

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Curriculum Design

Content Area: Science

Course Title: General Science

Grade Level: 4

Living Things

4 weeks

Plants

4 weeks

Animal Characteristics

4 weeks

Organ Systems

4 weeks

Rocks

4 weeks

Earth's Interior and Surface

4 weeks

Water and Weather

4 weeks

The Solar System

4 weeks

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Matter	4 weeks
Energy	4 weeks
Date Created: July 2011	
Board Approved on: August 25, 2011	

Unit 1 Overview

Content Area: Life Science

Unit 1 Title: Living Things

Grade Level: 4

Unit Summary

Food is required for energy and building cellular materials. Organisms in an ecosystem have different ways of obtaining food, and some organisms obtain their food directly from other organisms. All animals and most plants depend on both other organisms and their environment to meet their basic needs. Organisms reproduce, develop, and have predictable life cycles.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.3 Life Science: All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Living organisms:
 - Interact with and cause changes in their environment.
 - Exchange materials (such as gases, nutrients, water, and waste) with the environment.
 - Reproduce.
 - Grow and develop in a predictable manner.
- Organisms can only survive in environments in which their needs are met. Within ecosystems, organisms interact with and are dependent on their physical and living environment.
- Some changes in ecosystems occur slowly, while others occur rapidly. Changes can affect life forms, including humans.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

<ul style="list-style-type: none"> Plants and animals have life cycles (they begin life, develop into adults, reproduce, and eventually die). The characteristics of each stage of life vary by species. 			
CPI #	Cumulative Progress Indicator (CPI)		
5.3.4.A.1	Develop and use evidence-based criteria to determine if an unfamiliar object is living or nonliving.		
5.3.4.C.1	Predict the biotic and abiotic characteristics of an unfamiliar organism’s habitat.		
5.3.4.C.2	Explain the consequences of rapid ecosystem change (e.g., flooding, wind storms, snowfall, volcanic eruptions), and compare them to consequences of gradual ecosystem change (e.g., gradual increase or decrease in daily temperatures, change in yearly rainfall).		
5.3.4.D.1	Compare the physical characteristics of the different stages of the life cycle of an individual organism, and compare the characteristics of life stages among species.		
<table border="1"> <tr> <td> <p>Unit Essential Questions</p> <ul style="list-style-type: none"> How do organisms change as they go through their life cycle? In what ways are organisms of the same kind different from each other? How does this help them reproduce and survive? What do all living things have in common? How do living things depend on one another for survival? In what ways do organisms interact within ecosystems? </td> <td> <p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> Organisms reproduce, develop, have predictable life cycles, and pass on some traits to their offspring. Sometimes differences between organisms of the same kind give advantages in surviving and reproducing in different environments. Living organisms have a variety of observable features that enable them to obtain food and reproduce. All organisms depend on one another in a food chain. All animals and most plants depend on both other organisms and their environments for their basic needs. </td> </tr> </table>		<p>Unit Essential Questions</p> <ul style="list-style-type: none"> How do organisms change as they go through their life cycle? In what ways are organisms of the same kind different from each other? How does this help them reproduce and survive? What do all living things have in common? How do living things depend on one another for survival? In what ways do organisms interact within ecosystems? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> Organisms reproduce, develop, have predictable life cycles, and pass on some traits to their offspring. Sometimes differences between organisms of the same kind give advantages in surviving and reproducing in different environments. Living organisms have a variety of observable features that enable them to obtain food and reproduce. All organisms depend on one another in a food chain. All animals and most plants depend on both other organisms and their environments for their basic needs.
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> How do organisms change as they go through their life cycle? In what ways are organisms of the same kind different from each other? How does this help them reproduce and survive? What do all living things have in common? How do living things depend on one another for survival? In what ways do organisms interact within ecosystems? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> Organisms reproduce, develop, have predictable life cycles, and pass on some traits to their offspring. Sometimes differences between organisms of the same kind give advantages in surviving and reproducing in different environments. Living organisms have a variety of observable features that enable them to obtain food and reproduce. All organisms depend on one another in a food chain. All animals and most plants depend on both other organisms and their environments for their basic needs. 		
<p>Unit Vocabulary</p> <table border="1"> <tr> <td> <ul style="list-style-type: none"> Cells Tissues Organ System </td> <td> <ul style="list-style-type: none"> Habitat Food chain Producer Consumer Pollution </td> </tr> </table>		<ul style="list-style-type: none"> Cells Tissues Organ System 	<ul style="list-style-type: none"> Habitat Food chain Producer Consumer Pollution
<ul style="list-style-type: none"> Cells Tissues Organ System 	<ul style="list-style-type: none"> Habitat Food chain Producer Consumer Pollution 		
Evidence of Learning			
<p>Suggested Summative Assessment</p> <ul style="list-style-type: none"> NJ ASK 4 Unit exam 			

