

3rd Grade Science Year-at-a-Glance

Weather & Climate Force & Motion	Electrical & Magnetic Forces Traits	Continuing the Cycle Organisms & the Environment	Using Evidence to Understand Change in Environments
September-November	December-February	March-May	May-June
3-ESS2-1	3-PS2.B	3-LS2.C	3-LS2.C
3-ESS2-2	3-PS2-1	3-LS4-1	3-LS4-1
3-ESS3-1	3-PS2-2	3-LS4-2	3-LS4-2
3-5-ETS1-2	3-PS2-3	3-LS4-3	3-LS4-3
3-PS2-1	3-PS2-4	3-LS4-4	3-LS4-4
3-PS2-2	3-LS3.A	3-LS1.b	
3-PS2-3	3-LS3-1	3-ESS2-1	
3-PS2-4	3-LS3-2	3-ESS2-2	
		3-5-ETS1-2	

Standards are listed in a numerical order only and may be taught in any order within the unit.

*The standards listed in red are the Disciplinary Core ideas as they relate to the Performance Expectations within the units.

NOTE: The Science and Engineering Practices are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical concepts.

Unit 1: Weather and Climate

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Weather and Climate	Time Frame	2-3 weeks 5 lessons/week
Power Standards (Within this Unit)	Identify the Power Standard: 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Identify the Power Standard: 3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.	Identify the Power Standard: 3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*
Learning Plan			
Disciplinary Core Objective (DCI) Enduring Understanding What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Cross-cutting Concept What big idea are students engaging with as they learn to apply the practice?	
<p>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. (3-ESS2-1)</p> <p>Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)</p> <p>A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1)</p>	<p><u>Represent and analyze</u> data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.</p> <p><u>Obtain and combine information</u> from prior knowledge, experiences, books, and other reliable media to explain phenomena.</p> <p><u>Explain</u> ways that humans can affect the environment around them.</p> <p><u>Make a claim</u> 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>	<p><u>Patterns</u> of change can be used to make predictions. (3-ESS2-1),(3-ESS2-2)</p> <p><u>Cause and effect</u> relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)</p> <p>Science affects everyday life. (3-ESS3-1)</p> <p>Engineers improve existing technologies or develop new ones to increase their benefits (e.g., lifting homes to decrease flood potential), decrease known risks (e.g., wind resistant housing materials), and meet societal demands (e.g., cell phones). (3-ESS3-1) (3-5-ETS1-2)</p>	
Essential/Driving Questions		Possible Misconceptions	
How do scientists record patterns of the weather across different times and areas so that they can		Weather is the same everywhere. The weather determines the seasons.	

<p>make predictions about what kind of weather might happen next?</p> <p>How can climate describe a range of an area's typical weather conditions and the extent to which those conditions vary over years?</p> <p>How can humans help to reduce their impact from natural hazards or weather?</p>	<p>Weather can't be predicted. Humans are not able to affect the environment.</p>
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Motivational Set
(How will you hook students at the beginning of this unit?)

Show a video of extreme weather and its destruction impacting human everyday life. Brainstorm ways to reduce the impact of extreme weather.

Activities

What events will enable students to explore the essential questions in the unit to uncover the enduring understandings in the content and attain the skills.

Activity	Resources Needed	Time Frame (days)
<ul style="list-style-type: none"> ● Keep a weather chart ● Design a tool to measure weather ● Make a flood barrier 	<ul style="list-style-type: none"> ● Blank daily weather chart ● balloons, string, straw, oaktag ● sand, rocks, plastic, marbles 	<ul style="list-style-type: none"> ● 5 days ● 1 day ● 3 days

Materials Needed:

- balloons
- straws
- string
- sand
- rocks
- oaktag
- marbles
- blank weather chart
- plastic
- book- "How Clouds Are Made" by Marilyn Greco
- book- "Weather Record Breakers" by Thea Feldman
- book- "Weather" by Timothy Sandow

Unit 2: Force and Motion

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Force and Motion	Time Frame	10 days

Learning Plan		
DCI What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Crosscutting Concept What Big Idea are students engaging with as they learn to apply the practices?
<p>PS2.A: 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 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. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) (3-PS2-1) 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</p>	<p>Asking Questions and Defining Problems Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3) Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4) Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Plan and</p>	<p>Patterns Patterns of change can be used to make predictions. (3-PS2-2) Cause and Effect Cause and effect relationships are routinely identified. (3-PS2-1) Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-3) -----</p>

<p>introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) (3-PS2-2) PS2.B: Types of Interactions Objects in contact exert forces on each other. (3-PS2-1) 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-PS2-3),(3-PS2-4)</p>	<p>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. (3-PS2-1) 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. (3-PS2-2)</p>	
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<p>Essential/Driving Questions</p> <p>What evidence shows the effects of forces on the motion of an object? How can we predict an object’s motion? What evidence provides a pattern for us to predict motion?</p>
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<p>Activities</p> <p>What events will enable students to explore the Essential Questions in the unit to uncover the content and attain the skills?</p>

