

**KG Science Curriculum Guide
Lunenburg County Public Schools
2014-2015**

Marking Period: 1st Nine Weeks

Days: (7 days 1st Nine weeks),(9 days 2nd Nine Weeks),(7 days 3rd nine weeks), (ongoing 4th nine weeks)

Reporting Category/Strand: Scientific Investigation, Reasoning, and Logic

<p>SOL SK.1</p>	<p>K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations</p> <p>in which</p> <p>a) basic characteristics or properties of objects are identified by direct observation;</p> <p>b) observations are made from multiple positions to achieve different perspectives;</p> <p>c) a set of objects is sequenced according to size;</p> <p>d) a set of objects is separated into two groups based on a single physical characteristic;</p> <p>e) nonstandard units are used to measure the length, mass, and volume of common objects;</p> <p>f) observations and predictions are made for an unseen member in a sequence of objects;</p> <p>g) a question is developed and predictions are made from one or more observations;</p> <p>h) observations are recorded;</p> <p>i) picture graphs are constructed;</p> <p>j) unusual or unexpected results in an activity are recognized; and</p> <p>k) objects are described both pictorially and verbally.</p>
<p>Essential Knowledge/Skills/Understandings</p>	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - observe objects and describe their basic properties. These properties include color, shape (circle, triangle, square, and rectangle), size (big, little, large, small), texture (rough, smooth, hard, soft), and weight (heavy, light). - observe an object or objects from multiple positions to achieve different perspectives. In order to accomplish this, the student should look at the object from top, bottom, front, and back, and describe what he/she sees. - arrange a set of objects in sequence according to size. - separate a set of objects into two groups based on a single physical characteristic, including color, shape, size, texture, and weight. - measure common objects with nonstandard units. Examples of nonstandard units include hands, pennies, and paper clips for determining length; holding and comparing two different objects for determining mass; and liquids put in drinking cups for determining volume.

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Essential Questions	In what ways can we group and obs
Primary Resources	<u>Videos</u> United Streaming-Math Monsters <u>Downloadable Resources</u> Learning How to Use Science Tools-Teachers Pay Teachers
Essential Vocabulary	observe, characteristic, predict, question, record, property

Marking Period: 1st Nine Weeks

Days: (5 days 1st Nine Weeks -a,b),(5 days 2nd Nine Weeks-a,b), (3rd Nine Weeks 5 days-b), (ongoing 4th Nine Weeks-b)

Reporting Category/Strand: Scientific Investigation, Reasoning, and Logic

SOL SK.2	The student will investigate and understand that humans have senses that allow them to seek, find, take in, and react or respond to information in order to learn about their surroundings. Key concepts include a) the five senses and corresponding sensing organs; and b) sensory descriptors used to describe common objects and phenomena.
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will <ul style="list-style-type: none"> - identify and describe the five senses: taste, touch, smell, hearing, and sight. - match each sensing organ (eye, ear, nose, tongue, and skin) with its associated sense. - match sensory descriptors with the senses (taste: sweet, sour, bitter, salty; touch: rough, smooth, hard, soft, cold, warm, hot; hearing: loud, soft, high, low; sight: bright, dull, color, black, white; smell: strong, faint, bad, and good.)
Essential Questions	What are our 5 senses and how do they relate to sensory organs and descriptions?
Primary Resources	<u>Lesson Plans</u> VDOE: The Five Senses: Sight VDOE: The Five Senses: Smell VDOE: The Five Senses: Hearing VDOE: The Five Senses: Taste VDOE: The Five Senses: Touch <u>Downloadable Worksheets</u>

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	<p>Five Senses flip book \$1.50 download from Teachers Pay Teachers Power Points Five Senses \$1.00 download Power Point from Teachers Pay Teachers Power Point-Rockingham County Public Schools Videos Discovery Learning: Videos Literature Connections The 5 Senses by Nuria Roca</p> <p>Classroom Materials Lakeshore Five Senses game</p>
Essential Vocabulary	five senses (sight-eyes, touch-hands, smell-nose, taste-tongue, hear-ears)

Marking Period: 1st Nine Weeks

Days: (1st Nine Weeks 5 days a-e), (2nd Nine Weeks ongoing a-e), (3rd Nine Weeks 5 days a-e)

Reporting Category/Strand: Matter

SOL SK.4	<p>The student will investigate and understand that the position, motion, and physical properties of an object can be described. Key concepts include</p> <p>a) colors of objects; b) shapes and forms of objects; c) textures and feel of objects; d) relative sizes and weights of objects; and e) relative positions and speed of objects.</p>
Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - identify and name six basic colors, including red, orange, yellow, green, blue, and purple; and identify and name black and white. - identify and name a circle, triangle, square, and rectangle. - compare and contrast objects that are flexible, stiff, straight, and/or curved. - compare and contrast objects that are rough, smooth, hard, and/or soft. - compare objects using the concepts of heavy/light, long/short, wide/thin, big/little, and large/small.

