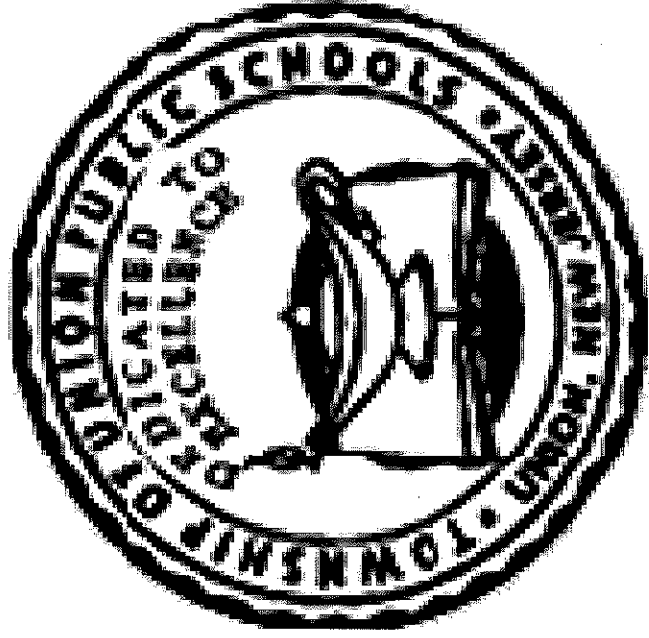


TOWNSHIP OF UNION PUBLIC SCHOOLS



**Grade 1 Science
Curriculum Guide
2015-2018**

Board Members

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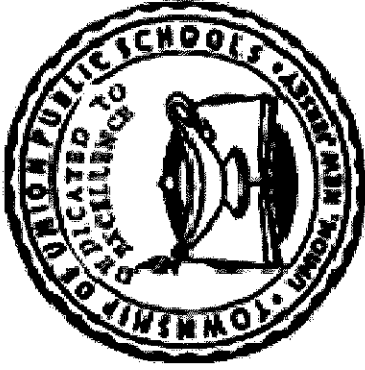
Thomas Layden

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TOWNSHIP OF UNION PUBLIC SCHOOLS
Administration

District Superintendent Mr. Gregory Tatum

Assistant Superintendent Dr. Noreen Lishak

Director of Student Information/Technology Ms. Ann M. Hart

Director of Special ServicesMs. Kim Conti

Director of Athletics, Physical Education and NursesMs. Linda Ionta

DEPARTMENT SUPERVISORS

12 Month

School Counseling K – 12.....	Nicole Ahern
Special Services: PreK – 8.....	Sherry Gallanter
Special Services: 9 - 12	Joseph Seugling
Special Services: PreK – 8.....	Donna Wozniak

10-Month

Pre K-2 English/Math/Science/SS.....	Maureen Corbett
Social Studies: 6 - 12, Business 9-12.....	Libby Galante
English: 2 - 5, Social Studies: 2 - 5	Robert Ghiretti
Science: 6 - 12/NCLB.....	Maureen Guilfoyle
Career Ed, World Lang., ESL, Computers, G&T.....	Yvonne Lorenzo
English: 6-12.....	Mary Malyska
Mathematics: 2 - 5, Science: 2 - 5.....	Theresa Matthews
Mathematics: 6-12.....	Jason Mauriello
Art, Music K – 12.....	Ron Rago

**Curriculum Committee
Grade 1 Science**

**Lindsay Conneely
Ivone Matos
ToniAnn Titmas**

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Mission Statement

The Township of Union Board of Education believes that every child is entitled to an education designed to meet his or her individual needs in an environment that is conducive to learning. State standards, federal and state mandates, and local goals and objectives, along with community input, must be reviewed and evaluated on a regular basis to ensure that an atmosphere of learning is both encouraged and implemented. Furthermore, any disruption to or interference with a healthy and safe educational environment must be addressed, corrected, or when necessary, removed in order for the district to maintain the appropriate educational setting.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is to formulate a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- Develop reading, writing, speaking, listening, and mathematical skills.
- Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.
- Acquire and use the skills and habits involved in critical and constructive thinking.
- Develop a code of behavior based on moral and ethical principles.
- Work with others cooperatively.
- Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.
- Acquire a knowledge and understanding of the physical and biological sciences.
- Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.
- Appreciate and understand literature, art, music, and other cultural activities.
- Develop an understanding of the historical and cultural heritage.
- Develop a concern for the proper use and/or preservation of natural resources.
- Develop basic skills in sports and other forms of recreation.

Course Description

The first grade standards stress basic science skills in understanding familiar objects and events. Students build on the concepts introduced in kindergarten, and are expected to begin conducting simple experiments. Inquiry skills are strengthened as students are encouraged to ask and seek answers to their curiosity about the natural and constructed world.

Teachers will use an interdisciplinary approach to these content areas with emphasis on the process skills outlined in the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (“the standards”) represent the next generation of K-12 standards designed to prepare all students for success in college, career, and life by the time they graduate from high school.

