Name _____ Date _____ Class _____

3.3 CONVERSION PROBLEMS

Section Review

Objectives

- Construct conversion factors from equivalent measurements
- Apply the techniques of dimensional analysis to a variety of conversion problems
- Solve problems by breaking the solution into steps
- Convert complex units, using dimensional analysis

Vocabulary

- conversion factor
- dimensional analysis

Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

Whenever two measurements are equal, or equivalent, a ratio of these two measurements will equal __1__. A ratio of equivalent measurements is called a __2__. When a measurement is multiplied by a conversion factor, the value of the measurement __3__.

In __4__, the units that are a part of the measurements are used to help solve the problem. The form of the conversion factor that is used is the one in which the unit of the __5__ is in the denominator.

Many complex word problems can be solved by breaking the solution into __6__. When converting between units, it is often necessary to use more than one __7__.

In doing multistep problems, it is important to check that the numerator and __8__ of each conversion factor are equivalent. When the __9__ cancel, you should be left with the unit of the __10__.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Name _____ Date _____ Class _____

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

_____ **11.** The units of a conversion factor must cancel.

_____ **12.** The conversion factor for changing between grams and milligrams is $\frac{1\text{ g}}{1000\text{ mg}}$.

_____ **13.** Multiple conversion factors can be used to solve complex conversion problems.

_____ **14.** If density = mass/volume, then mass = density/volume.

_____ **15.** When two measurements are equal, a ratio of these two measurements will equal unity.

Part C Questions and Problems

Answer the following in the space provided.

16. Make the following conversions using Tables 3.1 and 3.2. Write your answers in scientific notation.

a. 125 g to kilograms

b. 0.12 L to mL

17. If 1500 white blood cells are lined up side by side, they would form a row 1.0 inch long. What is the average diameter in micrometers of a single white blood cell? (1 inch = 2.54 cm)

18. A radio wave travels 186,000 miles per second. How many kilometers will the wave travel in one microsecond? (1 mile = 1.61 km)