

<p>Earth Sciences: Weather and Climate</p>	<p>Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits</p>
<p>Mystery Science <i>Stormy Skies: Weather, Climate, & Water Cycle</i></p> <ol style="list-style-type: none"> Where do clouds come from? (Weather Patterns, Water Cycle) How do we predict it it's going to storm? (Climate) Why are some places always hot? (Climate, Typical Weather, Geography) <p><i>Approximately 10 weeks to complete Mystery Science activities and supplemental background building and hands-on activities.</i></p>	<p>Mystery Science <i>Power of Flowers</i></p> <ol style="list-style-type: none"> Why do plants grow flowers?? (Reproduction) Why do plants give us fruit? (Reproduction) Why are some apples red and some green? (Inheritance, Traits, & Selection) How could you make the biggest fruit in the world? (Inheritance, Traits, & Selection) <p><i>Approximately 10 weeks to complete Mystery Science activities and supplemental background building and hands-on activities.</i></p>
<p>Life Sciences: Interdependent Relationships in Ecosystems</p>	<p>Physical Science: Forces and Motion</p>
<p>Mystery Science <i>Animals Through Time</i></p> <ol style="list-style-type: none"> Where can you find whales in a desert? (Habitats & Environment Change) How do we know what dinosaurs looked like? (Structures & Adaptation, Fossil Evidence, Classification) Can you outrun a dinosaur? (Fossil Evidence, Behavior) What kinds of animals might there be in the future? (Heredity, Variation, & Selection) Can selection happen without people? (Heredity, Variation, & Selection) <ul style="list-style-type: none"> Appendix: Why do some animals live in groups? <p><i>Approximately 10 weeks to complete Mystery Science activities and supplemental background building and hands-on activities.</i></p>	<p>Mystery Science <i>Invisible Forces</i></p> <ol style="list-style-type: none"> How could you win a tug-of-war against a bunch of adults? (Forces) What makes bridges so strong? (Balance of Forces, Engineering) How can you go faster down a slide? (Balance of Forces, Friction) What can magnets do? (Magnets, Forces) <p><i>Approximately 10 weeks to complete Mystery Science activities and supplemental background building and hands-on activities.</i></p>

Time Frame	10 weeks
Course	
Earth Sciences	
Title of Unit	
Weather and Climate	
Essential Questions	
<ol style="list-style-type: none"> 1. What is the weather in different parts of the world and during different times of the year? 2. How can the impact of weather related hazards be reduced? 	
Enduring Understandings	
<i>Students will understand that...</i>	
<ul style="list-style-type: none"> → data in tables and graphs can illustrate typical weather conditions expected during a particular season → climates in different regions of the world can follow patterns → there are ways to design solutions that reduce the impact of a weather-related hazard 	
Key Knowledge	
<i>Students will know...</i>	
<ul style="list-style-type: none"> → scientists record patterns of the weather in order to make predictions about what kind of weather might happen next → climate describes an area's typical weather conditions and the changes over many years → many different kinds of natural hazards occur in nature → although we cannot eliminate natural hazards, we can take steps to reduce their impact 	
Concepts and Skills	
<i>Students will be able to.....</i>	
<ul style="list-style-type: none"> → create tables and graphs that show weather patterns → describe and investigate the climate in different areas of the world → make predictions about the climate based on the previous observations → design a solution to reduce the impact of weather-related hazards 	
Learning Activities	
ELA Connections: Wonders	
<ul style="list-style-type: none"> ❖ Unit 3 Week 3: Discoveries: What do we know about Earth and Its Neighbors? ❖ Unit 6 Week 2: Weather: How can weather affect us? 	
Mystery Science: Stormy Skies: Weather, Climate, & Water Cycle (links provided- click):	
<ol style="list-style-type: none"> 1. Where do clouds come from? 2. How do we predict it's going to storm? 3. Why are some places always hot? 	
<p><i>**All video clips can be accessed by clicking on the text- another tool/option would be to type the title into EdPuzzle and utilize the clip as a student led (independent background builder) or assessment option with questions built in (questions can be differentiated and voice recordings can be created [by the teacher] for students who have difficulty with reading).</i></p>	