Recommended Textbooks

New Jersey School Science, Harcourt School Publishers, 2009

Curriculum Units

Unit A: Plants and Animals All Around

Unit B: Living Together

Unit C: About Our Earth

Unit D: Weather, Seasons, and the Sky

Unit E: Investigating Matter

Unit F: Energy in Our World

Pacing Guide- Course

Marking Period 1 (11 Lessons)

Unit D: Weather Seasons and the Sky

- Chapter 7 Measuring Weather
- Chapter 8 Seasons

Unit E: Investigating Matter

- Chapter 10 All About Matter

3 Lessons

4 Lessons

4 Lessons

Marking Period 2 (10 Lessons)

Unit C All About Earth

- Chapter 5 Our Earth
- Chapter 6 Natural Resources

3 Lessons

3 Lessons

Unit A Plants and Animals All Around

- Chapter 1 All About Animals

4 Lessons

Marking Period 3 (10 Lessons)

Unit A Plants and Animals All Around

- Chapter 2 All About Plants

4 Lessons

Unit B Living Together

- Chapter 3 Environments for Living Things
- Chapter 4 Places to Live

3 Lessons

3 Lessons

Marking Period 4 (10 Lessons)

Unit C All About Earth

- Chapter 9 Objects in the Sky

3 Lessons

Unit F Energy in our World

- Chapter 11 Heat, Light, and Sound
- Chapter 12 Motion

3 Lessons

4 Lessons

Science Standards

<u>Learning Objective</u>	<u>Standards</u>
Chapter 1 - Animals are living things that have needs.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.3.2.A, 5.3.2.C, 5.3.2.D
Chapter 2 - Plants have needs. They have parts that help them live and grow.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.3.2.A, 5.3.2.B, 5.3.2.C, 5.4.2.E.1
Chapter 3 - Living things have special parts or behaviors that help them survive in their environments. Plants and animals need each other.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.3.2.B, 5.3.2.C, 5.3.2.E
Chapter 4 - Forests, deserts, and oceans are different habitats. Plants and animals have special parts that help them live in these places.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.3.2.A, 5.3.2.B, 5.3.2.C, 5.3.2.E
Chapter 5 - Earth has landforms and body of water. Water can change Earth.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.4.2.E, 5.4.2.G
Chapter 6 - People use natural resources such as rock and water in different ways.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.4.2.C, 5.4.2.G
Chapter 7 - We can observe, measure and describe the weather	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.4.2.F
Chapter 8 - The four seasons all have their own kind of weather	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.4.2.F
Chapter 9 - The sun, moon, and stars are objects in the sky that seem to move because Earth rotates.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.4.2.A
Chapter 10 - Matter can be observed, described, and measured. Heating and cooling can change matter.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.2.2.A, 5.2.2.B
Chapter 11 - Heat, light and sound are all forms of energy.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.2.2.C, 5.2.2.D
Chapter 12 - Objects can move in different ways. Pushes and pulls can cause objects to change speed, direction, and position.	5.1.4.A, 5.1.4.B, 5.1.4.C, 5.1.4.D 5.2.2.E

Unit A: Plants and Animals All Around

Unit Theme: All things can be classified as living, non-living, or once living. Living things such as animals and plants have characteristics that help us group them. Animals and plants produce offspring similar to themselves.

Big Idea	Essential Questions	Objectives	Activities	Assessments
<p><u>Chapter 1</u> Animals are living things that have needs.</p>	<ul style="list-style-type: none"> • What are living and nonliving things? • What do animals need? • How can we group animals? 	<ul style="list-style-type: none"> • Classify things as living and nonliving • Explain living things need food, water, air and shelter • Compare and contrast living and nonliving • Compare the shelters (homes) of different animals and describe why their shelters are important • Identify and classify animals based on observable characteristics • Identify physical characteristics of animals and their functions • Discuss and identify different animal groups 	<p><u>Leveled Readers</u> Below: All About Animals On: Animal Groups Above: Move It!</p> <p>Reading Support & Homework Pages: p. RS5-12</p> <p>Lab Manuals: p. LM 23-30</p> <ul style="list-style-type: none"> • group pictures into living/nonliving • draw a select animal and the food, water, air and shelter that animals needs • Venn diagram living/nonliving • Picture cards of animal shelters • Group animal picture cards • Brainstorm animal physical characteristics (claws, beaks, feathers, gills, fins, etc.) and the use of each 	<p>Chapter 1 Assessments</p> <p><u>Chapter Review Test & Prep</u> SE pp. 88-89</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> • AG p. 1-4 <p><u>Performance Assessment</u></p> <ul style="list-style-type: none"> • Long Option: AG p. 5-6 • Short Option: TE p. 89 <p>Draw and label needs of Animals.</p> <p>Use pictures to group and classify animals.</p>

