1. Define the following terms:
   1. volume:
   2. mass:
   3. weight:
   4. quantitative observation:
   5. qualitative observation:
   6. chemical change:
   7. physical change:

II. Which of the following lab equipment measures a precise volume?

beaker graduated cylinder triple beam balance (circle one)

III. Scientific notation:

1. Write 300,000,000 in scientific notation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Going right through a number, each digit is how many times smaller than the digit to its left? \_\_\_\_\_\_
3. Which indicates a bigger number? positive exponent negative exponent
4. Which indicates a smaller number? positive exponent negative exponent
5. Write 0.000000000034 in scientific notation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IV. Significant Figures (digits) & Measurement

1. When using a measurement device, how many digits do you estimate? \_\_\_\_
2. If there is a tick for a digit on a ruler, is that digit certain or estimated? \_\_\_\_\_\_\_\_\_
3. Leading zeros are the zeros to the left of a number. For example 0.0032 has 3 leading zeros. Leading zeros are never significant. 0.0032 has 2 significant figures.
   1. How many significant figures are in the number 0.023 \_\_\_\_\_\_\_\_\_\_

V. Using the word bank, sort the following items as either chemical or physical changes.

|  |
| --- |
| Word Bank:  burning boiling bubbling temperature change cloudy  melting dissolving cutting substance changes breaking |

VI. Draw at the particle level: solid, liquid, gas. Label which has the most energy and which has the least. Write a sentence (for each, 3 sentences total) to describe the particles in a solid, a liquid, and a gas.

VII. Metric Conversions (on test, 2 require you to write a conversion, 2 conversion factors, use the criss cross applesauce dimensional analysis) the other 3, you may use another method as long as you show your work.

1. What does a kilometer mean? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (how many meters in 1 km?)
2. How many is milli? \_\_\_\_\_\_\_\_\_ What is this is exponential notation? \_\_\_\_\_
3. Write the conversions for meters to kilometers, grams to kilograms and liters to kiloliters:
4. Write two conversion factors from each conversion that you wrote above:
5. Use the criss cross applesauce method to solve:

1000 kg = \_\_\_\_\_\_\_ g 256 mL = \_\_\_\_\_\_ kL 100 cm = \_\_\_\_\_\_ dm

VII: Analyzing & Interpreting Scientific data:

1. Which chart would you use to compare categories to a whole? \_\_\_\_\_\_\_\_
2. Which chart gives you a side-by-side comparison of data? \_\_\_\_\_\_\_\_\_
3. Which chart shows trends across a data set? \_\_\_\_\_\_\_\_\_\_

VIII: Matter

1. What is the difference between a compound and a mixture?
2. What is the difference between an element and an atom?
3. What is the difference between a homogenous mixture and a heterogenous mixture?