NAME KEY

CHEM1301/ Summer 2019/ Homework 1

DUE: 7/9/2019

1. I want to know your motivation for being here. You don't have to write a novel here, but give it some thought. I want to know (Really, I want you to put into words): what is your main reason for being in this class? What degree are you seeking, and where will you go once that degree is in hand? Who or what is your motivation for succeeding?

Seriously, these were so awesome to read! Remind yourself of these often! It will help you push when life + distractions get in the way!

2. Classify each statement below as a theory, a law, or an observation:

LAW a. Matter is conserved in a chemical reaction.
All, every time. This is a WHAT statement.

Observation b. When tin is burned in a closed container, the sum of the masses of the container and its contents do not change. one / few WHAT

THEORY c. Matter is made of atoms.
Theory. Explains why matter behaves the way it does. You can't see this.

LAW d. For any sample of gas, the pressure of the sample increases when the temperature of the gas increases. (This is true only as long as the volume of the sample is held constant.)
& Always, ↑ + ↑

Theory e. A gas is composed of small particles in motion. They have lots of space between them allowing you to compress them closer together.
Explains why a gas does what it does.

3. In your words, define the following terms:
   a. THEORY
      Explains why matter behaves the way it does.
   b. LAW
      States what to expect each time a process occurs.

c. HYPOTHESIS

Seeks to explain why you saw an event in one or a few instances.

d. OBSERVATION

Qualitative or quantitative measurement of nature.

4. Fill in the table below by writing the following numbers in scientific notation:

Standard Form	Scientific Notation
12,005,300,000	1.2×10^{10}
0.00006257	6.257×10^{-5}
0.00150062	1.5×10^{-3}
1,000	1×10^{3}
1,000.068	1.0×10^{3}
9,054,875	9.055×10^{6}
42.14	4.214×10^{1}
0.00000000000845	8.45×10^{-12}
106.400	1.064×10^{2}
846,900,007,000,000.00	8.469×10^{14}

1. Fill in the table below by writing the following numbers in standard decimal form:

Scientific Notation	Standard Form
1.2008×10^{-4}	0.00012008
1.2008×10^{4}	12,008
6.0090×10^{8}	600,900,000
5.236×10^{-2}	.05236
4.628×10^{-10}	0.000 000 000 4628
9.000×10^{5}	900,000
9.621×10^{-9}	.000 000 009 621
2.700×10^{1}	27
1.008×10^{2}	100.8
8.465×10^{9}	8 465 000 000