Chemistry 2nd Semester

Timeline	Unit/theme	Standard	Student Focused Objective	Resources/ Suggested Activities
17 Days	Unit 6/ Stoichiometry	4. Use stoichiometric ratios to support the claim that atoms, and therefore mass, are conserved during chemical reactions. a. Quantitatively apply the concepts of the mole and Avogadro's number to conceptualize and calculate percent composition and empirical or molecular formulas of common compounds. b. Use mathematical representations of the mole concept to solve reaction stoichiometry problems, involving mole-to-mole conversions, mass-to-mole conversions, and mass-to-mass conversions. c. Use mathematical models to reveal the relationships among the theoretical, actual, and percent yields of chemical reactions. d. Qualitatively and quantitatively determine the limiting reactant when given the masses of all reactants. e. Use mathematics and computational thinking to perform gas stoichiometry calculations involving mass, volume, and number of moles at standard temperature and pressure (STP).	1) I can identify how many moles of an element. 2) I can identify limiting reactants 3) I can calculate theoretical yields, and calculate percent yield from from actual and theoretical yield. 4) I can identify Avogadro's number and use it in calculations. 5) I can differentiate between empirical and molecular formulas and identify how it applies differently between ionic and molecular compounds	It's Not Rocket Science curriculum, Lab equipment, Chemicals, Youtube- Chemistry videos
17 Days	Unit 8/ Solutions	5. Obtain, evaluate, and communicate information concerning factors that affect solubility and the properties of solutions. a. Use mathematics and computational	1) I will be able to differentiate between a solute and solvent in examples. 2) I can explain why water is considered the universal solvent.	It's Not Rocket Science curriculum, Lab equipment, Chemicals, Youtube- Chemistry videos

		thinking to express the concentrations of given solutions in terms of molarity and molality. b. Develop and use models to illustrate solute-solvent interactions. Example: particle diagram Structure and Function c. Use mathematics and computational thinking to prepare solutions from both solids and concentrated solutions when given a desired molarity and volume. Scale, Proportion, and Quantity d. Analyze and interpret data to explain the effects of temperature on the solubility of solid, liquid, and gaseous solutes in a solvent and the effects of pressure on the solubility of gaseous solutes. e. Design and conduct experiments to evaluate the effect of solute concentration on the colligative properties of a solution. Examples: boiling point, freezing point, vapor pressure	3) I can communicate factors that affect solubility. 4) I can calculate concentrations of solutions in terms of molarity 5) I can illustrate solute-solvent interactions using models. 6) I can analyze and interpret data as to how things affect solubility. 7) I can design experiments that effect solute concentration and colligative properties of a solution.	
18 days	Unit 9/ Acids and Bases	6. Make qualitative and quantitative claims, based on ion concentration, about the acidic, basic, or neutral characteristics of a solution. a. Obtain, evaluate, and communicate information concerning the properties of acids and bases. b. Use the periodic table and computational thinking to derive chemical formulas and names of acids and bases. c. Use multiple models to predict the	1) I can make claims, both qualitative and quantitative based on ion concentration about the acidic, basic, or neutral characteristics of a solution. 2) I can communicate information concerning the properties of acids and bases. 3) I can use the periodic table to derive chemical formulas of acids and bases.	It's Not Rocket Science curriculum, Lab equipment, Chemicals, Youtube- Chemistry videos

		relative properties of strong, weak, concentrated, and dilute acids and bases. Examples: Arrhenius and Brønsted-Lowry acids and bases Structure and Function d. Use mathematics to calculate the pH, pOH, [OH-], and [H3O+] of common solutions. e. Plan and carry out a strong acid-strong base titration to determine the concentration of an unknown acidic or basic solution.	4) I can use models to predict the properties of strong, weak, concentrated and dilute acids. 5) I can calculate the pH and pOH of solutions and titrate them to determine the concentration of an unknown acidic or basic solution.	
18 days	Unit 7/ States of Matter	7. Plan and carry out investigations to determine how the atomic and molecular motion in chemical and physical processes is related to the kinetic molecular theory. a. Qualitatively and quantitatively relate changes in the temperature and pressure of a gas to particle motion and number of collisions. b. Express the relationship among pressure, volume, temperature, and the number of moles of a gas quantitatively, conceptually, and graphically. Examples: Boyle's Law, Charles's Law, Dalton's Law of Partial Pressures, Ideal Gas Law 1 d. Ask questions to determine the relationship between an element's physical and chemical properties and its position on the periodic table.	1) I can understand and investigate the kinetic molecular theory. 2) I can quantitatively and qualitatively relate changes in temperature and pressure to gas particle motion and their collisions. 3) I can express the relationship among pressure, volume, temperature and concentration of a gas quantitatively, conceptually, and graphically. 4) I can ask questions to determine the relationship between the physical state and chemical properties of substances.	It's Not Rocket Science curriculum, Lab equipment, Chemicals, Youtube- Chemistry videos
18 days	Unit 10/ Thermochemistry	**Extension of Chemical Reaction Standards** 3. Develop and use multiple types of models to represent chemical reactions. Systems and System Models a. Use qualitative and	1) I can explain how energy exchanges are different in physical and chemical changes. 2) I will be able to distinguish between thermal energy, temperature and heat.	It's Not Rocket Science curriculum, Lab equipment, Chemicals, Youtube- Chemistry videos

		quantitative reasoning to describe and balance chemical equations to satisfy the law of conservation of matter. Examples: describe differences in properties of reactants and products Scale, Proportion, and Quantity b. Use qualitative and quantitative reasoning to classify chemical reactions, predict the products of single replacement and double replacement reactions, and represent chemical reactions using ionic equations. Patterns c. Analyze and interpret temperature and bond energy data to classify a reaction as endothermic or exothermic. Energy and Matter d. Construct an explanation, using particle diagrams and collision theory, for how particle size, concentration, and temperature affect the rate of a chemical reaction.	3) I will be able to differentiate between the three types of thermal energy transfer. 4) Explain the relationship between energy and the formation of chemical bonds during a chemical reaction. 5) Explain how delta H can be used to determine whether a reaction is exothermic or endothermic. 6) I can summarize the main tenets of collision theory. 7) I will be able to describe how different factors affect reaction rate.	