## Section 1B Review

Part 1: Fill in the blanks for the following ionic compounds.

| $\mathrm{FeF}_{2}$ | Iron (II) fluoride | $\mathrm{Cu}_{3}\left(\mathrm{PO}_{4}\right)_{2}$ | copper (II) phosphate |
| :--- | :--- | :--- | :--- |
| $\mathrm{SnO}_{2}$ | Tin (IV) oxide | $\mathrm{Al}(\mathrm{OH})_{3}$ | aluminum hydroxide |
| $\mathrm{CaCl}_{2}$ | Calcium chloride | $\left(\mathrm{NH}_{4}\right)_{3} \mathrm{PO}_{4}$ | ammonium phosphate |
| $\mathrm{Li}_{2} \mathrm{Cr}_{2} \mathrm{O}_{7}$ | Lithium dichromate | $\mathrm{Nb}(\mathrm{SCN})_{5}$ | niobium (V) thiocyanate |
| CaO | Calcium oxide | NaF | sodium fluoride |
| $\mathrm{Fe}_{2}\left(\mathrm{SO}_{3}\right)_{3}$ | Iron (III) sulfite | $\mathrm{Sr}_{3} \mathrm{P}_{2}$ | strontium phosphide |
| $\mathrm{Fe}_{2} \mathrm{~S}_{3}$ | Iron (III) sulfide | KCN | potassium cyanide |

Part 2: Define each of the following and give an example of each.

1) Element a substance that contains only one kind of atom ( He , diamond, aluminum foil)
2) Compound a substance made up of 2 or more elements bonded together (salt, sugar, water)
3) Solution - a mixture of 2 or more substances in a single physical state. The mixture is homogeneous (salt water, air, steel, Kool-aid)
4) Colloid - a heterogeneous mixture that has two or more visibly different parts that stay mixed up with one another (sand, conrete, Yoplait yogurt)
5) Suspension - a heterogeneous mixture that has two or more visibly different parts that settle out (oil \& water, orange juice, Italian dressing)

Part 3: Rewrite the following equations:

1) Aqueous sodium carbonate reacts with solid copper to produce solid copper (II) carbonate and two solid sodium atoms.

$$
\mathrm{Na}_{2} \mathrm{CO}_{3}(\mathrm{aq})+\mathrm{Cu}(\mathrm{~s})-->\mathrm{CuCO}_{3}(\mathrm{~s})+2 \mathrm{Na}(\mathrm{~s})
$$

2) $\mathrm{CaCO}_{3}$ (s) $+\mathrm{H}_{2} \mathrm{SO}_{4}$ (aq) $--->\mathrm{CaSO}_{4}(\mathrm{aq})+\mathrm{H}_{2} \mathrm{O}(\mathrm{l})+\mathrm{CO}_{2}(\mathrm{~g})$

Solid calcium carbonate reacts with aqueous hydrogen sulfate to produce aqueous calcium sulfate, liquid water and carbon dioxide gas.

Part 4: Calculate the unknown value in each of the following.

1) mass $=3.4 \mathrm{~g}$, volume $=12.2 \mathrm{~mL}$, density $=0.28 \mathrm{~g} / \mathrm{mL}$
2) density $=0.2 \mathrm{~g} / \mathrm{mL}$, volume $=3 \mathrm{~cm}^{3}$, mass $=0.60 \mathrm{~g}$
3) $25 \mathrm{~mL}, 4.2 \mathrm{~g}=0.17 \mathrm{~g} / \mathrm{mL}$
4) $11.3 \mathrm{~g}, 2.7 \mathrm{~g} / \mathrm{mL}=4.2 \mathrm{~mL}$
5) sphere radius $4.57 \mathrm{~cm}, 0.34 \mathrm{mg}=0.85 \mathrm{mg} / \mathrm{L}$ or $8.5 \times 10-7 \mathrm{~g} / \mathrm{mL}$
6) $4.23 \mathrm{~g} / \mathrm{mL}$, cylinder with $\mathrm{r}=2.47 \mathrm{~cm}$ and $\mathrm{h}=7.00 \mathrm{~cm}=567 \mathrm{~g}$

Part 5: Draw models for each of the following descriptors:

1) A mixture of two gases, both elements.

2) A suspension mixture of a compound and an element.

3) A homogeneous gas mixture of 4 different compounds.

4) A liquid solution in which the substance $X Y$ is the solute and $\mathrm{W}_{2} \mathrm{Z}$ is the solvent.

5) A gas solution of a four atom molecule and a three atom molecule.

6) Describe the difference between a chemical change and a physical change. Include an example of each.

In a physical change, the material remains the same material. Examples are crushing, cutting and dissolving. Chemical changes occur when the material changes into a new substance, like in burning or when a new state is produced.

