



# Park Hill School District

Building Successful Futures • Each Student • Every Day

## Third Grade Science Curriculum

**Course Description:** Third grade students will study three science domains over the course of the year; life science, earth and space science, and physical science. Students will define a simple design problem that can be solved by applying scientific ideas about magnets. For life science, students will study life cycles, plant and animal traits, how animals' habitats help them to survive, and environmental changes to habitats. During earth and space science, students will study seasonal weather conditions, climates of different regions of the world, and the impact of weather-related hazards. In the physical science unit, students will learn about the effects of balanced and unbalanced forces on the motion of an object and analyze patterns to predict future motion. Students will determine cause and effect relationships of electric or magnetic interactions between two objects.

### Scope and Sequence:

Unit	Timeframe
<b>1. Life Science Part 1</b> <ul style="list-style-type: none"><li>● Topic 1: Life Cycles</li><li>● Topic 2: Social and Group Behaviors</li><li>● Topic 3: Inheritance and Variation of Traits</li></ul>	5-6 weeks
<b>2. Life Science Part 2</b> <ul style="list-style-type: none"><li>● Topic 1: Environmental Traits</li><li>● Topic 2: Adaptations</li><li>● Topic 3: Environmental Changes and Effects</li></ul>	5 weeks
<b>3. Earth and Space Science</b> <ul style="list-style-type: none"><li>● Topic 1: Weather and Climate</li><li>● Topic 2: Process and Impact of Natural Hazards</li></ul>	6 weeks
<b>4. Physical Science</b> <ul style="list-style-type: none"><li>● Topic 1: Objects and Motion</li><li>● Topic 2: Electric and Magnetic Forces</li></ul>	4 weeks

## Unit 1: Life Science Part 1

**Subject:** Science

**Grade:** 3rd

**Name of Unit:** Life Science

**Length of Unit:** 5 – 6 weeks, (24-33 days)

**Overview of Unit:** This unit will cover 3 topics: 1) Life Cycles, and 2) Social and Group Behaviors, 3) Inheritance and Variation of Traits

**Materials to prepare for the unit:** Mealworms need to be ordered prior to this unit beginning, oatmeal, potatoes to feed mealworms, container to house mealworms

### Topic 1: Life Cycles

**Suggested Length of Time:** 10-15 days

**Essential Question (Student Wondering):**

- How are life cycles of plants and animals similar?

**Enduring Understanding (Learning Objectives)**

- The student is expected to develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*



- 3. LS1.B.1 Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
- 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.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Patterns:
  - Predictions - Patterns of change can be used to make predictions.
- Developing and Using Models:
  - Predict Phenomena - Develop and/or use models to describe and/or predict phenomena.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3.LS1.B1 Predictions & Patterning	Engage: Accessing Prior Knowledge & Hook	1 Day	2 Activities <ul style="list-style-type: none"> <li>• Inner and Outer Circles</li> <li>• Plants and Seeds-T-Chart</li> </ul> <b>Crosscutting Concepts: Patterns</b> -Students will predict the correct life cycle of the Monarch Butterfly. - Students will observe the seed and adult plant and recognize the repeating pattern of the life cycle.

3.LS1.B1 Predictions Predict Phenomena	Explore: D1: Scientific Investigation- Wonders of Plants	1-3 Days	Materials: <ul style="list-style-type: none"> <li>• Student Journal-download/print</li> <li>• CER</li> </ul> Students plant seeds Soak lima beans overnight <b>Crosscutting Concepts: Prediction</b> - Students will be able to identify parts of a seed and predict the growth rate of the four different seeds.
3.LS1.B1	Explore: D2: Activity Butterfly/Mealworm Life Cycle	1 Day - ongoing	Materials: <ul style="list-style-type: none"> <li>• Student Journal - download/print</li> <li>• Butterfly/Mealworms</li> <li>• Butterfly habitat/Plastic container</li> <li>• Hand lens and plastic spoon</li> <li>• Sugar water and leaves/Oatmeal</li> </ul> <b>Students will be able to identify the four stages in a mealworm life cycle. What are the similarities and differences between your life cycle and the life cycle of the mealworm?</b>
3.LS1.B1 Predictions	Explore D3:Engineering  Solutions	2-3 Days	Materials: <ul style="list-style-type: none"> <li>• Student Journal-download/print</li> </ul> Students will be making a 3-D model of a life cycle <b>Crosscutting Concepts: Predictions</b> -Students will predict what will happen to the life cycle of their organism in the future. Use the pattern you see in the data to justify your answer.
3.LS1.B1	Explore: D4: Research-Cycle Hunt 	1 Day	Materials: <ul style="list-style-type: none"> <li>• Make 1 set of Question Posters</li> <li>• Student Journal (Cycle Hunt) download/print</li> <li>• Computers needed for information</li> <li>• Collect life cycle books</li> </ul> <b>Students will be able to understand the pattern of growth, development, and reproduction of a life cycle. How are these life cycles similar and different than our own life cycles?</b>

