

Science

Grade 3

Prepared by:

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Superintendent of Schools:

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Science Grade 3

Course Description:

Students will engage in practices to build, deepen, and apply their knowledge of scientific phenomenon. Units will cover concepts related to force and motion, electricity and magnetism, weather, plant and animal life cycles, and ecosystems. Lessons will be taught through the process of 5 E's: Engage, Explore, Explain, Elaborate, Evaluate. Hands-on activities with labs and student designed questions and experiments will be embedded throughout the units.

Course Sequence:

Unit Title	Duration
Unit 1: Force and Motion	3 weeks
Unit 2: Electricity and Magnetism	2 weeks
Unit 3: Weather and Climate	4 weeks
Unit 4: Traits and life cycles	4 weeks
Unit 5: Organisms and their environment/Ecosystems	4 weeks

Pre-requisite:

Second Grade Science

UNIT # 1**Overview****Content Area: Science****Unit Title: Force and Motion****Grade Level(s): 3**

Core Ideas: In this unit of study, students are able to determine the effects of balanced and unbalanced forces on the motion of an object. The crosscutting concepts of patterns and cause and effect are identified as organizing concepts for these disciplinary core ideas. In the third-grade performance expectations, students are expected to demonstrate grade-appropriate proficiency by planning and carrying out investigations. Students are expected to use these practices to demonstrate an understanding of the core ideas.

Standards (Content and Technology)**CPI#:****Statement:****Performance Expectations (NJSLs)**

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-PS2-1	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Career Readiness (9.2) Life Literacies, and Key Skills (standard 9.1, 9.4)

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

Computer Science and Design Thinking (standard 8)

8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
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Interdisciplinary Connection

RI.3.3	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 and effect.
W.3.8	Recall information from experiences or gather information from print and digital sources, take brief notes on sources and sort evidence into provided categories.
SL.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on <i>grade 3 topics and texts</i> , building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> A. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion. B. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. D. Explain their own ideas and understanding in light of the discussion.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail
MP.2	Reason abstractly and quantitatively
MP.5	Use appropriate tools strategically

Cross-cultural Statements/Mandates (*Amistad, Holocaust, LGBT/Disabilities, SEL, etc...*)

Amistad Mandate: References to this mandate are made by reading the book titled "Five Brilliant Scientists". This book highlights the lives of five African American scientists from the United States. After reading the book, the class will engage in a discussion about how anyone can be a scientist, regardless of their race or gender.

Unit Essential Question(s):

- What are the steps of the scientific method?
- What effect does a force have on the motion of an object?
- What effect do balanced forces have on the motion of an object?
- What effect do unbalanced forces have on the motion of an object?

Enduring Understandings/ Disciplinary Core Ideas:

- The scientific method can help guide a scientist in planning and executing an experiment to solve a problem
- When a force is applied to an object, several things may happen.

<ul style="list-style-type: none"> How can one predict an object's continued motion, changes in motion, or stability? <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4) <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> Science findings are based on recognizing patterns. (3-PS2-2) 	
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Evidence of Learning

Formative Assessments: Entitled: "Balanced and Unbalanced" "Types of Forces" "The Motion of an Object"

Exit tickets/ entrance tickets, teacher observations

Summative/Benchmark Assessment(s): [Force and Motion Test](#)

Alternative Assessments: verbal , labs, notebook work

Resources/Materials: Interactive websites, Doc Camera (ELMO), Smart Board, Google Classroom (Slides, Forms)

Key Vocabulary: force, motion, balanced, unbalanced, friction, gravity, push, pull, hypothesis experiment, conclusion, magnet

Suggested Pacing Guide

Lesson Name/Topic	Student Learning Objective(s)	Suggested Tasks/Activities:	Day(s) to Complete
Scientific Method Introduction	Students will be introduced to the scientific method and work through the process	<ul style="list-style-type: none"> Students will complete the K and W section of the KWL chart on the Scientific Method Students will read the passage called the Scientific Method and complete the foldable in their notebook Teacher will go over the steps of the scientific method through anchor charts in the classroom 	1
What is a scientist?	Students will explore what roles a scientist has	<ul style="list-style-type: none"> What is a scientist? Is there a process or procedure that a scientist goes through? Make a Claim/Ask a Question: How can we clean pennies? (students develop possible solutions- soap & water, vinegar, etc.) Hypothesis, Test/Experiment, Analyze Data/ Draw Conclusions 	1
Balanced versus unbalanced forces	Students will determine the difference between a balanced force and an unbalanced force	<ul style="list-style-type: none"> Students will record vocabulary in notebooks Students will notice the imbalance of power by playing Tug of war Students will record their findings based on the experiment Students will design a question and illustrate balanced and unbalanced forces Utilize this resource: Balanced vs. unbalanced forces slides 	3

