**Science A: Fundamentals**

**Creating and Building Molecular Models**

**Idaho Content Standards- Science (ICSS):**

* PS1-5-1 Develop a model to describe that matter is made of particles too small to be seen.
* PS1-MS-1 Develop models to describe the atomic composition of simple molecules and extended structures.

**Math Common Core State Standards (Math-CCSS):**

* n/a

**Next Generation Science Standards (NGSS):**

* 5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.
* MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.

**English Language Arts Common Core State Standards (ELA-CCSS):**

* RF.5.3 Know and apply grade-level phonics and word analysis skills in decoding words.
* RF.5.3.A Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.
* RF.5.4 Read with sufficient accuracy and fluency to support comprehension.
* RF.5.4.A Read on-level text with purpose and understanding.
* SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-lead) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
* SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
* SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
* SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
* SL.5.4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
* L.5.4 Determine or clarify the meaning of unknown and multiple-meaning words, and phrases choosing flexibly from a range of strategies.
* L.5.4.B Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis).

**Energy Explorations**

**Idaho Content Standards- Science (ICSS):**

* PS1-4-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
* PS1-4-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
* PS1-MS-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.
* PS3-MS-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**Math Common Core State Standards ( Math-CCSS):**

* n/a

**Next Generation Science Standards (NGSS):**

* 4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.
* 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
* 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
* MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.
* MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**English Language Arts Common Core State Standards (ELA-CCSS):**

* RF.5.3 Know and apply grade-level phonics and word analysis skills in decoding words.
* RF.5.3.A Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.
* RF.5.4 Read with sufficient accuracy and fluency to support comprehension.
* RF.5.4.A Read on-level text with purpose and understanding.
* SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-lead) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
* SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
* SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
* SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
* SL.5.4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
* L.5.4 Determine or clarify the meaning of unknown and multiple-meaning words, and phrases choosing flexibly from a range of strategies.

**States of Matter Experiments**

**ICSS:**

* PS1-MS-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

**Math-CCSS:**

* n/a

**NGSS:**

* MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
* MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**ELA-CCSS:**

* SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-lead) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
* SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
* SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
* SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
* SL.5.4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

**Physical and Chemical Changes Experiments**

**ICSS:**

* PS1-4-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
* PS1-5-3. Make observations and measurements to identify materials based on their properties.
* PS1-5-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
* PS1-MS-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
* PS1-MS-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

**Math-CCSS:**

* 5.MD.B.2 Make a line plot to display a data set of measurements.

**NGSS:**

* 5-PS1-3. Make observations and measurements to identify materials based on their properties.
* 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
* MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
* MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
* MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**ELA-CCSS:**

* SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-lead) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
* SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
* SL.5.1.C Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
* SL.5.1.D Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

**Double Bubble Trouble**

**ICSS:**

* PS1-4-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
* PS1-5-3. Make observations and measurements to identify materials based on their properties.
* PS1-5-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
* PS1-MS-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
* PS1-MS-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

**Math-CCSS:**

* 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams, kilograms, and liters.
* 4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; L, mL; h, min, sec.

**NGSS:**

* 5-PS1-3. Make observations and measurements to identify materials based on their properties.
* 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
* MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
* MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
* MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**ELA-CCSS:**

* SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-lead) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
* SL.5.1.B Follow agreed-upon rules for discussions and carry out assigned roles.
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