3.LS1.B1 Predictions	Explain: STEMscopedia Picture Vocabulary	2-3 Days	Pick 2-3 activities to extend concept, consider adding voice and choice for students <b>By the end of this lesson, students should be able to answer the essential question. How are life cycles of plants and animals similar?</b>
3.LS1.B.1 3.LS1.1 Predict Predict Phenomena	E: Elaborate	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.
3.LS1.B1 Predictions Predict Phenomena	E: Evaluate	1 Day	CER, Constructed Response, and Multiple Choice  <i>Performance Expectation Assessment Task requires both Life Cycles and Social and Group Behavior Scopes</i>

## Topic 2: Social and Group Behaviors

**Suggested Length of Time:** 9 - 12 days

**Essential Questions (Student Wondering):**

- How can living in a group help or hurt animals' survival?

**Enduring Understanding (Learning Objectives):**

- The student is expected to construct an argument that some animals form groups that help members survive.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*


- 3-LS2.D.1 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 (Note: Moved from K–2).
- 3-LS2-1 Construct an argument that some animals form groups that help members survive.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Engaging in Argument from Evidence:
  - Construct and Support - Construct and/or support an argument with evidence, data, and/or a model.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-LS2 Construct & support	Engage: Accessing Prior Knowledge & Hook	1 Day	2 Activities <ul style="list-style-type: none"> <li>• Student journal</li> <li>• Migration challenge</li> </ul> <b>Teacher checks for understanding, prior knowledge, and misconceptions of social and group behavior. How does living in a group help animal survival?</b>
3-LS2.D.1 Construct & support; Cause & Effect	Explore: D1:Hunting Activity	1 Day	Materials: <ul style="list-style-type: none"> <li>• Student Journal - download/print</li> <li>• CER</li> </ul> <b>Crosscutting Concepts: Cause and Effect</b> -Students discover what would happen to the most skilled hunter if it were injured. <b>Students will understand how living in a group benefits animals.</b>
3-LS2.D.2 Construct & Support	Explore: D2: PBL Activity Strength in Numbers	2-3 Days	Role play predator vs. prey  <b>Students will understand the advantages and disadvantages of hunting in a group versus hunting alone.</b>
3-LS2	Explain: STEMscopedia Picture Vocabulary	1-2 Days	Pick 2-3 activities to extend concept, consider adding voice and choice for students.  <b>By the end of this lesson, students should be able to answer the essential question. How can living in a group help or hurt animals' survival?</b>
3.LS2.D1 3.LS2.1	Elaborate	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.

3-LS2	Evaluate	1 Day	Materials: <ul style="list-style-type: none"> <li>• Student Journal-Download/Print</li> <li>• CER</li> </ul>
	PEAT:Engaging Scenario 	2 Days	Develop a life cycle and write a story.

## Topic 3: Inheritance and Variation of Traits

**Suggested Length of Time: 5-6 Days**

**Essential Question (Student Wondering):**

- If they all have the same parents, why don't the puppies in a litter look exactly alike?