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Formative Assessments

- www.njcccs.org Classroom Application Docs
- Hands-on activities
- Chapter tests
- Performance assessments
- Quizzes
- Lab reports

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit 2 Overview

Content Area: Life Science

Unit 2 Title: Plants

Grade Level: 4

Unit Summary

Plants obtain energy needed for growth and reproduction from the Earth’s materials and the Sun.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.3 Life Science: All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Almost all energy (food) and matter can be traced to the Sun.
- Plants and animals have life cycles (they begin life, develop into adults, reproduce, and eventually die). The characteristics of each stage of life vary by species.

CPI #	Cumulative Progress Indicator (CPI)
5.3.4.B.1	Identify sources of energy (food) in a variety of settings (farm, zoo, ocean, forest).
5.3.4.D.1	Compare the physical characteristics of the different stages of the life cycle of an individual organism, and compare the characteristics of life stages among species.

Unit Essential Questions

- How do plants grow and reproduce?
- How do plants obtain food and energy?

Unit Enduring Understandings

- Plants grow and reproduce in predictable cycles.
- Plants obtain energy from the Sun and from the Earth’s minerals.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit Vocabulary

- Roots
- Chlorophyll
- Photosynthesis
- Respiration
- Germination
- Pollination
- Fertilization

Evidence of Learning

Suggested Summative Assessment

- NJ ASK 4
- Unit exam

Formative Assessments

- www.njcccs.org Classroom Application Docs
- Hands-on activities
- Chapter tests
- Performance assessments
- Quizzes
- Lab reports

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit 3 Overview	
Content Area: Life Science	
Unit 3 Title: Animal Characteristics	
Grade Level: 4	
<p>Unit Summary Animals share many characteristics. Animals can be identified and classified based on their characteristics.</p> <p>Primary interdisciplinary connections: Language Arts, Mathematics</p> <p>21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.</p>	
Learning Targets	
<p>Standards: 5.3 Life Science: All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.</p> <p>5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.</p>	
<p>Content Statements</p> <ul style="list-style-type: none"> Plants and animals have life cycles (they begin life, develop into adults, reproduce, and eventually die). The characteristics of each stage of life vary by species. 	
CPI #	Cumulative Progress Indicator (CPI)
5.3.4.D.1	Compare the physical characteristics of the different stages of the life cycle of an individual organism, and compare the characteristics of life stages among species.
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> What characteristics do different types of living things have in common? What characteristics of living things are different? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> Animals have different characteristics. We can classify and sort animals based on these characteristics.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit Vocabulary

- Vertebrate
- Invertebrate
- Cold blooded
- Warm blooded
- Fish
- Amphibians
- Reptiles
- Birds
- Mammals

Evidence of Learning

Suggested Summative Assessment

- NJ ASK 4
- Unit exam

Formative Assessments

- www.njcccs.org Classroom Application Docs
- Hands-on activities
- Chapter tests
- Performance assessments
- Quizzes
- Lab reports