YouTube video clips to build background:

- ❖ [Billy Blue Hair - What is the Water Cycle and Why Does it Rain?](#)
- ❖ [GoNoodle Water Cycle](#)
- ❖ [Water Cycle - StudyJams - Closed Captioned](#)
- ❖ [Weather and Climate- StudyJams](#)
- ❖ [Where does water come from?](#)
- ❖ [Weather and Climate](#)
- ❖ [Weather vs. Climate](#)
- ❖ [Be a weather watcher](#)
- ❖ [Climate Change 101 with Bill Nye | National Geographic](#)
- ❖ [Where do snowflakes come from?](#)
- ❖ [What are clouds made of?](#)
- ❖ [Bill Nye the Science Guy S03E07 Water Cycle](#)

Weather related hazards (video clips):

- ❖ [Severe Weather](#)
- ❖ [What causes thunder and lightening](#)
- ❖ [What Causes Earthquakes?](#)
- ❖ [Tornado Facts for Kids](#)
- ❖ [What is a blizzard?](#)
- ❖ [What is a tornado?](#)
- ❖ [Bill Nye: Storms](#)

BrainPopJr.com

- ❖ [Water cycle](#)
- ❖ [Temperature](#)

BrainPop.com

- ❖ [Climate Change](#)
- ❖ [Water Cycle](#)
- ❖ [Clouds](#)
- ❖ [Weather](#)
- ❖ [Natural Disasters](#)
- ❖ [Tornadoes](#)
- ❖ [Thunderstorms](#)
- ❖ [Hurricanes](#)

Flocabulary.com

- ❖ [Hurricanes](#)
- ❖ [Water Cycle](#)
- ❖ [Weather](#)

Pebblego.com

- ❖ [What is weather?](#)
- ❖ [Climate](#)
- ❖ [Wind](#)

Prepared Lesson Ideas

- ❖ **Awesome websites** for simple research and information gathering- could be a great source

for student led/independent study

- eschooltoday.com
- [Tree House Weather Kids](#) (text is read aloud)

- ❖ [Weather Scope- make weather instruments, gather data- learning log, etc.](#)
- ❖ [Weather, Climate, & Water lessons](#)
- ❖ BetterLesson.com [Earth & Spaces Sciences \(multiple lessons to choose from\)](#)
- ❖ [Water Cycle Activities](#) (4 lessons w/hands on activities/demonstrations)
- ❖ [Cloud Investigation](#)- hands on activity, chart for data collection, assessment
- ❖ [STEAM Weather Activities](#)- hands on- get crafty and reach your students!

Books:

- ❖ [Flash, Crash, Rumble, and Roll](#) by Franklyn Branley
- ❖ [Twister](#) by Darleen Bailey Beard
- ❖ [Cloud Dance](#) by Thomas Locker
- ❖ [Tornado Alert](#) by Franklyn Branley
- ❖ [Down Comes the Rain](#) by Franklyn Branley
- ❖ Gail Gibbons Weather Books ***free subscription required for online books
 - Online: [Weather Words and What They Mean by Gail Gibbons](#)
 - Online: [Tornadoes by Gail Gibbons](#)

Basic PowerPoint: Weather & Climate

Assessments

Water cycle assessment:

- ❖ Each student will create a poster for display showing the water cycle in their favorite outdoors place. It may be their home or a vacation spot. The key concepts should be shown in the poster. May use photos cut from magazines in combination with their own artwork to compose the poster.
- ❖ [Label diagram "Returning Raindrop"](#)
- ❖ [Label Water Cycle- Google Drawing Assessment](#) (Teacher make a "copy" and save to your Drive before posting/assigning to individual classes)
- ❖ [2nd Version- Label Water Cycle](#) (Teacher make a "copy" and save to your Drive before posting/assigning to individual classes)
- ❖ Mystery Science Assessments
 - [The World of Weather- Mystery 1: Weather Patterns, Water Cycle](#)
 - [The World of Weather- Mystery 2: Climate](#)
 - [The World of Weather- Mystery 3: Climate, Typical Weather, Geography](#)
- ❖ [4 Types of Clouds Quizlet](#)
- ❖ [4 Types of Clouds Labeling- Google Drawings Assessment](#) (Teacher make a "copy" and save to your Drive before posting/assigning to individual classes)
- ❖ [Climate & Weather Google Forms Assessment](#) (Teacher make a "copy" and save to your

Drive before posting/assigning to individual classes)

NGSS and NJSLS

Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

- ◆ **ESS2-1** - Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
- ◆ **ESS2-2** - Obtain and combine information to describe climates in different regions of the world
- ◆ **3-ESS3.1** - Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard

→ **NJSLS: ELA**

- ◆ **R3.1** - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
- ◆ **R3.9** - Compare and contrast the most important points and key details presented in two texts on the same topic
- ◆ **W3.1** - Write opinion pieces on topics or texts, supporting a point of view with reasons
- ◆ **W3.7** - Conduct short research projects that build knowledge about a topic
- ◆ **W3.8** - Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories

→ **NJSLS: Math**

- ◆ **3.MD.A.2** - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem
- ◆ **3.MD.B.3** - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs

→ **Technology: 8.1 Educational Technology:** All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. **8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

- ◆ **8.1.5.A.1** - Understand and use technology systems.
- ◆ **8.1.5.A.2** - Select and use applications effectively and productively.
- ◆ **8.2.5.A.3** - The core concepts of technology.
- ◆ **8.2.5.A.1** - The characteristics and scope of technology.

Modifications

Modifications: (ELLs, Special Education, Gifted and Talented)

GRADE: 3

COURSE: Science Curriculum 2017 NGSS Aligned

- Follow all IEP modifications and 504 plans
- Provide differentiated instruction as needed.
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.

Time Frame	10 weeks
Course	
Life Sciences	
Title of Unit	
Interdependent Relationships in Ecosystems	
Essential Questions	
<ol style="list-style-type: none"> 1. What happens to plants and animals when their environment changes? 2. How are plants, animals, and environments of the past similar or different from current plants, animals, and environments? 3. How can fossils provide evidence that animals and plants have changed over time? 	
Enduring Understandings	
<i>Students will understand that...</i>	
<ul style="list-style-type: none"> → that some animals form groups that help group members survive → data from fossils can provide evidence of the organisms and the environments in which they lived long ago → in a particular habitat some organisms can survive well, while some survive less well, and others cannot survive at all → when an environment changes, the types of plants and animals that live in it may change, and a variety of solutions may be used to solve this problem. Each of these possibilities may have advantages and disadvantages. 	
Key Knowledge	
<i>Students will know.....</i>	
<ul style="list-style-type: none"> → being part of a group helps animals obtain food, defend themselves, and cope with changes → there are different reasons for groups → some kinds of plants and animals that once lived on Earth are no longer found anywhere → fossils provide evidence about the types of organisms and environments from long ago → explain with evidence how some habitats allow animals to survive or die out → environmental changes cause organisms to survive and reproduce, move to new locations, and die out → animals live in a variety of habitats and change in those habitats to fit in them 	
Concepts and Skills	
<i>Students will be able to.....</i>	
<ul style="list-style-type: none"> → create an argument with evidence that shows how animals form groups to survive → use fossils to make connections between how animals lived long ago and how they live today → explain with evidence how some habitats allow animals to survive and flourish or die out. Explain how environmental changes affect the animals that live in the environment 	
Learning Activities	
ELA Connection: Wonders	
<ul style="list-style-type: none"> ❖ Unit 2 Week 1: Cooperation: Why is working together a good way to solve a problem? ❖ Unit 2 Week 4: Survival: How can People help animals survive? ❖ Unit 4 Week 3: Adaptations: How do animals adapt to challenges in their habitat? 	