**Enduring Understanding (Learning Objectives)**

- The student is expected to 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.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

- 3-LS3.A.1 Inheritance of Traits: Many characteristics of organisms are inherited from their parents.
- 3-LS3.B.1 Variation of Traits: Different organisms vary in how they look and function because they have different inherited information.
- 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.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Patterns:
  - Similarities and Differences - Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena and designed products.
- Analyze and Interpret Data - Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-LS3.A	Engage:	1 Day	Journal page, match parent to offspring

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Analyze and Interpret Data	Accessing Prior Knowledge & Hook		<b>Teacher checks for understanding, prior knowledge, and misconceptions about inherited traits of plants and animals.</b>
3-LS3.A.1 Similarities and differences	Explore: D1 Activity	1 Day	Materials: Print combination headings, amaryllis cards, traits guide, student journal page, and CER. <b>Crosscutting Concepts: Patterns</b> -Students will identify similarities and differences among the plant offspring.  <b>Students will understand that each offspring can inherit different combinations of traits from their parents.</b>
3-LS3.A Analyze and Interpret Data Similarities and differences	Explore: D2: Activity	1 Day	Materials: 1 set of dog pictures Student journal  Print pictures of dog breeds or use projector to show. <b>Students will understand that the characteristics of the offspring depends on the traits of the parents.</b>  <b>Crosscutting Concepts: Predictions</b> -Students will identify similarities and differences between adult dogs and their offspring.
3.LS3.A.1 2.LS3.B.1 3.LS3.1 Similarities and differences Analyze and interpret data	Elaborate	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.

3.5.3TS1.2			
3-LS3.A Similarities and differences Analyze and interpret data	Evaluate	1 Day	CER, Constructed Response, and Multiple Choice  <i>Performance Expectation Assessment Task requires Inheritance and Variation of Traits, Environmental Traits, Adaptations, and Environmental Changes and Effects.</i>

## Engaging Scenario

**Engaging Scenario** (Storyline/PEAT) At the conclusion of, Life Cycles and Social and Group Behaviors, students will develop a life cycle and write a story for a chosen animal.

**Rubric for Engaging Scenario:** [Print Rubric](#)

## Unit 2: Life Science Part 2

**Subject:** Science

**Grade:** 3rd

**Name of Unit:** Life Science, Part 2

**Length of Unit:** 5 weeks, (22-31 days)

**Overview of Unit:** This unit will cover 3 topics: 1) Environmental Traits, 2) Adaptations, and 3) Environmental Changes and Effect

## Topic 1: Environmental Traits

**Suggested Length of Time:** 8-11 Days

**Essential Questions (Student Wondering):**

- How can the environment affect an organism's traits?

**Enduring Understanding (Learning Objectives)**

- The student is expected to use evidence to support the explanation that traits can be influenced by the environment.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

- 3-LS3.A.2 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-LS3.B.2 Variation of Traits: The environment also affects the traits that an organism develops.
- 3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Constructing Explanations and Designing Solutions:
  - Use Evidence - Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-LS3.A.2 3-LS3.B.2	Engage: Accessing Prior Knowledge & Hook	1 Day	Student Journal page <b>Teacher checks for understanding, prior knowledge, and misconceptions of inherited vs. environmental traits.</b>
3-LS3.A.2 3-LS3.B.2 Cause and Effect	Explore: D1: Activity, classify the traits	1 Day	Student journal Copy of story, <i>Have a Great Day!</i> <b>Students will understand and identify the differences between inherited and environmental traits.</b>  <b>Crosscutting Concepts: Cause and Effect</b> -Students will be able to identify the cause and effect relationship between the environment and learned traits when reading about Brutus the Macaw. -Students will be able to identify the cause and effect relationship between inherited traits and the characteristics that are passed from parent to offspring.
3-LS3.A.2 3-LS3.B.2	Explore: D2: Activity, Matching activity	1 Day	Student journal page Memory cards <b>Students will understand and identify the differences between inherited and environmental traits.</b>

