



"I THINK YOU SHOULD BE MORE EXPLICIT
HERE IN STEP TWO."

Dimensional Analysis

The objective is to
convert one unit to
another unit

Three steps to get started:

1. Determine the starting unit.
2. Determine the end unit.
3. Determine the conversion factor(s) required.

Conversion Factor

- The conversion factor is always equal to one.
- A conversion factor can be written either way depending what needs to be converted.

- Examples

- 100 pennies = 1 dollar $\frac{100 \text{ pennies}}{1 \text{ dollar}}$ or $\frac{1 \text{ dollar}}{100 \text{ pennies}}$

- 1000 grams = 1 kilogram $\frac{1000 \text{ grams}}{1 \text{ kilogram}}$ or $\frac{1 \text{ kilogram}}{1000 \text{ grams}}$

Remember....

1. Write the given or known (home base) in the first block over 1
2. Use the appropriate **conversion factor(s)** to make the unit change needed. Make sure you alternate so that matching units can cancel out

$$\frac{1 \text{ mile}}{1} \quad | \quad \frac{5280 \text{ ft.}}{1 \text{ mile}}$$

- 3. Do the math by multiplying across the top then across the bottom.
- 4. Keep up with the remaining unit.
- 5. Simplify to a decimal.
- 3. Circle the answer.

Convert 23 miles to feet

$$\frac{23 \text{ miles}}{1} \times \frac{5280 \text{ ft.}}{1 \text{ mile}} = 23 \times 5280 \text{ ft} = 121440 \text{ feet}$$

Convert 36000 feet to miles

$$\frac{36000 \text{ ft.}}{1} \times \frac{1 \text{ mile}}{5280 \text{ ft.}} = \frac{36000 \times 1}{5280} = 6.82 \text{ miles}$$

Convert 3 gallons to liters

$$\frac{3 \text{ gal}}{1} \times \frac{3.79 \text{ l}}{1 \text{ gal}} = \frac{11.37 \text{ l}}{1} = 11.37 \text{ l}$$

Convert 1.7 kilograms to grams

$$\frac{1.7 \text{ kg}}{1} \times \frac{1000 \text{ g}}{1 \text{ kg}} = 1.7 \times 1000 \text{ g} = 1700 \text{ g}$$