

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.

$$1 \text{ decimeter} = 100 \text{ millimeters}$$

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

Millimeters are smaller than decimeters.

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

$$566 \div 100 = \underline{5.66}$$

millimeters mm in 1 dm total decimeters

So, 566 mm = 5.66 dm.

Metric Units of Length

$$1 \text{ centimeter (cm)} = 10 \text{ millimeters (mm)}$$

$$1 \text{ decimeter (dm)} = 10 \text{ centimeters (cm)}$$

$$1 \text{ meter (m)} = 1,000 \text{ millimeters (mm)}$$

$$1 \text{ kilometer (km)} = 1,000 \text{ meters (m)}$$

				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. $115 \text{ km} \bigcirc 10 = \underline{\hspace{2cm}} \text{ hm}$ 2. $418 \text{ cL} \bigcirc 10 = \underline{\hspace{2cm}} \text{ dL}$
 $115 \text{ km} \bigcirc 100 = \underline{\hspace{2cm}} \text{ dam}$ $418 \text{ cL} \bigcirc 100 = \underline{\hspace{2cm}} \text{ L}$
 $115 \text{ km} \bigcirc 1,000 = \underline{\hspace{2cm}} \text{ m}$ $418 \text{ cL} \bigcirc 1,000 = \underline{\hspace{2cm}} \text{ daL}$

Convert.

3. $40 \text{ cm} = \underline{\hspace{2cm}} \text{ mm}$ 4. $500 \text{ mL} = \underline{\hspace{2cm}} \text{ dL}$ 5. $6 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$
6. $5,000 \text{ cL} = \underline{\hspace{2cm}} \text{ L}$ 7. $4 \text{ kg} = \underline{\hspace{2cm}} \text{ hg}$ 8. $200 \text{ mm} = \underline{\hspace{2cm}} \text{ cm}$

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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 _____

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: _____