

Name _____

Customary Length

You can convert one customary unit of length to another customary unit of length by multiplying or dividing.

Multiply to change from larger to smaller units of length.

Divide to change from smaller to larger units of length.

Convert 3 feet to inches.

Step 1

Decide:

Multiply or Divide

feet → inches
larger → smaller

Step 2

Think:

1 ft = 12 in., so
3 ft = (3 × 12) in.

Step 3

Multiply.

$$3 \times 12 = 36$$

So, 3 feet = 36 inches.

Convert 363 feet to yards.

Step 1

Decide:

Multiply or Divide

feet → yards
smaller → larger

Step 2

Think:

3 ft = 1 yd,
so 363 ft = (363 ÷ 3) yd.

Step 3

Divide.

$$363 \div 3 = \underline{121}$$

So, 363 feet = 121 yards.

**Customary Units
of Length**

1 foot (ft) = 12 inches (in.)
1 yard (yd) = 3 feet
1 mile (mi) = 5,280 feet
1 mile = 1,760 yards

Convert.

1. 33 yd = _____ ft 2. 300 mi = _____ yd 3. 46 in. = ____ ft ____ in.

4. 96 yd = _____ ft 5. 48 ft = _____ yd 6. 2 mi 20 yd = _____ yd

Compare. Write <, >, or =.

7. 2 yd ○ 7 ft 8. 67 mi ○ 117,920 yd 9. 250 yd ○ 800 ft

10. 14 yd 2 ft ○ 16 ft 11. 34 ft 10 in. ○ 518 in. 12. 5 mi 8 ft ○ 8,800 yd

Name _____

Customary Length Measurements Match

Convert each measurement. Write the letter of the correct measure.

1. 28 yd = _____ ft

A. 3

2. 372 in. = _____ yd 1 ft

B. 346

3. _____ yd = 18 ft

C. 44

4. _____ in. = 28 ft 10 in.

D. 65

5. 132 ft = _____ yd

E. 180

6. 780 in. = _____ ft

F. 84

7. _____ yd = 219 ft

G. 12,520

8. _____ in. = 15 ft

H. 10

9. 15,840 ft = _____ mi

I. 73

10. 7 mi 200 yd = _____ yd

J. 6

11. **Stretch Your Thinking** Niko rides his bike 5,300 yards to his friend's house. About how many miles does Niko ride?

_____ yd = 1 mi

5,300 yards is about _____ miles.

Customary Units of Length

1 foot (ft) = 12 inches (in.)
 1 yard (yd) = 3 ft
 1 mile (mi) = 5,280 ft
 1 mi = 1,760 yd

12.  **Write Math** Explain how you found your answer for Exercise 11.

Name _____

Customary Capacity

You can convert one unit of customary capacity to another by multiplying or dividing.

Multiply to change from larger to smaller units.

Divide to change from smaller to larger units.

Convert 8 cups to quarts.

Step 1

Decide:

Multiply or Divide

cups → quarts
smaller → larger

Step 2

Think:

4 c = 1 qt,
so 8 c = (8 ÷ 4) qt.

Step 3

Divide.

$$8 \div \underline{4} = \underline{2}$$

So, 8 cups = 2 quarts.

Convert 19 gallons to quarts.

Step 1

Decide:

Multiply or Divide

gallons → quarts
larger → smaller

Step 2

Think:

1 gal = 4 qt,
so 19 gal = (19 × 4) qt.

Step 3

Multiply.

$$19 \times \underline{4} = \underline{76}$$

So, 19 gallons = 76 quarts.

Customary Units of Capacity

1 cup (c) = 8 fluid ounces (fl oz)
1 pint (pt) = 2 cups
1 quart (qt) = 2 pints
1 quart = 4 cups
1 gallon = 4 quarts

Convert.

1. 14 pt = _____ qt 2. 32 qt = _____ c 3. 7 c = _____ fl oz

4. 28 c = _____ pt 5. 9 gal = _____ qt 6. 16 c = _____ qt

Compare. Write <, >, or =.

