Chapter 4 Notes – The Periodic Table

**Matter**

* All the ‘stuff’ of the universe is composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Ex: air, you, your table, a pencil, a star, etc…
* Matter – anything that has \_\_\_\_\_\_\_\_, and takes up \_\_\_\_\_\_\_\_\_\_.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ particle of matter is an \_\_\_\_\_\_\_\_\_.
* The \_\_\_\_\_\_\_\_\_\_\_ of the atom determines the \_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_.
	+ Ex: Aluminum is different than \_\_\_\_\_\_\_ because it’s \_\_\_\_\_\_\_\_\_ are different.

**Atoms**

* An atom consists of 3 main parts: \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_.
* Protons and neutrons are in the \_\_\_\_\_\_\_\_\_\_\_(the center of the atom), while electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the nucleus. (like \_\_\_\_\_\_\_\_\_\_\_ around our sun)
* Protons have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (+), neutrons are \_\_\_\_\_\_\_\_\_\_\_\_(0), while electrons have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (-).

**Structure of an Atom**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subatomic Particle | Charge | Symbol | Mass | Location |
| Proton |  |  |  |  |
| Neutron |  |  |  |  |
| Electron |  |  |  |  |

**The Periodic Table**

* All \_\_\_\_\_\_\_\_\_\_\_\_\_ in the universe is made up of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The periodic table \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the elements by \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (the # of \_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus).
* Atomic Number = # of protons in the nucleus (this is what \_\_\_\_\_\_\_\_\_\_\_\_ the element)
* Atomic Mass = sum of \_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus
* In an atom, the number of \_\_\_\_\_\_\_\_\_\_\_\_ (+) are equal to the number of \_\_\_\_\_\_\_\_\_(-) , so the charges balance out and the atom has a neutral overall charge

**Reading the Element Square**

* To find the number of protons: it’s the same as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* To find the number of electrons: it’s the same as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* To find the number of neutrons:



**Families**

* Families or groups are in \_\_\_\_\_\_\_\_\_\_ columns (18) and elements in a \_\_\_\_\_\_\_\_\_\_\_ have similar \_\_\_\_\_\_\_\_\_\_\_\_ or properties.
	+ Elements in a family can make the same number of \_\_\_\_\_\_\_\_\_\_\_\_ and so have similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties

**Periods**

* Periods are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rows. Elements in a period DO NOT have similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Numbered 1-7.
* Elements in a period have the same # of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ shells.

**Organizing the Elements**

* Elements are also classified as \_\_\_\_\_\_\_\_\_\_\_\_, nonmetals or \_\_\_\_\_\_\_\_\_\_\_\_\_\_according to their properties
* The \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ line on the table separates these categories
* To the left:\_\_\_\_\_\_\_\_\_\_\_ To the right:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Touching the zig zag line= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Metals**

* Metals have similar physical properties. They are:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – can bend or pound into shapes
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – can form into wires
	+ Good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of heat and electricity
	+ High \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ points
	+ Hard
* Chemical properties can vary. Some can corrode, and some are very reactive.

**Non-Metals**

* Non-metals have the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties of metals. They are:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Non-conductive (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
	+ Low \_\_\_\_\_\_\_\_\_\_\_\_\_\_ points
	+ Mostly \_\_\_\_\_\_\_\_\_\_\_ at room temperature
* Chemical properties:
	+ All non-metals can form compounds except the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_
	+ Noble gases (inert gases) – the \_\_\_\_\_\_\_\_\_ family on the periodic table that does not \_\_\_\_\_\_\_\_\_ with anything. They are the snobs of the table.
	+ Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Properties of Semi-metals (Also Called Metalloids)**

* The semi-metals can have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of both metals and nonmetals.
* Their most useful property is that they are \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Semi-conductor – the varying ability to \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_. Used in every \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ in the world.
* Example: silicon