Name: class

**Science 9 Chemistry**

**Unit exam REVIEW by outcome:**

**\* Time put in before the exam, will pay off on the exam.**

**Outcome 1: I can investigate materials and describe them in terms of their physical and chemical properties.**

***You need to know:***

* *Physical properties and chemical properties (page 103-104)*
* *How materials can be classified (pure, mixture, homogeneous, heterogeneous, mechanical mixtures, solutions, metals, non-metals, etc) (page 95 – 98)*
* *******Changes of state (Science 7 Page 220)*
* *Particle model (page 95)*
* *Physical and chemical changes (pages 99 – 102)*

Answer the following questions:

1. Define and give examples of **Physical changes**.
2. Define and give examples of **Chemical changes.**
3. Define each of the following terms and give examples. *Make sure you know how to tell if a substance can be classified in that group.* **Draw an example molecule to prove you know it.**
	* Pure Substance
	* Homogenous / solution
	* Heterogeneous / mechanical mixture
4. Draw the **change of state** triangle (S, L, G – what it’s called as you move from one state to another). Ensure you know each change of state and the proper term.
5. Write out the **particle model pg. 95.**
6. List how to tell if a chemical change has occurred. Pg. 102

**Outcome 2: I can describe and interpret patterns in chemical reactions**

***You need to know:***

* *I can identify and evaluate dangers of caustic materials and potentially explosive reactions (T1 – page 93, 442-445)*
* *I can observe and describe evidence of chemical change in reactions between familiar materials, by describing combustion, corrosion and other reactions involving oxygen (T2 – page 99, 103, 104 / T8 – page 158, 159)*
1. What does caustic mean? Give some examples of caustic materials.
2. Define **combustion**; explain how oxygen is involved in this reaction.
3. Define **corrosion**; explain how oxygen is involved in this reaction.
4. Define and give examples of **endothermic reactions.**
5. Define and give examples of **exothermic reactions.**
6. List and explain the five methods of speeding up a chemical reaction.
7. Explain three ways to slow down a chemical reaction
8. Explain the Law of Conservation of Mass.
9. Draw out the 8 WHMIS symbols and label them

**Outcome 3: I can describe ideas used in interpreting the chemical nature of matter, both in the past and present, and identify example evidence that has contributed to the development of these ideas**

**You need to know:**

* *The periodic table*
	+ *patterns in groups and families and the physical/chemical properties of the elements included (page 116-125, 129 – 131)*
	+ *use it to determine the number of protons, neutrons and electrons for an element, draw a diagram of that element (page 128, handouts given in class about drawings)*
* *Explain the difference between observations and theories (page 112)*
* *Know the different properties of ionic and molecular compounds and give examples of each*
1. Use the small periodic table below. **Name** the family each element belongs to and **state how many electrons are in their valence shell**:
	* Lithium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	* Hydrogen\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	* Fluorine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	* Beryllium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	* Helium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. Explain the difference between groups/families and periods in the periodic table. Label them on the periodic table on the previous page.
2. Define each of the following terms and give examples.
	* *Metals –* they are malleable and ductile. What does that mean?
	* *Metalloids*
	* *non-metals*
3. Calculate the number of **neutrons** chlorine has**. Draw an atom** of chlorine with the proper placement of electrons, neutrons, and protons (just write out how many p & n there are)



1. What is an ion? Draw an **ion** of chlorine. Explain what the difference is between an atom and an ion of chlorine.



1. Complete the following chart on Molecular and Ionic compounds.

|  |  |  |
| --- | --- | --- |
|  | Molecular | Ionic |
| Does it share or steal electrons?  |  |  |
| What types of elements are combined? (metal, non-metal) |  |  |
| Naming rules. Prefixes, or not? What does it end in?  |  |  |
| Forms Ions in solution? (aka can it conduct electricity)  |  |  |

1. What are reactants and what are products in the equation below? (Where are each of them found in a chemical equation?)

|  |  |  |
| --- | --- | --- |
| **Formula**  | **Compound Name** | **Ionic or Molecular** |
| MgCl2 |  |  |
| CaO |  |  |
| FeS |  |  |
| NO2 |  |  |
|  | silver bromide |  |
|  | tetraphosphorus hexachloride |  |
|  | Tribromine Hexaoxide |  |

1. What are theories in science? If I said “I have a theory that the sky is blue because giants painted it that colour” – would that be a proper use of the word “theory” from a scientific standpoint? Why not?

**General Outcome 4: I can apply simplified chemical nomenclature in describing elements, compounds and chemical reactions**

***You need to know****:*

*- How to name molecular and ionic compounds*

*- How to use ion charges to name ionic compounds
- How to draw simple models of molecular and ionic compounds*

1. Name the following compounds, and tell whether they are ionic or molecular (aka covalent)