7. 16 qt ○ 60 c

8. 88 fl oz ○ 11 c

9. 3 gal ○ 10 qt

10. 36 qt ○ 54 c

11. 66 fl oz ○ 9 c

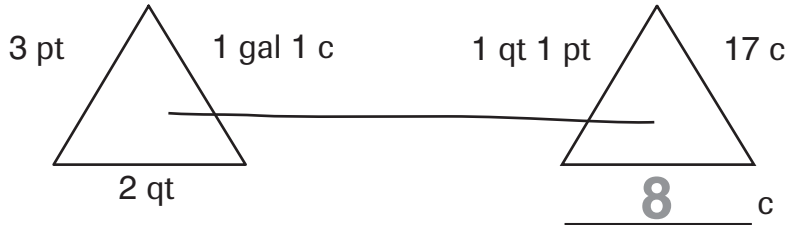
12. 16 gal ○ 64 qt

Units of Capacity

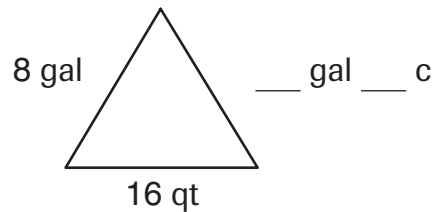
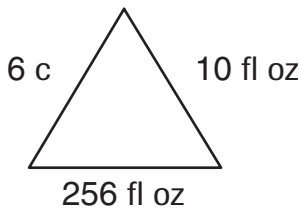
Each triangle in the right column has two measurements that are equal to measurements given on a triangle in the left column. Match the triangles with equal measurements, and find the unknown measurement.

Customary Units of Capacity	
1 cup (c)	= 8 fluid ounces (fl oz)
1 pint (pt)	= 2 cups
1 quart (qt)	= 2 pints
1 gallon (gal)	= 4 quarts

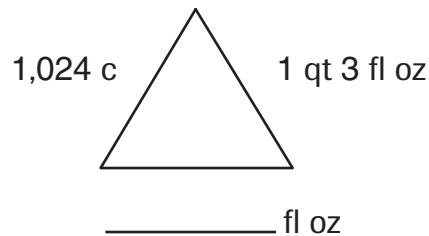
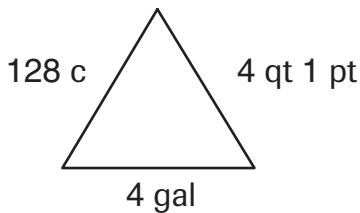
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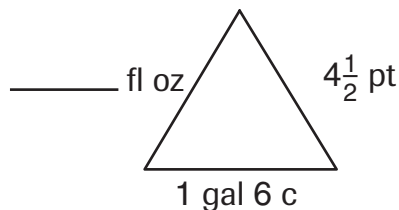
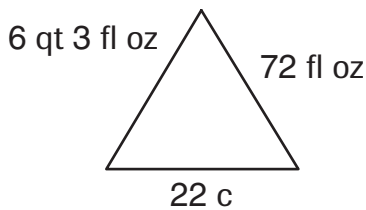
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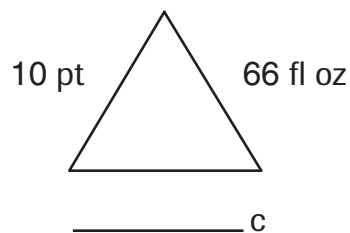
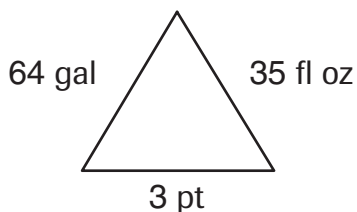
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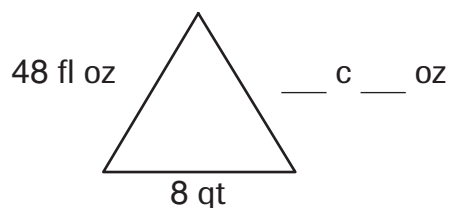
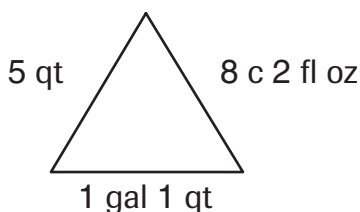
3.



4.



5.



Name _____

Weight

You can convert one customary unit of weight to another by multiplying or dividing.

Multiply to change from larger to smaller units.

Divide to change from smaller to larger units.

Customary Units of Weight

1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2,000 pounds

Convert 96 ounces to pounds.

Step 1

Decide:

Multiply or Divide

ounces → pounds
smaller → larger

Step 2

Think:

16 oz = 1 lb
so 96 oz = (96 ÷ 16) lb.

