

WARM-UP...

$$20 \text{ US pints} = \frac{10}{2} \text{ US quarts}$$

$$20 \text{ us pts.} \times \frac{1 \text{ us qt}}{2 \text{ us pts}}$$

$$\frac{54.6}{12} \text{ L} = 12 \text{ Brit gal}$$

$$12 \text{ Brit gal} \times \frac{4.546 \text{ L}}{1 \text{ Brit gal}}$$

$$20 \text{ fl oz} = \frac{591.5}{29.5735} \text{ mL}$$

$$20 \text{ fl. oz} \times \frac{29.5735 \text{ mL}}{1 \text{ fl. oz}}$$

HW SOLUTIONS...

Worksheet - Converting Volumes Imp_Metric.docx

Converting English and metric

- 1) 1.22 teaspoons = 6 milliliters
- 2) 1 gallons = 3.79 liters
- 3) 494.41 cubic feet = 14 cubic meters
- 4) 11.62 quarts = 11 liters
- 5) 27.47 cubic yards = 21 cubic meters
- 6) 5 quarts = 4.73 liters
- 7) 15.5 cups = 3.67 liters
- 8) 0.49 cubic inches = 8 milliliters
- 9) 1.96 cubic yards = 1.5 cubic meters
- 10) 12.5 cubic feet = 0.35 cubic meters
- 11) 723.95 cubic feet = 20.5 cubic meters
- 12) 63.4 cups = 15 liters
- 13) 0.7 cubic inches = 11.5 milliliters
- 14) 3 teaspoons = 14.79 milliliters
- 15) 4.23 quarts = 4 liters
- 16) 7.5 cups = 1.77 liters
- 17) 19.5 cubic inches = 319.55 milliliters
- 18) 3.5 cubic yards = 2.68 cubic meters
- 19) 17 tablespoons = 251.38 milliliters
- 20) 25 gallons = 94.64 liters

SOLUTIONS...

Worksheet - Converting Capacity in Imp.docx

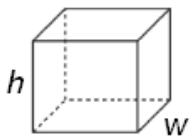
Liquid Measure Quiz

- 1) 12 tsp = 4 tbsp
- 2) 8 cups = 64 fl oz
- 3) 4 pints = 1/2 gallon
- 4) 1 quart = 1/4 gallon
- 5) 4 cups = 1 quart
- 6) 8 tbsp = 1/2 cup
- 7) 1 gallon = 128 fl oz
- 8) 16 cups = 1 gallon
- 9) 3 tsp = 1 tbsp
- 10) 16 cups = 8 pints
- 11) 2 cups = 1 pint
- 12) 2 pints = 1 quarts
- 13) 1/2 pint = 8 fl oz
- 14) 2 cups = 16 fl oz
- 15) 4 cups = 2 pints
- 16) 1/2 quart = 16 fl oz
- 17) 3 tsp = 1/2 fl oz
- 18) 1 cup = 8 fl oz
- 19) 1/4 cup = 2 fl oz
- 20) 8 pints = 4 gallon

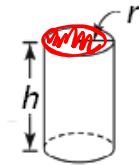


Activate Prior Learning: Volumes of Right Prisms and Cylinders

Volume =
Base area \times height

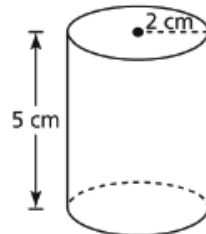
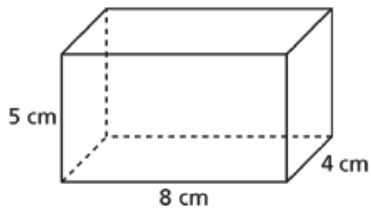


$$V = lwh$$



$$V = \pi r^2 h$$

Which object below has the greater volume?

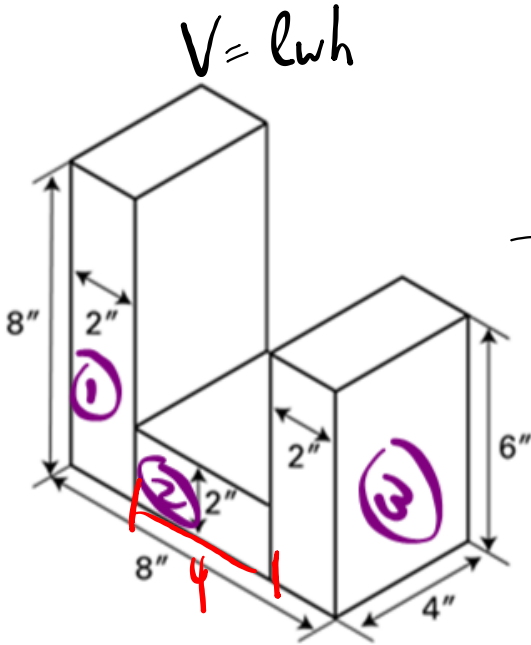


1.5 Volumes of Right Pyramids and Right Cones

Volume/Capacity Applications

EXAMPLE #1...

