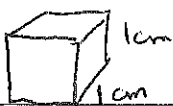


Chapter 5: Capacity, Volume, Mass & Temperature

Name: _____

Capacity (Metric Units and Conversions)

In the metric system of measurement, the base unit for capacity is the litre, L. We commonly use millilitres to measure capacity, too, and this is abbreviated mL. One litre equals 1000 mL. One mL also equals one cubic centimetre, but when using capacity, this is abbreviated as "cc" rather than "cm 3".

Unit	Conversion
Litre (L)	1 L = 1000 mL 1 L = 1000 cc/cm ³ 1 L = 4 cups 1 L = 1.06 quarts (US) 1 L = 0.26 gal (US) 0.264... 3.8 L = 1 gal (US) 3.785... 4.5 L = 1 gal (UK)
1L Carton of Milk Pop Bottle	
Millilitre (mL) 20 drops 	1 mL = 1 cc/cm ³ 5 mL = 1 tsp 15 mL = 1 T 250 mL = 1 cup 100 mL = 3.38 fl oz (US) 3.52 fl oz (UK)

Metric Prefixes

Multiplication Factor	Prefix	Symbol
1,000,000,000 = 10 ⁹	giga	G
1,000,000 = 10 ⁶	mega	M
1,000 = 10 ³	kilo	k
100 = 10 ²	hecto	h
1 = 1		
0.01 = 10 ⁻²	centi	c
0.001 = 10 ⁻³	milli	m
0.000001 = 10 ⁻⁶	micro	μ
0.000000001 = 10 ⁻⁹	nano	n

1 cm = 1 cm³ = 1 mL

Just like any measurements in the metric system, prefixes are used to denote multiples of 10 from the base unit. (Base unit for volume = Litres)

Example:

How many litres are there in 3500 mL?

$$\text{mL} \rightarrow \text{L} \left(\div 1000 \right)$$

$$= 3.5 \text{ L}$$

How many litres are there in 750 mL?

$$0.75 \text{ L}$$

How many mL are there in 4.2 L?

$$\text{L} \rightarrow \text{mL} \left(\times 1000 \right)$$

$$= 4200 \text{ mL}$$

How many mL are there in .8 L?

$$800 \text{ mL}$$

Practice:

1) Convert the following measurements.

a) 500 mL = 16.907 fl oz (US)

$$\frac{100 \text{ mL}}{3.38 \text{ oz}} = \frac{500 \text{ mL}}{x \text{ oz}}$$

b) 2 gal = 9 L
(UK)

$$\frac{1 \text{ gal}}{4.5 \text{ L}} = \frac{2 \text{ gal}}{x \text{ L}}$$

c) 6.7 gal (US) = 25.77 / 25.5 L

$$\frac{0.26 \text{ gal}}{1 \text{ L}} = \frac{6.7 \text{ gal}}{x \text{ L}} = \frac{1 \text{ gal}}{3.8 \text{ L}}$$

d) 3 L = 3.18 qt (US)

$$\frac{1 \text{ L}}{1.06 \text{ qt}} = \frac{3 \text{ L}}{x \text{ qt}}$$

e) 15.5 L = 3.4 gal (UK)

f) 8 bu = 243.2 L (US)

$$\frac{4.5 \text{ L}}{1 \text{ gal}} = \frac{15.5 \text{ L}}{x \text{ gal}}$$

$$\frac{1 \text{ bu}}{8 \text{ gal}} = \frac{8 \text{ bu}}{x \text{ gal}} \quad \frac{1 \text{ gal}}{3.8 \text{ L}} = \frac{64 \text{ gal}}{x \text{ L}}$$

$$= 64 \text{ gal}$$

2) My gas tank holds 45 L. If I fill up in Washington State, how many American gallons will my tank hold?

$$\frac{3.8 \text{ L}}{1 \text{ gal}} = \frac{45 \text{ L}}{x \text{ gal}} = 11.84 \text{ US gal}$$

3) If I were to fill up my tank in London, England, how many UK gallons would my 45 L tank hold?

$$\frac{4.5 \text{ L}}{1 \text{ gal (UK)}} = \frac{45 \text{ L}}{x \text{ gal}} = 10 \text{ UK gal}$$

4) Ann was making a cake at her aunt's house in California. Her recipe was in metric units but she only has imperial measuring devices. Convert the measurements for her.

30 mL oil to tablespoons

625 mL flour to cups

2.5 mL baking soda to teaspoons

$$\frac{15 \text{ mL}}{1 \text{ T}} = \frac{30 \text{ mL}}{x \text{ T}} = 2 \text{ T}$$

$$\frac{250 \text{ mL}}{1 \text{ c}} = \frac{625 \text{ mL}}{x \text{ c}} = 2.5 \text{ c}$$

$$\frac{5 \text{ mL}}{1 \text{ tsp}} = \frac{2.5 \text{ mL}}{x \text{ tsp}} = 0.5 \text{ tsp}$$

5) The doctor prescribes Sally a 210 mL bottle of medicine with the instructions to take 5 mL twice a day. How long does the medicine last?

$$5 \text{ mL twice} = 10 \text{ mL/day}$$

$$210 \text{ mL} \div 10 \text{ mL/day} = 21 \text{ days}$$

6) How many litres is 250,000 cm³?

$$\begin{aligned} &250,000 \text{ cc} \\ &250,000 \text{ mL} \\ &\div 1000 \end{aligned}$$

$$= 250 \text{ L}$$