Big Idea	Essential Questions	Objectives	Activities	Assessments
<p><u>Chapter 2</u> Plants have needs. They help them live and grow.</p>	<ul style="list-style-type: none"> • What do plants need? • What are the parts of a plant? • How can we group plants? 	<ul style="list-style-type: none"> • identify what plants need to live • conduct simple experiments related to plant needs by changing one variable at a time • identify the parts of a plant • create a model/drawing of a plant and label the roots, stems, leaves, blossoms, fruits, seeds • describe the purpose of each plant part • classify leaves by physical traits • classify plants by viewing parts • identify uses of plants 	<p><u>Leveled Readers</u> Below: All About Plants On: Plants, Plants, Everywhere! Above: What Do You Eat?</p> <p>Reading Support & Homework Pages: p. RS 14-21</p> <p>Lab Manuals: p. LM 31-38</p> <ul style="list-style-type: none"> • Draw plants and their needs • Experiments with plants with holding water, light, soil, warmth, etc. • Label plant parts • Use hand lens to observe and classify plants • Collect and categorize plants and plant parts • Use plant picture cards to classify plants 	<p>Chapter 2 Assessments</p> <p><u>Chapter Review Test & Prep</u> SE pp. 132-133</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> • AG p. 7-10 <p><u>Performance Assessment</u></p> <ul style="list-style-type: none"> • Long Option: AG p. 11-12 • Short Option: TE p. 133

Unit B: Living Together

Unit Theme: Living things have adaptations that help them live in certain environments.
The living things within an environment are interdependent.

<u>Big Idea</u>	<u>Essential Questions</u>	<u>Objectives</u>	<u>Activities</u>	<u>Assessments</u>
<p><u>Chapter 3</u> Living things have special parts or behaviors that help them survive in their environments. Plants and animals need each other.</p>	<ul style="list-style-type: none"> • What is an environment? • What helps plants and animals live in places? • How do plants and animals need each other? • What is a habitat? • Why do different plants and animals live in different habitats? 	<ul style="list-style-type: none"> • Describe an environment • Identify various animals and plants and adaptive traits of each • Identify animals and needs of camouflage • Describe how animals help plants reproduce • Explain how living things are part of a food chain 	<p><u>Leveled Readers</u> Below: Environments for Living Things On: Animals and Plants Above: Web of Life</p> <p>Reading Support & HW Pages: p. RS 24-29</p> <p>Lab Manuals: p. LM 43-48</p> <ul style="list-style-type: none"> • Draw a select environment (pond, school, house, beach) • Group animal pictures by adaptive traits • Create paper links and label to demonstrate food chain 	<p>Chapter 3 Assessments</p> <p>Chapter Review Test & Prep SE pp. 168-169</p> <p>Formal Assessment</p> <ul style="list-style-type: none"> • AG p. 17-20 • Performance Assessment • Long Option: AG p. 21-22 • Short Option: TE p. 169
<p><u>Chapter 4</u> Forests, deserts, and oceans are different habitats. Plants and animals have special parts that help them live in these places.</p>	<ul style="list-style-type: none"> • What is a habitat? • Why do different plants and animals live in different habitats? 	<ul style="list-style-type: none"> • List what comprises a forest, a desert and an ocean • Identify animals and plants found in forests, deserts and oceans 	<ul style="list-style-type: none"> • Create a trifold of a forest, desert and an ocean with appropriate plants and animals 	<p>Chapter 4 Assessment Chapter Review Test & Prep SE pp. 198-199</p> <p>Formal Assessment</p> <ul style="list-style-type: none"> • AG p. 23-26 • Performance Assessment • Long Option: AG p. 27-28 • Short Option: TE p. 199

Unit C: About Our Earth

Unit Theme: Earth is composed of land water and a surrounding atmosphere. Earth's surface is made up of different types of materials, such as soil and rocks. These and other natural resources must be protected.

<u>Big Idea</u>	<u>Essential Questions</u>	<u>Objectives</u>	<u>Activities</u>	<u>Assessments</u>
<p><u>Chapter 5</u> Earth has landforms and body of water. Water can change Earth.</p>	<p>What Are some Kinds of Land? What Are Some Kinds of Water? How Does Earth Change?</p>	<ul style="list-style-type: none"> • Classify pictures of landforms. • Identify and describe landforms. • Describe similarities and differences in landforms. • Infer how water and land are different. • Identify bodies of water. • Describe similarities and differences in bodies of water. <p>Identify ways Earth's surface is changed by weather. Describe causes and effects of erosion. Know people invent tools and techniques to solve problems.</p>	<p><u>Leveled Readers</u> Below: Our Earth On: My Earth Above: Land and Water</p> <p>Reading Support & HW Pages: p. RS 39 - 44</p> <p>Lab Manuals: p. LM 59 - 64</p> <ul style="list-style-type: none"> • Draw and color the landforms in a make-believe landscape. Then glue the labels on their landforms. • Discuss each landform and what activities people might do there? List these on chart paper. • Create a Venn Diagram to show similarities and differences between land formations and bodies of water. • Use Crayola air dry clay to build the different landforms and label them 	<p><u>Chapter 5 Assessment</u> <u>Chapter Review Test & Prep</u> SE pp. 240-241</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> • AG p. 33-36 • <u>Performance Assessment</u> • Long Option: AG p. 37-38 • Short Option: TE p. 241 <p>Correctly color bodies of land brown and bodies of water blue.</p>

