

AP CHEMISTRY

CHAPTER 1 CHEMICAL FOUNDATION

1.1 The scientific method

1.2 Units of measurement

1.3 Uncertainty in measurement –precision and accuracy

1.4 Significant figures and calculations

1.5 Dimensional analysis

1.1



1.5

Dimensional analysis

1.1



Dimensional Analysis Method of Solving Problems


1. Determine which unit conversion factor(s) are needed
2. Carry units through calculation
3. If all units cancel except for the desired unit(s), then the problem was solved correctly.

How many mL are in 1.63 L?

$$1 \text{ L} = 1000 \text{ mL}$$

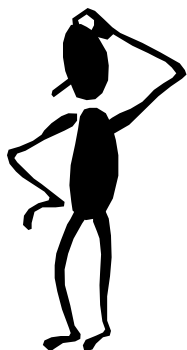
$$1.63 \cancel{\text{L}} \times \frac{1000 \text{ mL}}{1 \cancel{\text{L}}} = 1630 \text{ mL}$$

~~$$1.63 \text{ L} \times \frac{1 \text{ L}}{1000 \text{ mL}} = 0.001630 \frac{\text{L}^2}{\text{mL}}$$~~



1.1

1.9



The speed of sound in air is about 343 m/s. What is this speed in miles per hour?

meters to miles

seconds to hours

$$1 \text{ mi} = 1609 \text{ m}$$

$$1 \text{ min} = 60 \text{ s}$$

$$1 \text{ hour} = 60 \text{ min}$$

$$343 \frac{\cancel{\text{m}}}{\cancel{\text{s}}} \times \frac{1 \text{ mi}}{1609 \cancel{\text{m}}} \times \frac{60 \cancel{\text{s}}}{1 \cancel{\text{min}}} \times \frac{60 \cancel{\text{min}}}{1 \text{ hour}} = 767 \frac{\text{mi}}{\text{hour}}$$

