Chapter 1   Worksheet and Study Guide
Purpose: This is a guide for your as you work through the chapter. The major topics are provided so that you can write notes on each topic and work the corresponding problems.

This should serve a s a study guide as you go on to do the problems in Sapling and take the quizzes and exams.
Topics and Space for Notes

1. What is Chemistry?

2. What is Science?

3. Write the steps to the Scientific Method!! Make sure you understand it!

4. Draw the microscopic and macroscopic views of two compounds or elements.

5. Define Element and give 2 examples.

6. Define <u>compound</u> and give 2 examples. What is a molecule? Are all compounds molecules? Can elements be molecules?

7. Define Mixture. Define Homogeneous and Heterogeneous.

8. How do separate mixtures? What are physical properties?

9. How do we separate compounds? What are chemical properties?

10. List the metric units and metric prefixes that you need to know.

11. Explain dimensional analysis and show how you use dimensional analysis to convert metric units.

12. What are the rules for Sig Figs? Write the rules for reading and reporting sig figs.

13. What are the rules for rounding?

14. What are the math rules for Sig Figs?

    (Addition and Subtraction)

    (Multiplication and Division)

15. Define density. What is the equation for density and what are the units for density for a gas and a liquid (or solid)?

16. Convert °F into °C and Kelvins. (memorize the equations)

Problems:

1. **Metric Units.   Convert 22500 nm to m**

2. **Metric Units. Convert 122.4 µL to mL**

3. **Scientific and Decimal Notation**

    Write in scientific notation: 0.00157 km

    Write in decimal notation: 12.32×10^{-4} L

4. How many Sig Figs are in?

    120.010 g

    120 miles

    3 tomato plants

5. **Rounding**

    Round to 3 sig figs: 12884.6

6. **Sig Figs in Calculations:**

Do the following problems (all numbers are measurements) and give the answer to the correct number of sig figs.

    $1.2 \times 10^{3} + 135.6$ =

    (45.678 – 45.102)/45.678 =

7. Density

(A) A metal object has a mass of 147.2 g. When the object is dropped into 50.0 mL of water, the volume of water rises to 104.5 mL. What is the density of the piece of metal in g/mL?

(B) What is the volume of 45.8 grams of this metal?

8. Conversions:

Your car gets 32.4 miles/gallon and your tank holds 14.25 gallons of gas.

    a. How far can you go, in miles, on one tank of gas?

    b. If gas costs $2.11 per gallon, how much will one tank of gas cost?

    c. How much will it cost in euros to drive 1200 km. Gas costs €1.20 per liter and there are $1.09 in 1.00 €.

9. Conversion

For a pharmacist dispensing pills or capsules, it is often easier to weigh the medication to be dispensed rather than to count the individual pills. If a single antibiotic capsule weighs 350 mg, and a pharmacist weighs out 15.60 grams of capsules, how many capsules have been dispensed?

10. Conversion

Earth is approximately 1.5×10^8 km from the sun. How many minutes does it take light to travel from the sun to the earth? The speed of light is 3.00×10^8 meters/second.