- ❖ Unit 5 Week 2: Reuse & Recycle: How can we reuse what we already have?

Mystery Science: *Animals Through Time: Habitats, Change, & Heredity*

- ❖ [Where can you find whales in a desert?](#)
- ❖ [How do we know what dinosaurs look like?](#)
- ❖ [Can you outrun a dinosaur?](#)
- ❖ [What kind of animals might there be in the future?](#)
- ❖ [Can selection happen without people?](#)

***All video clips can be accessed by clicking on the text- another tool/option would be to type the title into EdPuzzle and utilize the clip as a student led (independent background builder) or assessment option with questions built in (questions can be differentiated and voice recordings can be created [by the teacher] for students who have difficulty with reading).*

YouTube video clips to build background:

- ❖ [Amazing Animal Groups](#)
- ❖ [Can wildlife adapt to climate change?](#)
- ❖ [Animals With Winter Coats](#)
- ❖ [How do Whales, Penguins, and Polar Bears Keep Warm?](#)
- ❖ [study jams - ECOSYSTEMS](#)
- ❖ [study jams- Adaptations](#)
- ❖ [Dig Into Paleontology](#)
- ❖ [What's a Fossil?](#)
- ❖ [Bill Nye the Science Guy- Biodiversity \(Ecosystem Support\)](#)
- ❖ [Bill Nye the Science Guy- Fossils](#)

BrainPopJr.com

- ❖ [Fossils](#)
- ❖ [Plant Adaptations](#)

BrainPop.com

- ❖ [Fossils](#)

Pebblego.com

- ❖ [Adaptations](#)
- ❖ [Animals Affect Habitats](#)
- ❖ [Endangered and Threatened Animals](#)

Flocabulary.com (subscription required)

- ❖ [Adaptation](#)

Online Books: (with short quizzes) *free subscription required**

- ❖ [Earth Science Rocks! Fossils by Chris Bowman](#)
- ❖ [Figuring Out Fossils by Sally M. Walker](#)
- ❖ [Animal Adaptations by Louise Spilsbury & Richard Spilsbury](#)

Prepared Lesson Ideas:

- ❖ [“Fun with Fossils”](#) -excellent lesson w/video clips, student project, assessment
- ❖ [Animals Adapt to Their Habitats](#) - excellent lesson w/video clips, scenario for student connections, and assessment (seems similar to Houghton Mifflin B.4.3 lesson on adaptations)
- ❖ **Website** for simple research and information gathering- could be a great source for student

led/independent study to help build background [eschooltoday.com](http://www.eschooltoday.com)

- ❖ [Heredity Lesson- hands on activity](#)

Assessments

Mystery Science Assessments:

- ❖ [Animals Through Time: Mystery 1: Habitats & Environment Change](#)
- ❖ [Animals Through Time: Mystery 2: Structures & Adaptation; Fossil Evidence](#)
- ❖ [Animals Through Time: Mystery 3: Fossil Evidence, Behavior](#)
- ❖ [Animals Through Time: Mystery 4: Heredity, Variation, & Selection](#)
- ❖ [Animals Through Time: Mystery 5: Heredity & Selection](#)

“Prepared Lesson Idea” Assessment

- ❖ [Animals Adapt to Their Habitats](#) (conclusion to lesson)- Draw the animal that you imagine was in the box you received from the explorer. Describe the physical characteristics of the animal and how it is specially adapted to be successful in its habitat. Describe the habitat from which you think it comes.
- ❖ [How a Fossil Forms- Google Slide Assessment](#) (Teacher make a “copy” and save to your Drive before posting/assigning to individual classes)

NGSS and NJSLS

Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ NGSS:

- ◆ **3-LS2-1** - Construct an argument that some animals form groups that help members survive
- ◆ **3-LS4-1** - Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago
- ◆ **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-LS4-2** - 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-LS4-4** - 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

