Dimensional Analysis

Dimensional analysis is the means of converting from one dimension (or unit) to another dimension (or unit), typically using conversion factors. A conversion factor is a ratio of two equivalent values with different units.

Example: 1 inch = 2.54 cm; 1 inch/2.54 cm

Steps to Solving a Dimensional Analysis Problem	**Example Dimensional Analysis Problem** If you have 6.0 ounces of sodium chloride (table salt), how many kilograms of table salt do you have?
1. Identify the starting units from the problem.	ounces
2. Write the starting quantity and units as a fraction.	$\frac{6.0\ ounces}{1}$
3. Determine what the final units will need to be.	kilograms
4. Identify the necessary conversion factor(s). You may need more than one conversion factor.	ounces to grams (1 ounce = 28.35 grams) grams to kilograms (1000 grams = 1 kg)
5. Write your conversion factors as fractions with the unit that matches your starting units on bottom and the other quantity on top. Note: The final units should be on top of your final conversion factor fraction.	$\frac{28.35\ grams}{1\ ounce}$ $\frac{1\ kg}{1000\ grams}$
6. Solve by multiplying your initial quantity as a fraction by your conversion factor(s).	$\frac{6.0\ ounces}{1} \times \frac{28.35\ grams}{1\ ounce} \times \frac{1\ kg}{1000\ grams}$ $= 0.17\ kilograms$

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