BOSTON Public Schools Focus on Children | Office of Instructional Research and Development

Science and Technology/Engineering

CWA High School: Chemistry

For additional information or questions about these prompts email: bps.science@gmail.com

CWA	Science Idea	Standards (New Mass Framework to select, but also link to Old Mass Framework)	Description Lesson Specific, Unit Assessment, or Open Argument	Writing Prompt	Other Resources (e.g. rubrics, student responses, etc.)
Properties of Substances	Properties of Matter, Bonding	• MS-PS1-13(MA). Analyze data of the conductivity of pure water versus different solutions of water with another substance dissolved in it to make a claim about the nature of the molecules of the dissolved substances. • HS-PS2-6. Communicate scientific and technical information about the molecular-level structures of different materials to justify why particular classes of substances have specific properties that are useful in the functioning of designed materials • 1.1 Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes. • 4.1 Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.	Alchemy Unit Assessment	Which of the three substances Keisha should choose to add to the beaker of distilled water to light up the light bulb?	• Prompt • Prompt with scaffolding • Content specific rubric • Sample student response
Calorimetry	Energy transfer, endothermic and exothermic reactions	• HS-PS1-4. Develop a model to illustrate the energy transferred during an exothermic or endothermic chemical reaction based on the bond energy difference between bonds broken (absorption of energy) and bonds formed (release of energy). • 6.4 Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process.	Fire: Lesson Specific Assessment	Was the combustion of the potato chip an endothermic or exothermic reaction?	• Prompt with no scaffolding • Prompt with two scaffolding options • Content specific rubric • Sample student response

CWA	Science Idea	Standards (New Mass Framework to select, but also link to Old Mass Framework)	Description Lesson Specific, Unit Assessment, or Open Argument	Writing Prompt	Other Resources (e.g. rubrics, student responses, etc.)
Charles' Law	Gas Laws and Kinetic Molecular Theory	• HS-PS2-8(MA). Communicate a qualitative explanation based on kinetic-molecular theory for why one variable in the combined gas law changes when another is varied. Using kinetic-molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), and pressure and temperature (Gay-Lussac's law). Use the combined gas law to determine changes in pressure, volume, and temperature. • 6.3 Using the kinetic molecular theory, describe and contrast the properties of gases, liquids, and solids. Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.	Weather Unit Assessment	If the air pressure at the beach is the same as it was at Jorge's house which of the following statements will be true?	• Prompt with two scaffolding options • Content specific rubric • Sample student response
Hydrogen	Periodicity Properties of Elements	• HS-PS1-1. Use the periodic table as a model to predict the relative properties of main group elements, including ionization energy and relative sizes of atoms and ions, based on the patterns of electrons in the outermost energy level of each element. Use the patterns of valence electron configurations and Coulomb's law to explain and predict trends in ionization energies, relative sizes of atoms and ions, and reactivity of pure elements • 3.1 Explain the relationship of an element's position on the periodic table to its atomic number. Identify families (groups) and periods on the periodic table. • 3.2 Use the periodic table to identify the three classes of elements: metals, nonmetals, and metalloids. • 3.3 Relate the position of an element on the periodic table to its electron configuration and compare its reactivity to the reactivity of other elements in the table. • 3.4 Identify trends on the periodic table (ionization energy, electronegativity, and relative sizes of atoms and ions).	Open Argument	Should Hydrogen be located in Group 1 or Group 7?	• Prompt • 2 reference articles • Content specific rubric • Sample student response