Unit 4 Overview

Content Area: Life Science

Unit 4 Title: Organ Systems - Nervous/Skeletal/Muscular Systems

Grade Level: 4

Unit Summary

Living organisms are composed of systems which carry out various functions needed for survival, growth, and reproduction.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.3 Life Science: All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Essential functions of the human body are carried out by specialized systems:
 - Digestive
 - Circulatory
 - Respiratory
 - Nervous
 - Skeletal
 - Muscular
 - Reproductive
- Living organisms interact with and cause changes in their environment; exchange materials with the environment; reproduce; grow and develop in a predictable manner.
- Essential functions required for the well-being of an organism are carried out by specialized structures in plants and animals.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

CPI #	Cumulative Progress Indicator (CPI)		
5.3.4.A.3	Describe the interactions of systems involved in carrying out everyday life activities.		
5.3.4.A.1	Develop and use evidence-based criteria to determine if an unfamiliar object is living or nonliving.		
5.3.4.A.2	Compare and contrast structures that have similar functions in various organisms, and explain how those functions may be carried out by structures that have different physical appearances.		
5.3.4.A.3	Describe the interactions of systems involved in carrying out everyday life activities.		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;"> <p>Unit Essential Questions</p> <ul style="list-style-type: none"> • What do all living things have in common? • How do systems function in different types of organisms? </td> <td style="width:50%; vertical-align: top;"> <p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> • Living organisms interact with the environment and exchange materials with the environment. • Systems interact with one another to function. </td> </tr> </table>		<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • What do all living things have in common? • How do systems function in different types of organisms? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> • Living organisms interact with the environment and exchange materials with the environment. • Systems interact with one another to function.
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • What do all living things have in common? • How do systems function in different types of organisms? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> • Living organisms interact with the environment and exchange materials with the environment. • Systems interact with one another to function. 		
<p>Unit Vocabulary</p> <table border="0" style="width:100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Circulatory • Respiratory • Excretory • Digestive • Nervous • Skeletal • Muscular </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Metamorphosis • Heredity • Camouflage • Adaptation • Mimicry • Instinct </td> </tr> </table>		<ul style="list-style-type: none"> • Circulatory • Respiratory • Excretory • Digestive • Nervous • Skeletal • Muscular 	<ul style="list-style-type: none"> • Metamorphosis • Heredity • Camouflage • Adaptation • Mimicry • Instinct
<ul style="list-style-type: none"> • Circulatory • Respiratory • Excretory • Digestive • Nervous • Skeletal • Muscular 	<ul style="list-style-type: none"> • Metamorphosis • Heredity • Camouflage • Adaptation • Mimicry • Instinct 		
Evidence of Learning			
<p>Suggested Summative Assessment</p> <ul style="list-style-type: none"> • NJ ASK 4 • Unit exam 			
<p>Formative Assessments</p> <table border="0" style="width:100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports </td> </tr> </table>		<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports
<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports 		

Unit 5 Overview

Content Area: Earth Science

Unit 5 Title: Rocks

Grade Level: 4

Unit Summary

The Earth is made up of rocks. These rocks come in many forms and change over time due to the forces of nature. Rocks known as fossils can give us insight into the Earth’s past.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Fossils provide evidence about the plants and animals that lived long ago, including whether they lived on the land or in the sea as well as ways species changed over time.
- Rocks can be broken down to make soil.
- Earth materials in nature include rocks, minerals, soils, water, and the gases of the atmosphere. Attributes of rocks and minerals assist in their identification.
- Rocks and rock formations contain evidence that tell a story about their past. The story is dependent on the minerals, materials, tectonic conditions, and erosion forces that created them.

