Name: _____Period :_____Date:_____

General Chemistry

Unit 1 General Chemistry Review

THE STUDY OF CHEMISTRY

1**. Chemistry** studies the composition and structure of matter. The chemical changes investigated usually deal with substances changing their inherent properties such as burning, reacting, rusting, and the production or use of energy.

    a. Which branch of science investigates the changes matter undergoes? _____

    b. Which of the following would a chemist study?

        (1) The respiratory system   (3) How fast a car can drive when roads are wet

        (2) Pressure systems and weather   (4) The ratio of chemicals in gasoline

2. **Pure chemistry** is the pursuit of chemical knowledge including research designed to answer specific questions. **Applied chemistry** is more practical, used in medicine and design.

    a. Which of the following is applied chemistry and which are pure chemistry?

        (1) Studying the element hydrogen.

        (2) Researching the affect of Tylenol on headaches.

        (3) Studying the compound octane.

        (4) Developing new antibiotics.

3. A **theory** is an educationally sound idea a scientist has to explain how something works. It is generally accepted by scientists but has the ability to be disproven. A **law** is a proven answer with no exceptions.

    a. Which can be modified easier: a theory or a law? _____

    b. Which is more reliable, a theory or a law? _____

_____

SCIENTIFIC METHOD

4. The scientific method is a series of steps used to answer a question. The steps are outlined below in **bold**. Define the steps and corresponding vocabulary:

    a. **Problem**: _____

    b. **Research**: _____

c. **Hypothesis**: _____

d. **Experiment**: _____

      (1) **independant variable** (controlled): _____

      (2) **dependant variable** (corresponding): _____

      (3) **controls**: _____

e. **Conclusion/evaluate**: _____

_____

METRIC

5. Using tables on page one of your reference table you should be able to identify which unit is used to measure each quantity and you should be able to convert between units using the prefixes. Locate the prefix assigned to the measurement unit that you are starting with and then find the prefix that you want to convert to. Count the number difference between the factors and then move your decimal that many places.

    a. identify the unit used for each quantity:

      (1) mass   _____   (4) temperature   _____

      (2) volume   _____   (5) length   _____

      (3) energy   _____   (6) time   _____

    b. Convert the following:

      (1) 568 mL to L   _____

      (2) 0.00897 g to mg   _____

      (3) 45700 mm to km   _____

6. **Density** is the measurement of mass divided by volume. A substance's density can help identify it. For example, water's density is 1.00g/mL. Substances float in water of they have low densities, and sink when their densities are greater than 1.00 g/mL.

    a. Calculate the density of 5.00 gram sample of an unknown substance, which has a volume of 5.15mL.

    b. Using table S, identify the unknown substance in question (a) above. _____

    c. Calculate the mass of a substance with a density of 2.50 g/mL and a volume of 23.0mL.

d. Calculate the volume of a metal rectangle with a height of 2.0cm, a length of 3.0cm, and a width of 1.0cm.

e. If the metal in question (d) above is iron, calculate the mass. (Hint: density is on table S)

_____

GRAPHING

7. Give your graph a **title**. The title should describe what the graph represents and include both the manipulated and responding variables. Decide which variable is the **independent variable**. This variable should go along the **x-axis**. The **dependent variable** should go along the **y-axis**. Both axis should be labeled and include a unit of measurement. Decide on the numerical scale to use for each axis and then number each axis. (Take the largest and smallest number of your variable and subtract. Count the number of LINES on your graph paper. Divide the original number by the number of lines. Round up to the nearest whole number, and then use that number as the scale.) Draw a "best fit line" through the points.

a. Graph the following data: time on the x-axis.

Time (s)	Temperature (K)
1	320
2	280
3	240
4	200
5	160
6	120
7	80
8	40
9	20
10	0