Mohawk Local Schools Chemistry - SCIENCE

Quarter 2 Curriculum Guide

Guiding Principles of the Scientific Inquiry/Learning Cycle:

Evaluate….Engage…Explore…Explain…Extend…Evaluate

Identify ask valid and testable questions
Research books, other resources to gather known information
Plan and Investigate
Use appropriate mathematics, technology tools to gather, interpret data.
Organize, evaluate, interpret observations, measurements, other data
Use evidence, scientific knowledge to develop explanations
Communicate results with graphs charts, tables

Critical Areas of Focus Being Addressed:

- Structure and Properties of Matter
- Interactions of Matter
- Scientific Inquiry

Content Statements Addressed and Whether they are Knowledge, Reasoning, Performance Skill, or Product: (DOK1) (DOK2) (DOK3) (DOK4)	Underpinning Targets Corresponding with Standards and Whether they are Knowledge, Reasoning, Performance Skill, or Product: "I can…..", "Students Will Be Able To……."
Periodic Table	• Predict the electron configuration of an element based on its position within the periodic table. (R)

	• Explain the trends in atomic radii, ionic radii, first ionization energy, and electronegativity using the concepts of effective nuclear charge and shielding. (R) • Correlate the chemical properties of elements to their periodic properties. (R) • Use the periodic table to predict the charge on main group elements. (R) • Use the atomic theory and bonding to explain the trends in atomic radii, ionic radii, first ionization energy, and electronegativity. (PS) • Predict the properties of an element based on its position within the periodic table. Predict the possible interactions between atoms based on their valence electrons. (R) • Predict the type of bond between two atoms (ionic, polar covalent, covalent) using the difference in electronegativity of two atoms. (R) • Understand that the polarity of an atomic bond is dependent on the electronegativity and bond length. (K) • Use the periodic table to predict the charge on main group elements. (R)
Intramolecular Chemical Bonding (DOK 2)	• Compare the properties of molecules, ionic lattices, and network covalent structures. (R) • Explain how properties of metals (e.g., conductivity) can be explained by metallic bonding. (R)
Representing Compounds (DOK 2)	• Evaluate which models (chemical formulas, Lewis structures, and ball-and-stick models) are most useful in a given situation. (K) • Predict the electronic and molecular geometry of a substance (composed of hydrogen, carbon, nitrogen, oxygen, phosphorus, sulfur and the halogens) using the Lewis structures and VSEPR theory. (R) • Name binary molecular and ionic compounds including

	Greek prefixes (mono-, di-, tri-, etc. up to deca-) and Roman numerals. (K) • Given the names of binary molecular and ionic compounds predict the formula. (K) • Predict the formula of binary ionic compounds composed of elements from groups 1, 2, 17, hydrogen, oxygen (and polyatomic ions with the charge and formula given) using their position on the periodic table to predict charge. (R)
Quantifying Matter	• Compare accuracy and precision • Evaluate the precision of the various piece of laboratory equipment. • Determine the number of significant digits in a measurement. • Apply the significant figures rules for addition/subtraction, multiplication/division, and logarithmic functions. • Calculate in scientific notation when necessary. • Use numbers in scientific notation correctly in an equation. • Report the percent error for a given measurement (or set of measurements). • Apply the equivalence statement for two units to change the dimensions of a given measurement. • Convert between mass, moles, volume, and number of particles using formula mass, Avogadro's number, and density. • Compare measurement in the various measurement domains: macroscopic, microscopic, and cosmic. • Calculate the atomic mass of an element given the mass and abundance of each isotope of that element. • Show the relationship between formula mass and the mole.
Stoichiometry (DOK 2)	• Use stoichiometric calculations to convert moles into

	mass, volume of a gas, volume of a solution, number of particles. (R) • Infer if a reaction has a limiting reagent from the initial amount of reactants. (R) • Compare experimental yield to theoretical yield and determine the percent yield. (R) • Use molarity in stoichiometric calculations (R)