

Introduction to Conversion

Step 1 - Identify that you need to convert

- Look for the key words such as “equivalent” or “convert”
- Another clue is that the question asks for **how many** of one type of unit is in a second type of unit
- For example : **How many** quarts are in 2 gallons of milk?

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Step 2 Write down what you have.

- Our example : How many quarts are in 2 gallons of milk?
- What do I start with? I have 2 gallons of milk.

Write the amount you have as a fraction with the bottom number being one.

$$\frac{2 \text{ gallons}}{1}$$

(Writing the amount as a fraction will help us when we multiply later.)

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Introduction to relating units

Take a moment to consider how units relate. An equivalency chart will list how units relate to each other.

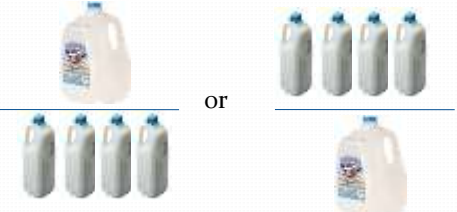
For example: 1 gallon = 4 quarts



A large white plastic jug representing 1 gallon is shown on the left. To its right are four smaller white plastic jugs, each representing 1 quart, arranged in a row.

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To convert, we will need to write our equivalent units one on top of the other. 1 gallon = 4 quarts can be written 2 ways.



Two visual representations of the conversion are shown. On the left, a large jug (1 gallon) is positioned above a horizontal line, and four smaller jugs (4 quarts) are positioned below the line. On the right, four smaller jugs (4 quarts) are positioned above a horizontal line, and a large jug (1 gallon) is positioned below the line.


$\frac{1 \text{ gallon}}{4 \text{ quarts}}$ or $\frac{4 \text{ quarts}}{1 \text{ gallon}}$

Introduction to relating units

- Which way should I write my relating units?


Introduction to relating units

- How to decide???




It's all about balance!

We'll balance the top with the bottom.




Introduction to relating units

- My first fraction has gallons on top




1

- My next fraction needs to have gallons on the bottom




1





Introduction to relating units

- **Step 3** Write down your equivalent fraction
- My first fraction has gallons on top Here's what we write:




$$\frac{2 \text{ gallons}}{1}$$

- My next fraction needs to have gallons on the bottom

$$\frac{2 \text{ gallons}}{1} \times \frac{4 \text{ quarts}}{1 \text{ gallon}}$$



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Step 4 Reduce Units. Cross off any matching pairs of unit labels. The label left should be what you want to find.

$$\frac{\cancel{2 \text{ gallons}}}{1} \times \frac{4 \text{ quarts}}{\cancel{1 \text{ gallon}}}$$

In this example the only unit label left is quarts.

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Step 5 Do the math!

$$\frac{2 \text{ gallons}}{1} \times \frac{4 \text{ quarts}}{1 \text{ gallon}}$$
$$\frac{2 \times 4}{1 \times 1} = \frac{8}{1} \text{ (reduce any fractions)}$$
$$= 8 \text{ quarts}$$

Two gallons is equal to 8 quarts!

Introduction to Conversion

These are the steps we used.

1. Determine the need to perform a conversion (key words "equivalent to," "convert")
2. Write down the starting term
3. Find an equivalent fraction for the units. Write the equivalency down next to the starting term with the units you want to eliminate on the bottom
4. Reduce the units (Eliminate only the words that match in the top and bottom of your fractions.) When you are finished you should have only the terms you are looking for left.
5. Perform the math operations and reduce your answer. (In some calculations you may need to round as specified by your instructions.)