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.*



$$V_1 = 2(8)(4)$$

$$V_1 = 64 \text{ in}^3$$

$$V_2 = 2(4)(4)$$

$$V_2 = 32 \text{ in}^3$$

$$V_3 = 2(4)(6)$$

$$V_3 = 48 \text{ in}^3$$

$$\begin{aligned} V_{\text{total}} &= \\ &= 64 \\ &+ 32 \\ &+ 48 \\ \hline &144 \text{ in}^3 \end{aligned}$$

$$\text{Total} \Rightarrow (144 \times 2) \times 25$$

$$\Rightarrow 7200 \text{ in}^3 \times \frac{1 \text{ ft}^3}{12^3 \text{ in}^3} = 4.1\bar{6} \text{ ft}^3$$

$$\begin{aligned} \text{Cost} &= 4.1\bar{6} \times 15.25 \\ &= \boxed{\$63.54} \end{aligned}$$

$$\begin{aligned} \text{OR} \\ \text{Cost} &= 5 \times 15.25 \\ &= \boxed{\$76.25} \end{aligned}$$

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?

a) $60 \text{ L} = \frac{15.9}{3.785 \text{ L}} \text{ US gal}$

$60 \text{ L} \times \frac{1 \text{ US gal}}{3.785 \text{ L}}$

Cost = 15.9×3.49

= $\$55.32$

b) $60 \text{ L} = \frac{13.2}{4.546 \text{ L}} \text{ Brit gal}$

$60 \text{ L} \times \frac{1 \text{ Brit gal}}{4.546 \text{ L}}$

Cost = 13.2×8.01

= $\$105.72$

EXAMPLE #3...

DOUBLE 20 cups, 2.5 cups, 5 tsp

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?

$$22.5 \text{ cups} \times \frac{250 \text{ mL}}{1 \text{ cup}} = 5625 \text{ mL}$$

$$5 \text{ tsp} \times \frac{5 \text{ mL}}{1 \text{ tsp}} = \frac{25 \text{ mL}}{5650 \text{ mL}}$$



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.

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

Handwritten notes: "vs" above the second fraction, and "L" above the 3.785 in the third fraction. Units "mi" and "US gal" are circled in red.

HOMEWORK...

- 1)  Worksheet - Applications (p. 182).pdf
- 2)  Review Worksheet - Converting Imp_Metric.docx

NOTE: Use US Imperial for pt, qt & gal

QUIZ on Surface Area Tomorrow!

SOLUTIONS...

Review Worksheet - Converting Imp_Metric.docx

Converting English and Metric

- 1) 8.27 inches = 21 centimeters
- 2) 10 mph = 6.21 kmph
- 3) 9.01 miles = 14.5 kilometers
- 4) 13 gallons = 49.21 liters
- 5) 3.17 quarts = 3 liters
- 6) 9 cups = 2.13 liters
- 7) 9.5 teaspoons = 46.82 milliliters
- 8) 19.5 square inches = 125.81 square centimeters
- 9) 8 cups = 1.89 liters
- 10) 0.21 cubic inches = 3.5 milliliters
- 11) 0.46 cubic inches = 7.5 milliliters
- 12) 10.5 gallons = 39.75 liters
- 13) 16.4 feet = 5 meters
- 14) 70.63 cubic feet = 2 cubic meters
- 15) 1.22 teaspoons = 6 milliliters
- 16) 15.7 cubic yards = 12 cubic meters
- 17) 0.16 square inches = 1 square centimeters
- 18) 19 yards = 17.37 meters
- 19) 20 fluid ounces = 591.47 milliliters
- 20) 15 cubic feet = 0.42 cubic meters

Attachments

Worksheet - Converting Volumes Imp_Metric.docx

Worksheet - Converting Capacity in Imp.docx

Review Worksheet - Converting Imp_Metric.docx

Worksheet - Applications (p. 182).pdf