

Non Sibi High School

Andover's Chem 550/580: Advanced Chemistry

Chapter 1, Review Quiz 1 Answers

1

How many significant figures are in 0.00609000?

$$0.00609000 = 6 \text{ sig. fig.s}$$

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.

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

b.

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

c.

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

3

The density of liquid octane is 0.70 g/mL. What is the mass in milligrams of 0.0910 gallons of octane?

$$0.0910 \text{ gal} \left(\frac{3.79 \text{ L}}{1 \text{ gal}} \right) \left(\frac{1000 \text{ mL}}{1 \text{ L}} \right) \left(\frac{0.70 \text{ g}}{1 \text{ mL}} \right) \left(\frac{1000 \text{ mg}}{1 \text{ g}} \right) = 2.4 \times 10^5 \text{ mg}$$

4

The density of steel is 7.82 g/cm^3 . What is the volume in m^3 of 0.68 kilograms of steel?

$$0.68 \text{ kg} \left(\frac{1000 \text{ g}}{1 \text{ kg}} \right) \left(\frac{1 \text{ cm}^3}{7.82 \text{ g}} \right) \left(\frac{1 \text{ m}^3}{100^3 \text{ cm}^3} \right) = 8.7 \times 10^{-5} \text{ m}^3$$



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