→ NJSLS: ELA

- ◆ **RI3.1** - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
- ◆ **RI3.2** - Determine the main idea of a text; recount the key details and explain how they support the main idea
- ◆ **RI3.3** - Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect
- ◆ **W3.1** - Write opinion pieces on topics or texts, supporting a point of view with reasons
- ◆ **W3.2** - Write informative/explanatory texts to examine a topic and convey ideas and information clearly
- ◆ **W3.8** - Recall information from experiences or gather information from print and digital

sources; take brief notes on sources and sort evidence into provided categories

- ◆ **SL3.4** - Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace

→ **NJSLS: Math**

- ◆ **3.NBT.A.1** - Use place value understanding to round whole numbers to the nearest 10 or 100
- ◆ **3.NBT.A.2** - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction
- ◆ **3.NBT.A.3** - Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations
- ◆ **3.MD.B.3** - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs
- ◆ **3.MD.B.4** - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters

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Modifications

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- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.

Time Frame	10 weeks
Course	
Life Science	
Title of Unit	
Inheritance and Variation of Traits: Life Cycles and Traits	
Essential Questions	
<ol style="list-style-type: none"> 1. How do organisms vary in their traits? 2. What kinds of traits are passed from parents to offspring? 	
Enduring Understandings	
<i>Students will understand that...</i>	
<ul style="list-style-type: none"> → organisms have unique and diverse life cycles but they all have these things in common: birth, growth, reproduction, and death → data can provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms → evidence supports the explanation that traits can be influenced by the environment → evidence can be used 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 	
Key Knowledge	
<i>Students will know...</i>	
<ul style="list-style-type: none"> → plants and animals have unique and diverse life cycles → plants and animals inherit traits from their parents → traits of plants and animals can change to adapt to the environment; changes can range from diet to learning abilities. → plants and animals look and act differently as a result of environmental and/or inherited traits → variations of traits help plants and animals survive, choose mates, and reproduce in specific ways 	
Concepts and Skills	
<i>Students will be able to...</i>	
<ul style="list-style-type: none"> → plants and animals have different life cycles, but share similarities in birth, growth, reproduction, and death → collect and analyze data to give evidence that plants and animals have traits that are passed down from parents → similar plants and animals share traits but also have differences → use evidence to show how traits can be influenced by the environment → show how variations of traits help plants and animals survive, choose mates, and reproduce 	
Learning Activities	
ELA Connection: Wonders:	
<ul style="list-style-type: none"> ❖ Unit 3 Week 1: Be Unique: What makes different animals unique? ❖ Unit 3 Week 4: New Ideas: What ideas can we get from nature? ❖ Unit 4 Week 1: Choices: What choices are good for us? ❖ Unit 6 Week 4: Animals and You: How can learning about animals help you respect them? 	
Mystery Science: <i>Power of Flowers</i>	
<ul style="list-style-type: none"> ❖ Why do plants grow flowers? ❖ Why do plants give us fruit? 	

- ❖ [Why are some apples red and some green?](#)
- ❖ [How could you make the biggest fruit in the world?](#)

***All video clips can be accessed by clicking on the text- another tool/option would be to type the title into EdPuzzle and utilize the clip as a student led (independent background builder) or assessment option with questions built in (questions can be differentiated and voice recordings can be created [by the teacher] for students who have difficulty with reading).*

YouTube video clips to build background:

- ❖ [How Does A Seed Become A Plant?](#)
- ❖ [Grow Your Own Plants! \(Part 1\)](#)
- ❖ [What Happened to Our Plants? \(Part 2\)](#)
- ❖ [How a Caterpillar Becomes a Butterfly](#)
- ❖ [Salmon Parents Are Amazing!](#)- Salmon Life Cycle
- ❖ [Bill Nye the Science Guy- Life Cycles](#)
- ❖ [What is a trait?](#)
- ❖ [Heredity](#)

