Unit 1 Review Sheet

I. Data and Significant Figures

1. What is the difference between accuracy and precision?
   - Accuracy is relevant to an accepted value; precision describes how close together measurements are
2. What are the two types of data? - Quantitative & Qualitative

   Classify each of the following as either quantitative or qualitative:

smells like gasoline	Qual.	398 inches	Quant.
17 feet	Quant.	hot	Qual.
furry	Qual.	59 years	Quant.
11 mph	Quant.	tastes salty	Qual.

3. For additional practice on identifying significant figures and performing calculations with significant figures see accompanying handout
   - Given in class on Monday
4. Base units
   -- What is the difference between a base unit and a derived unit?
   Fill in the table below with the appropriate SI unit of measurement:

Property	*Mass*	*Length*	*Amount of a Substance*	*Time*	*Temperature*
SI Base Unit	kg	meter	mole	s	K

5. What is the difference between an observation and an inference?
   -- During the $CuCl_2$/Al lab, what were some observations that you made?
   - Color changes
   - $CuCl_2$ dissolving
   - Temperature increase

   -- What were some inferences that you made?
   - Chemical reaction occurred

II. Classification of Matter

1. Fill in the different ways that matter can be classified by using the blank flowchart * Provided in class *
2. What is the difference between an element and a compound?
   Element composed of a single type of atom; compound composed of multiple types
3. What is the difference between a pure substance and a mixture?
   - A mixture is composed of two or more pure substances
   - Pure substances have only one component
4. What is the difference between a heterogeneous mixture and a homogeneous mixture?
   - Homo: Same consistency throughout
   - Hetero: Different consistency throughout

Classify each of the materials below. In the center column, state whether the material is a **pure substance** or a **mixture**. If the material is a pure substance, further classify it as either an **element** or **compound** in the right column. Similarly, if the material is a mixture, further classify it as **homogeneous** or **heterogeneous** in the right column.

Material	***Pure Substance or Mixture***	***Element, Compound, Homogeneous, Heterogeneous***
sugar ($C_6H_{12}O_6$)	Pure Substance	Compound
air	Mixture	Homogeneous
steel (Fe + C)	Mixture	Homogeneous
salt and pepper mixed together	Mixture	Heterogeneous
aluminum (Al)	Pure Substance	Element
hydrochloric acid (HCl)	" "	Compound
uranium (U)	" "	Element
hamburger with mustard & ketchup	Mixture	Heterogeneous

III. Physical and Chemical Properties

1. What is a physical change?
   - A change in physical appearance but not chemical makeup
2. What is a chemical change?
   - A conversion to a completely new substance
3. What is the difference between an intensive property and extensive property? Be able to identify.
   - Intensive does not depend on amount of material; extensive does

Classify each of the following as either a physical change or a chemical change:

Water is converted to steam ___P___

Magnesium reacts with oxygen to give a bright light and a gray powder ___C___

A mirror drops onto the floor and shatters ___P___

HCl reacts with NaOH to produce salt and water ___C___

TNT decomposes into carbon dioxide, nitrogen, and water ___C___

A wooden board is sawed in half ___P___

IV. Elements and Compounds

1. What is the difference between an element and a compound?
-Element composed of single type of atom; compound composed of two or more types of

Classify each of the following as an element or a compound:

Gold (Au) ___element___

Silver (Ag) ___element___

Sugar ($C_6H_{12}O_6$) ___compound___

Sodium chloride (NaCl) ___compound___

Carbon dioxide (CO_2) ___compound___

Phosphorous (P) ___element___

V. Density calculations and temperature conversions

Be able to perform calculations based on the above.
Example problems:
-- #47-50 (pg. 167)
-- #60, 62 (pg. 167)

- will check answers in class if necessary