From last week:

SI Units: 1 L = 1000 mL

Imperial Units:

Unit	Fluid Ounces	Cups	Pints	Quarts	Gallons
1 fluid ounce	1	1/8	1/16	1/32	1/128
1 cup	8	1	1/2	1/4	1/16
1 pint	16	2	1	1/2	1/8
1 quart	32	4	2	1	$\frac{1}{4}$
1 gallon	128	16	8	4	1

1. What imperial unit is most appropriate for each measurement?

a) the capacity of a drinking glass cups

b) the capacity of a swimming pool Gal.

c) the volume of cow's milk in a pail pts or qts.

d) the volume of formula in a baby bottle fl. oz.

4. Convert each amount.

a) 2 cups = 16 fl oz

b) $\frac{1}{2}$ cup = 4 fl oz

c) 4 cups = 32 fl oz

d) 12 fl oz = 1.5 cups

e) 2 fl oz = 0.25 cups

f) 40 fl oz = 5 cups

5. Convert each amount.

a) 2 qt = 8 cups

b) $\frac{1}{2}$ qt = 2 cups

c) 3 qt = 12 cups 8 + 4 = 12

d) 1 qt = 32 fl oz

e) 2 qt = 64 fl oz

f) 1 gal = 128 fl oz

b) $\frac{1}{2}$ cup → fl oz

$\frac{1}{2}$ cup × $\frac{8 \text{ oz}}{1 \text{ cup}}$

$= \frac{8}{2}$ oz = 4 oz

d) 12 fl oz → cups

12 fl oz × $\frac{1 \text{ cup}}{8 \text{ oz}}$

$= \frac{12}{8}$ = 1.5 cups

e) 2 oz → cups

2 oz × $\frac{1 \text{ cup}}{8 \text{ oz}}$ = 0.25

6. Mike purchases ketchup for his restaurant in 5-L bottles. Customers are served 300-mL ketchup bottles at their table. How many 300-mL bottles will one 5-L bottle fill?

1. Convert L → mL

$$5\,\text{L} \times \frac{1000\,\text{mL}}{1\,\text{L}}$$

$$= 5000\,\text{mL}$$

2. $$\frac{5000\,\text{mL}}{300\,\text{mL}} = 16.67 \text{ bottles}$$

* He can fill between 16 & 17

7. The capacity of the gas tank of Raj's motorcycle is 5 gallons.

a) Convert the capacity of the gas tank to quarts.

b) Using today's price for 1 litre of gas, estimate the cost of 1 full tank of gas for the motorcycle.

$4\,qt = 1\,gallon$

$5\,\cancel{gal} \times \frac{4\,qt}{1\,\cancel{gal}}$

$= 20\,qt.$

$* 1\,qt = 1L$

$= 20L \times 0.95$

$= \$19$

Estimating Capacity and Volume Using References

Amy's family lives on a small farm. They currently have a few cows and a week-old calf. Amy needs to estimate the amount of milk replacer that the calf is drinking. She wants to make sure that the calf is getting enough nutrients.

Amy uses feeding bottles that have an approximate capacity of 2 L. The bottle shows how much the calf has consumed so far in the morning feeding.

a) Estimate the amount consumed by the calf, in millilitres.

b) Approximately how much fluid remains in the bottle, in litres?

1500mL → L

$1500 \times \frac{1L}{1000mL}$

1/4

$= 1.5L$.

$2L \rightarrow mL$

$2L \times \frac{1000mL}{1L}$

$= 2000mL \times 1/4$

$\rightarrow \frac{2000mL}{4} = 500mL$

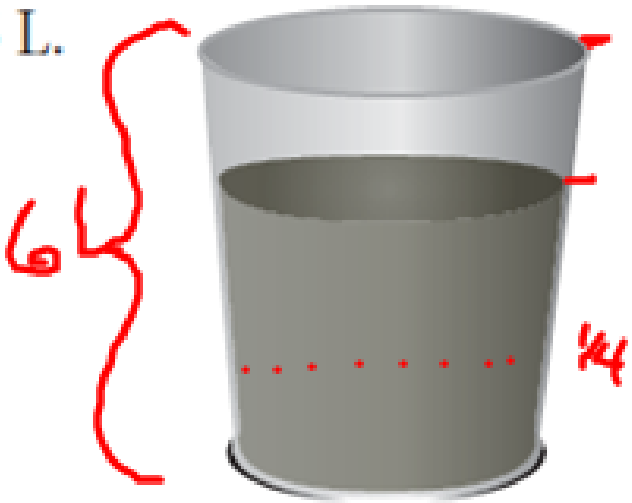
$2000 - 500$

$= 1500mL$

Your Turn

a) The pail shown here has a capacity of about 6 L. Estimate the volume of the maple sap in the pail, in litres.

b) Sap is poured out of the pail until it is $\frac{1}{4}$ full. What is the amount of sap in the pail, in millilitres?



a) $6 \times \frac{3}{4} = \frac{18}{4} = 4.5\,L$

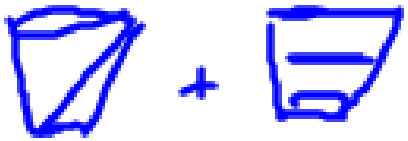
b) $6L \times \frac{1}{4} = \frac{6}{4}\,L = \frac{3}{2}L = 1.5L$

$1.5L \times \frac{1000mL}{1L} = 1500mL$

1. Marnie works as a caterer. To plan for a wedding reception, Marnie estimates $1\frac{1}{2}$ six-ounce cups of coffee for each of the 90 guests. Marnie owns a 3-gallon coffee urn and a 10-gallon coffee urn.

a) Which coffee urn should she bring to the reception? Explain.

b) Is your answer the same if the number of guests doubles? Explain.



6oz + 3oz = 9oz

9oz x 90 = 810oz

810oz → Gallons

$810\text{oz} \times \frac{1\ \text{Gallon}}{128\ \text{oz}}$

= 6.328 gallons

Marnie needs 10oz Urn.

6.328 gallons x 2

= 12.656 gallons

Marnie will need
the 10oz & 3oz Urn.

2. A certain brand of toilet is made in the United States and sold in Canada. It uses about 1.6 gallons per flush.

a) Convert the water usage per flush to quarts.

b) Approximately how many litres is this?

c) If the average person flushes 6 times per day, how much water is used per person?

d) About how many litres of water would the toilet of a typical family of four use in one day?

e) About how many litres of water would the toilet of a typical family of four use in one year?

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3. Hilda's doctor says that she should not have more than two cups of coffee per day. One morning, Hilda drinks two large coffees at the local coffee shop. A large coffee is 20 fluid ounces.

a) How many cups of coffee did Hilda actually drink?

b) Express the amount Hilda drank in an imperial unit other than fluid ounces and cups.

4. **a)** Estimate the volume of a ball formed by using a melon baller.

b) Estimate the total volume of seven melon balls.