3-LS3.A.2 Science and Engineering practice	Explore: D3:Activity, Design an object to help find food	2-3 Days	Review engineering design process Consumable materials required (see list) <b>Students will understand how animals use inherited and environmental traits to survive.</b>
3-LS3.A.2 3-LS3.B.2 Cause and Effect	Explain: STEMscopedia Picture Vocabulary	1-2 Days	Pick 2-3 activities to extend concept, consider adding voice and choice for students. <b>By the end of this lesson, students should be able to answer the essential question. How can the environment affect an organism's traits?</b>
3.LS3.A.2 3.LS3.B.2 3.LS3.2 Cause and Effect Use evidence 3.5.ETS.1.1	Elaborate	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.
3-LS3.A.2 3-LS3.B.2 Science and Engineering practice	Evaluate	1 Day	CER, Constructed Response, and Multiple Choice

## Topic 2: Adaptations

**Suggested Length of Time: 7-9 Days**

**Essential Question (Student Wondering):**

- Why can a cactus survive in a desert, but other plants can not?

**Enduring Understanding (Learning Objectives)**

- The student is expected to 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.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

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10


- 3. LS4.C.1 Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
- 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.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change.
- Engaging in Argument from Evidence:
  - Construct and Support - Construct and/or support an argument with evidence, data, and/or a model.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3.LS4.C.1 Science and Engineering Cause and Effect	Engage: Accessing Prior Knowledge & Hook	1 Day	<p>Student Journal Select a few animals to guide through adaptations, needs and survival.</p> <p><b>Teacher checks for understanding, prior knowledge, and misconceptions of animal adaptations.</b></p> <p><b>Crosscutting Concepts: Cause and Effect</b> -Students will be able to identify the cause and effect relationship between the removal of a vital part of their classroom and how they adapt.</p>
3.LS4.C.1 Science and Engineering	Explore:D1:Activity  Match animal to an environment for best survival.	1 Day	<p>Student journal CER Environmental cards Living things cards Consumables</p> <p><b>Students will understand that animals adapt to survive in their environment.</b></p>

<p>3.LS4.C.1 Science and Engineering Cause and Effect</p>	<p>Explore: D2: Activity Build a habitat for a lizard</p> 	<p>2 Days</p>	<p>Student journal Computers Consumables <b>Students will understand that animals' adaptations are affected by environment.</b></p> <p><b>Crosscutting Concepts: Cause and Effect</b> -Students will be able to identify the relationship between an animal's adaptations and its environment.</p>
<p>3.LS4.C.1 Science and Engineering Cause and Effect</p>	<p>Explain: STEMscopedia Picture Vocabulary</p>	<p>1-2 Days</p>	<p>Pick 2-3 activities to extend concept, consider adding voice and choice for students. <b>By the end of this lesson, students should be able to answer the essential question. Why can a cactus survive in a desert, but other plants can not?</b></p>
<p>3.LS4.C.1 3.LS4.3 Cause and Effect Construct and Support 3.5.ETS.1.1</p>	<p>Elaborate</p>	<p>1-2 Days</p>	<p>Math connections, reading science, career science, connection videos and Science Rock.</p>
<p>3.LS4.C.1 Science and Engineering Cause and Effect</p>	<p>Evaluate</p>	<p>1 Day</p>	<p>CER, Constructed Response, and Multiple Choice</p>

**Topic 3: Environmental Changes and Effects**

**Suggested Length of Time: 7-11 days**  
**Essential Question (Student Wondering):**

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- How do you choose what kind of tree to plant in your local environment?

**Enduring Understanding (Learning Objectives)**

- The student is expected to 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.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*


- 3-LS4.D.1 Biodiversity and Humans: Populations live in a variety of habitats, and change in those habitats affects the organisms living there.
- 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-LS2.C.1 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.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Systems and System Models:
  - System Description - A system can be described in terms of its components and their interactions.
- Engaging in Argument from Evidence:
  - Solutions - 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.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-LS4.D.1 3-LS2.C.1	Engage: Accessing Prior Knowledge & Hook	1 Day	Student journal Posters Brainstorm local events where environmental changes have occurred. <b>Teacher checks for understanding, prior knowledge, and misconceptions of environmental changes and effects.</b>
3-LS2.C.1 3-LS4.D.1	Explore: D1:Activity, Role playing game	1 Day	Student journal CER Game boundary guidelines Reusables <b>Students will discover and understand how environmental changes affect the animals that live in a certain habitat.</b>

