

Part I. Multiple Choice. Circle the letter of the most appropriate answer. (1 pt ea; 12 points)

- Which of the following is the *best* equipment to use for measuring the *volume* of a liquid?
a) a balance b) a graduated cylinder c) an Erlenmeyer flask d) a ruler
- Which of the following is NOT a metric unit?
a) pound b) cm^3 c) gram d) liter
- Which of the following is equal to 100. mm?
I. 10.0 cm II. 0.0100 km III. 0.100 m
a) II only b) III only c) I & III d) II & III e) I, II & III
- Which of the following is NOT an example of a pure substance?
a) hydrogen b) sodium chloride c) carbon d) air
- Which of the following is NOT an example of an element?
a) water b) nitrogen c) gold d) mercury
- Which of the following statements about compounds is *true*?
a) Compounds are pure substances made up of only one type of element.
b) Compounds are made up of two or more elements in all possible ratios.
c) Compounds are homogeneous mixtures made up of two or more elements.
d) Compounds are pure substances made up of two or more elements in a fixed ratio.
- Two samples were massed using different balances and the following data were obtained:
sample number 1 = 9.287 grams
sample number 2 = 1.51 grams
The total mass of the samples should be
a) 10.7 grams b) 10.8 grams c) 10.79 grams d) 10.80 grams e) 10.797 grams
- Balance A gives values which are close to the true value and reproducible to the nearest 0.1 gram. Balance B gives values reproducible to the nearest gram, but which are too high by about 2 grams. Compared to Balance B, Balance A is
a) more accurate and more precise b) more accurate and less precise
c) less accurate and more precise d) less accurate and less precise
- Which of the following is an exact quantity?
a) the quality of coffee at Brewberries b) the number of millimeters in a meter
c) the mass of your text d) the volume of a dozen apples

3. Perform the following operations and express the answers in significant figures.
(2 points each; 8 points)

a) 3.12×1.8

b) $1.008 + 8.3 + 3.48$

c) $(5 \times 10^2) \div (6 \times 10^4)$

d) $(3.36 - 3.12)/3.36$

Part III. Use *conversion factors* to solve the problems below. All answers must be in significant figures and include units. **Show all work.** (18 points)

1. What is the volume in ounces of a liquid that has a volume of 68.0 centiliters? (5 points)

2. The density of lead is 11.35 g/cm^3 . What is the mass in pounds of a 901-microliter sample of lead? (5 points)

3. If a bee flies at an average speed of 3.4 m/s, what is its average speed in mi/hr? (6 points)

4. A prescription says to take exactly 2 teaspoons of a medicine but all you have is a metric eye dropper that measures in mL. How many mL are in exactly 2 teaspoons? (3 teaspoons = 1 Tablespoon, 16 Tablespoons = 1 cup, 4 cups = 1 quart, 4 quarts = 1 gallon) (2 points)

some conversions	
length	
1 km	= 0.6214 miles
volume	
1 L	= 1.057 quarts
1 qt	= 32.00 ounces
mass	
1 kg	= 2.20 pounds