CPI #	Cumulative Progress Indicator (CPI)
5.4.4.B.1	Use data gathered from observations of fossils to argue whether a given fossil is terrestrial or marine in origin.
5.4.4.C.1	Create a model to represent how soil is formed.
5.4.4.C.2	Categorize unknown samples as either rocks or minerals.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit Essential Questions <ul style="list-style-type: none">• How do geologic events occurring today provide insight into Earth’s past?• How do Earth Systems interact to create soil?• What attributes help us to know what kind of a rock we are looking at?	Unit Enduring Understandings <ul style="list-style-type: none">• Earth’s components form systems. These systems continually interact at different rates of time, affecting the shape of the Earth’s surface regionally and globally.• Soil is a product of the interactions of the Earth Systems.• Rocks, minerals, soil, water, and gases help contribute to the formation of rocks.
Unit Vocabulary <ul style="list-style-type: none">• Igneous• Sedimentary• Metamorphic• Minerals	<ul style="list-style-type: none">• Mold• Imprint• Cast• Fossil
Evidence of Learning	
Suggested Summative Assessment <ul style="list-style-type: none">• NJ ASK 4• Unit exam	
Formative Assessments <ul style="list-style-type: none">• www.njcccs.org Classroom Application Docs• Hands-on activities• Chapter tests• Performance assessments• Quizzes• Lab reports	

Unit 6 Overview

Content Area: Earth Science

Unit 6 Title: Earth’s Interior/Surface

Grade Level: 4

Unit Summary

From the time that Earth formed, it has been evolving as a result of geologic, biological, physical, and chemical processes.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit infuses the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Earth’s current structure has been influenced by both sporadic and gradual events. Changes caused by earthquakes and volcanic eruptions can be observed on a human time scale, but many geological processes, such as mountain building and the shifting of continents, are observed on a geologic time scale.
- Moving water, wind, and ice continually shape Earth’s surface by eroding rock and soil in some areas and depositing them in other areas.
- Earth is layered with a lithosphere, a hot, convecting mantle, and a dense, metallic core.
- Major geological events, such as earthquakes, volcanic eruptions, and mountain building, result from the motion of plates. Sea floor spreading, revealed in mapping of the Mid-Atlantic Ridge, and subduction zones are evidence for the theory of plate tectonics.

CPI #	Cumulative Progress Indicator (CPI)
5.4.6.B.2	Examine Earth’s surface features and identify those created on a scale of human

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

	life or on a geologic time scale.	
5.4.6.B.3	Determine if landforms were created by processes of erosion (e.g., wind, water, and/or ice) based on evidence in pictures, video, and/or maps.	
5.4.8.D.1	Model the interactions between the layers of Earth.	
5.4.8.D.2	Present evidence to support arguments for the theory of plate motion.	
Unit Essential Questions	Unit Enduring Understandings	
<ul style="list-style-type: none"> • How do geologic events occurring today provide insight Earth’s past? • To what extent does the exchange of energy within the Earth drive geologic events on the surface? • How do our actions affect the Earth’s surface? 	<ul style="list-style-type: none"> • The earth’s surface is constantly changing based on weather events and forces of nature. • We must protect our soil and its role in the environment. 	
Unit Vocabulary		
<ul style="list-style-type: none"> • Humus • Topsoil • Subsoil • Earthquake • Fault 	<ul style="list-style-type: none"> • Mantle • Crust • Inner Core • Outer core 	
Evidence of Learning		
Suggested Summative Assessment		
<ul style="list-style-type: none"> • NJ ASK 4 • Unit exam 		
Formative Assessments		
<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports 	

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit 7 Overview

Content Area: Earth Science

Unit 7 Title: Water and Weather

Grade Level: 4

Unit Summary

Earth’s weather and climate systems are the result of complex interactions between land, ocean, ice, and atmosphere. Water comes in many forms. These forms are changed during the Water Cycle. The Earth’s forces (i.e. temperature, winds, gravity) have many effects on water.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Land, air, and water absorb the sun’s energy at different rates.
- Weather is the result of short-term variations in temperature, humidity, and air pressure.
- Clouds and fog are made of tiny droplets of water and, at times, tiny particles of ice.
- Rain, snow, and other forms of precipitation come from clouds; not all clouds produce precipitation.
- Most of Earth’s surface is covered by water. Water circulates through the crust, oceans, and atmosphere in what is known as the water cycle.
- Properties of water depend on where the water is located (oceans, rivers, lakes, underground sources, and glaciers).