<p>3-LS2.C.1 3-LS4.D.1 Science and Engineering Systems</p>	<p>Explore: D2: Activity PBL: Build My Habitat</p> 	<p>2-3 Days</p>	<p>Entry document Expert mini-workshop Rubric Consumables <b>Students will design a way to prevent a negative impact on a water ecosystem.</b></p> <p><b>Crosscutting Concepts: Systems and System Models</b> -Students will be able to identify that all organisms in an environment depend on each other.</p>
<p>3-LS2.C.1 3-LS4.D.1 Science and Engineering Systems</p>	<p>Explain: STEMscopedia Picture Vocabulary</p>	<p>1-2 Days</p>	<p>Pick 2-3 activities to extend concept, consider adding voice and choice for students. <b>By the end of this lesson, students should be able to answer the essential question. How do you choose what kind of tree to plant in your local environment?</b></p>
<p>3.LS4.D.1 3.LS4.4 System Description Solutions 3.LS2.C.1 3.5.ETS.1.1 3.5.ETS.1.2</p>	<p>Elaborate</p>	<p>1-2 Days</p>	<p>Math connections, reading science, career science, connection videos and Science Rock.</p>
<p>3-LS2.C.1 3-LS4.D.1 Science and Engineering Systems</p>	<p>Evaluate</p>	<p>1-2 Day</p>	<p>CER, Constructed Response, and Multiple Choice</p> <p><i>Performance Expectation Assessment Task requires Inheritance and Variation of Traits, Environmental Traits, Adaptations, and Environmental Changes and Effects.</i></p> <p>Rubric</p>

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## Engaging Scenario

**Engaging Scenario** (Storyline/PEAT)  
 Students decide on an action plan for the conservation of a bird species in Yellowstone National Park.

**Rubric for Engaging Scenario:** Print Effects on Organisms of Changing Environments Rubric

## Unit 3: Earth and Space Science

**Subject:** Science

**Grade:** 3rd

**Name of Unit:** Earth and Space Science

**Length of Unit:** 5 weeks, April – May (18-25 days)

**Overview of Unit:** This unit will cover two topics: 1) Weather and Climate, and 2) Processes and Impacts of Natural Hazards.

## Topic 1: Weather and Climate

**Suggested Length of Time:** 10-13 Days

**Essential Questions (Student Wondering):**

- What weather patterns do we see in the winter?

**Enduring Understanding (Learning Objectives):**

- The student is expected to represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- The student is expected to obtain and combine information to describe climates in different regions of the world.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

- 3-ESS2.D.1 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.D.2 Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.


*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- 3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world.
- Predictions - Patterns of change can be used to make predictions.
- Analyzing and Interpreting Data:
  - Represent Data - Represent data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) to reveal patterns that indicate relationships.
- Obtaining, Evaluating, and Communicating Information:
  - Phenomena and Solutions - Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-ESS2.D.1 3-ESS2.D.2 Predictions	Engage: Accessing Prior Knowledge Hook	1 Day	Student Journal Recording of Previous Day's weather report <b>Crosscutting Concepts: Predictions</b> -Students predict patterns of weather after investigating the current weather report in the area in which they live. <b>Teacher will check for understanding, prior knowledge, and misconceptions of weather and climate.</b>
3-ESS2.D.1 3-ESS2.D.2 Predictions	Explore: D1: Activity: Graphing Conditions in US Cities	2 Day	Student Journal Student Handout (color copy) Seasonal Data Handout (color copy) Blank Map of the US <b>Crosscutting Concepts: Predictions</b> -After graphing seasonal and precipitation information of various cities, students discuss and make predictions about the weather in these areas.