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	<ul style="list-style-type: none"> - measure objects, using nonstandard units, and direct comparisons. - identify the position of an object, using position words over/under, in/out, above/below, and left/right. - group objects according to their speed — fast or slow
Essential Questions	What are ways that objects can be identified and measured?
Primary Resources	<p><u>Lesson Plans</u> VDOE Colors and Shapes VDOE Properties of Objects</p> <p><u>Classroom Materials</u> Lakeshore color and shapes game Color & Shape Attribute Links</p>
Essential Vocabulary	matter, colors, shapes, texture, weight, position, speed

Marking Period: 1st Nine Weeks

Days: (1st Nine Weeks 10 days a,b), (2nd Nine Weeks 10 days a,b), (4th Nine Weeks 9 days a-d)

Reporting Category/Strand: Life Processes

SOL SK.7	<p>The student will investigate and understand basic needs and life processes of plants and animals. Key concepts include</p> <ul style="list-style-type: none"> a) animals need adequate food, water, shelter, air, and space to survive; b) plants need nutrients, water, air, light, and a place to grow to survive; c) plants and animals change as they grow, have varied life cycles, and eventually die; and d) offspring of plants and animals are similar but not identical to their parents or to one another.
Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - describe the life needs of animals. The life needs are food, water, shelter, air, and space. - describe the life needs of plants. The life needs are nutrients, water, air, light, and a place that has adequate space for them to grow. predict what will happen to animals and plants if life needs are not met. - describe some simple changes animals undergo during their life cycles. This may include changes in their body size, color, covering, or shape. - describe some simple changes that plants undergo during their life cycles. This may include size, presence of leaves

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	<p>and branches, fruits, and seeds.</p> <ul style="list-style-type: none"> - compare and contrast young plants and animals with their parents, using pictures and/or live organisms.
Essential Questions	What are the basic needs and life processes of plants and animals?
Primary Resources	<p><u>Lesson Plans</u> Living and Nonliving Plant and Animal Needs Plant Life Cycles Plant and Animal Offspring</p> <p><u>Videos</u> Plants-United Streaming</p> <p><u>Literature Connections</u> The Tiny Seed by Eric Carle Butterfly Life Cycle Science Vocabulary Reader by Jeff Bauer Pumpkin, Pumpkin by Jeanne Titherington Scholastic Knowledge Quest-Plants</p> <p><u>Downloadable Resources</u> Butterfly Life Cycle Booklet Pumpkin Sequence Cards</p>
Essential Vocabulary	animal needs, plant needs, plant/animal changes, offspring

Marking Period: 1st Nine Weeks

Days: (1st Nine Weeks 5 days-a), (2nd Nine Weeks 4 days-a), (3rd Nine Weeks 10 days-a,b,c), (4th Nine Weeks 10 days-a,c)

Reporting Category/Strand: Earth Patterns, Cycles, and Change

SOL SK.9	<p>The student will investigate and understand that there are simple repeating patterns in his/her daily life. Key concepts include</p> <ul style="list-style-type: none"> a) weather observations; b) the shapes and forms of many common natural objects including seeds, cones, and leaves; and c) animal and plant growth.
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Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - observe and identify daily weather conditions — sunny, rainy, cloudy, snowy, windy, warm, hot, cool, and cold. - predict daily weather based on basic observable conditions. - chart daily weather conditions. - identify simple patterns in natural objects — veins in a leaf, spiral patterns in cones, shapes and colors of common seeds. - describe how animals and plants change as they grow. (Related to K.7.)
Essential Questions	<p>How do we identify weather conditions, patterns in nature and ways in which plants and animals change as they grow?</p>
Primary Resources	<p>Lesson Plans Weather Patterns Patterns in Nature Animal Growth Patterns Downloadable Resources Weather graph Songs Shari Sloane: What is the Weather Today? Number 8 MP3 Download</p>
Essential Vocabulary	<p>weather, predict</p>

Marking Period: First Nine Weeks

Days: (1st Nine Weeks 10 days-a,b), (2nd Nine Weeks 10 days-a,b), (3rd Nine Weeks 5 days-a,b), (4th Nine Weeks 5 days-a,b)

Reporting Category/Strand: Earth Patterns, Cycles, and Change

SOL SK.10	<p>The student will investigate and understand that change occurs over time and rates may be fast or slow. Key concepts include</p> <p>a) natural and human-made things may change over time; and</p> <p>b) changes can be observed and measured.</p>
Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - identify some changes that people experience over time (e.g., height, weight, and color of hair).