Big Idea	Essential Questions	Objectives	Activities	Assessments
<p>Chapter 6</p> <p>People use natural resources such as rock and water in different ways.</p>	<p>What are Natural Resources?</p> <p>What Can We Observe About Rocks and soil?</p> <p>How Can We Protect Natural Resources?</p>	<p>Observe examples of natural resources in the environment.</p> <p>List examples of natural resources.</p> <p>Identify how living things use natural resources.</p> <p>Identify forms of pollution and their effects on living things.</p> <p>Explain how reducing, reusing, and recycling trash can reduce pollution and save natural resources.</p>	<p><u>Leveled Readers</u> Below: Natural Resources On: Earth's Resources Above: This Rocks!</p> <p>Reading Support & HW Pages: p. RS 46 - 51</p> <p>Lab Manuals: p. LM 65 - 70</p> <ul style="list-style-type: none"> Students can work in small groups to observe and describe the similarities and differences between rocks . Record data on chart paper. Measure size of rocks using ruler, record results and then sort by size Weigh mass of rocks using digital scale, record results and then sort by weight Sort rocks by color, shape and texture. Students will brainstorm ideas and plan how to make a regatta. Use recycled products to create a regatta boat that will float. Products can include: Paper towel tubes, straws, duct tape, plastic bottles, plastic cups, etc. Make a prediction and confirm prediction if regatta will sink or float 	<p>Chapter 6 Assessment</p> <p><u>Chapter Review Test & Prep</u> SE pp. 274 - 275</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> AG p. 39 - 42 <p><u>Performance Assessment</u></p> <ul style="list-style-type: none"> Long Option: AG p. 43 - 44 Short Option: TE p. 275

Unit D: Weather, Seasons, and the Sun

Unit Theme: Changes in the weather occur daily and seasonally. These changes produce patterns that can be observed, measured, and recorded. The sun, moon and stars are observable objects located beyond earth's atmosphere.

<u>Big Idea</u>	<u>Essential Questions</u>	<u>Objectives</u>	<u>Activities</u>	<u>Assessments</u>
<p><u>Chapter 7</u></p> <p>We can observe, measure and describe the weather.</p>	<p>What is Weather?</p> <p>How Can We Measure Weather?</p> <p>What Makes Clouds And Rain?</p>	<p>Recognize patterns in weather, and observe how weather changes daily.</p> <p>Use thermometers to measure the temperature of air.</p> <p>Use a chart to observe and compare weather data and weather patterns.</p> <p>Measure weather by using a variety of tools.</p> <p>Describe how rain forms from water drops in clouds.</p>	<p><u>Leveled Readers</u> Below: Measuring Weather On: The Water Cycle Above: Weather Safety</p> <p>Reading Support & HW Pages: p. RS 54 - 59</p> <p>Lab Manuals: p. LM 75 – 80</p> <p><u>RAINBOW ACTIVITY</u> Children can find out how rainbows work while making a rainbow.</p> <ul style="list-style-type: none"> • What you'll need: • A glass of water (about three quarters full) • White paper • A sunny day <p>Instructions:</p> <ol style="list-style-type: none"> 1. Take the glass of water and paper to a part of the room with sunlight (near a window is good). 2. Hold the glass of water (being careful not to spill it) above the paper and watch as sunlight passes through the glass of water, refracts (bends) and forms a rainbow of colors on your sheet of paper. 3. Try holding the glass of water at different heights and angles to see if it has a different effect. <p>What's Happening?</p>	<p><u>Chapter 7 Assessment</u></p> <p><u>Chapter Review Test & Prep</u> SE pp. 306 - 307</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> • AG p. 49 - 52 <p><u>Performance Assessment</u></p> <ul style="list-style-type: none"> • Long Option: AG p. 53 - 54 • Short Option: TE p. 307

Rainbows form in the sky when sunlight refracts (bends) as it passes through raindrops, it acts in the same way when it passes through your glass of water. The sunlight refracts, separating it into the colors red, orange, yellow, green, blue, indigo and violet.

- Record and analyze how much rainfall we get during a period of time
- Use collected rainfall data to compare which day had the most/fewest rain

<u>Big Idea</u>	<u>Essential Questions</u>	<u>Objectives</u>	<u>Activities</u>	<u>Assessments</u>
<p><u>Chapter 8</u></p> <p>The four seasons all have their own kind of weather.</p>	<p>What is Spring?</p> <p>What is summer?</p> <p>What is Fall?</p> <p>What is Winter?</p>	<p>Name the four seasons in sequence, and explain how they form a pattern.</p> <p>Identify characteristics of the four seasons.</p> <p>Describe how seasonal weather affects living things.</p> <p>Identify characteristics of fall.</p> <p>Identify characteristics of winter.</p>	<p><u>Leveled Readers</u> Below: Seasons On: The Four Seasons Above: Four Seasons on a Farm</p> <p>Reading Support & HW Pages: p. RS 61 – 68</p> <p>Lab Manuals: p. LM 81 - 88</p> <ul style="list-style-type: none"> • Make a season's diorama • Use chart paper and list which activities people can do in each season 	<p><u>Chapter 8 Assessment</u></p> <p><u>Chapter Review Test & Prep</u> SE pp. 346 - 347</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> • AG p. 55 - 58 <p><u>Performance Assessment</u></p> <ul style="list-style-type: none"> • Long Option: AG p. 59 - 60 • Short Option: TE p. 347