Step 3

Divide.

96 ÷ 16 = 6

So, 96 ounces = 6 pounds.

Convert 4 pounds to ounces.

Step 1

Decide:

Multiply or Divide

pounds → ounces
larger → smaller

Step 2

Think:

1 lb = 16 oz,
so 4 lb = (4 × 16) oz.

Step 3

Multiply.

4 × 16 = 64

So, 4 pounds = 64 ounces.

Convert.

1. 14 lb = _____ oz 2. 12,000 lb = _____ T 3. 2 T = _____ lb

4. 7 lb = _____ oz 5. 22 lb = _____ oz 6. 16 oz = _____ lb

Compare. Write <, >, or =.

7. 1 T ○ 3,000 lb

8. 3 lb ○ 43 oz

9. 5 T ○ 10,000 lb

10. 3 T ○ 6,000 lb

11. 6 lb ○ 96 oz

12. 16 T ○ 6,400 lb

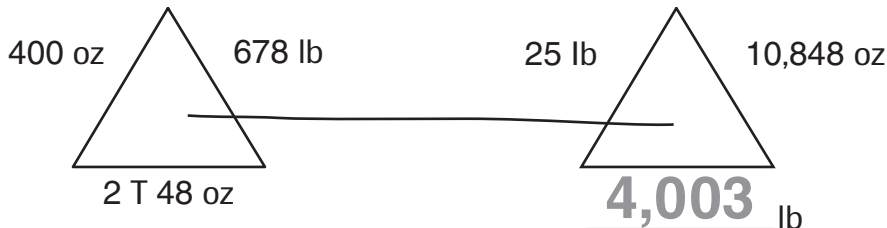
Name _____

Units of Weight

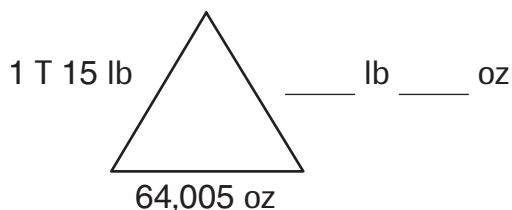
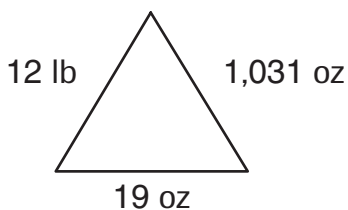
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Customary Units of Weight
 1 pound (lb) = 16 ounces (oz)
 1 ton (T) = 2,000 lb

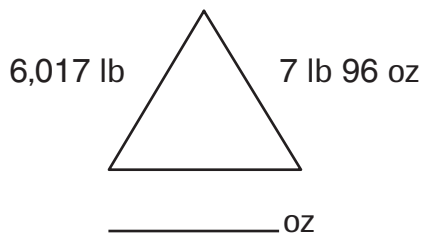
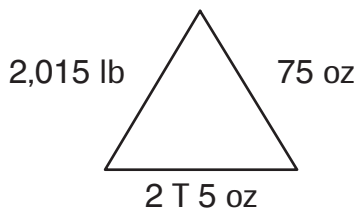
Example:



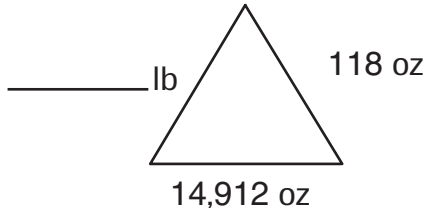
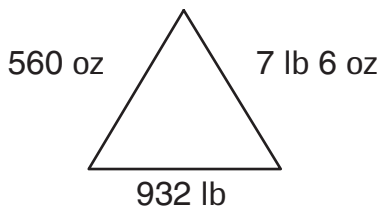
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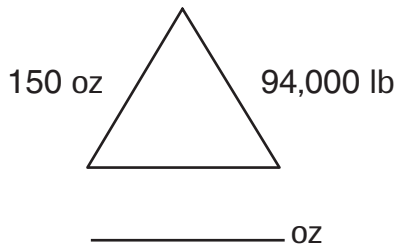
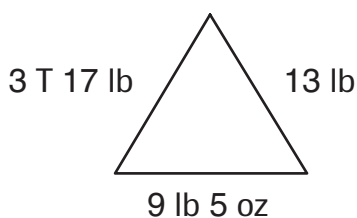
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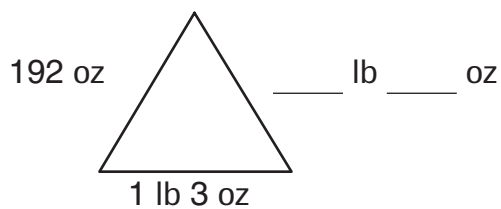
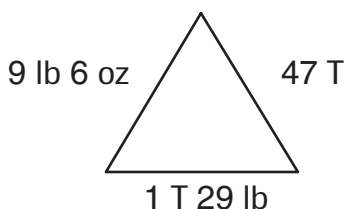
3.



