Kentucky Science

Grade 3

Adopted 2022

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Physical Science

3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. 3-PS2-1

3-SEPS2-1. Planning and Carrying Out Investigations - Plan and conduct an investigation collaboratively in order to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials is considered. 3-SEPS2-1

A1. Forces and Motion - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add up to zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual but not quantitative addition of forces are used at this level.) 3-DCI.PS2.A1

B1. Types of Interactions - Objects in contact exert forces on each other. 3-DCI.PS2.B1

PS2-1. Cause and Effect - Cause-and-effect relationships are routinely identified. 3-CC.PS2-1

3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. 3-PS2-2

3-SEPS2-2. Planning and Carrying Out Investigations - Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or to test a design solution. 3-SEPS2-2

A2. Forces and Motion - The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as "magnitude," "velocity," "momentum," and "vector quantity," are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) 3-DCI.PS2.A2

PS2-2. Patterns - Patterns of change can be used to make predictions. 3-CC.PS2-2

3-PS2-3. Ask questions to determine cause-and-effect relationships of electric or magnetic interactions between two objects not in contact with each other. 3-PS2-3

3-SEPS2-3. Asking Questions and Defining Problems - Ask questions that can be investigated based on patterns, such as cause-and-effect relationships. 3-SEPS2-3

B3. Types of Interactions - Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. 3-DCI.PS2.B3

PS2-3. Cause and Effect - Cause-and-effect relationships are routinely identified, tested, and used to explain change. 3-CC.PS2-3

3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets. 3-PS2-4

3-SEPS2-4. Asking Questions and Defining Problems - Define a simple problem that can be solved through the development of a new or improved object or tool. 3-SEPS2-4

B4. Types of Interactions - Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart, and for forces between two magnets, on their orientation relative to each other. 3-DCI.PS2.B4

PS2-4. Cause and Effect - Identify and test causal relationships and use these relationships to explain change. 3-CC.PS2-4

Life Science

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 3-LS1-1

3-SEPLS1-1. Developing and Using Models - Develop models to describe phenomena. 3-SEPLS1-1

B1. Growth and Development of Organisms - Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. 3-DCI.LS1.B1

LS1-1. Patterns - Patterns of change can be used to make predictions. 3-CC.LS1-1

3-LS2-1. Construct an argument that some animals form groups that help members survive. 3-LS2-1

3-SEPLS2-1. Engaging in Argument from Evidence - Construct an argument with evidence, data, and/or a model. 3-SEPLS2-1

D1. Social Interactions and Group Behavior - Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. 3-DCI.LS2.D1

LS2-1. Cause and Effect - Cause-and-effect relationships are routinely identified and used to explain change. 3-CC.LS2-1

3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. 3-LS3-1

3-SEPLS3-1. Analyzing and Interpreting Data - Analyze and interpret data to make sense of phenomena using logical reasoning. 3-SEPLS3-1

A1. Inheritance of Traits - Many characteristics of organisms are inherited from their parents. 3-DCI.LS3.A1

B1. Variation of Traits - Different organisms vary in how they look and function because they have different inherited information. 3-DCI.LS3.B1

LS3-1. Patterns - Similarities and differences in patterns can be used to sort and classify natural phenomena. 3-CC.LS3-1

3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment. 3-LS3-2

3-SEPLS3-2. Constructing Explanations and Designing Solutions - Use evidence (e.g., observations, patterns) to support an explanation. 3-SEPLS3-2

A2. Inheritance of Traits - Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. 3-DCI.LS3.A2

B2. Variation of Traits - The environment also affects the traits that an organism develops. 3-DCI.LS3.B2

LS3-2. Cause and Effect - Cause-and-effect relationships are routinely identified and used to explain change. 3-CC.LS3-2

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. 3-LS4-2

3-SEPLS4-2. Constructing Explanations and Designing Solutions - Use evidence (e.g., observations, patterns) to construct an explanation. 3-SEPLS4-2

B2. Natural Selection - Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. 3-DCI.LS4.B2

LS4-2. Cause and Effect - Cause-and-effect relationships are routinely identified and used to explain change. 3-CC.LS4-2

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. 3-LS4-3

3-SEPLS4-3. Engaging in Argument from Evidence - Construct an argument with evidence. 3-SEPLS4-3

C3. Adaptation - For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. 3-DCI.LS4.C3

LS4-3. Cause and Effect - Cause-and-effect relationships are routinely identified and used to explain change. 3-CC.LS4-3

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. 3-LS4-4

3-SEPLS4-4. Engaging in Argument from Evidence - Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. 3-SEPLS4-4

C4. Ecosystem Dynamics, Functioning, and Resilience - When the environment changes in ways that affect a place's physical characteristics, temperature, or the availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. 3-DCI.LS2.C4

D4. Biodiversity and Humans - Populations live in a variety of habitats, and changes in those habitats affect the organisms living there. 3-DCI.LS4.D4

LS4-4. Models - A system can be described in terms of its components and their interactions. 3-CC.LS4-4

Earth and Space Science

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. `3-ESS2-1`

3-SEPESS2-1. Analyzing and Interpreting Data - Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. `3-SEPESS2-1`

D1. Weather and Climate - Scientists record patterns of weather across different times and areas so that they can make predictions about what kind of weather might happen next. `3-DCI.ESS2.D1`

ESS2-1. Patterns - Patterns of change can be used to make predictions. `3-CC.ESS2-1`

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world. `3-ESS2-2`

3-SEPESS2-2. Obtaining, Evaluating, and Communicating Information - Obtain and combine information from books and other reliable media to explain phenomena. `3-SEPESS2-2`

D2. Weather and Climate - Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. `3-CC.ESS2.D2`

ESS2-2. Patterns - Patterns of change can be used to make predictions. `3-CC.ESS2-2`

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. `3-ESS3-1`

3-SEPESS3-1. Engaging in Argument from Evidence - Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. `3-SEPESS3-1`

B3. Natural Hazards - A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. `3-DCI.ESS3.B3`

ESS3-1. Cause and Effect - Cause-and-effect relationships are routinely identified, tested, and used to explain change. `3-CC.ESS3-1`

3-5 Engineering Design

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. `3-5-ETS1-1`

3-5-SEPEST1-1. Asking Questions and Defining Problems - Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. `3-5-SEPEST1-1`

1A. **Defining and Delimiting Engineering Problems - Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.** 3-5-DCI.ETS1.1A

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-ETS1-2

3-5-SEPEST1-2. **Constructing Explanations and Designing Solutions - Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.** 3-5-SEPEST1-2

2B. **Developing Possible Solutions - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.** 3-5-DCI.ETS1.2B

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.** 3-5-ETS1-3

3-5-SEPEST1-3. **Planning and Carrying Out Investigations - Plan and conduct an investigation collaboratively in order to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials is considered.** 3-5-SEPEST1-3