**Chemistry Study Guide**

**Chapter 1: Introduction to Chemistry**

* **NGSS Standards:**
	+ HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.
* **Math Standards**
	+ MP.2 Reason abstractly and quantitatively. (HS-PS1-7)
* **Essential Questions:**
	+ **1.2: Chemistry and Matter**
		- What is matter?
		- What is the difference between mass and weight?
		- Why does chemistry involve the study of the changes in the world at a submicroscopic level?
	+ **1.3: Scientific Methods**
		- Explain why a scientist must be cautious when a new chemical that has many potential uses is synthesized.
		- What is the scientific method? What are its steps?
		- You are asked to study the effect of temperature on the volume of a balloon. Identify the independent and dependent variable.
		- What is technology? Give examples of technology that you use every day.
		- Explain the reason behind each of the following: wear goggles and an apron in the lab even if you are only an observer, report all accident to the teacher, do not return unused chemicals to the stock bottles.
* **Big Ideas:**
	+ **1.2: Chemistry and Matter**
		- Chemistry is the study of matter and the changes it undergoes.
		- Matter is anything that has mass and take up space.
		- Mass is a measure of the amount of matter
		- Weight is a measure of not only of an amount of matter but also the effect of Earth’s gravitational pull on that matter.
	+ **1.3: Scientific Methods**
		- Macroscopic observations of matter reflect the actions of atoms on a submicroscopic scale.
		- Typical steps of the scientific method include observations, hypothesis, data analysis and conclusion.
		- Qualitative data describe an observation: quantitative data use numbers.
		- Any independent variable is a variable you change in an experiment and a dependent variable changes in response to a change in the independent variable.
		- A theory is a hypothesis that has been supported by many experiments.
		- A scientific law describes relationship in matter.
		- Scientific methods can be used in research.
		- Laboratory safety is the responsibility of anyone who conducts and experiment.
		- Many of the conveniences we enjoy today are technological applications of chemistry.
* **Vocabulary**
	+ **1.2: Chemistry and Matter**
		- Chemistry
		- Matter
		- Weight
		- Mass
	+ **1.3: Scientific Methods**
		- Scientific method
			* Data
				+ Qualitative data
				+ Quantitative data
			* Hypothesis
			* Experiment
			* Variable
				+ Independent variable
				+ Dependent variable
			* Control
			* Conclusion
		- Model
		- Law
		- Theory
		- Research
		- Technology