4.



5.



Name _____

Multistep Measurement Problems

An ice cream parlor donated 6 containers of ice cream to a local elementary school. Each container holds 3 gallons of ice cream. If each student is served 1 cup of ice cream, how many students can be served?

Step 1 Record the information you are given.

There are 6 containers of ice cream.

Each container holds 3 gallons of ice cream.

Step 2 Find the total amount of ice cream in the 6 containers.

6×3 gallons = 18 gallons of ice cream

Step 3 Convert from gallons to cups.

There are 4 quarts in 1 gallon, so 18 gallons = 72 quarts.

There are 2 pints in 1 quart, so 72 quarts = 144 pints.

There are 2 cups in 1 pint, so 144 pints = 288 cups.

So, 288 students can be served 1 cup of ice cream.

Solve.

1. A cargo truck weighs 8,750 pounds. The weight limit for a certain bridge is 5 tons. How many pounds of cargo can be added to the truck before it exceeds the weight limit for the bridge?

2. A plumber uses 16 inches of tubing to connect each washing machine in a laundry to the water source. He wants to install 18 washing machines. How many yards of tubing will he need?

3. Larry has 9 gallons of paint. He uses 10 quarts to paint his kitchen and 3 gallons to paint his living room. How many pints of paint will be left?

4. Ketisha is practicing for a marathon by running around a track that is 440 yards long. Yesterday she ran around the track 20 times. How many miles did she run?

Name _____

Metric Measures

The metric system is based on place value. To convert between units, you multiply or divide by a power of 10. You **multiply** to change larger units to smaller units, such as liters to centiliters. You **divide** to change smaller units to larger units, such as meters to kilometers.

Convert 566 millimeters to decimeters.

- Think about how the two units are related.

1 decimeter = 100 millimeters

- **Think:** Should I multiply or divide?

Millimeters are smaller than decimeters.

So divide, or move the decimal point left for each power of 10.

$$\begin{array}{ccccccc} 566 & \div & 100 & = & \underline{5.66} & & \\ \text{millimeters} & & \text{mm in 1 dm} & & \text{total decimeters} & & \end{array}$$

So, 566 mm = 5.66 dm.

Metric Units of Length	
1 centimeter (cm)	= 10 millimeters (mm)
1 decimeter (dm)	= 10 centimeters (cm)
1 meter (m)	= 1,000 millimeters (mm)
1 kilometer (km)	= 1,000 meters (m)

				5	6	6
kilo- (k)	hecto- (h)	deka- (da)	meter liter gram	deci- (d)	centi- (c)	milli- (m)

Complete the equation to show the conversion.

1. 115 km 10 = _____ hm 2. 418 cL 10 = _____ dL
- 115 km 100 = _____ dam 418 cL 100 = _____ L
- 115 km 1,000 = _____ m 418 cL 1,000 = _____ daL

Convert.