What is force?	Students will determine what a force is and the effect a force can have on an object	Students will determine: <ul style="list-style-type: none"> • What is a force? • What effect does a force have on the motion of an object? • What effect does the weight or size of a ball have on its force • Note taking on key vocabulary terms discussed this unit Mystery science- force and motion	2
Sheep in a Jeep experiment	Students will understand that the height an object is at can impact the motion of that object	<ul style="list-style-type: none"> • Scientific Exploration- Sheep in a Jeep Scientists will design experiments using a selection of materials to determine how the height of the ramp will impact the motion of the car. • lab sheet sheep in a jeep • student copy sheep in a jeep • Scientists will add a variable to experiment to determine how friction will affect the motion and will record their data • Variables: size of car, weight of car, ramp design- high/low, composition of ramp, 	5
Changing Direction	Scientists will understand that they can change direction of an object.	<ul style="list-style-type: none"> • Students will watch several video clips on how the force of an object will change direction • Force & Direction Video • Another Force Video • Mystery Science: How Can You Go Faster Down a Slide? 	2
Assessment	-Students will demonstrate their knowledge of content covered in this unit: force, motion, friction, gravity, unbalanced force, balanced force	<ul style="list-style-type: none"> • Students will take an assessment showing what they know about force and motion • Force and Motion Assessment 	1

Teacher Notes:**Additional Resources:**

- [Force and Motion games](#)
- [Generation Genius- Gravity](#)
- [Student Interactive Techbook- Changing Speed](#)
- [Video on Force and Motion - 19 minutes](#)

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners
<ul style="list-style-type: none"> • Consult student IEP • Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions, and permit drawing, as an explanation • Accept participation at any level, even one word • Consult with Case Managers and follow IEP 	<ul style="list-style-type: none"> • Consult student ELL Plan • Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word
Gifted and Talented Students	Students at Risk
<ul style="list-style-type: none"> • Consult with G and T teacher • Provide extension activities 	<ul style="list-style-type: none"> • Consult with I &RS as needed • Provide extended time to complete tasks

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<ul style="list-style-type: none"> ● Build on students' intrinsic motivations ● Consult with parents to accommodate students' interests in completing tasks at their level of engagement 	<ul style="list-style-type: none"> ● Consult with Guidance Counselors and follow I&RS procedures/action plan ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary
<p>504 Students</p>	<p>Other:</p>
<ul style="list-style-type: none"> ● Consult 504 Plan and follow accommodations/modifications ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions ● Accept participation at any level 	

UNIT # 2**Overview****Content Area: Science****Unit Title: Electricity and Magnetism****Grade Level(s): 3**

Core Ideas: In this unit of study, students determine the effects of balanced and unbalanced forces on the motion of an object and the cause-and-effect relationships of electrical or magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concept of *cause and effect*, and the *interdependence of science, engineering, and technology*, and the *influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *asking questions and defining problems*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards (Content and Technology)**CPI#:****Statement:****Performance Expectations (NJSLs)**

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
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Career Readiness (9.2) Life Literacies, and Key Skills (standard 9.1, 9.4)

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.4.5.CI.4	Research the development process of a product and identify the role of failure as a part of the creative process

Computer Science and Design Thinking (standard 8)

8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

Interdisciplinary Connection

RI.3.1	Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RI.3.3	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 and effect.
W.3.8	Recall information from experiences or gather information from print and digital sources, take brief notes on sources and sort evidence into provided categories.
SL.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on <i>grade 3 topics and texts</i> , building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> E. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion. F. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). G. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. H. Explain their own ideas and understanding in light of the discussion.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail
MP.2	Reason abstractly and quantitatively
MP.5	Use appropriate tools strategically

Cross-cultural Statements/Mandates (*Amistad, Holocaust, LGBT/Disabilities, SEL, etc...*)

Amistad Mandate: References to this mandate are made by studying Warren Elliot Henry. He is an African American scientist who made contributions in the field of magnetism.

Unit Essential Question(s):

- How can one explain and predict interactions between objects and within systems of objects?

