**Chemistry Study Guide**

**Chapter 3: Matter – Properties and Changes**

* **3.1: Properties of Matter**
	+ **Essential Questions**
		- Describe the characteristics that identify a sample of matter as being a substance.
		- Create a list of properties of matter as physical or chemical
		- Create a table that describes the three common states of matter in terms of their shape, volume, and compressibility.
	+ **Big Ideas**
		- A substance is a form of matter with a uniform and unchanging composition.
		- Physical properties can be observed without changing a substances composition.
		- Chemical properties describe a substances ability to combine with or change into one or more new substances.
		- The three common states of matter are solid, liquid, and gas.
	+ **Vocabulary**
		- Physical property
		- Chemical property
		- States of matter
* **3.2: Changes in Matter**
	+ **Essential Questions**
		- Describe the results of a physical change and list three examples of a physical change. (Do the same for a chemical change).
		- Classify a list of changes in matter as physical or chemical.
	+ **Big Ideas**
		- In chemical reactions, reactants form products.
		- Matter is neither created nor destroyed in a chemical reaction.
	+ **Vocabulary**
		- Physical change
		- Chemical change
		- Law of conservation of mass
* **3.3: Mixtures of Matter**
	+ **Essential Questions**
		- How do mixtures and substances differ?
		- Consider a mixture of water, sand, and oil. How many phases are present? How could you separate these three substances?
		- Classify a list of mixtures as either homogenous or heterogeneous.
	+ **Big Ideas**
		- A mixture is a physical blend of two or more pure substances.
		- Solutions are homogenous mixtures.
		- Mixtures can be separated by physical means. Common separation techniques include filtration, distillation, crystallization, and chromatography.
	+ **Vocabulary**
		- Mixture
			* Heterogeneous
			* Homogeneous
* **3.4: Elements and Compounds**
	+ **Essential Questions**
		- How are elements and compounds similar? How are they different?
		- What is the basic organizing feature of the periodic table of elements?
		- Explain how the law of definite proportions applies to compounds.
	+ **Big Ideas**
		- Elements are substances that cannot be broken down in to simpler substances by chemical or physical means.
		- The elements are organized in the periodic table of elements.
		- A compound is a chemical combination of two or more elements.
	+ **Vocabulary**
		- Element
		- Periodic table
		- Compound
		- Law of proportions
		- Percent by mass