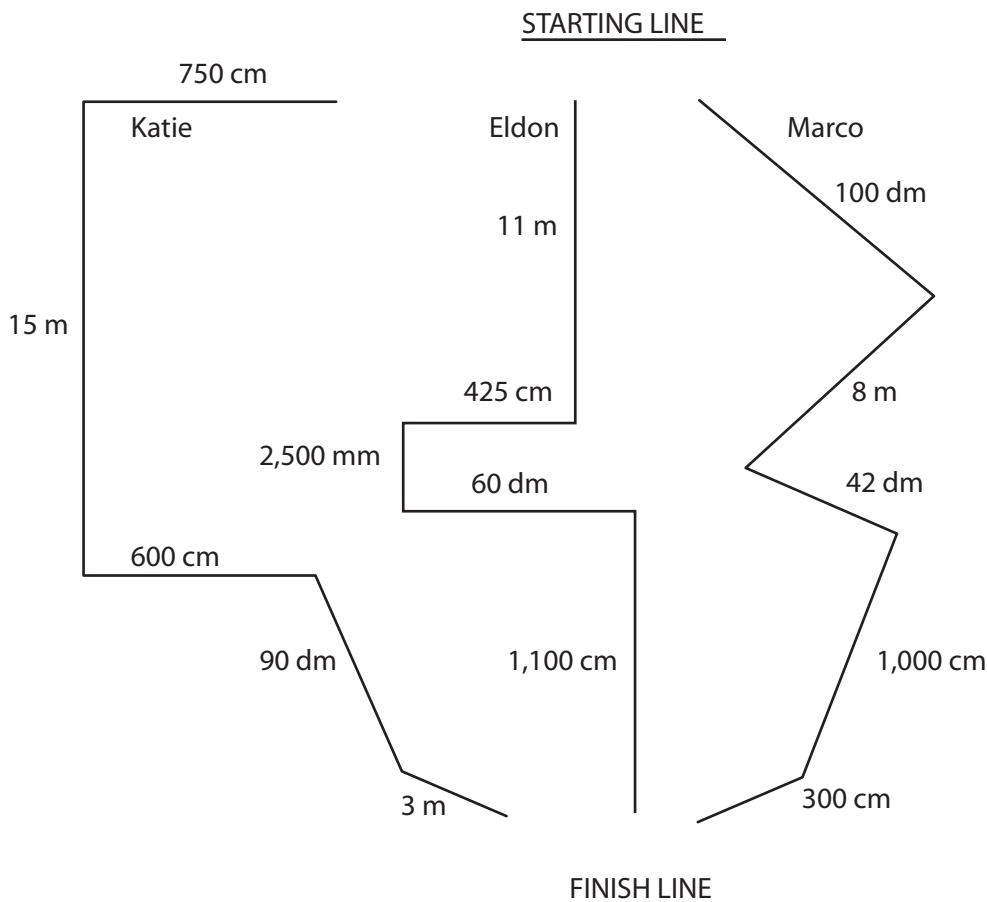
3. 40 cm = _____ mm 4. 500 mL = _____ dL 5. 6 kg = _____ g
6. 5,000 cL = _____ L 7. 4 kg = _____ hg 8. 200 mm = _____ cm

Name _____

Metric Maze

Katie, Eldon, and Marco are taking different paths through the Metric Maze below. Follow each of their paths, and add to find the total distance each person travels. Then answer the questions below.

Metric Units of Length
 1 meter (m) = 10 decimeters (dm)
 1 dm = 10 centimeters (cm)
 1 cm = 10 millimeters (mm)



1. Who has the shortest path to the Finish Line? _____
2. Who has the longest path to the Finish Line? _____
3. **Write Math** **Explain** how you changed the units so that you could compare the lengths of the paths.

Name _____

Problem Solving • Customary and Metric Conversions

You can use the strategy *make a table* to help you solve problems about customary and metric conversions.

Jon's faucet is dripping at the rate of 24 centiliters in a day. How many milliliters of water will have dripped from Jon's faucet in 24 hours?

Read the Problem

What do I need to find?

I need to find how many milliliters of water will have dripped from Jon's faucet in 24 hours.

What information do I need to use?

I need to use the number of cL that have dripped in 24 hr and the number of mL in a cL.

How will I use the information?

I will make a table to show the relationship between the number of centiliters and the number of milliliters.

Conversion Table

	L	dL	cL	mL
1 L	1	10	100	1,000
1 dL	$\frac{1}{10}$	1	10	100
1 cL	$\frac{1}{100}$	$\frac{1}{10}$	1	10
1 mL	$\frac{1}{1,000}$	$\frac{1}{100}$	$\frac{1}{10}$	1

I can use the Conversion Table to find the number of milliliters in 1 centiliter.

There are 10 milliliters in 1 centiliter.

cL	1	2	4	24
mL	10	20	40	240

So, 240 milliliters of water will have dripped from Jon's faucet in 24 hours.

Make a table to help you solve the problems.

