**Chemistry Essential Skills and Knowledge**

**Semester 2 Plan**

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| **Unit 3.B: The Periodic Table & Periodic Trends** |
| * 3.f I can explain how atomic number, atomic mass, and the periodic table are related.
* 3.g I can use the periodic table to identify metals, semimetals, and nonmetals.
* 3.h I can use the periodic table to identify alkali metals, alkaline earth metals, halogens, and transition metals.
* 3.i I can use the periodic table to identify trends in ionization energy, electronegativity, and the relative sizes of ions and atoms.
* 3.j I can use the periodic table to determine the number of electrons available for bonding
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| **Unit 4: Chemical Bonding** |
| **Essential Skills & Knowledge*** 4.a I can explain how atoms combine to form ionic, covalent, and metallic compounds.
* 4.b I can identify chemical bonds in molecules.
* 4.c I can explain ionic bonds.
* 4.d I can draw Lewis dot structures.
* 4.e I can explain how electronegativity and ionization energy relate to bond formation.
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| **Unit 5: Chemical Reactions & Stoichiometry** |
| **Essential Skills & Knowledge*** 5.a I can balance chemical reactions and explain them conceptually using the concept of conservation of mass.
* 5.b I can relate reactants to products using a chemical reaction and can convert from molecules A to molecules B or moles A to moles B.
* 5.c I can define a mole and Avogadro’s number and use them to convert from molecules to moles.
* 5.d I can calculate the number of grams in one mole of any compound based on the formula.
* 5.e I can convert from grams A to grams B or any other two/three-step conversion in a reaction.
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| **Unit 6: Solutions & Acids & Bases** |
| **Essential Skills & Knowledge*** 6.a I can explain the observable properties of acids, bases, and salt solutions, including . . .
* 6.b I can explain strong/weak acids/bases and the pH scale.
* 6.c I can define solute, solvent, and solution.
* 6.d I can explain the dissolving process at the molecular level by using the concept of random molecular motion.
* 6.e I can explain how temperature, pressure, and surface area affect the dissolving process.
* 6.f I can calculate the concentration of a solute in terms of grams per liter, molarity, parts per million, and percent composition.
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