**Mathematics B: Measurement**

**Length, Liquid Volume, and Mass**

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

* PS1-5-3 Make observations and measurements to identify materials based on their properties.

**Math Common Core State Standards (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.
* 4.MD.A.2. Use the 4 operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as a number line that features a measurement scale.
* 5.MD.C.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
* 5.MD.C.3.B A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
* 5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
* 5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
* 5.MD.C.5.B Apply the formulas V=l x w x h and V= b x h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

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

* 5-PS1-3. Make observations and measurements to identify materials based on their properties.

**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.B Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis).

**Engineering Measurement Training**

**ICSS:**

* n/a

**Math-CCSS:**

* 3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.
* 3.MD.C.7 Relate area to the operations of multiplication and addition.
* 3.MD.C.7.B Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
* 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.
* 5.MD.C.3.B A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
* 5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
* 5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
* 5.MD.C.5.B Apply the formulas V=l x w x h and V= b x h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

**NGSS:**

* n/a

**ELA-CCSS:**

**Pop Goes the Fizz**

**ICSS:**

* n/a

**Math-CCSS:**

* 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams, kilograms, and liters.
* 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.
* 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch.
* 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:**

* 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
* 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

**ELA-CCSS:**

* RF.5.3 Know and apply grade-level phonics and word analysis skills in decoding words.
* 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.

**STEM Time Capsule**

**ICSS:**

* n/a

**Math-CCSS:**

* 3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.
* 3.MD.C.7 Relate area to the operations of multiplication and addition.
* 3.MD.C.7.B Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
* 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.
* 5.MD.C.3.B A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
* 5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
* 5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
* 5.MD.C.5.B Apply the formulas V=l x w x h and V= b x h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

**NGSS:**

* n/a

**ELA-CCSS:**

* RF.5.3 Know and apply grade-level phonics and word analysis skills in decoding words.
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