CPI #	Cumulative Progress Indicator (CPI)
5.4.4.E.1	Develop a general set of rules to predict temperature changes of Earth materials, such as water, soil, and sand, when placed in the Sun and in the shade.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

5.4.4.G.1	Explain how clouds form.		
5.4.4.G.2	Observe daily cloud patterns, types of precipitation, and temperature, and categorize the clouds by the conditions that form precipitation.		
5.4.4.G.3	Trace a path a drop of water might follow through the water cycle.		
5.4.4.G.4	Model how the properties of water can change as water moves through the water cycle.		
Unit Essential Questions		Unit Enduring Understandings	
<ul style="list-style-type: none"> • What is the role of the sun in energy transfer in the oceans? • How do clouds form? • How does water move from one form to another in the Water Cycle? • How do changes in one part of the Earth system affect other parts of the system? 		<ul style="list-style-type: none"> • The energy from the sun is transferred throughout the oceans and atmosphere. • Earth’s components form systems that have cycles and patterns that allow us to make predictions. • These systems continually interact at different rates of time, affecting the Earth locally and globally. 	
Unit Vocabulary	<ul style="list-style-type: none"> • Evaporation • Condensation • Clouds • Precipitation • Water Cycle • Freezing 	<ul style="list-style-type: none"> • Melting • Currents • Tides • Waves • Wind and gravity in ocean currents • Transpiration 	<ul style="list-style-type: none"> • Runoff • Droughts • Floods • Conservation • Pollution • Irrigation
Evidence of Learning			
Suggested Summative Assessment			
<ul style="list-style-type: none"> • NJ ASK 4 • Unit exam 			
Formative Assessments			
<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests • Performance assessments • Quizzes • Lab reports 			

Unit 8 Overview

Content Area: Earth Systems Science

Unit 8 Title: The Solar System

Grade Level: 4

Unit Summary

The Earth is only a small part of the solar system. The planets, moon, Sun, and stars all make up our solar system. The Sun and Moon’s movements affect the Earth.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Objects in the sky have patterns of movement. The Sun and Moon appear to move across the sky on a daily basis. The shadows of an object on Earth change over the course of a day, indicating the changing position of the Sun during the day.
- The observable shape of the Moon changes from day to day in a cycle that lasts 29.5 days.
- Earth is approximately spherical in shape. Objects fall towards the center of the Earth because of the pull of the force of gravity.
- Earth is the third planet from the Sun in our solar system, which includes seven other planets.

CPI #	Cumulative Progress Indicator (CPI)
5.4.4.A.1	Formulate a general description of the daily motion of the Sun across the sky based on shadow observations. Explain how shadows could be used to tell the time of day.
5.4.4.A.2	Identify patterns of the Moon’s appearance and make predictions about its future appearance based observational data.
5.4.4.A.3	Generate a model with explanatory value that explains both why objects roll

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

	down ramps as well as why the Moon orbits Earth.
5.4.4.A.4	Analyze and evaluate evidence in the form of data tables and photographs to categorize and relate solar system objects (e.g., planets, dwarf planets, moons, asteroids, and comets).
Unit Essential Questions <ul style="list-style-type: none">• How do the Sun and Moon 's movements affect the Earth?• How does the movement of the Earth affect gravity?• How does the Earth relate to the other objects in the solar system?	Unit Enduring Understandings <ul style="list-style-type: none">• The Sun and Moon's positioning have many effects on the Earth.• The Earth is one piece of a system of stars and planets that make up the solar systems.
Unit Vocabulary <ul style="list-style-type: none">• Moon phases• Gravity• Solar System• Constellations	
Evidence of Learning	
Suggested Summative Assessment <ul style="list-style-type: none">• NJ ASK 4• Unit exam	
Formative Assessments <ul style="list-style-type: none">• www.njcccs.org Classroom Application Docs• Hands-on activities• Chapter tests• Performance assessments• Quizzes• Lab reports	

Unit 9 Overview

Content Area: Physical Science

Unit 9 Title: Matter

Grade Level: 4

Unit Summary

Matter has many forms. These forms can be identified and categorized by measuring their physical properties.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.2 Physical Science: All students will understand that physical science principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Some objects are composed of a single substance; others are composed of more than one substance.
- Each state of matter has unique properties (e.g., gases can be compressed, while solids and liquids cannot; the shape of a solid is independent of its container; liquids and gases take the shape of their containers).
- Objects and substances have properties, such as weight and volume that can be measured using appropriate tools. Unknown substances can sometimes be identified by their properties.
- Objects vary in the extent to which they absorb and reflect light and conduct heat (thermal energy) and electricity.