Enduring Understandings/ Disciplinary Core Ideas:

- Magnets produce a field of force called magnetism. This force allows the magnet to pull

<ul style="list-style-type: none"> • What underlying forces explain the variety of interactions observed? • What problems can be solved by applying scientific ideas about magnets? • What design problem can be solved using knowledge of magnets? <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> • 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>Crosscutting Concepts:</p> <ul style="list-style-type: none"> • Science investigations use a variety of methods, tools, and techniques. (3-PS2-1) 	<p>certain materials toward itself and pull/push other magnets away.</p> <ul style="list-style-type: none"> • Magnetism affects certain objects that are in its magnetic field. • Test variables to learn more about the functions of magnets. 		
Evidence of Learning			
<p>Formative Assessments: Entitled: Exit tickets/ entrance tickets, teacher observations</p>			
<p>Summative/Benchmark Assessment(s): Electricity and Magnetism Test</p>			
<p>Alternative Assessments: verbal , labs, notebook work</p>			
<p>Resources/Materials: Interactive websites, Doc Camera (ELMO), Smart Board, Google Classroom (Slides, Forms)</p>	<p>Key Vocabulary: Static electricity, proton, neutron, electron, atom, positive charge, negative charge, attract, repel, magnet, closed circuit, open circuit</p>		
Suggested Pacing Guide			
Lesson Name/Topic	Student Learning Objective(s)	Suggested Tasks/Activities:	Day(s) to Complete
Introduction to Static Electricity	Students will understand how static electricity works.	<p>Static Cling/ Electricity: Brainstorm with a partner where you have seen this in your life? What caused it? Electrons can be stored as static. I Went down a slide and got a shock. IN addition to electrons, atoms also have protons. Positive and negative attract</p> <p>Lesson Questions:</p> <ul style="list-style-type: none"> • What is static electricity? • When does a static charge build up on an object? • What happens when a static charge builds up on an object? • What is an example from nature of static electricity? • Discuss positive and negative charges and parts of an atom • Diagram of an atom (sample in additional resources) • Google Slides Presentation 	2
Create Static Electricity	Students will create static electricity through an experiment	<p>Questions to ask prior to experiment:</p> <ul style="list-style-type: none"> • When have you felt a shock?Why is it happening? • Make a hypothesis of what materials will make pepper dance • Start experiment using pepper, paper, and different wool materials • Record results of what material picks up the pepper most • Day 2: Continue experiment with 	2

		<p>other materials (use feet on carpet and newspaper rubbings)</p> <ul style="list-style-type: none"> • Watch DE video 	
Mystery Bags Investigation	Students will test several different materials with a magnet to decipher what is magnetic material versus what is not.	<p>Investigation- Mystery Bags Magnets interact with other objects</p> <ul style="list-style-type: none"> • Utilize scientific method during experiment • Question- What objects are magnetic? Hypothesis- Determine if the object will stick or not. Conduct Experiment Draw Conclusions- Why did certain objects stick together? What objects are magnetic? Why does it stick to certain things? 	1
Identify and Solve a Problem with Magnets	Students will identify a problem that can be solved using scientific ideas about magnets	<ul style="list-style-type: none"> • Problem: Kitchen cabinet door will not stay closed • Brainstorm: think of possible solutions for the posed problem • Questions we can ask: • How can we use our understanding about magnets to solve the given problem? What may keep the kitchen door shut? How can we use magnets to resolve the issue? • Resource to utilize 	1
Forms of Electrical Energy	Students will understand that electrical energy can be transferred into different forms	<ul style="list-style-type: none"> • Explain that electrical energy can be transformed into light, heat, sound, and motion • Generation Genius- Energy Transfer 	1
Create your own circuit	Students will create a closed circuit to produce electricity using a battery	<ul style="list-style-type: none"> • Students will build a simple electromagnet by wrapping an iron nail with wire and attaching it to a battery • Test variables to learn more about the function of the electromagnet (more wraps will create a stronger magnet) 	2
Assessment	Students will demonstrate their knowledge of content covered in this unit: static electricity, magnets, circuits, atoms	Electricity and Magnetism Test	1

Teacher Notes:**Additional Resources:**

- [How Static Electricity Works](#)- video, [Current Electricity Flocabulary](#), [Electrical Charges Worksheet](#), [Diagram of an atom sample](#), [Bill Nye Static Electricity](#), [Magnet attraction sheet](#), [Conductor or Insulator](#)

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners
<ul style="list-style-type: none"> • Consult student IEP • Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions, and permit drawing, as an explanation • Accept participation at any level, even one word • Consult with Case Managers and follow IEP 	<ul style="list-style-type: none"> • Consult student ELL Plan • Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word

Gifted and Talented Students	Students at Risk
<ul style="list-style-type: none"> ● Consult with G and T teacher ● Provide extension activities ● Build on students' intrinsic motivations ● Consult with parents to accommodate students' interests in completing tasks at their level of engagement 	<ul style="list-style-type: none"> ● Consult with I &RS as needed ● Provide extended time to complete tasks ● Consult with Guidance Counselors and follow I&RS procedures/action plan ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary
504 Students	Other:
<ul style="list-style-type: none"> ● Consult 504 Plan and follow accommodations/modifications ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions ● Accept participation at any level 	

UNIT # 3**Overview****Content Area: Science****Unit Title: Weather and Climate****Grade Level(s): 3**

Core Ideas: In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. The crosscutting concepts of patterns, cause and effect, and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in asking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards (Content and Technology)**CPI#:****Statement:****Performance Expectations (NJSLs)**

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.
3-ESS3-1	Make a claim about the merit of a design solution that reduces the impacts of climate change and/or a weather-related hazard.

