Minnesota Science

Grade 5

Adopted 2019

Grade 5

Physical Science

1. Asking questions and defining problems. 5P.1.1
    1. Students will be able to ask questions about aspects of the phenomena they observe, the conclusions they draw from their models or scientific investigations, each other's ideas, and the information they read. 5P.1.1.1
        1. Ask investigatable questions and predict reasonable outcomes about the changes in energy, related to speed, that occur when objects interact. 5P.1.1.1.1
2. Planning and carrying out investigations. 5P.1.2
    1. Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions, and will organize and collect data to provide evidence to support claims the students make about phenomena. 5P.1.2.1
        1. Conduct an investigation to determine whether the mixing of two or more substances results in new substances. 5P.1.2.1.1
        2. Evaluate appropriate methods and tools to identify materials based on their properties prior to investigation. 5P.1.2.1.2
1. Analyzing and interpreting data. 5P.2.1
    1. Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables. 5P.2.1.1
        1. Analyze and interpret data to show that energy can be transferred from place to place by sound, light, heat, and electric currents. 5P.2.1.1.1
2. Using mathematics and computational thinking. 5P.2.2
    1. Students will be able to use mathematics to represent physical variables and their relationships; compare mathematical expressions to the real world; and engage in computational thinking as they use or develop algorithms to describe the natural or designed worlds. 5P.2.2.1
        1. 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. 5P.2.2.1.1

Life Science

2. Planning and carrying out investigations. 5L.1.2

    1. Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions, and will organize and collect data to provide evidence to support claims the students make about phenomena. 5L.1.2.1

        3. Plan and conduct an investigation to obtain evidence that plants get the materials they need for growth chiefly from air and water. 5L.1.2.1.3

1. Developing and using models. 5L.3.1

    1. Students will be able to develop, revise, and use models to represent the students' understanding of phenomena or systems as they develop questions, predictions and/or explanations, and communicate ideas to others. 5L.3.1.1

        3. Create an electronic visualization of the movement of matter among plants, animals, decomposers, and the environment. 5L.3.1.1.3

1. Engaging in argument from evidence. 5L.4.1

    2. Students will be able to argue from evidence to justify the best solution to a problem or to compare and evaluate competing designs, ideas, or methods. 5L.4.1.2

        1. Evaluate the merit of a solution to a problem caused by changes in plant and animal populations as a result of environmental changes. 5L.4.1.2.1

Earth and Space Science

2. Using mathematics and computational thinking. 5E.2.2

    1. Students will be able to use mathematics to represent physical variables and their relationships; compare mathematical expressions to the real world; and engage in computational thinking as they use or develop algorithms to describe the natural or designed worlds. 5E.2.2.1

        2. Use data to describe patterns in the daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. 5E.2.2.1.2

1. Engaging in argument from evidence. 5E.4.1

    1. Students will be able to engage in argument from evidence for the explanations the students construct, defend and revise their interpretations when presented with new evidence, critically evaluate the scientific arguments of others, and present counterarguments. 5E.4.1.1

        1. Use evidence to support an argument that the apparent brightness of the Sun and stars is due to their relative distances from Earth. 5E.4.1.1.1

Physical Science

1. Developing and using models. 5P.3.1
    1. Students will be able to develop, revise, and use models to represent the students' understanding of phenomena or systems as they develop questions, predictions and/or explanations, and communicate ideas to others. 5P.3.1.1
        1. Develop and refine a model to describe that matter is made of particles too small to be seen. 5P.3.1.1.1
        2. Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the Sun. 5P.3.1.1.2
2. Constructing explanations and designing solutions. 5P.3.2
    1. Students will be able to apply scientific principles and empirical evidence (primary or secondary) to explain the causes of phenomena or identify weaknesses in explanations developed by the students or others. 5P.3.2.1
        1. Construct an explanation based on evidence relating the speed of an object to the energy of that object. 5P.3.2.1.1
        2. Students will be able to use their understanding of scientific principles and the engineering design process to design solutions that meet established criteria and constraints. 5P.3.2.2
        1. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. 5P.3.2.2.1