Online Books: (with short quizzes) *free EPIC subscription required**

- ❖ [Animal Life Cycles: Growing and changing](#) by Bobbie Kalman
- ❖ [Life Cycles of Insects](#) by Molly Aloian

Prepared Lessons

- ❖ <http://www.eschooltoday.com/> **Website** for simple research and information gathering- could be a great source for student led/independent study to help build background

BrainPopJr.com

- ❖ [Plant Life Cycle](#)
- ❖ [Butterflies](#)
- ❖ [Frogs](#)

BrainPop.com

- ❖ [Ecosystems](#)

Pebblego.com

- ❖ [Heredity](#)
- ❖ [Living or Nonliving](#)

Flocabulary.com

- ❖ [Life Cycles](#)
- ❖ [Pollination](#)

Useful websites

Assessments

Mystery Science Assessments:

- ❖ Power of Flowers: Mystery 1: Reproduction
- ❖ Power of Flowers: Mystery 2: Reproduction

- ❖ Power of Flowers: Mystery 3: Inheritance, Traits, & Selection
- ❖ Power of Flowers: Mystery 4: Inheritance, Traits, & Selection

NGSS and NJSL

Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

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

→ **NJSLS: ELA**

- ◆ **RI3.1** - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
- ◆ **RI3.2** - Determine the main idea of a text; recount the key details and explain how they support the main idea
- ◆ **RI3.3** - Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect
- ◆ **RI3.7** - Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur)
- ◆ **W3.2** - Write informative/explanatory texts to examine a topic and convey ideas and information clearly
- ◆ **SL3.4** - Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace
- ◆ **SL3.5** - Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details

→ **NJSLS: Math**

- ◆ **3.MD.B.3** - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs
- ◆ **3.MD.B.4** - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters

- **Technology- 8.1 Educational Technology:** All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. **8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the

GRADE: 3

COURSE: Science Curriculum 2017 NGSS Aligned

designed world as they relate to the individual, global society, and the environment.

- ◆ **8.1.5.A.1** - Understand and use technology systems.
- ◆ **8.1.5.A.2** - Select and use applications effectively and productively.
- ◆ **8.2.5.A.3** - The core concepts of technology.
- ◆ **8.2.5.A.1** - The characteristics and scope of technology.

Modifications

Modifications: (ELLs, Special Education, Gifted and Talented)

- Follow all IEP modifications and 504 plans
- Provide differentiated instruction as needed.
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
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- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
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- Provide ELL students with multiple literacy strategies.

Time Frame	10 weeks
Course	
Physical Science	
Title of Unit	
Forces and Motion	
Essential Questions	
1. How do equal and unequal forces on an object affect the object? 2. How can magnets be used?	
Enduring Understandings	
<i>Students will understand that...</i>	
<ul style="list-style-type: none">→ an investigation can provide evidence of the effects of balanced and unbalanced forces on the motion of an object→ observations and/or measurements of an object's motion can be used to provide evidence that a pattern can be used to predict future motion→ there is a cause and effect relationship of electrical and magnetic interactions between two objects not in contact with each other→ a simple design problem can be solved by applying scientific ideas about magnets	

Key Knowledge

Students will know...

- a force can be a push or a pull
- objects remain in motion or at rest until another force changes the direction or changes the speed
- friction slows objects down
- some changes in motion require objects to touch and some do not require objects to touch (electrical or magnetic forces)
- magnets are attracted to some objects that contain certain metals
- static electricity between hair and a balloon is an electrical force

Concepts and Skills

Students will be able to...

- give evidence of the effects of balanced and unbalanced forces on the motion of an object
- collect measurement data to provide evidence of an object's motion
- use data to predict future motion
- demonstrate how two objects do not need to be in contact with each other to cause motion
- define a simple design problem that can be solved by applying scientific ideas about magnets

Learning Activities

ELA Connection: Wonders:

- ❖ Unit 1 Week 4: Inventions: How can problem solving lead to new ideas?
- ❖ Unit 2 Week 5: Figure It Out: How do people figure things out?
- ❖ Unit 4 Week 4: Flight: How are people able to fly?
- ❖ Unit 5 Week 5: Energy: What are different kinds of energy?

