Chemistry Sem 1

1. Scientific Inquiry and Data Analysis
   1. The Nature of Chemistry
      1. Instruction
         1. How has the study of chemistry affected society?
   2. Hypotheses, Laws, and Theories
      1. Instruction
         1. What words do scientists use to classify their ideas?
   3. Scientific Methods
      1. Instruction
         1. What methods do scientists use to gather new knowledge?
   4. Tools, Technology, and Measurement
      1. Instruction
         1. What is the role of tools, technology, and measurement in the development of scientific knowledge?
   5. Scientific Notation and Significant Figures
      1. Instruction
         1. How do scientists represent very large and small numbers and show the precision of data?
   6. Dimensional Analysis
      1. Instruction
         1. What method do chemists use to perform calculations?
   7. Using Math to Analyze Data
      1. Instruction
         1. How do scientists use math to analyze data?
   8. Technological Design
      1. Instruction
         1. What is technological design?
   9. **Unit Test - (Must be taken in Person)**
2. Understanding Matter
   1. The Modern Atomic Theory
      1. Instruction
         1. How was the modern understanding of the atom developed?
   2. The Structure of the Atom
      1. Instruction
         1. What is the structure of the atom?
   3. Elements, Compounds, and Mixtures
      1. Instruction
         1. What is everything on Earth made of?
   4. The History and Arrangement of the Periodic Table
      1. Instruction
         1. How was the periodic table developed and how is it arranged?
   5. Atomic Numbers and Electron Configurations
      1. Instruction
         1. How can scientists describe the arrangement of electrons in an atom?
   6. Electrons and the Periodic Table
      1. Instruction
         1. How can the periodic table be used to understand the arrangement of electrons in an atom?
   7. Periodic Trends
      1. Instruction
         1. What trends become apparent from the arrangement of electrons in the periodic table?
   8. Changes in Matter
      1. Instruction
         1. How do scientists describe matter and its changes?
   9. Lab: Physical and Chemical Changes
      1. Instruction
         1. How can you distinguish a physical change from a chemical change?
      2. Virtual Lab
         1. Explore the difference between physical change and chemical change by performing a virtual experiment.
   10. **Unit Test - (Must be taken in Person)**
3. Chemical Bonding
   1. Ionic Bonding
      1. Instruction
         1. How do ionic bonds form between atoms?
   2. Metallic Bonding
      1. Instruction
         1. What are the properties of metals? How do metals form bonds with each other?
   3. Covalent Bonding
      1. Instruction
         1. How do scientists predict whether a covalent bond will form? How are covalent bonds illustrated?
   4. Lab: Ionic and Covalent Bonds
      1. Instruction
         1. Based on a substance’s properties, how can you determine whether its bonds are ionic or covalent?
      2. Virtual Lab
         1. Explore ionic and covalent bonds by performing a virtual experiment.
   5. Nomenclature of Ionic Compounds
      1. Instruction
         1. What is the method of naming ionic compounds?
   6. Nomenclature of Covalent Compounds
      1. Instruction
         1. What is the method for naming covalent compounds?
   7. Intermolecular Forces
      1. Instruction
         1. What types of forces exist between molecules, and how do these forces affect the properties of the molecule?
   8. **Unit Test - (Must be taken in Person)**
4. States of Matter and the Gas Laws
   1. Gases
      1. Instruction
         1. How do scientists describe the behavior of particles in gases?
   2. Liquids
      1. Instruction
         1. How do scientists describe the behavior of particles in liquids?
   3. Solids and Plasmas
      1. Instruction
         1. How do scientists describe the behavior of particles in solids and plasmas?
   4. Phase Changes
      1. Instruction
         1. What happens when matter changes its form?
   5. Gas Laws
      1. Instruction
         1. What is the relationship among pressure, temperature, and volume of a gas?
   6. Lab: Charles's Law
      1. Instruction
         1. What is the effect of a gas’ temperature on its volume?
      2. Virtual Lab
         1. Explore the relationship between temperature and the volume of a gas by performing a virtual experiment.
   7. Lab: Boyle’s Law
      1. Instruction
         1. What is the effect of pressure on the volume of a gas?
      2. Virtual Lab
         1. Explore the relationship of the pressure and volume of a gas in a virtual experiment.
   8. The Ideal Gas Law
      1. Instruction
         1. How does the number of particles in a gas relate to pressure, temperature, and volume?
   9. **Unit Test - (Must be taken in Person)**
5. Cumulative Exam
   1. **Cumulative Exam - (Must be taken in Person)**