Career Readiness (9.2) Life Literacies, and Key Skills (standard 9.1, 9.4)

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.4.5.CI.1:	Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions

Computer Science and Design Thinking (standard 8)

8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
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Interdisciplinary Connection

RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for answers
W.3.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
W.3.8	Recall information from experiences or gather information from print and digital sources, take brief notes on sources and sort evidence into provided categories.
SL.3.4	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.
MP.2	Reason abstractly and quantitatively
MP.5	Use appropriate tools strategically

Cross-cultural Statements/Mandates (Amistad, Holocaust, LGBT/Disabilities, SEL, etc...)

Amistad Mandate: References to this mandate are made by reading the book titled “The Meteorologist in Me.” This book highlights the importance of following your dreams regardless of your race and background. This young African American girl gains the courage to conquer her fears and doubts in herself and inspires others to follow their dreams.

Standards in Action: Climate change

Unit Essential Question(s):

- Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter?
- How can climates in different regions of the world be described?
- How can we create a design solution that will reduce the impact of climate change or weather related hazard?
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Science and Engineering Practices:**Enduring Understandings/Disciplinary Core Ideas:**

- Patterns of change can be used to make predictions.
- People record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.
- Climate describes the range of an area’s typical weather conditions and the extent to which those conditions vary over years.

<ul style="list-style-type: none"> Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1) <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> Patterns of change can be used to make predictions. (3-ESS2-1), (3-ESS2-2) 	
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Evidence of Learning

Formative Assessments: Entitled: Exit tickets/ entrance tickets, teacher observations

Summative/Benchmark Assessment(s): [Weather Assessment](#)

Alternative Assessments: verbal , labs, notebook work

Resources/Materials: Interactive websites, Doc Camera (ELMO), Smart Board, Google Classroom (Slides, Forms)

Key Vocabulary: weather, climate, precipitation, thermometer, barometer, rain gauge, anemometer, wind vane, humidity, air pressure, hurricane, blizzard, tornado, drought, thunderstorm

Suggested Pacing Guide

Lesson Name/Topic	Student Learning Objective(s)	Suggested Tasks/Activities:	Day(s) to Complete
Exploring Weather	Students will determine what weather is and understand what a meteorologist does in regards to determining the forecast of weather	<ul style="list-style-type: none"> What is Weather? Watch an example of a forecast. Questions to discuss: What do we know about weather? How is it measured? <i>Who studies it? What types of weather are there?- rain, snow,</i> 	2
Weather Report	Students will observe weather patterns over the course of a week and analyze and observe weather patterns	<ul style="list-style-type: none"> Each day students will observe the weather and complete a scientific drawing of the weather they observe. Split the notebook page into 4 boxes. At the top of each page put the day of the week and the date Look outside your window. What is the weather like today? Sunny, Windy, Cloudy, Rainy? Make a sketch of the weather. Look up the temperature using the internet 	5 (ongoing)
Weather Tools and Vocabulary	Students will understand that there are different tools used to measure different types of weather (Anemometer, barometer, wind vane, rain gauge and thermometer).	<ul style="list-style-type: none"> <i>What tools are used to measure weather?</i> <i>Review the types of weather tools meteorologists (use notes below)</i> Weather Slideshow Weather Instruments 	1
Thermometer Exploration	Students will research information on thermometers, gain knowledge about how they work, then create their own thermometers and record their observations	<ul style="list-style-type: none"> Reading a Thermometer- <i>nearpod to be completed on chromebooks</i> <i>Questions to ask:</i> What will happen when it is warm? (liquid will expand and rise to top-- just like a real thermometer) What will happen when it is cold? (liquid will not expand and will go down) Additional video showing thermometer project Thermometer directions 	2
Humidity Exploration	Students will learn through discussion what humidity is and make connections to their own lives by thinking about	<ul style="list-style-type: none"> Teacher will explain: humidity is the amount of water vapor or moisture in the air. If the air is more humid, it has 	2

