Name: class

**Science 9 Chemistry**

**Unit exam REVIEW by outcome:**

**\* Hours 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**.

Change in shape. No new substance produced.

Ex) ripping paper. Boiling water.

1. Define and give examples of **Chemical changes.**

New substance produced.

Ex) burning something. Cooking/ baking

1. 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

only one type of molecule. Element or compound.

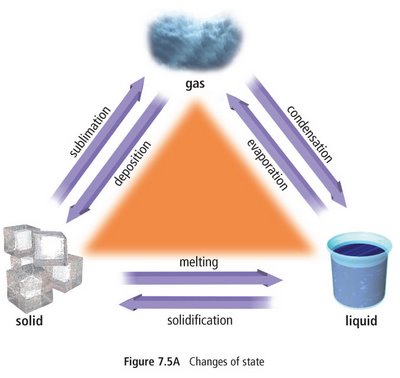
* + Homogenous / solution

Mixture that looks like it’s made of only 1 thing.

* + Heterogeneous / mechanical mixture

Mixture that you can see different pieces in.

1. 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.



1. Write out the **particle model pg. 95.**
2. Made of tiny particles
3. They’re always moving
4. Attracted to each other
5. Elements have unique particles
6. Spaces between them
7. List how to tell if a chemical change has occurred. Pg. 102

A new substance is produced (different from what you started with).

1. Temp change 2) precipitate formed (S from L). 3) bubbles 4) can’t reverse 5) new substance

**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.

Corrosive. Eats flesh. Ex) acid

1. Define **combustion**; explain how oxygen is involved in this reaction.

Violent burning reaction with oxygen.

1. Define **corrosion**; explain how oxygen is involved in this reaction.

Slow reaction between metal and oxygen.

1. Define and give examples of **endothermic reactions.**

Feels cold. Sucking in energy. ex) cold pack

1. Define and give examples of **exothermic reactions.**

Feels hot. Releasing energy. Ex) fireworks

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1. List and explain the five methods of speeding up a chemical reaction.

Stir, heat, increase surface area, increase concentration, catalyst (speeds up reaction, but isn’t used up)

1. Explain three ways to slow down a chemical reaction

Cool, use large chunks, use less chemicals, inhibitor

1. Explain the Law of Conservation of Mass.

Mass of reactants MUST EQUAL mass of products. \*you can’t create or destroy matter

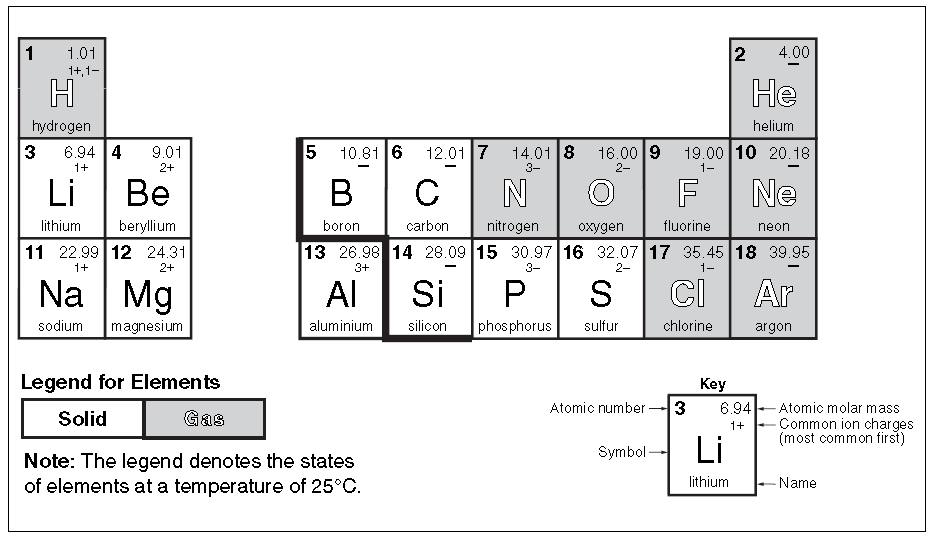
1. Draw out the 8 WHMIS symbols and label them

**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 Alkali
   * Hydrogen Hydrogen
   * Fluorine halogen
   * Beryllium Alkaline Earth
   * Helium Noble Gas



1. Explain the difference between groups/families and periods in the periodic table. Label them on the periodic table on the previous page.

Groups (aka families) are columns (up and down)

Periods are rows (left and right)

1. Define each of the following terms and give examples.
   * *Metals –* they are malleable and ductile. What does that mean?

*Metals- on the left side of the staircase.*

*Malleable-mold it*

*Ductile- can stretch into a wire.*

* + *Metalloids*

*Found on the staircase. Properties of metals and non-metals*

* + *non-metals*

*right side of staircase. Gases.*

1. 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)



P: 17

e-: 17

n: 35 (mass) – 17 (protons) = 18

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

An ion is when an atom gains or loses an electron, so it becomes positive or negative. (Has a charge)

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

|  |  |  |
| --- | --- | --- |
|  | Molecular | Ionic |
| Does it share or steal electrons? | Sharing n | Stealing |
| What types of elements are combined? (metal, non-metal) | Non-metal/ non-metal | Metal/ non-metal |
| Naming rules. Prefixes, or not? What does it end in? | Needs prefixes. NO MONO on the first element if it is only 1 atom.  Ends in –ide | NO prefixes at all  Ends in –ide |
| Forms Ions in solution? (aka can it conduct electricity) | No ions. Cannot conduct electricity | Forms ions (charged because it gives up or takes in an electrons)  CAN conduct electricity |

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

Reactants: Products

|  |  |  |
| --- | --- | --- |
| **Formula** | **Compound Name** | **Ionic or Molecular** |
| MgCl2 | magnesium chloride | Ionic |
| CaO | calcium oxide | Ionic |
| FeS | Iron sulfide | Ionic |
| NO2 | Nitrogen dioxide | Molecular |
| AgBr | silver bromide | Ionic |
| P4Cl6 | tetraphosphorus hexachloride | molecular |
| Br3O6 | Tribromine Hexaoxide | molecular |

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?

Theories are the BEST proven scientific explanations for why things happen. Taken as truth until better evidence comes along.

The example is NOT a theory because there is no evidence

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

**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 compound*