

Winchester Public Schools

Third Grade Science Unit Guide



Weeks	Unit	PE	SEP	DCI	CCC
9 weeks	Weather, Climate, and Natural Hazards	<p>3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.</p> <p>3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.</p> <p>3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</p> <p>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.</p> <p>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</p>	<p>Analyzing and Interpreting Data Represent data in tables and various graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.</p> <p>Obtaining, Evaluating, and Communicating Information Obtain and combine information from books and other reliable media to explain phenomena.</p> <p>Engaging in Argument from Evidence Make a claim about</p>	<p>ESS2.D: Weather and Climate</p> <ul style="list-style-type: none"> Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over the years. <p>ESS3.B: Natural Hazards</p> <ul style="list-style-type: none"> A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> Possible solutions to a problem are limited by the available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a 	<p>Patterns Patterns of change can be used to make predictions.</p> <p>Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.</p>

problem.

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.

the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

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.

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.

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.

ETS1.B: 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.
- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.

ETS1.C: Optimizing the Design Solution

- Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.

<p>8 weeks</p>	<p>Force and Motion</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>Asking Questions and Defining Problems Ask questions that can be investigated based on patterns such as cause and effect relationships.</p> <p>Define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>Planning and Carrying Out Investigations Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.</p> <p>Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.</p>	<p>PS2.A: Forces and Motion</p> <ul style="list-style-type: none"> 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 to give 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. 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. <p>PS2.B: Types of Interactions</p> <ul style="list-style-type: none"> Objects in contact exert forces on each other. 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 depends on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> Possible solutions to a problem are limited by the 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 	<p>Patterns Patterns of change can be used to make predictions.</p> <p>Cause and Effect Cause and effect relationships are routinely identified.</p> <p>Cause and effect relationships are routinely identified, tested, and used to explain change.</p>
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8 weeks	Diversity	<p>S 3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</p> <p>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.</p> <p>3-LS4-3. Construct an argument with</p>	<p>Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning.</p> <p>Constructing Explanations and Designing Solutions Use evidence (e.g., observations, patterns) to construct an</p>	<p>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</p> <ul style="list-style-type: none"> • When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. <p>LS4.A: Evidence of Common Ancestry and Diversity</p>	<p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change.</p> <p>Scale, Proportion, and Quantity Observable phenomena exist from very short to very long time</p>

		<p>evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</p> <p>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.</p>	<p>explanation.</p> <p>Engaging in Argument from Evidence Construct an argument with evidence.</p> <p>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.</p>	<ul style="list-style-type: none"> Some kinds of plants and animals that once lived on Earth are no longer found anywhere. Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. <p>LS4.B: Natural Selection</p> <ul style="list-style-type: none"> Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. <p>LS4.C: Adaptation</p> <ul style="list-style-type: none"> For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. <p>LS4.D: Biodiversity and Humans</p> <ul style="list-style-type: none"> Populations live in a variety of habitats, and change in those habitats affects the organisms living there. 	<p>periods.</p> <p>Systems and System Models A system can be described in terms of its components and their interactions.</p>
<p>7 weeks</p>	<p>Animal Traits and Survival</p>	<p>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.</p> <p>3-LS2-1. Construct an argument that some animals form groups that help members survive.</p> <p>3-LS3-1. Analyze and interpret data to provide evidence that plants and</p>	<p>Developing and Using Models Develop models to describe phenomena.</p> <p>Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model.</p>	<p>LS1.B: Growth and Development of Organisms</p> <ul style="list-style-type: none"> Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. <p>LS2.D: Social Interactions and Group Behavior</p> <ul style="list-style-type: none"> Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve 	<p>Patterns Patterns of change can be used to make predictions.</p> <p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change.</p>

animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

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

Analyzing and Interpreting Data

Analyze and interpret data to make sense of phenomena using logical reasoning.

Constructing Explanations and Designing Solutions

Use evidence (e.g., observations, patterns) to support an explanation.

different functions and vary dramatically in size.

LS3.A: Inheritance of Traits

- Many characteristics of organisms are inherited from their parents.
- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.

LS3.B: Variation of Traits

- Different organisms vary in how they look and function because they have different inherited information.
- The environment also affects the traits that an organism develops.