Mystery Science: *Invisible Forces*

- ❖ [How could you win a tug-of-war against a bunch of adults?](#) (supporting video clip*)
- ❖ [What makes bridges so strong?](#) (supporting video clip*)
- ❖ [How can you go faster down a slide?](#)
- ❖ [What can magnets do?](#)

***All video clips can be accessed by clicking on the text- another tool/option would be to type the title into EdPuzzle and utilize the clip as a student led (independent background builder) or assessment option with questions built in (questions can be differentiated and voice recordings can be created [by the teacher] for students who have difficulty with reading).*

YouTube video clips to build background:

- ❖ [Friction: Slipping, Sliding Science!](#)
- ❖ [Acceleration: Study Jams](#)
- ❖ [Defining Gravity](#)
- ❖ [Let's Get Rolling!](#)
- ❖ [Swings, Slides, and Science](#)
- ❖ [Need a Life, Try a Pulley](#)
- ❖ [What Makes Bridges So Strong-](#) supports "bridges so strong" *Mystery Science
- ❖ [Balanced and Unbalanced Forces-](#) supports tug of war *Mystery Science
- ❖ [Force & Motion](#)

- ❖ [Static Electricity: The Sticky Balloon Trick](#)
- ❖ [Bill Nye the Science Guy Magnetism](#)
- ❖ [Bill Nye the Science Guy Static Electricity](#)
- ❖ [Bill Nye the Science Guy Simple Machines](#)

Books Online (with short quizzes at the end of each book) ***free subscription required

- ❖ [Magnetism](#) by Mari Schuh
- ❖ [Pushing and Pulling](#) by Natalie Hyde
- ❖ [Gravity](#) by Kay Manolis

Prepared Lessons

- ❖ <http://www.eschooltoday.com/> Website for simple research and information gathering- could be a great source for student led/independent study to help build background
- ❖ [Measuring Friction](#) (can be used as performance assessment)- make a copy and save to your own google drive

Pebblego.com

- ❖ [Kinds of Forces](#)
- ❖ [What is Motion?](#)
- ❖ [Electricity](#)
- ❖ [Magnetism](#)
- ❖ [Friction](#)
- ❖ [Gravity](#)

Flocabulary.com

- ❖ [Force and Motion](#)
- ❖ [Gravity](#)
- ❖ [Motion](#)
- ❖ [Static Electricity](#)

BrainPopJr.com

- ❖ [Magnets](#)
- ❖ [Push & Pull](#)

Assessments

Mystery Science Assessments:

- ❖ Invisible Forces: Mystery 1: Forces
- ❖ Invisible Forces: Mystery 2: Balance of Forces, Engineering
- ❖ Invisible Forces: Mystery 3: Balance of Forces, Friction
- ❖ Invisible Forces: Mystery 4: Magnets, Forces

Additional Assessments:

- ❖ Forces and Motion Google Forms Assessment_(Make a copy to save in your drive).

NGSS and NJSL

Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

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

→ **NJSLS: ELA**

- ◆ **RI3.1** - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
- ◆ **RI3.3** - Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect
- ◆ **RI3.8** - Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence)
- ◆ **W3.7** - Conduct short research projects that build knowledge about a topic
- ◆ **W3.8** - Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories
- ◆ **SL3.3** - Ask and answer questions about information from a speaker, offering appropriate elaboration and detail

→ **NJSLS: Math**

- ◆ **MD.A.2** - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem

→ **Technology: 8.1 Educational Technology:** All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. **8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

- ◆ **8.1.5.A.1** - Understand and use technology systems.
- ◆ **8.1.5.A.2** - Select and use applications effectively and productively.
- ◆ **8.2.5.A.3** - The core concepts of technology.
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GRADE: 3

COURSE: Science Curriculum 2017 NGSS Aligned

social/family background and knowledge of their community.

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