Stackable Instructionally-embedded Portable Science (SIPS) Assessments Project

Grade 5 Science
Unit 1 Range Performance Level Descriptors
Matter and Its Interactions
September 2023

Grade 5 Unit 1 EOU Assessment Performance Expectations

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [*Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.*]

5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.] [*Assessment Boundary: Assessment does not include distinguishing mass and weight.*]

5-PS1-3. Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [*Assessment Boundary: Assessment does not include density or distinguishing mass and weight.*]

5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

SIPS Grade 5 Unit 1 Range Performance Level Descriptors

SIPS tasks require students to apply and transfer their science learning through engagement with science and engineering practices (SEPs) and application of the crosscutting concepts (CCCs) to demonstrate their understanding of disciplinary core ideas (DCIs) to make sense of and explain phenomena and/or to design solutions to phenomena-rooted engineering problems.

Level 1	Level 2	Level 3 (Target)	Level 4
A student performing at this level produces evidence of three-dimensional science learning by their ability to:	A student performing at this level produces evidence of three-dimensional science learning by their ability to:	A student performing at this level produces evidence of three-dimensional science learning by their ability to:	A student performing at this level produces evidence of three-dimensional science learning by their ability to:
• use a provided or partial model to create a simple, partial description to describe how matter is made up of particles that are too small to be seen.	• develop and use incomplete but accurate models of at least two states of matter to create an explanation that matter is made up of tiny particles too small to be seen. using some evidence such as particle size, arrangement, and spacing.	• develop and use complete and accurate models of at least two states of matter to create an accurate and complete explanation that matter is made up of tiny particles too small to be seen.	• develop and use complete and accurate models to create scientifically accurate and complete explanations that matter made up of tiny particles too small to be seen can be detected and can account for phenomena.
• use some aspects of provided data to identify an unknown material.	• identify an observation or measurement of a material's property to be collected to identify a material and use some aspects of provided data to identify an unknown material.	• determine how to collect observations and gather data on properties to identify unknown materials and explain how the data supports identification of the material(s).	• determine how to collect observations and gather data on properties to identify unknown materials, support conclusion with data, and describe which measurements are most useful for identifying the material(s).
• use some relevant data related to the total weights of provided substances before and after heating, cooling, and/or mixing to describe the total weight of the substances (i.e., changed, not changed).	• use some aspects of provided data about the total weights of substances to answer a scientific question about the conservation of the amount of matter (i.e., total weight) after heating, cooling, and/or mixing substances.	• use provided data about the total weights of substances to produce mathematical representations as evidence to support a conclusion about the conservation of the amount of matter (i.e., total weight) after heating, cooling, and/or mixing substances.	• use collected or provided data about the total weights of substances to produce accurate mathematical representations as evidence to support conclusions about the conservation of the amount of matter (i.e., total weight) after heating, cooling, and/or mixing substances when changes occur or in transitions in which matter seems to vanish.

• use observations or measurements to identify whether the mixing of two or more substances results in the formation of a new substance.	• use observations and quantitative or qualitative measurements to determine whether the mixing of two or more substances results in the formation of a new substance and provide a partial explanation.	• use observations and quantitative or qualitative measurements to determine whether the mixing of two or more substances results in the formation of a new substance and provide an accurate explanation in support of the conclusion.	• use observations and quantitative and/or qualitative measurements to determine whether the mixing of two or more substances results in the formation of a new substance and provide a comprehensive and scientifically accurate explanation in support of the conclusion.