TEMPERATURE & CAPACITY

More Conversions

Strangely, in Canada we use different units of measurement depending on what and where we are measuring.

TEMPERATURE

- Cooking is in Fahrenheit
- The pool is in Fahrenheit
- Everything else is in Celsius

As such, we need to be able to convert.

A “close enough” estimate is “Double it and add 30,” but that is not ACCURATE.

This is *accurate*:

$$°F = \left(\frac{9}{5} \times C\right) + 32$$ ** DO BRACKETS FIRST

EX1: Convert 100°C into °F

$$°F = \left(\frac{9}{5} \times 100\right) + 32$$

$$°F = (1.8 \times 100) + 32$$

$$°F = 180 + 32$$

$$°F = \boxed{212}$$

I can show you how to take the same formula and solve if °C, or you can just trust me that it's going to look like this:

$$°C = \frac{5}{9} \times (°F - 32)$$ ** DO BRACKETS FIRST)

EX2: CONVERT 63°F Into Celsius:

$$°C = \frac{5}{9} \times (°F - 32)$$

$$°C = 0.5555555\ldots \times (°63 - 32)$$

$$°C = 0.5555555\ldots \times °31$$

$$°C = \boxed{17.2}$$

CAPACITY

Again, in Canada, we use both Metric and Imperial…

- Cooking: Cups and Spoons (Imperial)
- Everything else: Metric

Here is some conversions:

CAPACITY CONVERSIONS

1 (UK) gallon	=	4.546 liters
1 (US) gallon	=	3.785 liters
1 (US) gallon	=	4 quarts
1 quart	=	2 pints
1 pint	=	16 fluid ounces (fl.oz)
1 quart	=	32 fl.oz
1 liter	=	1000ml
1000 liters	=	1 kiloliter

VOLUME to CAPACITY CONVERSIONS

1 cubic centimeter (cm^3 or cc)	=	1 milliliter (ml)

To convert, just like we did, remember:

$$\text{WHAT YOU } \textbf{HAVE} \quad \text{X} \quad \frac{\text{WHAT YOU } \textbf{WANT}}{\text{WHAT YOU } \textbf{HAVE}}$$

EX1:

Convert 6 gallons(UK) into gallons (US)

$$6\,G(UK) \times \frac{4.546\,L}{1\,G(UK)} \times \frac{1\,G(US)}{3.785\,L}$$

$$7.21\,G(US)$$

EX2:

15) Convert 65000 millilitres into kilolitres

$$65000\,mL \times \frac{1\,L}{1000\,mL} \times \frac{1\,kL}{1000\,L}$$

$$.065\,kL$$

EX3:

Convert 7450 cm^3 into litres

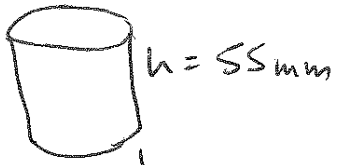
$7450\,cm^3 = 7450\,mL \times \frac{1\,L}{1000\,mL}$

$\boxed{7.450\,L}$

EX4:

A single-cylinder motorbike engine has a cylinder diameter of 76mm and a height of 55mm. Determine its capacity in CC's (cubic centimeters)

STEP 1: DRAW A PICTURE



STEP 2: VOLUME IN mm^3

$Vol = \pi r^2 h$

$Vol = \pi (38)^2 (55)$

$Vol = \pi (1444)(55)$

$Vol = 249505.29\ mm^3$

STEP 3: CONVERT to cm^3

$$249505.29 \times \frac{1^3\ cm^3}{10^3\ mm^3}$$

$$\frac{249505.29}{1000}$$

$249.505\ cm^3 = 249.505\ cc$

STEP 4: CONVERT to mL

$cm^3 = cc = mL$ ← YAY METRIC!

So... $249.505\ mL$

STEP 5: CONVERT to L

$$249.505\ mL \times \frac{1\ L}{1000\ mL}$$

★ YOU DON'T NEED TO CUBE THIS AT ALL!

0.249 L ENGINE