Big Idea	Essential Questions	Objectives	Activities	Assessments
<p>Chapter 9</p> <p>The sun, moon, and stars are objects in the sky that seem to move because Earth rotates.</p>	<p>What Can We See in the Sky?</p> <p>What Causes Day and Night?</p> <p>What Can We Observe About the Moon?</p>	<p>Observe and describe the daytime and nighttime sky, and explain what causes day and night.</p> <p>Describe why the sun, moon, and stars appear to move across the sky.</p> <p>Understand the pattern of the apparent changes in the moon's shape.</p>	<p>Leveled Readers</p> <p>Below: Objects in the Sky On: Look Up! Our Sky Above: Sun Time!</p> <p>Reading Support & HW Pages: p. RS 70 - 75</p> <p>Lab Manuals: p. LM 89 – 94</p> <ul style="list-style-type: none"> • Make a T-Chart and list objects that can be seen in the sky during daytime and nighttime • Explore making shadows and tracking the movement of an object over the course of a day • Draw moon's shape for each evening and determine the pattern in the shapes over several weeks 	<p>Chapter 9 Assessment</p> <p>Chapter Review Test & Prep SE pp. 376 - 377</p> <p>Formal Assessment</p> <ul style="list-style-type: none"> • AG p. 61 - 64 <p>Performance Assessment</p> <ul style="list-style-type: none"> • Long Option: AG p. 65 - 66 • Short Option: TE p. 377

Unit E: Investigating Matter

Unit Theme: Everything in our physical universe is made of matter. Matter can be categorized by its characteristics in the form of solid, liquid or gas.

<u>Big Idea</u>	<u>Essential Questions</u>	<u>Objectives</u>	<u>Activities</u>	<u>Assessments</u>
<p><u>Chapter 10</u> Matter can be observed, described, and measured. Heating and cooling can change matter.</p>	<p>What is matter?</p> <p>What Can We Observe About Liquids?</p> <p>What Can We Observe About Gases?</p>	<p>Recognize that everything around us is matter; Measure and compare physical properties of matter.</p> <p>Observe the effects of heating and cooling on different kinds of matter.</p> <p>Understand that matter that flows is liquid.</p> <p>Observe and measure liquids, using tools such as a balance and a measuring cup.</p> <p>Understand that gas in matter that does not have a shape of its own and spreads out to fill its container.</p> <p>Recognize that steam and ice are forms of water.</p>	<p>Leveled Readers Below: All About Matter On: What is Matter? Above: Fantastic Fruit</p> <p>Reading Support & Homework Pages: p. RS 77-85</p> <p>Lab Manuals: p. LM 99-106</p> <ul style="list-style-type: none"> • Sort matter • Measure mass using a balance • Identify and compare the shapes of matter 	<p>Chapter 10 Assessments</p> <p><u>Chapter Review Test & Prep</u> SE pp. 406-407</p> <p><u>Formal Assessment</u></p> <ul style="list-style-type: none"> • AG p. 71-74 <p><u>Performance Assessment</u></p> <ul style="list-style-type: none"> • Long Option: AG p. 75 • Short Option: TE p. 431 <p>Sort Matter</p>

Unit F: Energy in our World

**Unit Theme: Heat, Light, and Sound are forms of energy.
Heat force (push or pull) can interact with an object and make it move.**

Big Idea	Essential Questions	Objectives	Activities	Assessments
Chapter 11 Heat, light and sound are all forms of energy.	What Is Heat? What Can Light Do? What is Sound?	Recognize that the sun supplies heat and light to Earth, and identify other sources of heat and light. Investigate how the sun supplies heat to Earth. Explain why some things warm up faster than other things, depending on the surface. Draw conclusions about why shadows change. Identify sources of light. Identify that sound travels through air. Describe differences in sounds.	Leveled Readers Below: Heat, Light, and Sound On: What are Heat, Light and Sound? Above: Red, White and Boom Reading Support & Homework Pages: p. RS 87-93 Lab Manuals: p. LM 111-116 <ul style="list-style-type: none"> • Use thermometers to measure heat from the sun • Draw shadows at different times of the day • Watch sound by putting rice on foil and making a loud sound • Melt crayons between wax paper TE p. 440 • Make a list of different sounds and objects that make the sounds 	Chapter 11 Assessments Chapter Review Test & Prep SE pp. 464-465 Formal Assessment <ul style="list-style-type: none"> • AG p. 81-84 Performance Assessment <ul style="list-style-type: none"> • Long Option: AG p. 85 • Short Option: TE p. 465 Identify different forms of energy