	<p>what the humidity is like where they live</p> <p>Students will then participate in a teacher led experiment to determine humidity</p>	<p>more water vapor. If the air is less humid, it has less water vapor.</p> <ul style="list-style-type: none"> ● Teacher and Students will discuss: the seasons in Midland Park and their humidity <p>Activity(materials: bowl of water, a plate with a sponge, and a pipette)</p> <ul style="list-style-type: none"> ● 1.. Before the experiment, have the students squeeze the sponges to see that there is no water in them. Ask the students questions then have students make predictions in their science journals about what will happen when they add water to the sponge. ● 2. Have students take turns taking pipettes of water and dropping them onto the sponge. ● Students will record how many pipettes full it takes until the sponge is “saturated” 	
Anemometer and Wind Vane Project	Students will create a wind vane to measure the direction of wind and how fast wind moves	<ul style="list-style-type: none"> ● Create a wind vane to observe how fast the wind moves and in what directions the wind moves ● Wind vane - measures direction of wind ● Anemometer - measures wind speed (high tech ones can measure temperature) ● <u>Wind vane directions</u> - This project will be used as a wind vane and an anemometer 	2
Weather Tool Review	Students will create a flipbook to reinforce what students learned about the weather tools	<ul style="list-style-type: none"> ● Weather flipbook ● Use the information learned in the unit to fill out each section of the flipbook 	2
Storm Research Project	Students will work with partners to research one of the major storms and generate a report on their findings.	<ul style="list-style-type: none"> ● Explain Extreme Weather Project ● Reports will include: what the storm is, where they occur, the damage and ways to keep safe 	3
What is Climate?		<ul style="list-style-type: none"> ● 3 types of climate: Polar, Temperate, Tropical ● Color the climate zones ● Climate Zone for Kids Key ● Climate for Kids - Types of Climate ● Climates Worksheet ● A Walk in the Arctic for Kids Educational Video for Early Learners <p>Climate Zones for Kids Learn about the 3 Main Climate Zones of the Earth</p>	2
Weather vs. Climate Trifold	Students will compare and contrast the similarities and differences between weather and climate at a specific location	<ul style="list-style-type: none"> ● Day 1: Teach into what causes climate change utilizing the following website ● Day 2-4:Research the definition of weather, climate and climate change 	3

		<ul style="list-style-type: none"> ● Research a specific place and find the weather and climate of that particular area ● Research how climate change has affected your assigned region ● Document findings on poster board ● Possible research sites: What is Weather, Weather vs. Climate 	
Assessment	-Students will demonstrate their knowledge of content covered in this unit: weather conditions, how to measure weather, types of extreme weather	<ul style="list-style-type: none"> ● Students will demonstrate their knowledge of this unit ● Weather and Climate Assessment 	1

Teacher Notes:

Additional Resources:

- [Weather Slideshow](#) & [Answer Key](#), [Weather forecast video](#), [Complete KWL chart on jamboard](#), [Weather Brainpop](#), [Weather forecasting site](#), [Interactive weather slides](#), [Humidity Brainpop](#), [Climate Change Brainpop](#) & [Climate Zones Brainpop](#)

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners
<ul style="list-style-type: none"> ● Consult student IEP ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions, and permit drawing, as an explanation ● Accept participation at any level, even one word ● Consult with Case Managers and follow IEP 	<ul style="list-style-type: none"> ● Consult student ELL Plan ● Assign a buddy, same language or English speaking ● Allow errors in speaking ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions ● Accept participation at any level, even one word
Gifted and Talented Students	Students at Risk
<ul style="list-style-type: none"> ● Consult with G and T teacher ● Provide extension activities ● Build on students' intrinsic motivations ● Consult with parents to accommodate students' interests in completing tasks at their level of engagement 	<ul style="list-style-type: none"> ● Consult with I &RS as needed ● Provide extended time to complete tasks ● Consult with Guidance Counselors and follow I&RS procedures/action plan ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary
504 Students	Other:
<ul style="list-style-type: none"> ● Consult 504 Plan and follow accommodations/modifications ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions ● Accept participation at any level 	

UNIT # 4**Overview****Content Area: Science****Unit Title: Traits and Life Cycles****Grade Level(s): 3**

Core Ideas: In this unit of study, students acquire an understanding that organisms have different inherited traits and that the environment can also affect the traits that an organism develops. In addition to understanding their traits, they understand their life cycles and their similarities and differences. Students demonstrate grade-appropriate proficiency in developing and using models and constructing explanations and designing solutions. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards (Content and Technology)**CPI#:****Statement:****Performance Expectations (NJSL)**

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.
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3-LS3-2	Use evidence to support the explanation that traits can be influenced by the environment
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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.
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Career Readiness (9.2) Life Literacies, and Key Skills (standard 9.1, 9.4)

9.2.5.CAP.1	Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
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9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).
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Computer Science and Design Thinking (standard 8)

8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
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Interdisciplinary Connection

RI.3.3	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 and effect.
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W.3.7	Conduct short research projects that build knowledge about a topic.
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W.3.8	Recall information from experiences or gather information from print and digital sources, take brief notes on sources and sort evidence into provided categories.
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SL.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on <i>grade 3 topics and texts</i> , building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> I. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion. J. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). K. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. L. Explain their own ideas and understanding in light of the discussion.
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SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail
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MP.2	Reason abstractly and quantitatively
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MP.5	Use appropriate tools strategically
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Cross-cultural Statements/Mandates (Amistad, Holocaust, LGBT/Disabilities, SEL, etc...)