CPI #	Cumulative Progress Indicator (CPI)
5.2.4.A.1	Identify objects that are composed of a single substance and those that are composed of more than one substance using simple tools found in the classroom.
5.2.4.A.2	Plan and carry out an investigation to distinguish among solids, liquids, and gasses.

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

5.2.4.A.3	Determine the weight and volume of common objects using appropriate tools.		
5.2.4.A.4	Categorize objects based on the ability to absorb or reflect light and conduct heat or electricity.		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;"> <p>Unit Essential Questions</p> <ul style="list-style-type: none"> • How do I distinguish between solids, liquids, and gases? • How do I determine the weight and volume of matter? • How to the physical properties of matter help me to categorize it? </td> <td style="width:50%; vertical-align: top;"> <p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> • Solids, liquids, and gases have many identifiable properties. • I can measure the weight and volume of matter using tools and instruments. • Matter can be categorized based on its physical properties. </td> </tr> </table>		<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • How do I distinguish between solids, liquids, and gases? • How do I determine the weight and volume of matter? • How to the physical properties of matter help me to categorize it? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> • Solids, liquids, and gases have many identifiable properties. • I can measure the weight and volume of matter using tools and instruments. • Matter can be categorized based on its physical properties.
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • How do I distinguish between solids, liquids, and gases? • How do I determine the weight and volume of matter? • How to the physical properties of matter help me to categorize it? 	<p>Unit Enduring Understandings</p> <ul style="list-style-type: none"> • Solids, liquids, and gases have many identifiable properties. • I can measure the weight and volume of matter using tools and instruments. • Matter can be categorized based on its physical properties. 		
<p>Unit Vocabulary</p> <table border="0" style="width:100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Weight • Volume • Area • Matter • Properties • Atom/element • Mixture/Compound </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Solid • Liquid • Gas • Chemical changes </td> </tr> </table>		<ul style="list-style-type: none"> • Weight • Volume • Area • Matter • Properties • Atom/element • Mixture/Compound 	<ul style="list-style-type: none"> • Solid • Liquid • Gas • Chemical changes
<ul style="list-style-type: none"> • Weight • Volume • Area • Matter • Properties • Atom/element • Mixture/Compound 	<ul style="list-style-type: none"> • Solid • Liquid • Gas • Chemical changes 		
Evidence of Learning			
<p>Suggested Summative Assessment</p> <ul style="list-style-type: none"> • NJ ASK 4 • Unit exam 			
<p>Formative Assessments</p> <table border="0" style="width:100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports </td> </tr> </table>		<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports
<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports 		

Unit 10 Overview

Content Area: Physical Science

Unit 10 Title: Energy

Grade Level: 4

Unit Summary

When energy is transferred from one object to another, movement occurs. There are many laws of motion that apply to different forms of matter.

Primary interdisciplinary connections: Language Arts, Mathematics

21st century themes: 9.1- This unit will also infuse the 21st Century Life & Careers standard 9.1, strands A-D. These strands include: Critical Thinking and Problem Solving; Creativity and Innovation; Collaboration, Teamwork and Leadership and Cross Cultural Understanding and Interpersonal Communication.

Learning Targets

Standards: 5.2 Physical Science: All students will understand that physical science principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.

5.1.A.B.C.D Science Practices: This unit will infuse the four strands of the Science Practices standard. These focus on understanding scientific explanations; generating scientific evidence through active investigation; reflecting on scientific knowledge; and participating productively in science.