Big Idea	Essential Questions	Objectives	Activities	Assessments
<p><u>Chapter 12</u></p> <p><u>Objects can move in different ways.</u></p> <p><u>Pushes and pulls can cause objects to change speed, direction, and position.</u></p>	<p>How Do things Move?</p> <p>How Can You change the Way things Move?</p> <p>How does Gravity make Things Move?</p> <p>How do Magnets Make Things Move?</p>	<p>Classify the ways objects move.</p> <p>Compare the relative speeds of objects.</p> <p>Describe how object move</p> <p>Identify and describe forces used to move or stop objects.</p> <p>Classify objects as magnetic or nonmagnetic</p>	<p><u>Leveled Readers</u> Below: Motion On: In Motion Above: Ride On</p> <p>Reading Support & Homework Pages: p. RS 94-92</p> <p>Lab Manuals: p. LM 117-124</p> <ul style="list-style-type: none"> • Classify objects by the way they move • Have students show how things can be moved push vs. pull • Compare how objects fall to the ground • Compare objects that are and are not attracted to magnets 	<p>Chapter 12 Assessments</p> <p><u>Chapter Review Test & Prep</u> SE pp. 506-507</p> <p><u>Formal Assessment Performance Assessment</u></p> <ul style="list-style-type: none"> • AG p. 87-90 • Long Option: AG p. 91 • Short Option: TE p. 507 <p>Identify and compare forces</p> <p>Lab Manual Pg 122</p> <p>Lab Manual Pg 123</p>

New Jersey Scoring Rubric

SCIENCE RUBRIC

Exceeds – must receive no more than one 3 and the rest 4s in the other areas of the rubric.
Meets – may receive no more than one 2 and a combination of 3s and 4s in the other areas of the rubric.
Approaches – may receive no more than one 1 and a combination of 2s, 3s, or 4s, in the other areas of the rubric.
Begins – must receive at least a 1 in all 3 areas of the rubric.

	<u>KNOWLEDGE</u>	<u>APPLICATION</u>	<u>COMMUNICATION</u>
4	<p>Knows and understands scientific terms, facts, concepts, principles, theories and methods</p> <ul style="list-style-type: none"> • Descriptions of scientific terms, facts, concepts, principles, theories and methods are complete and correct. 	<p>Applies scientific knowledge, skills and methods to manipulate, analyze, synthesize, create and evaluate</p> <ul style="list-style-type: none"> • Applications are thorough, appropriate, and accurate. 	<p>Communicates scientific knowledge and applications through writing, speech, and visual displays.</p> <ul style="list-style-type: none"> • Written, oral and/or visual communication is well-organized and effective.
3	<ul style="list-style-type: none"> • Descriptions of scientific terms, facts, concepts, principles, theories and methods are mostly complete and correct. 	<ul style="list-style-type: none"> • Applications are mostly thorough, appropriate, and accurate. 	<ul style="list-style-type: none"> • Most of the written, oral and/or visual communication is well-organized and effective.
2	<ul style="list-style-type: none"> • Descriptions of scientific terms, facts, concepts, principles, theories and methods are somewhat complete and correct. 	<ul style="list-style-type: none"> • Applications are somewhat appropriate and accurate. 	<ul style="list-style-type: none"> • Some of the written, oral and/or visual communication is organized and effective.
1	<ul style="list-style-type: none"> • Descriptions of scientific terms, facts, concepts, principles, theories and methods are minimally present or correct. 	<ul style="list-style-type: none"> • Applications are minimally appropriate and accurate. 	<ul style="list-style-type: none"> • Little of the written, oral and/or visual communication is organized and effective.
0	<ul style="list-style-type: none"> • All descriptions of scientific terms, facts, concepts, principles, theories and methods are missing and/or incorrect. 	<ul style="list-style-type: none"> • All applications are missing and/or incorrect. 	<ul style="list-style-type: none"> • All of the written, oral or visual communication is missing and/or lacks organization.
Score			

NJCCS- Science

5.1 Science Practices

All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.

A. Understand Scientific Explanations: Students understand core concepts and principles of science and use measurement and observation tools to assist in categorizing, representing, and interpreting the natural and designed world.

By the end of Grade 4

Content: Fundamental scientific concepts and principles and the links between them are more useful than discrete facts.

5.1.4.A.1 Demonstrate understanding of the interrelationships among fundamental concepts in the physical, life, and Earth systems sciences.

Content: Connections developed between fundamental concepts are used to explain, interpret, build, and refine explanations, models, and theories.

5.1.4.A.2 Use outcomes of investigations to build and refine questions, models, and explanations.

Content: Outcomes of investigations are used to build and refine questions, models, and explanations.

5.1.4.A.3 Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments.

B. Generate Scientific Evidence Through Active Investigations: Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.

By the end of Grade 4

Content: Building and refining models and explanations requires generation and evaluation of evidence.

5.1.4.B.1 Design and follow simple plans using systematic observations to explore questions and predictions.

Content: Tools and technology are used to gather, analyze, and communicate results.

5.1.4.B.2 Measure, gather, evaluate, and share evidence using tools and technologies.

Content: Evidence is used to construct and defend arguments.

5.1.4.B.3 Formulate explanations from evidence.