			<b>The student will understand that weather conditions vary from region to region within the United States.</b>
3- ESS2.D.1 3- ESS2.D.2 Predictions	Explore: D2 PBL: Vacation Presentation 	3 Days	Entry Document Computer Chart Paper Craft Supplies Vacation Locations on slips of paper <b>Crosscutting Concepts: Predictions</b> Students will analyze various weather data from given cities and predict the best place for their teacher to vacation. <b>The student will understand how weather and climate affects cities throughout the world.</b>
3- ESS2.D.1 3- ESS2.D.2 Predictions	Explain: STEMscopedia Picture Vocabulary	1-2 Days	Pick 2 - 3 activities to extend concept, consider adding voice and choice for students. <b>By the end of this lesson, students should be able to answer the essential question. What weather patterns do we see in the winter?</b>
3- ESS2.D.1 3- ESS2.D.2 Predictions	Elaborate	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.
3- ESS2.D.1 3- ESS2.D.2 Predictions	Evaluate	2-3 Days	<i>CER, Multiple Choice, Open-Ended Assessment and an Active Assessment</i>  <i>PEAT requires both the Weather and Climate and Processes and Impacts of Natural Hazards Scopes</i>

## Topic 2: Processes and Impacts of Natural Hazards

**Suggested Length of Time: 8-12 Days**

Board Approved: June 7, 2018

**Essential Question (Student Wondering):**

- Can lightning rods help prevent damage to tall buildings?

**Enduring Understanding (Learning Objectives):**

- The student is expected to make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

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

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change.
- Engaging in Argument from Evidence:
  - Solutions - 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.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-ESS3.B.1 Cause/Effect	Engage: Accessing Prior Knowledge Hook	1 Day	Student journal page or project on board <u>Three Little Pigs</u> book or find an e-version <b>Teacher will check for understanding, prior knowledge and misconceptions of processes and impacts of natural hazards.</b>  <b>Crosscutting Concepts: Cause and Effect</b> -Students identify how natural hazards can affect a structure after reading <u>Three Little Pigs</u> .
3-ESS3.B.1 Cause/Effect Solutions	Explore: D1: Activity: Tale of Two Houses CER Activity	1 Day	Student Journal House Articles <b>The student will understand the effects of natural disasters on structures.</b>  <b>Crosscutting Concepts: Cause and</b>

			<p><b>Effect</b> -Students will discuss how the same natural hazard can affect something differently.</p>
3-ESS3.B.1 Cause/Effect Solutions	Explore: D2: Engineering Solutions- Rising Expectations	2-3 Days	<p>Student Journal New Orleans Image Consumables</p> <p><b>The student will understand that there are ways to reduce the impact of natural disasters</b></p> <p><b>Crosscutting Concepts: Cause and Effect</b> -Students will name how a small change in their design can have a big effect on their results.</p>
3- ESS3.B.1 Cause /Effect	Explain: STEMscopedia Picture Vocabulary	1-2 Days	<p>Pick 2 - 3 activities to extend concept, consider adding voice and choice for students.</p> <p><b>By the end of this lesson, students should be able to answer the essential question. Can lightning rods help prevent damage to tall buildings?</b></p>
3- ESS3.B.1 Cause /Effect	Elaborate	1-2 Days	<p>Math connections, reading science, career science, connection videos and Science Rock.</p>
3-ESS3.B.1 Cause/Effect Solutions	Evaluate	2-3 Days	<p><i>CER, Multiple Choice, Open-Ended Assessment and an Active Assessment</i></p> <p><i>Performance Expectation Assessment Task-Check teacher prep notes carefully-roof materials will need to be obtained-tiles, shingles, etc.</i></p> <p><b><i>Performance Expectation Assessment Task requires both the Weather and Climate and Processes and Impacts of Natural Hazards Scopes</i></b></p>

## Engaging Scenario

**Engaging Scenario:** (Storyline/PEAT) (A Performance Expectation Assessment Task is designed to assess student mastery of the Performance Expectations associated with the modules: *Weather and Climate and Processes and Impacts of Natural Hazards*)

**In this task, students select a roof material to decrease the effects of extreme heat in India.**

**Rubric for Engaging Scenario:** Print copy of PEAT Rubric

## Unit 4: Physical Science

**Subject:** Science

**Grade:** 3rd

**Name of Unit:** Physical Science

**Length of Unit:** 4 weeks, April-May (17 - 20 Days)

**Overview of Unit:** This unit will cover two topics: 1) Objects and Motion, and 2) Electric and Magnetic Forces.

**Materials to prepare for the unit:** Poster board for racetrack, craft magnets, recyclables for PEAT (Aluminum (soda cans) and steel cans (fruit or vegetables cans), and empty water bottles.

