Conversions in Volume: SI vs Metric

Ex #1: Convert 89 250 cm^3 to m^3.

$$89\,250\,cm^3 \times \left(\frac{m}{100\ cm}\right)^3 = 0.089250\,m^3$$

Ex #2: Convert 12 m^3 to yd^3.

$$12\,m^3 \times \left(\frac{1.0936\ yd}{m}\right)^3 = 15.7\,yd^3$$

Ex #3: Convert 2000 ft^3 to m^3.

$$2000\,ft^3 \times \left(\frac{1\ yd}{3\ ft}\right)^3 \times \left(\frac{1\ m}{1.0936\ yd}\right)^3 = 56.6\,m^3$$

Sep 20-9:50 PM

Conversions in Capacity: SI vs Metric

CONVERTING COMMON COOKING UNITS

Imperial	*SI*
¼ teaspoon	1.25 mL
½ teaspoon	2.5 mL
1 teaspoon	5 mL
1 tablespoon (3 teaspoons)	15 mL
1 cup	250 mL
1 pint	568.2614 mL
1 quart (2 pt)	1.1365 L
1 gallon (4 qt)	4.5461 L

CONVERTING US IMPERIAL TO SI UNITS

US Imperial	*SI*
1 fl oz	29.5735 mL
1 pt = 16 fl oz	473.176 mL or 0.473 L
1 qt = 2 pt	946.352 mL or 0.946 L
1 gal = 4 qt	3785.4 mL or 3.785 L

NOTE: 1 L = 1000 mL
1 kL = 1000 L
1 cm^3 = 1 mL

EXERCISE: Fill in the blanks...

a) 16 cups = 4 liters

$$4\,l \times \frac{1000\ ml}{l} \times \frac{1\ c}{250\ ml}$$

b) 8 tablespoons = _____ milliliters

c) 6 quarts = _____ liters

d) 16 tsp = _____ tbsp

e) _____ cups = 12 pints

f) 10 fl oz = _____ cup

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EXERCISE: Fill in the blanks...

a) 16 cups = 4 liters

b) 8 tablespoons = 120 milliliters

c) 6 quarts = 5.7 liters

d) 16 tsp = 5.3 tbsp

e) 22.7 cups = 12 pints

f) 10 fl oz = 1.2 cup

$4\ell \times \frac{1000ml}{\ell} \times \frac{1c}{250ml}$

$8T \times \frac{15ml}{1T}$

$6qt \times \frac{0.946\ell}{qt} = 5.7\ell$

$16t \times \frac{1T}{3t} = 5.3T$

$12pt \times \frac{473.176ml}{pt} \times \frac{1c}{250ml} = 22.7c$

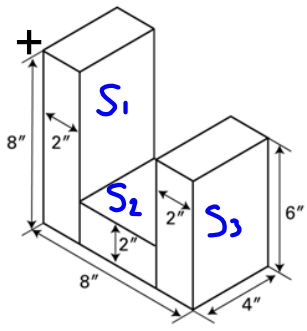
$10floz \times \frac{29.5735ml}{floz} \times \frac{1c}{250ml} = 1.2c$

Feb 28-8:06 AM

Volume/Capacity Applications

EXAMPLE #1...

11. Matthew was hired to produce 25 pairs of plastic bookends using the dimensions shown in the diagram below. The bookends will be constructed using an injection mould. Determine the cost of 25 pairs of bookends if the cost of plastic is $15.25 a cubic foot.



$V_{S_1} = \ell wh = (2)(4)(8) = 64in^3$

$V_{S_2} = \ell wh = (2)(4)(4) = 32in^3$

$V_3 = \ell wh = (2)(6)(4) = 48in^3$

$V_T = (64 + 32 + 48) \times 50 = 7200in^3$

$Cost = \$15.25 \times \left(\frac{ft}{12\ in}\right)^3 \times 7200in^3$

$= \$63.54$

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EXAMPLE #2...

The gas tank of Rory's car can hold 60 litres of gas.

a) Rory is travelling in Colorado, USA, and needs to fill up his tank. The cost of gas is $3.49/gallon. How much will it cost him to fill up, assuming the tank is completely empty?

b) If Rory took the same car to England, where gas costs $8.01/gal, how much would it cost him to fill up the tank?

$$60\,\ell \times \frac{1\ \text{gal}}{3.785\,\ell} \times \frac{\$3.49}{1\ \text{gal}} = \$55.32$$

England

$$60\,\ell \times \frac{\text{gal}}{4.5461\,\ell} \times \frac{\$8.01}{1\text{gal}} = \$105.72$$

Mar 3-8:14 AM

EXAMPLE #3...

Gwen is following a recipe for pancakes that calls for 10 cups of flour, $1\frac{1}{4}$ cups of sugar, and 2.5 tsp of baking soda. What will the total volume of the dry goods be in mL if she makes a double batch?

$$11.25c \times \frac{250\ \text{ml}}{1\ c} = 2812.5\,\text{ml}$$

$$2.5t \times \frac{5\ \text{ml}}{t} = 12.5\,\text{ml}$$

$$V_T = (2812.5 + 12.5)2$$

$$= 5650\,\text{ml}$$

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EXAMPLE #4...

A new Nissan car is advertising a fuel consumption rating of 8.2 L / 100 km. The imperial system uses a rating of miles/gallon. Determine the fuel consumption of the car in mi/gal.

$\frac{8.2\ \ell}{100\ km}$

$\frac{100\ km}{8.2\ \ell} \times \frac{1\ mi}{1.6093\ km} \times \frac{3.785\ \ell}{gal} = 28.7\ mi/gal$

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HOMEWORK

Textbook

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Attachments

Section 4.4 Worksheet - Converting Volume.pdf