- Fernando has a bucket that holds 3 gallons of water. He is filling the bucket using a 1-pint container. How many times will he have to fill the pint container in order to fill the bucket?
- Lexi has a roll of shelf paper that is 800 cm long. She wants to cut the paper into 1-m strips to line the shelves in her pantry. How many 1-meter strips can she cut?


Name _____

More Customary Units

The table below shows customary units of length and capacity that are sometimes used.

Units of Length	Units of Capacity
1 rod = 16.5 feet	1 fluid dram = $\frac{1}{8}$ fluid ounce
1 furlong = 40 rods	1 gill = 4 fluid ounces
1 mile = 8 furlongs	1 peck = 8 quarts
1 fathom = 6 feet	1 bushel = 4 pecks
1 league = 3 miles	1 tablespoon = $\frac{1}{2}$ fluid ounce
	1 teaspoon = $\frac{1}{3}$ tablespoon

Solve.

- How many yards are in 1 rod? _____
- How many feet are in 1 furlong? _____
- How many furlongs are in 1,760 yards? _____
- How many inches are in 1 fathom? _____
- How many miles are in 20,000 leagues? _____
- How many fluid drams are in 1 ounce? _____
- How many gills are in 1 pint? _____
- How many pints are in 1 peck? _____
- How many quarts are in 3 bushels? _____
- How many fluid drams are in 1 gill? _____
- How many teaspoons are in 1 tablespoon? _____
- How many tablespoons are in 1 gill? _____
-  **Explain** how you solved Exercise 12.

Name _____

Elapsed Time

You can solve elapsed time problems by converting units of time.

Starting at 4:20 P.M., Connie practiced piano for 90 minutes. At what time did Connie stop practicing piano?

Convert 90 minutes to hours and minutes. Then find the end time.

Step 1 To convert minutes to hours, divide.

$$90 \div 60 \text{ is } 1 \text{ r } 30$$

$$90 \text{ min} = \underline{1} \text{ hr } \underline{30} \text{ min}$$

Step 2 Count forward by hours until you reach 1 hour.

$$4:20 \rightarrow 5:20 = 1 \text{ hour}$$

Step 3 Count forward by minutes until you reach 30 minutes.

$$5:20 \rightarrow 5:30 = 1 \text{ hour } 10 \text{ minutes}$$

$$5:30 \rightarrow 5:40 = 1 \text{ hour } 20 \text{ minutes}$$

$$5:40 \rightarrow 5:50 = 1 \text{ hour } 30 \text{ minutes}$$

Connie stops practicing piano at 5:50 P.M.

Units of Time
60 seconds (s) = 1 minute (min)
60 minutes = 1 hour (hr)
24 hours = 1 day (d)
7 days = 1 week (wk)
52 weeks = 1 year (yr)
12 months (mo) = 1 year
365 days = 1 year

Convert.

1. 480 min = _____ hr 2. 4 d = _____ hr 3. 125 hr = _____ d _____ hr

Find the start, elapsed, or end time.

4. Start time: 7:15 A.M.

Elapsed time: 2 hr 20 min

End time: _____

5. Start time: 6:28 A.M.

Elapsed time: _____

End time: 10:08 A.M.

6. Start time: _____

Elapsed time: 5 hr 50 min

End time: 7:55 P.M.

7. Start time: 5:24 P.M.

Elapsed time: 6 hr

End time: _____

Name _____

What Time Is It?

Find the start, elapsed, or end time.

1. Start: 9:13 A.M.

Elapsed time: $9\frac{3}{4}$ hr

End time: _____

2. Start: 7:15 A.M.

Elapsed time: _____

End time: 1:22 P.M.

3. Start: 2:18:09 P.M.

Elapsed time: 5 hr 34 min 27 sec

End time: _____

4. Start: _____

Elapsed time: 2 hr 27 min 53 sec

End time: 7:04:11 P.M.

5. Start: April 4

Elapsed time: 2 weeks 4 days

End time: _____

6. Start: June 1

Elapsed time: _____

End time: June 27

7. **Stretch Your Thinking** Anne started working on her art project at 3:40 P.M. She worked for $1\frac{1}{2}$ hours. She took a 55 minute supper break. She claimed that if she worked 1 hour more, she could finish the project and meet her friends at the movies before 7:00 P.M. Is Anne correct? **Explain** how you know.

8.  **Explain** how to find the elapsed time in Exercise 6.
