

2.6 Volume/Capacity Conversions

The **capacity** of a container is the amount it can hold; in other words, its **volume**.

Capacity is often used with liquid measures. In the metric system, the basic unit of capacity is the litre. In the imperial system, we use units such as gallons, quarts, pints, cups, and fluid ounces.

Most recipes have ingredient amounts written in imperial units.

Imperial	Imperial to Metric	Metric
1 gal = 4 qt 1 qt = 2 pt 1 pt = 2 c 1 c = 8 fl oz 1 fl oz = 2 tbsp 1 tbsp = 3 tsp <u>Abbreviations:</u> gallon = gal quart = qt pint = pt cup = c fluid ounce = fl oz tablespoon = tbsp or T teaspoon = tsp or t	1 gal ≈ 3.79 L 1 qt ≈ 946 mL 1 fl oz ≈ 29.57 mL 1 fl oz = 2 tbsp 1 tbsp ≈ 15 mL	1 L = 1000 mL <u>Abbreviations:</u> litre = L millilitre = mL

Examples

Ex 1. Jayme is making a punch for a party. The recipe calls for 72 fl oz of pineapple juice, and 4.5 quarts of orange juice.

a) How many cups of pineapple juice does she need?

$$\frac{72 \text{ fl oz}}{1} \times \frac{1 \text{ c}}{8 \text{ fl oz}} = \frac{72 \text{ c}}{8} = 9 \text{ cups}$$

b) How many litres of orange juice does she need? Round to the nearest tenth.

qt → mL → L.

$$\frac{4.5 \text{ qt}}{1} \times \frac{946 \text{ mL}}{1 \text{ qt}} \times \frac{1 \text{ L}}{1000 \text{ mL}} = \frac{4257 \text{ L}}{1000} = 4.257 \text{ L} \approx 4.3 \text{ L}$$

Ex 2. Paula is following a crème brûlée recipe written in metric units, but she has imperial measuring devices. The recipe requires 500 mL of cream and 1.25 mL of vanilla.

a) About how much cream will she need, in cups?

mL → fl.oz. → cups

$$\frac{500 \cancel{\text{mL}}}{1} \times \frac{1 \cancel{\text{fl.oz.}}}{29.57 \cancel{\text{mL}}} \times \frac{1 \text{ c}}{8 \cancel{\text{fl.oz.}}} = \frac{500 \text{ c}}{236.56} = 2.11 \text{ c}$$

$\approx 2 \text{ cups}$

b) How much vanilla will she need, in teaspoons?

mL → tbsp → tsp.

$$\frac{1.25 \cancel{\text{mL}}}{1} \times \frac{1 \cancel{\text{tbsp}}}{15 \cancel{\text{mL}}} \times \frac{3 \text{ tsp}}{1 \cancel{\text{tbsp}}} = \frac{3.75 \text{ tsp}}{15}$$

$= 0.25 \text{ tsp}$
 $= \frac{1}{4} \text{ tsp}$

2.6 Practice

1. Convert the following capacities to the units indicated. Round to the nearest tenth when needed.

a) 16 pints = _____ cups = _____ quarts

b) 3 fl oz = _____ T (tablespoons)

c) 4 gal = _____ pt

d) 5.64 L = _____ mL

e) 560 gal = _____ L

f) 56 quarts = _____ L