

**Mathematics Preparation For High School Chemistry**  
**Using Proportions**

**Student Examples**

$$\frac{a}{b} = \frac{c}{d}$$

$$\frac{3}{4} = \frac{12}{16}$$

**Example 1**

How many liters are there in 4.8 quarts of water ?

$$\frac{1 \text{ quart}}{1.06 \text{ liters}} = \frac{4.8 \text{ quarts}}{x \text{ liters}}$$

$$x \text{ liters} = \frac{(1.06 \text{ liters})(4.8 \text{ quarts})}{(1 \text{ quart})}$$

$$x = 5.09 \text{ liters}$$

**Student Problems**

Use the following information to answer these questions;

1 inch = 2.54 centimeters  
1 mole HNO<sub>3</sub> = 63 grams  
1 kilogram = 2.2 pounds

**Problem 1**

How many inches are there in 12.9 centimeters ?

**Problem 2**

How many moles are there in 200 grams of HNO<sub>3</sub> ?

**Problem 3**

How many pounds are there in .58 kilograms ?

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### Student Problems

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#### Problem 1

How many inches are there in 12.9 centimeters?

$$\frac{1 \text{ in}}{2.54 \text{ cm}} = \frac{x \text{ in}}{12.9 \text{ cm}} \quad (5.08 \text{ in.})$$

#### Problem 2

How many moles are there in 200 grams of HNO<sub>3</sub>?

$$\frac{1 \text{ mol}}{63 \text{ g}} = \frac{x \text{ mol}}{200 \text{ g}} \quad (3.17 \text{ mol})$$

#### Problem 3

How many pounds are there in .58 kilograms?

$$\frac{1 \text{ kg}}{2.2 \text{ lb}} = \frac{.58 \text{ kg}}{x \text{ lb}} \quad (1.2716)$$