U.S customary units of capacity

In this chapter you have two objectives.
The first one is to covert measurements of capacity in the U.S. customary system.

Liquid substances are measured in units of **capacity.**
The U.S. customary units of capacity are the **fluid ounce, cup, pint, quart,** and **gallon.**

8 fluid ounces (fl oz)= 1 cup (c);	or a cup contains 8 ounces
2c = 1 pint (pt);	or a pint contains 2 cups
2 pt = 1 quart (qt);	or a quart contains 2 pints
4pt = 1 gallon (gal);	or a gallon contains four quarts

These equivalents can be used to form conversion rates. It helps you to change one unit of measurement to another.
For example: according to the table, we know that 8 fl oz = 1c. So the conversion rates 8fl oz/1c and 1c/8 fl oz are each equivalent.

Example step by step:

Convert 36 fl oz to cups:

- At first you need to write whatever measurement the problem gave to you. In this problem it was "36 fl oz"
- Second, you need put the multiplication sign beside the measurement: 36 fl oz x
- Third, you need to write the rate. In order to cancel, the unit given in the question (fl oz) needs to be in the denominator: so we have 36 fl oz x 1 cup/ 8 fl oz.

$$36 \text{ fl oz} \times \frac{1 \text{ cup}}{8 \text{ fl oz}} = 4.5 \text{ cups}$$

Example

Convert 3 qt to cups:

- Step one: 3 qt (write the unit the problem has given to you);
- Step two: 3 qt x (write the multiplication sign beside the measurement)
- Step three: you might know the rate. You can find it on the first table, in the beginning of this chapter. But in this example, the direct rate is not given. You need to use two conversion rates. First convert quarts to pints and then convert pints to cups.

Don't forget:

In order to reduce, the unit in the denominator of the second conversion rate and the unit in the numerator of the first conversion rate must be the same.

So: $3 \text{ qt} \times \frac{2 \text{ pints}}{1 \text{ quart}} \times \frac{2 \text{ cups}}{1 \text{ pint}} = 12 \text{ cups}$

The second objective is to perform arithmetic operations with measurements of capacity:

Example:

What is 4 gal 1 qt decreased by 2 gal 3 qt?

$$\begin{array}{r} {\scriptstyle 3\text{ gal}\quad 5\text{ qt}} \\ \cancel{4\text{ gal}}\ \cancel{1\text{ qt}} \\ -\ 2\text{ gal } 3\text{ qt} \\ \hline 1\text{ gal } 2\text{ qt} \end{array}$$

- Borrow 1 gal (4 qt) from 4 gal and add to 1 qt.
- Now perform the subtraction for both units of measurement (gal and qt)