The LGBT/Disabilities mandate: References to this mandate are made by reading the book titled: Hi My Name is Avery: The Beauty of Down Syndrome in the Classroom written by Nicole Juarez. This book highlights the physical traits of a child with down syndrome. Students will discuss the common acquired traits for someone who has this disability.

Unit Essential Question(s):

- What kinds of traits are passed on from parent to offspring?
- What environmental factors might influence the traits of a specific organism?
- How do organisms live, grow, respond to their environment, and reproduce?

Enduring Understandings/Disciplinary Core Ideas:

- Organisms inherit some behaviors from their parents. Other behaviors are learned over time.
- Although there are many ways that plants can reproduce, their overall life cycles are all the same.
- It is through this continual process of growing and reproducing that plant species survive.

<ul style="list-style-type: none"> • How do organisms live, grow, respond to their environment and reproduce? • What are the stages of the life cycle of a plant and animal? • How do some animals change in appearance throughout their life cycle? • How do different organisms reproduce? <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> • Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1) <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> • Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2) 	<ul style="list-style-type: none"> • All living organisms have a life cycle.
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Evidence of Learning

Formative Assessments: Entitled: Exit tickets/ entrance tickets, teacher observations

Summative/Benchmark Assessment(s): Traits and plant/animal life cycle summative assessment

Alternative Assessments: verbal , labs, notebook work

Resources/Materials: Interactive websites, Doc Camera (ELMO), Smart Board, Google Classroom (Slides, Forms)

Key Vocabulary: trait, inherit, organism, offspring, characteristic, life cycle, environment, metamorphosis

Suggested Pacing Guide

Lesson Name/Topic	Student Learning Objective(s)	Suggested Tasks/Activities:	Day(s) to Complete
Butterfly and Tadpole Observations	Students will be able to make observations and record findings in their observation journal	<ul style="list-style-type: none"> • Utilize Tadpole and Butterfly observation journal to observe animals and document changes from week to week 	ongoing
Learned vs. inherited traits intro	Students will be able to review vocabulary and determine the difference between inherited versus acquired traits	<ul style="list-style-type: none"> • Use Google Slide project to review vocabulary and determine difference between inherited and acquired. 	2
Activity determining inherited vs. acquired traits	Students will participate in an activity where they have to determine whether a trait is inherited or acquired based on images shown.	<ul style="list-style-type: none"> • Use google slide project to present photos that require differentiating between inherited and acquired traits • Inherited vs acquired traits slides • Inherited vs Acquired traits sort-additional activity 	1
Inventory of traits	Students will be able to determine inherited traits that they may have acquired from their parents genes	<ul style="list-style-type: none"> • Students will participate in a bingo activity where they will have to determine which pictures relate to traits that are acquired versus which are inherited • Utilize: Slides 4 and 7- Traits “Bingo” 	1
Traits Quiz	Students will show what they know by determining the difference between inherited versus acquired traits	<ul style="list-style-type: none"> • Students will show what they know by taking the formative assessment on traits • Traits Quiz 	1
Introduction to animal life cycles	Students will determine what they already know versus what they want to learn about various animal life cycles	<ul style="list-style-type: none"> • Create a KWL Chart as a class • Class has a discussion on what a cycle is (discussion on how a cycle is a sequence of events in a repeated pattern) 	1