Activity	Resources Needed	Time Frame (days)
First Law of Motion	Handouts/booklet, plates, hard boiled eggs, raw eggs, balloons,scissors, tape, not bendy drinking straws, string, square baking pan, 4 plastic cups	5 days
Second and Third Law of	Handouts, balls, jump	5 days

Motion	ropes and playground equipment	
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Unit 3:Electrical and Magnetic Forces

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Electrical and Magnetic Forces	Time Frame	15 days

Learning Plan		
DCI What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Crosscutting Concept What Big Idea are students engaging with as they learn to apply the practices?
Electric and magnetic forces between a pair of objects do not require that the object 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. (PS2.B:Types of Interactions)	Defining problems in grades 3-5 builds on grades -2 experiences and progresses to specifying qualitative relationships. -Define a simple problem that can be solved through the development through a new object or tool.(3-PS2-4)	Interdependence of science, engineering, and technology. -Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. (3-PS2-1, 3-PS2-2, 3-PS2-3)

Essential/Driving Questions
<p>What do you know about magnets?</p> <p>What is a magnet?</p> <p>What will a magnet attract?</p> <p>How do magnets interact?</p> <p>How do we use magnets?</p> <p>What is a magnetic field?</p>

Activities
<p>What events will enable students to explore the Essential Questions in the unit to uncover the content and attain the skills?</p>

Activity	Resources Needed	Time Frame (days)
Whole class introduction: Explore Activity	Steel can, magnets, 30cm of string, paper clip, tape, Activity Sheet	2 days
My Engineering Project Using Magnetism	Page 1	1 day
Research	Page 2	1 day
Solutions	Page 3	1 day
Design Prototype	Page 4	1 day
Build Prototype	Page 5, building materials	2 days
Test Prototype	Page 6	1 day
My Design Solution	Page 7	1 day

Unit 4: Traits

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Traits	Time Frame	15 days

Learning Plan		
DCI What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Crosscutting Concept What Big Idea are students engaging with as they learn to apply the practices?
<p>LS3.A: Inheritance of Traits Many characteristics of organisms are inherited from their parents. (3-LS3-1) Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)</p> <p>LS3.B: Variation of Traits Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1) The environment also affects the traits that an organism develops. (3-LS3-2)</p>	<p>Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., observations, patterns) to support an</p>	<p>Patterns Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1) Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2)</p>

	explanation. (3-LS3-2)	
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Essential/Driving Questions

What evidence is there that plants and animals have traits inherited from parents?
 What variations of these traits exist in a group of similar organisms?
 What evidence explains how traits are influenced by learning in the environment?
 Can you tell the difference between inherited and learned traits?

Activities

What events will enable students to explore the Essential Questions in the unit to uncover the content and attain the skills?

Activity	Resources Needed	Time Frame(days)
Inherited Traits Booklets	Booklets, thermometer, thermometer sleeves, videos	5 days
Inherited Traits 2 Booklets	Booklets, thermometer, thermometer sleeves, videos	5 days
Quizlets Flashcards	Flashcards, handouts, sandwich bags, videos	5 days

Unit 5: Continuing the Cycle

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Continuing the Cycle	Time Frame	15 days

Learning Plan		
DCI What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Crosscutting Concept What Big Idea are students engaging with as they learn to apply the practices?
<p>LS2.C: Ecosystem Dynamics, Functioning, and Resilience 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. (secondary to 3-LS4-4) LS4.A: Evidence of Common Ancestry and Diversity Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) (3-LS4-1) Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1) LS4.B: Natural Selection Sometimes the differences in characteristics between</p>	<p>Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., observations,</p>	<p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (3-LS4-2),(3-LS4-3) Scale, Proportion, and Quantity Observable phenomena exist from very short to very long time periods. (3-LS4-1) Systems and System Models A system can be described in terms of its components and their interactions. (3-LS4-4)</p>

<p>individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2) LS4.C: Adaptation For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3) LS4.D: Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)</p>	<p>patterns) to construct an explanation. (3-LS4-2) Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence. (3-LS4-3) 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-LS4-4)</p>	
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<p>Essential/Driving Questions</p> <p>What are mealworms basic needs? What does your mealworms look like? What is it doing? How many legs does it have? Describe how it moves.</p>

<p>Activities</p> <p>What events will enable students to explore the Essential Questions in the unit to uncover the content and attain the skills?</p>

Activity	Resources Needed	Time Frame(days)
Mealworm Life Cycle	Activity sheet #1	4 days
Mealworm Study	Activity sheet #2	5 days
Watch the mealworm move	Activity sheet #3	4 days
Write It	Assessment page	2 days