## Topic 1: Objects and Motion

**Suggested Length of Time:** 7-10 Days

**Essential Question (Student Wondering):**

- Why do bowling pins fall down?

**Enduring Understanding (Learning Objectives):**

- The student is expected to plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- The student is expected to make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

- 3-PS2.A.1 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.A.2 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-PS2.B.1 Objects in contact exert forces on each other.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Predictions - Patterns of change can be used to make predictions.
- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Planning and Carrying Out Investigations:
  - Variables - 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 is considered.
  - Phenomenon Explanations - 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.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-PS2.A1 3-PS2.A2 3-PS2.B1 Patterns Cause & Effect	Engage: Accessing Prior Knowledge	1 Day	2 Activities <ul style="list-style-type: none"> <li>- Journal page - download/print</li> <li>- Tug-of-War (physical space required)</li> <li>- Video recording Tug-of-War</li> </ul> Crosscutting Concepts: <ul style="list-style-type: none"> <li>- Students will be able to identify patterns that are occurring during the game.</li> <li>- Students will also be able to identify Cause &amp; Effect Relationships that occur during the game.</li> </ul> <p><b>Teacher will check for understanding, prior knowledge, and misconceptions of objects and motion.</b></p>
3-PS2.A1 3-PS2.A2 3-PS2.B1	Explore: Do 1 Activity	3 Days	<b>Materials:</b> <ul style="list-style-type: none"> <li>- Journal page - download/print</li> <li>- Computer stations (optional)</li> </ul>

<p>Patterns Cause &amp; Effect Plan &amp; conduct invest. Represent Data</p>	<p>Motion and Balance Learning Stations</p>		<ul style="list-style-type: none"> <li>- CER</li> <li>- Set up 6 stations</li> </ul> <p><b>Crosscutting Concepts:</b></p> <ul style="list-style-type: none"> <li>- Students will identify Patterns when they complete multiple trials.</li> <li>- Students will identify Cause &amp; Effect Relationships during the Motion and Balance Learning Stations</li> <li>- Based on the data you collected from the Motion Stations, ask students what patterns did you notice in the object's motion?</li> </ul> <p><b>Students will understand that balanced forces do not involve motion, unbalanced forces involve motion.</b></p>
<p>3-PS2.A1 3-PS2.A2 3-PS2.B1 Patterns; Cause &amp; Effect; Plan &amp; Conduct Investigation; Represent Data</p>	<p>Explore: D2:PBL</p>  <p>Pop Fly</p>	<p>2 Days</p>	<p><b>Description:</b> In this Project-Based Learning, students show how balanced and unbalanced forces cause motion. A local little league team needs practice catching pop-fly balls. Your class has been asked to develop a pop-fly launcher that launches consistent pop flies to outfielders. The prototype should be built from recycled and repurposed materials, and a design sketch should show where the balanced and unbalanced forces are acting on the launcher.</p> <p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>- Entry document and Expert Role</li> <li>- Individual 21st Century Skills Rubric</li> <li>- Expert Mini-Workshop per expert/group (manually assigned)</li> </ul> <p><b>Crosscutting Concepts:</b> Students will be able to identify Patterns and Cause &amp; Effect Relationship when they are building and testing their catapult.</p> <p>Student products can include a presentation. <b>Students will understand how balanced and unbalanced forces cause motion.</b></p>
<p>3-PS2.A1 3-PS2.A2 3-PS2.B1</p>	<p>Explain</p>	<p>1-2 Days</p>	<p><b>Required:</b> Picture Vocabulary STEMscopedia</p> <p><b>By the end of this lesson, students should be able to answer the essential question. Why do</b></p>

			<b>bowling pins fall down?</b>
3.PS2.1.1 3.PS2.A.2 3.PS2.B.1 3.PS2/1 3.PS2.2 Prediction Cause and Effect Variables Phenomenon Explanation 3.5. ETS.1.1 3.5. ETS.1.3	Elaborate	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.
3-PS2.A1 3-PS2.A2 3-PS2.B1	Evaluate: Assess	1 Day	CER, Open-ended, or Multiple Choice

## Topic 2: Electric and Magnetic Forces

**Suggested Length of Time:** 7-10 Days

**Essential Question (Student Wondering):**

- Why does a balloon cause my hair to stick up?