		<ul style="list-style-type: none"> ● Introduce key vocabulary: metamorphosis, offspring, egg, life cycle ● Utilize google slide presentation 	
Animal life cycle exploration	Students will be able to determine the stages of an animals life cycle and understanding the key vocabulary relating to each animal	<ul style="list-style-type: none"> ● Day 1: Butterflies and ladybugs ● Day 2: White Tailed Deer (discussion on how this animal doesn't go through metamorphosis) ● Day 3: Frog ● Teacher will utilize short clips and various read alouds to discuss key vocabulary surrounding each life cycle 	3
Animal Research Project	Students will be able to research and gather information on an animal's life cycle, habitat, traits, and diet.	<ul style="list-style-type: none"> ● Pick animal that has the same letter as your first name ● What is their life cycle like? How are they similar to their parents? ● What is their environment like? ● How have they adapted to their environment? (i.e. polar bears have white fur to help them camouflage themselves) ● What do they eat/who are their predators? ● What are their inherited and non-inherited traits ● Graphic Organizer 	5
Animal Project Presentations	Students will show all that they have learned through presenting their project to classmates	<ul style="list-style-type: none"> ● Students will record notes in science notebooks on the animals presented by classmates 	2
Introduction to plant life cycles	Students will determine what they already know versus what they want to learn about plant life cycles	<ul style="list-style-type: none"> ● Create a KWL Chart as a class ● Class has a discussion on how the plant life cycle relates to animal life cycles ● Watch Plant Life Cycle Brainpop ● Introduce key vocabulary: leaf, root, seed, flower, fern, pollinate, trunk, reproduce ● Pick one story from the online library explaining the plant life cycle 	1
Discover Parts of a Plant	Students will determine the different parts of a plant and their functions	<ul style="list-style-type: none"> ● Watch the Flocabulary video on parts of a plant ● Pause video to stop and take notes on the plant life cycle terminology ● Complete The Life Cycle of a Plant Worksheet 	1
Plant Experiment	Students will understand how a plant grows and changes throughout the life cycle	<ul style="list-style-type: none"> ● Students will brainstorm the best conditions for a growing plant to survive including: location, amount of water, amount of soil ● Students will plant seeds (marigolds) into ice cream cones with soil ● Students will record their day one data on the flower 	1

Plant Observations	Students will be able to make observations and record findings in their observation journal	<ul style="list-style-type: none"> Utilize plant observation journal to observe growing plants and document changes from week to week 	ongoing
Assessment	Students will demonstrate their knowledge of content covered in this unit referring to traits and the plant and animal life cycles	<ul style="list-style-type: none"> Students will demonstrate their knowledge of this unit by completing the summative assessment 	1

Teacher Notes:**Additional Resources:**

- [Life Cycles - Flocabulary](#), [Parts of a Plant - Flocabulary](#), [Plant Growth Brainpop](#), [Plant Life Cycle Brainpop](#), Research Sites for Animal Project: [Animals A-Z](#), [Amazing Animals](#), [Habitats](#)

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners
<ul style="list-style-type: none"> Consult student IEP Allow errors Rephrase questions, directions, and explanations Allow extended time to answer questions, and permit drawing, as an explanation Accept participation at any level, even one word Consult with Case Managers and follow IEP 	<ul style="list-style-type: none"> Consult student ELL Plan Assign a buddy, same language or English speaking Allow errors in speaking Rephrase questions, directions, and explanations Allow extended time to answer questions Accept participation at any level, even one word
Gifted and Talented Students	Students at Risk
<ul style="list-style-type: none"> Consult with G and T teacher Provide extension activities Build on students' intrinsic motivations Consult with parents to accommodate students' interests in completing tasks at their level of engagement 	<ul style="list-style-type: none"> Consult with I & RS as needed Provide extended time to complete tasks Consult with Guidance Counselors and follow I&RS procedures/action plan Consult with classroom teacher(s) for specific behavior interventions Provide rewards as necessary
504 Students	Other:
<ul style="list-style-type: none"> Consult 504 Plan and follow accommodations/modifications Allow errors Rephrase questions, directions, and explanations Allow extended time to answer questions Accept participation at any level 	

UNIT # 5**Overview****Content Area: Science****Unit Title: Organisms/Ecosystems and the Environment****Grade Level(s): 3**

Core Ideas: In this unit of study, students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. In addition, students will analyze the habitats that are conducive to life for organisms and which habitats are not. They will use data from fossils to collect information on the environment in which organisms lived. Students can then compare how this is similar to and different from environments today.

Standards (Content and Technology)**CPI#:****Statement:****Performance Expectations (NJSL)**

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 environment in which they lived long ago
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-LS4-3	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-LS4-4	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

Career Readiness (9.2) Life Literacies, and Key Skills (standard 9.1, 9.4)

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.2.5.CAP.1	Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).

Computer Science and Design Thinking (standard 8)

8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
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Interdisciplinary Connection

RI.3.3	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 and effect.
W.3.2	Write informative/explanatory texts to examine a topic or convey ideas and information clearly
W.3.8	Recall information from experiences or gather information from print and digital sources, take brief notes on sources and sort evidence into provided categories.
SL.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on <i>grade 3 topics and texts</i> , building on others' ideas and expressing their own clearly. <ul style="list-style-type: none"> M. Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion. N. Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). O. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. P. Explain their own ideas and understanding in light of the discussion.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail
SL.3.4	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
MP.2	Reason abstractly and quantitatively

Cross-cultural Statements/Mandates (Amistad, Holocaust, LGBT/Disabilities, SEL, etc...)

Amistad Mandate: References to this mandate are made by researching African American Paleontologists. Class has a discussion on the importance of following your dreams regardless of your race and background. These African American paleontologists pursued their career regardless of the color of their skin. [Link](#) to website utilized.