Content: Reasoning is used to support scientific conclusions.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

C. Reflect on Scientific Knowledge: Scientific knowledge builds on itself over time.

By the end of Grade 4

Content: Scientific understanding changes over time as new evidence and updated arguments emerge.

5.1.4.C.1 Monitor and reflect on one's own knowledge regarding how ideas change over time.

Content: Revisions of predictions and explanations occur when new arguments emerge that account more completely for available evidence.

5.1.4.C.2 Revise predictions or explanations on the basis of learning new information.

Content: Scientific knowledge is a particular kind of knowledge with its own sources, justifications, and uncertainties.

5.1.4.C.3 Present evidence to interpret and/or predict cause-and-effect outcomes of investigations.

D. Participate Productively in Science: The growth of scientific knowledge involves critique and communication, which are social practices that are governed by a core set of values and norms.

By the end of Grade 4

Content: Science has unique norms for participation. These include adopting a critical stance, demonstrating a willingness to ask questions and seek help, and developing a sense of trust and skepticism.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Content: In order to determine which arguments and explanations are most persuasive, communities of learners work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories (e.g., scientific argumentation and representation).

5.1.4.D.2 Work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories.

Content: Instruments of measurement can be used to safely gather accurate information for making scientific comparisons of objects and events.

5.1.4.D.3 Demonstrate how to safely use tools, instruments, and supplies.

Content: Organisms are treated humanely, responsibly, and ethically.

5.1.4.D.4 Handle and treat organisms humanely, responsibly, and ethically.

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.

A. Properties of Matter: All objects and substances in the natural world are composed of matter. Matter has two fundamental properties: matter takes up space, and matter has inertia.

By the end of Grade 2

Content: Living and nonliving things are made of parts and can be described in terms of the materials of which they are made and their physical properties.

5.2.2.A.1 Sort and describe objects based on the materials of which they are made and their physical properties.

Content: Matter exists in several different states; the most commonly encountered are solids, liquids, and gases. Liquids take the shape of the part of the container they occupy. Solids retain their shape regardless of the container they occupy.

5.2.2.A.2 Identify common objects as solids, liquids, or gases.

B. Changes in Matter: Substances can undergo physical or chemical changes to form new substances. Each change involves energy.

By the end of Grade 2

Content: Some properties of matter can change as a result of processes such as heating and cooling. Not all materials respond the same way to these processes.

5.2.2.B.1 Generate accurate data and organize arguments to show that not all substances respond the same way when heated or cooled, using common materials, such as shortening or candle wax.

C. Forms of Energy: Knowing the characteristics of familiar forms of energy, including potential and kinetic energy, is useful in coming to the understanding that, for the most part, the natural world can be explained and is predictable.

By the end of Grade 2

Content: The Sun warms the land, air, and water.

5.2.2.C.1 Compare, citing evidence, the heating of different colored objects placed in full sunlight.

Content: An object can be seen when light strikes it and is reflected to a viewer's eye. If there is no light, objects cannot be seen.

5.2.2.C.2 Apply a variety of strategies to collect evidence that validates the principle that if there is no light, objects cannot be seen.

Content: When light strikes substances and objects through which it cannot pass, shadows result.

5.2.2.C.3 Present evidence that represents the relationship between a light source, solid object, and the resulting shadow.

D. Energy Transfer and Conservation: The conservation of energy can be demonstrated by keeping track of familiar forms of energy as they are transferred from one object to another.

By the end of Grade 2

Content: Batteries supply energy to produce light, sound, or heat.

5.2.2.D.1 Predict and confirm the brightness of a light, the volume of sound, or the amount of heat when given the number of batteries, or the size of batteries

E. Forces and Motion: It takes energy to change the motion of objects. The energy change is understood in terms of forces.

By the end of Grade 2

Content: Objects can move in many different ways (fast and slow, in a straight line, in a circular path, zigzag, and back and forth).

5.2.2.E.1 Investigate and model the various ways that inanimate objects can move.

Content: A force is a push or a pull. Pushing or pulling can move an object. The speed an object moves is related to how strongly it is pushed or pulled. When an object does not move in response to a push or a pull, it is because another push or pull (friction) is being applied by the environment.

5.2.2.E.2 Predict an object's relative speed, path, or how far it will travel using various forces and surfaces.

Content: Some forces act by touching, while other forces can act without touching.

5.2.2.E.3 Distinguish a force that acts by direct contact with an object (e.g., by pushing or pulling) from a force that can act without direct contact (e.g., the attraction between a magnet and a steel paper clip).

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.

A. Organization and Development: Living organisms are composed of cellular units (structures) that carry out functions required for life. Cellular units are composed of molecules, which also carry out biological functions.

By the end of Grade 2

Content: Living organisms:

- Exchange nutrients and water with the environment.
- Reproduce.
- Grow and develop in a predictable manner.

5.3.2.A.1 Group living and nonliving things according to the characteristics that they share.

B. Matter and Energy Transformations: 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.

By the end of Grade 2

Content: A source of energy is needed for all organisms to stay alive and grow. Both plants and animals need to take in water, and animals need to take in food. Plants need light.

