V = ____ cu. cm	V = ____ cu. cm	V = ____ cu. m
3.			
	V = ____ cu. m	V = ____ cu. m	V = ____ cu. m

NAME _____

Lesson 8.7 Calculating Volume

Use the dimensions given to find the volume of the figures.

	a	b
1.	Length = 12 centimeters Width = 4 centimeters Height = 6 centimeters V = ____ cu. cm	Length = 4 centimeters Width = 11 centimeters Height = 6 centimeters V = ____ cu. cm
2.	Length = 4 meters Width = 10 meters Height = 5 meters V = ____ cu. m	Length = 2 inches Width = 6 inches Height = 4 inches V = ____ cu. in.
3.	Length = 3 feet Width = 2 feet Height = 6 feet V = ____ cu. ft.	Length = 12 inches Width = 8 inches Height = 4 inches V = ____ cu. in.
4.	Length = 10 inches Width = 6 inches Height = 2 inches V = ____ cu. in.	Length = 6 inches Width = 9 inches Height = 5 inches V = ____ cu. in.
5.	Length = 8 inches Width = 5 inches Height = 3 inches V = ____ cu. in.	Length = 12 meters Width = 8 meters Height = 3 meters V = ____ cu. m

NAME _____

Lesson 8.8 Problem Solving

SHOW YOUR WORK

Solve each problem.

1. Mr. Peate is building a rectangular fence around his house. The fence will be 32 feet long and 29 feet wide. What will be the perimeter of the fence?

The perimeter will be _____ feet.

1.

2. Sherman developed a photo 4 inches wide by 6 inches long. What is the area of the photograph?

The photo is _____ square inches.

2.

3. The Williams family bought a house 4,560 square feet in area. The house is 60 feet long. How wide is the house?

The house is _____ feet wide.

3.

4. Ms. Ferris owns a barn 12 yards long, 9 yards high, and 11 yards wide. If Ms. Ferris' barn is rectangular, what is the volume of her barn?

The volume of her barn is _____ cubic yards.

4.

5. The storage center sells rectangular storage spaces that are each 200 cubic feet. Each space is 5 feet long and 5 feet wide. What is the height of each storage space?

Each storage space is _____ feet high.

5.

6. A toy doll was sent to Lucy in a box 8 inchces long, 5 inches wide, and 15 inches high. What is the volume of the box?

The volume of the box is _____ cubic inches.

6.

NAME _____

Lesson 8.8 Problem Solving

SHOW YOUR WORK

Solve each problem.

1. A soccer field is a rectangle. If a soccer field is 90 meters long and 45 meters wide, what is the perimeter of the soccer field?

The perimeter of the field is _____ meters.

1.

2. Julie is cutting out triangle pieces for her scrapbook. The sides of the triangle are 3 centimeters by 4 centimeters by 2 centimeters. What is the perimeter of the triangle?

The perimeter of the triangle is _____ centimeters.

2.

3. A town is 4 kilometers wide and 3 kilometers long. How many kilometers is it around the town?

The perimeter is _____ kilometers.

3.

4. Ian must mow a lawn 15 meters long and 9 meters wide. What is the area that Ian must mow?

Ian must mow an area of _____ square meters.

4.

5. Lea wants to put carpet on her bedroom floor. Her bedroom is 4 meters long and 6 meters wide. How much carpet does Lea need to cover the floor?

Lea needs _____ square meters of carpet.

5.

6. A swimming pool is 3 meters in depth, 8 meters in length, and 6 meters in width. What is the volume of the swimming pool?

The volume of the swimming pool is _____ cubic meters.

6.

NAME _____

Lesson 8.9 Elapsed Time

To calculate the amount of time that has elapsed, follow these steps:

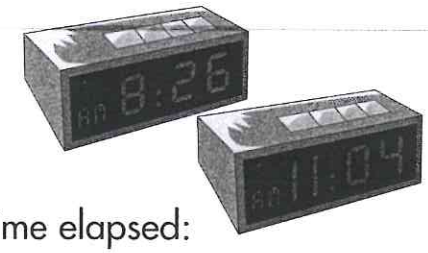
1. Count the number of whole hours between the starting time and finishing time.
2. Count the remaining minutes.
3. Add the hours and minutes.

For example: start time: 9:39 a.m.
finish time: 4:16 p.m.
From 9:39 a.m. to 3:39 p.m., count 6 hours.
From 3:39 p.m. to 4:16 p.m., count 37 minutes.
The total time elapsed is 6 hours and 37 minutes.

Determine how much time has elapsed in each problem.

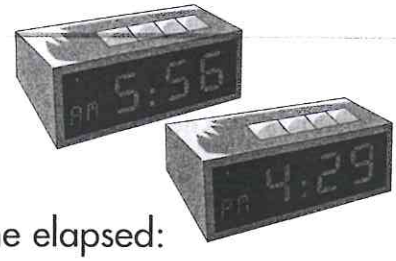
1.

a



Time elapsed:
_____ hours _____ minutes

b



Time elapsed:
_____ hours _____ minutes

2.

Arrival:	6:12 p.m.
Departure:	1:17 a.m.

Time elapsed:
_____ hours _____ minutes

Departure:	2:57 p.m.
Arrival:	9:21 p.m.

Time elapsed:
_____ hours _____ minutes

3.

Time start: _____ a.m.
Time finish: _____ a.m.
Time elapsed: _____

Time start: _____ a.m.
Time finish: _____ a.m.
Time elapsed: _____