Unit Essential Question(s):

- What are the needs of plants and animals?
- How do some organisms survive better in a habitat than others?
- What can fossils tell us about environments from long ago?
- How does an animal's behavior help it to survive in its habitat?
- What is an ecosystem?
- What influence do humans have on ecosystems?

Science and Engineering Practices:

- Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3)

Crosscutting Concepts:

- Science findings are based on recognizing patterns. (3-LS1-1)

Enduring Understandings/ Disciplinary Core Ideas:

- Each living thing has different needs in order to survive.
- Fossils gave us data to understand environments from long ago.
- An animal's behavior determines how it will survive in its habitat.
- An ecosystem is a community of living things.

Evidence of Learning

Formative Assessments: Entitled: Exit tickets/ entrance tickets, teacher observations

Summative/Benchmark Assessment(s): Brochure

Alternative Assessments: verbal , labs, notebook work

Resources/Materials: Interactive websites, Doc Camera (ELMO), Smart Board, Google Classroom (Slides, Forms)

Key Vocabulary: habitat, organism, survival, ecosystem, characteristic, fossil, paleontologist, variation, population, community

Suggested Pacing Guide

Lesson Name/Topic	Student Learning Objective(s)	Suggested Tasks/Activities:	Day(s) to Complete
Needs	Students will determine the needs of plants and animals.	<ul style="list-style-type: none"> • Habitats booklet • Use formative assessment “water habitat” and “desert plants” to guide instruction. 	1
Survival in a habitat	Students will determine how some organisms are better able to survive in a habitat than others.	<ul style="list-style-type: none"> • Students will identify different characteristics needed to survive in their habitats • Read article as a class or with a partner: “Where Do I Live?” article 	1
Fossil Investigation	Students will interpret data from fossils to understand the environments in which they lived long ago.	<ul style="list-style-type: none"> • Mystery Science Lesson (Where can you find whales in a desert?)- Students will understand that fossils reveal changes in a habitat over time 	2
Behavior	Students will discover how an animal's structure or behavior help it to survive in its habitat	<ul style="list-style-type: none"> • In partnerships students will study an animal that lives in a group. They will determine why that particular animal survives better living in a group versus on their own • Students will present information to their peers 	2

		<ul style="list-style-type: none"> Students will take notes on other groups during presentations 	
Survival Project	Students will research variations in characteristics of animals based on their habitat	<ul style="list-style-type: none"> As a class determine characteristics of the Tawny Owl and compare characteristics of potential environments they could live in figuring out how they adapted to where they live Students choose an animal to research and determine what characteristics are needed for survival 	3
Survival Project Presentations	Students will present their plans to the class.	<ul style="list-style-type: none"> Students will present their research done to the class Students will take notes during presentation 	2
What is an Ecosystem	Students will understand that an ecosystem is a community of living things	<ul style="list-style-type: none"> Discuss slides Definition of ecosystem and examples Activity: Each group will be given one ecosystem to observe and determine the living and nonliving things in that particular ecosystem Students will share out with the class 	2
Human Influences	Students will learn how humans can create short term changes on an ecosystem	<ul style="list-style-type: none"> Mystery Science lesson (What's the Best Way to Get Rid of Mosquitos?)- students will develop a solution for an increase in mosquito population caused by a rainy season 	2
Brochure	Students create a brochure for a national park or other ecologically sensitive area that explains to visitors what they can do to protect the environment and thus the populations within it, and why those conservation measures are important.	<ul style="list-style-type: none"> Students will choose a national park and research the ecosystems that are in the park They will then determine ways humans can protect the organisms that live there Students will create a brochure providing an action plan promoting the conservation of the ecosystems in the park During presentations, students will take notes on their classmates' projects 	5

Teacher Notes:**Additional Resources:**

- [Ecosystems brainpop](#), [Mystery Science Unit](#), [Supplemental resource for ecosystems unit](#)

Differentiation/Modification Strategies**Students with Disabilities**

- Consult student IEP
- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP

English Language Learners

- Consult student ELL Plan
- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word

Gifted and Talented Students	Students at Risk
<ul style="list-style-type: none"> ● Consult with G and T teacher ● Provide extension activities ● Build on students' intrinsic motivations ● Consult with parents to accommodate students' interests in completing tasks at their level of engagement 	<ul style="list-style-type: none"> ● Consult with I &RS as needed ● Provide extended time to complete tasks ● Consult with Guidance Counselors and follow I&RS procedures/action plan ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary
504 Students	Other:
<ul style="list-style-type: none"> ● Consult 504 Plan and follow accommodations/modifications ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions ● Accept participation at any level 	