Non Sibi High School

Andover's Chem 250: Introductory/Basic Chemistry

Chapter 1, Review Quiz 1 Answers

1

How many significant figures are in 0.00609000?

$$0.00\underline{609000} = 6\,\text{sig. fig.s}$$

2

Convert the following measurements:

a. 0.40 miles to centimeters
b. 8.74×10^{-4} kilograms to pounds
c. 235 milliliters to gallons

   a.

$$0.40\,\text{mi} \left(\frac{5280\,\text{ft}}{1\,\text{mi}} \right) \left(\frac{12\,\text{in}}{1\,\text{ft}} \right) \left(\frac{2.54\,\text{cm}}{1\,\text{in}} \right) = 6.4 \times 10^4\,\text{cm} \quad (2\,\text{sig. fig.s})$$

   b.

$$8.75 \times 10^{-4}\,\text{kg} \left(\frac{1000\,\text{g}}{1\,\text{kg}} \right) \left(\frac{1\,\text{lb}}{454\,\text{g}} \right) = 0.00193\,\text{lb} \quad (3\,\text{sig. fig.s})$$

   c.

$$235\,\text{mL} \left(\frac{1\,\text{L}}{1000\,\text{mL}} \right) \left(\frac{1\,\text{gal}}{3.79\,\text{L}} \right) = 0.0620\,\text{gal} \quad (3\,\text{sig. fig.s})$$

3

The density of liquid octane is 0.70 g/mL. What is the mass in milligrams of 0.345 liters of octane?

$$0.345 \, \text{L} \left(\frac{1000 \, \text{mL}}{1 \, \text{L}} \right) \left(\frac{0.70 \, \text{g}}{1 \, \text{mL}} \right) \left(\frac{1000 \, \text{mg}}{1 \, \text{g}} \right) = 2.4 \times 10^5 \, \text{mg}$$

4

The density of steel is $7.82 \, \text{g/cm}^3$. What is the volume of 0.68 kilograms of steel?

$$0.68 \, \text{kg} \left(\frac{1000 \, \text{g}}{1 \, \text{kg}} \right) \left(\frac{1 \, \text{cm}^3}{7.82 \, \text{g}} \right) = 87 \, \text{cm}^3$$