October 10, 2018

7th Grade Atomic Structure Review

***Vocab***

* **Matter**: anything that takes up space and has mass
* **Element**: a type of matter that cannot be broken down into another substance through chemical reactions
	+ Elements consist of atoms
* **Atom**: the smallest particle of an element that still has all the properties of that element
* **Subatomic particles**: particles that make up an atom
	+ Protons, neutrons and electrons are subatomic particles
* **Nucleus**: the center mass of an atom, containing protons and neutrons
* **Proton**: a subatomic particle with a positive charge
* **Neutron**: a subatomic particle with no charge
* **Electron**: a subatomic particle with a negative charge that orbits the nucleus

 

* **Periodic Table of the Elements**: a table that organizes the elements according to their physical and chemical properties
* **Group**: the vertical columns in the Periodic Table
* **Period**: the horizontal rows in the Periodic Table
* **Atomic Number**: the number of protons and the number of electrons found in an element’s atom
	+ Atomic number = # protons = # electrons
* **Atomic Mass**: the mass of an atom’s protons and neutrons
	+ Atomic mass – # protons = # neutrons
* **Molecular weight**: the sum of the atomic masses of all the atoms in a molecule
	+ Ex. the molecular weight of H2O (water) is 1.01 + 1.01 + 16 = **18**
		- The atomic mass of H is 1.01 and there are 2 H’s, and the atomic mass of O is 16, and there is 1 O



* **Metals**: elements that are lustrous, shiny, hard and malleable and good conductors of electricity and heat
* **Nonmetals**: elements that are soft, brittle, dull, and poor conductors of electricity and heat
* **Metalloid**: an element that can possess properties of both metals and nonmetals
	+ Semi-conductors and electrical insulators
* **Physical Property**: a property of a substance that can be observed without changing the substance’s identity
	+ Ex. color, texture, smell, taste, density, freezing point, melting point
* **Chemical property**: characteristics that can be observed or measured during a chemical reaction
	+ Ex. reactivity to acids, combustion, pH
* **Electricity**: the steady flow of electrons

***Focus Questions***
**How is the Periodic Table of the Elements Arranged?**

* Elements with similar physical and chemical properties are grouped together on the table.
* The Periodic Table separates elements into metals, nonmetals, and metalloids.

**How do the elements from the metal and nonmetal groups differ?**

* Metals and nonmetals have different physical and chemical properties from each other.

**What information about an element can be determined by using the Periodic Table of the Elements?**

* An element’s atomic mass equals the number of protons in its atoms’ nucleus and the number of electrons normally orbiting the nucleus
* The number of neutrons found in the nucleus of an atom is equal to the element’s atomic mass minus its atomic number.

**What is a metalloid?**

* A metalloid is an element that can have the properties of both metals and nonmetals.

**Where are metalloids found on the Periodic Table of the Elements?**

* Metalloids can be found on the border of the metals and nonmetals of the Periodic Table of the Elements.