Unit 6: Organisms and the Environment

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Organisms and the Environment	Time Frame	2-3 weeks 5 lessons/week
Power Standards (Within this Unit)	Identify the Power Standard: 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	Identify the Power Standard:	Identify the Power Standard:
Learning Plan			
Disciplinary Core Objective (DCI) Enduring Understanding What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Cross-cutting Concept What big idea are students engaging with as they learn to apply the practice?	
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. (LS1.B)	<p><u>Represent</u> and <u>analyze</u> data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.</p> <p><u>Obtain and combine information</u> from prior knowledge, experiences, books, and other reliable media to explain phenomena.</p> <p><u>Explain that although organisms can display life cycles that look different, they all follow the same pattern.</u></p> <p><u>Make a claim</u> related to the phenomenon, based on patterns identified among life cycles (e.g., prediction could include that if there are no births, deaths will continue and eventually there will be no more of that type of organism).</p>	<p><u>Patterns</u> of change can be used to make predictions. (3-ESS2-1),(3-ESS2-2)</p> <p><u>Cause and effect</u> relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)</p> <p>Science affects everyday life. (3-ESS3-1)</p> <p>Engineers improve existing technologies or develop new ones to increase their benefits (e.g., lifting homes to decrease flood potential), decrease known risks (e.g., wind resistant housing materials), and meet societal demands (e.g., cell phones). (3-ESS3-1) (3-5-ETS1-2)</p>	

<p align="center">Essential/Driving Questions</p> <p>What are the stages of the plant's life cycle? (i.e. seed germination, etc)</p> <p>How does the environment affect the life cycle of the plant?</p> <p>How can humans help to improve the life cycle of plants?</p>		<p align="center">Possible Misconceptions</p> <p>All seeds produce the same plant.</p> <p>As long as a plant receives water and sunlight it will grow.</p> <p>Insects are harmful to plants.</p>
<p align="center">Motivational Set (How will you hook students at the beginning of this unit?)</p>		
<p>Read leveled reader "How Plants Grow" to investigate changes to organisms.</p>		
<p align="center">Activities</p> <p>What events will enable students to explore the essential questions in the unit to uncover the enduring understandings in the content and attain the skills.</p>		
Activity	Resources Needed	Time Frame (days)
<ul style="list-style-type: none"> ● Build a greenhouse ● Keep a record of plant growth ● Compare different greenhouse models ● Create a graph showing plant growth 	<ul style="list-style-type: none"> ● Blank chart to record seedling growth. ● string, straw, oaktag, boxes, plastic wrap, foil, rocks, sand, bins, seeds, soil, mulch, egg cartons. 	<ul style="list-style-type: none"> ● 3 days ● 2 weeks ● 1 day ● 1 day

Materials Needed:

seeds
foil
soil
mulch
egg cartons
string
sand
rocks
oaktag
blank chart
plastic
book- "How Plants Grow"

<http://climatekids.nasa.gov/menu/weather-and-climate/>

Unit 7: Using Evidence to Understand Change in Environments

Curriculum Area	Science	Grade Level	3rd Grade
Title of Unit	Using Evidence to Understand Change in Environments	Time Frame	15 days

Learning Plan		
DCI What content are students being asked to understand?	Practice(s) What practices must students apply to understand the DCI?	Crosscutting Concept What Big Idea are students engaging with as they learn to apply the practices?
<p>LS2.C: Ecosystem Dynamics, Functioning, and Resilience 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. (secondary to 3-LS4-4) LS4.A: Evidence of Common Ancestry and Diversity Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) (3-LS4-1) Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their</p>	<p>Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe</p>	<p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (3-LS4-2),(3-LS4-3) Scale, Proportion, and Quantity Observable phenomena exist from very short to very long time periods. (3-LS4-1) Systems and System Models A system can be described in terms of its components and their interactions. (3-LS4-4)</p> <p>----- ----- Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology Knowledge of relevant scientific concepts and research findings is</p>

<p>environments. (3-LS4-1) LS4.B: Natural Selection Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2) LS4.C: Adaptation For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)</p>	<p>and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., observations, patterns) to construct an explanation. (3-LS4-2) Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence. (3-LS4-3) 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-LS4-4)</p>	<p>important in engineering. (3-LS4-3) ----- ----- Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems Science assumes consistent patterns in natural systems. (3-LS4-1)</p>
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<p>Essential/Driving Questions</p> <p>What evidence is there of the variations in characteristics among species that provide advantages in surviving, finding mates, and reproducing? Can you construct an argument with evidence that some organisms survive well, some survive, and some do not survive at all? How will making daily conservation changes stop coral reef bleaching? How will making daily conservation changes help endangered polar bears?</p>

<p>Activities</p> <p>What events will enable students to explore the Essential Questions in the unit to uncover the content and attain the skills?</p>

Activity	Resources Needed	Time Frame(days)
It's All Natural Booklets	Booklet, video, 50	5 days

	unshelled peanuts per group, rulers	
Survivor Handout Booklet	Booklet, poster board, markers, pencils, etc., videos	5 days
Will It Work Booklets	Handouts, videos	5 days