**Enduring Understanding (Learning Objectives):**

- The student is expected to ask question to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- The student is expected to define a simple design problem that can be solved by applying scientific ideas about magnets.

**Standards Addressed**

*Priority: Disciplinary Core Ideas Disciplinary Core Ideas*

- 3-PS2.B.2 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 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- 3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.

*Supporting: Cross Cutting Concepts & Science and Engineering Practices*

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change

- Asking Questions and Defining Problems:
  - Investigate and Predict - Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.
  - Solving Problems with Criteria - 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.

**Detailed Description/Instructions:**

Standard	5 E Model	Suggested # of Days	Notes
3-PS2.B.2 Make a Claim; Cause & Effect	Engage: Accessing Prior Knowledge	1 Day	Materials: <ul style="list-style-type: none"> <li>- Journal page - download/print</li> </ul> Activity: <ul style="list-style-type: none"> <li>- Hook - Floating Paper Clip</li> </ul> <p><b>Teacher will check for understanding, prior knowledge, and misconceptions of electric and magnetic forces.</b></p> <p><b>Crosscutting Concepts: Cause and Effect</b> -Students will be able to identify the cause and effect relationship between the paperclip and the magnet.</p>
3-PS2.B.2 Solving Problems with Criteria; Cause & Effect	Explore: D1 Forces in Action	1 Day	Materials: <ul style="list-style-type: none"> <li>- Journal page - download/print</li> <li>- CE</li> </ul> <p><b>Crosscutting Concepts: Cause and Effect</b> -Students will be able to explain that static electricity can only attract, not repel through Station 5 and Station 6. -Students will be able to explain that magnets are not attracted to all metals through Station 1 and Station 4. -Students will be able to explain that larger magnets don't always have the strongest force through Station 2 and Station 3.</p>



3-PS2.B.2 Investigate & Predict; Solving Problems with Criteria; Cause & Effect	Explore: D2 Engineering Solutions	2 Day	Activity - Create toy car racetrack Materials: <ul style="list-style-type: none"> <li>- Journal page - download/print</li> <li>- Poster board</li> <li>- Design process 1 day; performance 1 day</li> <li>- Student Rubric &amp; CER Key</li> <li>-</li> </ul> <b>Crosscutting Concepts: Cause and Effect</b> -Students will be able to explain that magnets have fields of magnetism as they move the car around the track without directly touching the magnet to the car. After building the race track, ask students what would happen if you built a steep hill into your racetrack?
3-PS2.B.2	Explain: Picture Vocabulary, STEMscopedia	2-3 Days	Pick 2 - 3 activities to extend concept; consider adding voice and choice for students Computer stations (optional) <b>By the end of this lesson, students should be able to answer the essential question. Why does a balloon cause my hair to stick up?</b>
3.PS2.2 3.PS2.3 3.PS2.4 Cause and Effect Investigate and Predict Solving Problems with Criteria 3.5.ETS.1.1	Elaborate:	1-2 Days	Math connections, reading science, career science, connection videos and Science Rock.
3-PS2.B.2 Cause & Effect	Evaluate: Assess	1 Day	CER, Open-ended or Multiple Choice
	Engaging Scenario: PEAT	2 Days	Separate recyclable materials

## Engaging Scenario

**Engaging Scenario:** (Storyline/PEAT) At the conclusion of Topic 1, Objects in Motion, and Topic 2, Electric and Magnetic Forces, students will design a plan to separate recyclable materials in a Materials Recovery Facility (MRF).

- Refer to the items listed in the materials to prepare for the unit.