

# Understanding Dimensional Analysis

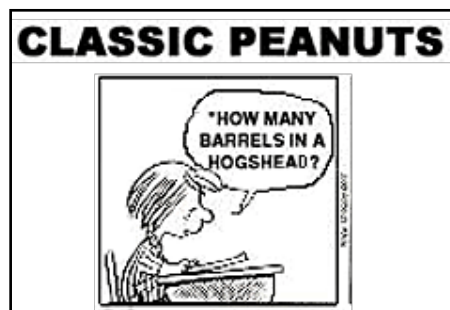
**Step 1: Examine the information given and any units of measurement.**

"Base" quantities	Unit
length ( $l$ )	meter
mass ( $m$ )	kilogram
time ( $t$ )	second
electric current ( $I$ )	ampere
temperature ("thermodynamic") ( $T$ )	kelvin
amount of substance ( $n$ )	mole
luminous intensity ( $I_v$ )	candela

*1 inch = 2.54 centimeters	1 foot = 12 inches	*1 pound = 454 grams
*1 liter = 1.06 quarts	1 yard = 3 feet	1 hour = 60 minutes
*1 calorie = 4.18 joules	1 mile = 5,280 feet	1 minute = 60 seconds
*1 atm = 101.3 kilopascals	1 mile = 1,760 yards	1 gallon = 4 quarts
	1 pound = 16 ounces	1 quart = 2 pints
$^{\circ}\text{F} = 1.8^{\circ}\text{C} + 32$	$^{\circ}\text{C} = \frac{^{\circ}\text{F} - 32}{1.8}$	$\text{K} = ^{\circ}\text{C} + 273$

**Step 2: Find appropriate conversion factors that can convert from the units given in the problem to the**

**Step 3: Start with the information given including the units.**



Starting amount	Equal amounts	End Amount
24 <del>inches</del>	1 foot	= 2 feet
	12 <del>inches</del>	

**Step 4: Align conversion factors so that the units cancel (top to bottom like common factors in fractions).**

**Step 5: Multiply the numerators and divide the denominators.**

$$\frac{25.0 \text{ mL}}{1} \times \frac{1 \text{ L}}{1000 \text{ mL}} = 0.025 \text{ L}$$