5.3.2.B.1 Describe the requirements for the care of plants and animals related to meeting their energy needs.

Content: Animals have various ways of obtaining food and water. Nearly all animals drink water or eat foods that contain water.

5.3.2.B.2 Compare how different animals obtain food and water.

Content: Most plants have roots to get water and leaves to gather sunlight.

5.3.2.B.3 Explain that most plants get water from soil through their roots and gather light through their leaves.

C. Interdependence: All animals and most plants depend on both other organisms and their environment to meet their basic needs.

By the end of Grade 2

Content: Organisms interact and are interdependent in various ways; for example, they provide food and shelter to one another.

5.3.2.C.1 Describe the ways in which organisms interact with each other and their habitats in order to meet basic needs.

Content: A habitat supports the growth of many different plants and animals by meeting their basic needs of food, water, and shelter.

5.3.2.C.2 Identify the characteristics of a habitat that enable the habitat to support the growth of many different plants and animals.

Content: Humans can change natural habitats in ways that can be helpful or harmful for the plants and animals that live there.

5.3.2.C.3 Communicate ways that humans protect habitats and/or improve conditions for the growth of the plants and animals that live there, or ways that humans might harm habitats.

D. Heredity and Reproduction: Organisms reproduce, develop, and have predictable life cycles. Organisms contain genetic information that influences their traits, and they pass this on to their offspring during reproduction.

By the end of Grade 2

Content: Plants and animals often resemble their parents.

5.3.2.D.1 Record the observable characteristics of plants and animals to determine the similarities and differences between parents and their offspring.

Content: Organisms have predictable characteristics at different stages of development.

5.3.2.D.2 Determine the characteristic changes that occur during the life cycle of plants and animals by examining a variety of species, and distinguish between growth and development.

E. Evolution and Diversity:: Sometimes, differences between organisms of the same kind provide advantages for surviving and reproducing in different environments. These selective differences may lead to dramatic changes in characteristics of organisms in a population over extremely long periods of time.

By the end of Grade 2

Content: Variations exist within a group of the same kind of organism.

5.3.2.E.1 Describe similarities and differences in observable traits between parents and offspring.

Content: Plants and animals have features that help them survive in different environments.

5.3.2.E.2 Describe how similar structures found in different organisms (e.g., eyes, ears, mouths) have similar functions and enable those organisms to survive in different environments.

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.

A. Objects in the Universe: Our universe has been expanding and evolving for 13.7 billion years under the influence of gravitational and nuclear forces. As gravity governs its expansion, organizational patterns, and the movement of celestial bodies, nuclear forces within stars govern its evolution through the processes of stellar birth and death. These same processes governed the formation of our solar system 4.6 billion years ago.

By the end of Grade 2

Content: The Sun is a star that can only be seen during the day. The Moon is not a star and can be seen sometimes at night and sometimes during the day. The Moon appears to have different shapes on different days.

5.4.2.A.1 Determine a set of general rules describing when the Sun and Moon are visible based on actual sky observations.

B. History of Earth: From the time that Earth formed from a nebula 4.6 billion years ago, it has been evolving as a result of geologic, biological, physical, and chemical processes.

C. Properties of Earth Materials: Earth's composition is unique, is related to the origin of our solar system, and provides us with the raw resources needed to sustain life. By the end of Grade 2

Content: Soils are made of many living and nonliving substances. The attributes and properties of soil (e.g., moisture, kind and size of particles, living/organic elements, etc.) vary depending on location.

5.4.2.C.1 Describe Earth materials using appropriate terms, such as hard, soft, dry, wet, heavy, and light.

D. Tectonics: The theory of plate tectonics provides a framework for understanding the dynamic processes within and on Earth.

E. Energy in Earth Systems: Internal and external sources of energy drive Earth systems. By the end of Grade 2

Content: Plants need sunlight to grow.

5.4.2.E.1 Describe the relationship between the Sun and plant growth.

F. Climate and Weather: Earth's weather and climate systems are the result of complex interactions between land, ocean, ice, and atmosphere.
By the end of Grade 2

Content: Current weather conditions include air movement, clouds, and precipitation. Weather conditions affect our daily lives.

5.4.2.F.1 Observe and document daily weather conditions and discuss how the weather influences your activities for the day.

G. Biogeochemical Cycles: The biogeochemical cycles in the Earth systems include the flow of microscopic and macroscopic resources from one reservoir in the hydrosphere, geosphere, atmosphere, or biosphere to another, are driven by Earth's internal and external sources of energy, and are impacted by human activity.

By the end of Grade 2

Content: Water can disappear (evaporate) and collect (condense) on surfaces.

5.4.2.G.1 Observe and discuss evaporation and condensation.

Content: There are many sources and uses of water.

5.4.2.G.2 Identify and use water conservation practices.

Content: Organisms have basic needs and they meet those needs within their environment.

5.4.2.G.3 Identify and categorize the basic needs of living organisms as they relate to the environment

Content: The origin of everyday manufactured products such as paper and cans can be traced back to natural resources.

5.4.2.G.4 Identify the natural resources used in the process of making various manufactured products.