Windsor Locks High School

Believe and You Will Achieve

Chemistry
Power Standards and Scoring Criteria

1. Connect the relationship between cause and effect to how it impacts the balance of chemical processes.				
Student can...	**4**	**3**	**2**	**1**
1.1: Analyze how different factors affect equilibrium in a chemical reaction	I can predict the impact of changing factors in a chemical reaction	I can analyze how different factors affect equilibrium in a chemical reaction	I can determine if a reaction will go forward or backward using Le Chatelier's Principle	I can identify a factor that would affect equilibrium
1.2: Explain how factors affect physical or chemical properties	I can predict changes in physical and chemical properties based on data	I can explain how factors affect physical or chemical properties	I can calculate or measure physical or chemical properties	I can identify a factors that affects physical or chemical properties

2. Analyze and apply how energy transfers and transforms within and across chemical processes.				
Student can...	**4**	**3**	**2**	**1**
2.1: Calculate or measure the energy transformations within a system	I can defend the claim that energy cannot be destroyed only converted.	I can calculate or measure the energy transformations within a system	I can represent the flow/transfers of energy in a system.	I can classify energy transformations in a system
2.2: Calculate the change in energy within a system is the result of bonds being broken and formed	I can create a representation of the relationship between bonding and energy	I can calculate the change in energy within a system is the result of bonds being broken and formed.	I can describe the energy transfer between the system and the environment	I can identify the bonds that are broken and formed in a chemical reaction.

3. Analyze relationships between structure and function of matter as it applies to chemical systems.				
Student can...	**4**	**3**	**2**	**1**
3.1: Connect atomic structure to the properties of the element	I can predict bonding patterns based on electron configurations	I can connect the atomic structure to the properties of the element	I can describe the atomic structure of an element	I can identify the components of an atom
3.2 Create 2D and 3D structure models of compounds	I can infer the properties of substances based on the structure of electrons	I can create 2D and 3D structure models of compounds	I can determine the chemical formula of a substance based on valence of electrons	I can identify the number of valence electrons in an atom or ion

4. Critique patterns to predict behavior and relationships within chemical systems.				
Student can...	**4**	**3**	**2**	**1**
4.1: Apply mathematical representation to quantify reactants and/or products	I can compare limiting and excess reagents and determine percent yield in chemical reactions	I can apply mathematical representations to quantify reactants and/or products	I can explain how the Law of Conservation of Mass applies to chemical reactions.	I can identify quantities of reactants and products of a chemical reaction
4.2: Apply the periodic table to predict the relative properties and behaviors of elements	I can apply the periodic table in practical and chemical applications	I can use the periodic table to predict the relative properties and behaviors of elements	I can describe a trend on the periodic table	I can identify the trends on the periodic table

5. Design and conduct controlled physical science investigations.				
Student can...	**4**	**3**	**2**	**1**
5.1: I can ask and refine questions to explain natural phenomena.	I can revise my questions based on new information.	I can ask questions to explain phenomena.	I can determine variables involved with phenomena.	I can make observations based off a phenomena.
5.2: I can explain phenomena utilizing relevant information.	I can support my claims with background research.	I can explain phenomena utilizing relevant information.	I can communicate information from various resources.	I can summarize the central idea of a source.
5.3: I can conduct an investigation using a clear, concise procedure.	I can create and conduct an investigation to answer a scientific question.	I can conduct an investigation using a clear, concise procedure.	I can determine the type of data that should be collected during an investigation.	I can identify independent variable, dependent variable, and constants in an investigation.
5.4: I can create an appropriate visual representation of data.	I can manipulate data or make inferences about the data.	I can create an appropriate visual representation of data.	I can make a visual representation of data.	I can collect data.
5.5: I can construct an explanation based on evidence	I can connect my explanation to the real-world.	I can construct an explanation based on evidence.	I can summarize supporting evidence	I can state a claim to answer a scientific question
5.6: I can evaluate the reliability and validity of data sets.	I can identify the causes of error in the investigation..	I can evaluate the reliability and validity of data sets.	I can assess the validity of data sets/	I can identify sources of error within the investigation.
5.7: I can develop models to support explanations, predict phenomena, analyze systems, and/or solve problems.	I can evaluate the merits and limitations of different models in order to select or revise a model that best fits the evidence.	I can develop models that support explanations, predict phenomena, analyze systems, and/or solve problems.	I can use a model to explain phenomena.	I can select an appropriate model to represent a phenomenon
5.8: I can design a solution to a real-world problem.	I can evaluate a solution to a real-world problem based on prioritized criteria and trade-offs.	I can design a solution to a real-world problem.	I can explain why the real-world problem needs to be solved.	I can identify a problem that can be solved.