

Tutorial 0010

A. Significant Figures

1. Determine the number of significant figures in the following measurements:

- (a) 20.1300 cm
- (b) 0.0045 g
- (c) 1.00040 L

2. Perform the arithmetic operation and round off the answers to the correct number of significant figures:

- (a) $(0.0022 \text{ g}) / (3.45 \text{ mL})$

$6.377 \times 10^{-4} \text{ g/mL}$

$6.4 \times 10^{-4} \text{ g/mL}$

$6.38 \times 10^{-4} \text{ g/mL}$

- (b) $84.35 \text{ g} - 0.02345 \text{ g}$

$8.4 \times 10^1 \text{ g}$

84.3266 g

84.33 g

- (c) $65.5 \text{ g} / (54.45 \text{ cm} \times 65.45 \text{ cm} \times 65.0006 \text{ cm})$

0.000283 g/cc

0.00028 g/cc

0.00 g/cc

3. Express the following in scientific notation to three significant figures:

- (a) 550

$$55.0 \times 10^1$$



$$5.5 \times 10^2 \text{ g/mL}$$



$$5.50 \times 10^2 \text{ g/mL}$$

- (b) 0.000004378

$$4.37 \times 10^{-6}$$

$$0.438 \times 10^{-5}$$

$$4.38 \times 10^{-6}$$

- (c) $4.35 \times 10^5 + 3.432 \times 10^4$



$$4.69 \times 10^5$$



$$7.78 \times 10^5$$



$$3.86 \times 10^4$$

B. Density, Unit Conversion

1.a) A bottle contains 3.2 mL of ethanol. What is the mass in grams of ethanol if its density is 0.789 g/mL? **(2.5 g)**

2. a) What is the mass in grams of 950 mL of a substance that has a density of 1.274 g/mL? **(1.21 × 10³ g)**