Content Statements

- Heat (thermal energy), electricity, light, and sound are forms of energy.
- Heat (thermal energy) results when substances burn, when certain kinds of materials rub against each other, and when electricity flows through wires. Metals are good conductors of heat (thermal energy) and electricity. Increasing the temperature of any substance requires the addition of energy.
- Energy can be transferred from one place to another. Heat energy is transferred from warmer things to colder things.
- Light travels in straight lines. When light travels from one substance to another (air and water), it changes direction.
- Motion can be described as a change in position over a period of time.
- There is always a force involved when something starts moving or changes its speed or direction of motion. A greater force can make an object move faster and farther.
- Magnets can repel or attract other magnets, but they attract all matter made of iron. Magnets can make some things move without being touched.
- Earth pulls down on all objects with a force called gravity. Weight is a measure of how

Brigantine Public School District

Science Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

strongly an object is pulled down toward the ground by gravity. With a few exceptions, objects fall to the ground no matter where they are on Earth.			
CPI #	Cumulative Progress Indicator (CPI)		
5.2.4.C.1	Compare various forms of energy as observed in everyday life and describe their applications.		
5.2.4.C.2	Compare the flow of heat through metals and nonmetals by taking and analyzing measurements.		
5.2.4.C.3	Draw and label diagrams showing several ways that energy can be transferred from one place to another.		
5.2.4.C.4	Illustrate and explain what happens when light travels from air into water.		
5.2.4.E.1	Demonstrate through modeling that motion is a change in position over a period of time.		
5.2.4.E.2	Identify the force that starts something moving or changes its speed or direction of motion.		
5.2.4.E.3	Investigate and categorize materials based on their interaction with magnets.		
5.2.4.E.4	Investigate, construct, and generalize rules for the effect that force of gravity has on balls of different sizes and weights.		
<table border="1"> <tr> <td> Unit Essential Questions <ul style="list-style-type: none"> • What are the forms of energy? • How is energy used to move objects? • What are the basic laws of motion? </td> <td> Unit Enduring Understandings <ul style="list-style-type: none"> • There are many forms of energy. • Many forms of energy can move objects. • There are some basic laws that apply to motion. </td> </tr> </table>		Unit Essential Questions <ul style="list-style-type: none"> • What are the forms of energy? • How is energy used to move objects? • What are the basic laws of motion? 	Unit Enduring Understandings <ul style="list-style-type: none"> • There are many forms of energy. • Many forms of energy can move objects. • There are some basic laws that apply to motion.
Unit Essential Questions <ul style="list-style-type: none"> • What are the forms of energy? • How is energy used to move objects? • What are the basic laws of motion? 	Unit Enduring Understandings <ul style="list-style-type: none"> • There are many forms of energy. • Many forms of energy can move objects. • There are some basic laws that apply to motion. 		
Unit Vocabulary <table border="1"> <tr> <td> <ul style="list-style-type: none"> • Speed • Acceleration • Inertia • Friction • Simple machines • Compound machines </td> <td> <ul style="list-style-type: none"> • Temperature • Heat transfer • Effects • Fossil fuel • Electrical circuits </td> </tr> </table>		<ul style="list-style-type: none"> • Speed • Acceleration • Inertia • Friction • Simple machines • Compound machines 	<ul style="list-style-type: none"> • Temperature • Heat transfer • Effects • Fossil fuel • Electrical circuits
<ul style="list-style-type: none"> • Speed • Acceleration • Inertia • Friction • Simple machines • Compound machines 	<ul style="list-style-type: none"> • Temperature • Heat transfer • Effects • Fossil fuel • Electrical circuits 		
Evidence of Learning			
Suggested Summative Assessment <ul style="list-style-type: none"> • NJ ASK 4 • Unit exam 			
Formative Assessments <table border="1"> <tr> <td> <ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests </td> <td> <ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports </td> </tr> </table>		<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports
<ul style="list-style-type: none"> • www.njcccs.org Classroom Application Docs • Hands-on activities • Chapter tests 	<ul style="list-style-type: none"> • Performance assessments • Quizzes • Lab reports 		