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	<ul style="list-style-type: none"> - predict how their own height will change over the school year. - Measure and graph the information. - describe how people cause things to change (e.g., demolition of buildings, construction of buildings, cutting down trees, planting trees, and building highways). - describe how things change naturally. This includes seasonal changes, the growth in seeds and common plants, the growth of common animals, and the weather. - identify examples of fast changes and slow changes. Slow changes should be the kinds of familiar changes that occur over weeks, months, or seasons. (Students are not responsible for long-term changes.)
Essential Questions	
Primary Resources	<p><u>Lesson Plans</u> VDOE Natural and Human Made Services VDOE Measuring Change</p> <p><u>Videos</u> Adapting to Changes in Nature</p> <p><u>Literature Connections</u> The Very Hungry Caterpillar by Eric Carl</p>
Essential Vocabulary	change, grow, measure, natural/human changes

Marking Period: 2nd Nine Weeks

Days: (2nd Nine Weeks 8 days-a,b,c), (4th Nine Weeks 5 days-a,b,c)

Reporting Category/Strand: Matter

SOL SK.5	<p>The student will investigate and understand that water flows and has properties that can be observed and tested. Key concepts include</p> <ul style="list-style-type: none"> a) water occurs in different phases; b) water flows downhill; and c) some materials float in water, while others sink.
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Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - classify examples of the different phases of water (solid, liquid, and gas). - describe the natural flow of water. - predict where a stream of water will flow. - predict whether items will float or sink when placed in water. Items to use include wood, metal, paper, and plastics.
Essential Questions	<p>What are the phases of water and how do we predict the direction of water flow and whether items will float or sink when placed in water?</p>
Primary Resources	<p><u>Lesson Plans</u> VDOE Phases of Water VDOE Water Flow VDOE Sink and Float</p> <p><u>Power Point</u> Solid, Liquid, Gas States of Water</p> <p><u>Video</u> Properties of Matter Solid, Liquid, Gas</p>
Essential Vocabulary	<p>water properties, flow, float/sink</p>

Marking Period: 3rd Nine Weeks

Days: 5 days

Reporting Category/Strand: Force, Motion, and Energy

SOL S.K 3	<p>The student will investigate and understand that magnets have an effect on some materials, make some things move without touching them, and have useful applications. Key concepts include</p>
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	<p>a) magnetism and its effects; and</p> <p>b) useful applications of magnetism.</p>
Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - predict and test which common objects will be attracted to magnets and which will not be attracted to magnets. - classify objects as being attracted or not attracted to magnets, such as an iron nail, an iron-bearing paper clip, cereal, and a book. - explain in their own words how an object such as an iron nail, an iron bearing paper clip, cereal, or a book is affected by a magnet. - identify items in the home or school that contain a magnet or magnets, such as can openers, magnetized screwdrivers, magnetic games, magnetic cabinet door latches, refrigerator magnets, and magnetic letters.
Essential Questions	What is magnetism and how can we identify which items are magnetic?
Primary Resources	<p><u>Lesson Plans</u> <u>VDOE Magnetism</u> <u>Downloadable Resources</u> <u>Magnet worksheet-Teachers Pay Teachers</u> <u>Magnet station activities</u> <u>Magnet lesson plan-Regent</u> <u>Videos</u> <u>Brain Pop video</u> <u>Electricity and Magnetism-United Streaming</u></p>
Essential Vocabulary	magnet, attract, repel

Marking Period: 3rd Nine Weeks

Days: 5 days

Reporting Category/Strand: Interrelationships in Earth/Space Systems

SOL SK.8	<p>The student will investigate and understand that shadows occur when light is blocked by an object. Key concepts include</p> <p>a) shadows occur in nature when sunlight is blocked by an object; and</p>
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	b) shadows can be produced by blocking artificial light sources.
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will <ul style="list-style-type: none"> - identify a shadow. - describe how shadows occur. - identify and describe sources of light — sun, electric lights, and flashlights — that can produce shadows. - match objects with the shadow they would create. - demonstrate that shadows change as the direction of the light source changes.
Essential Questions	What is a shadow and what causes them to change?
Primary Resources	<p><u>Lesson Plans</u> VDOE Light and Shadows</p> <p><u>Downloadable Resources</u> Brown Bear Shadow Activity</p> <p><u>Literature Connections</u> Bear Shadow by Frank Asch It's Groundhog Day by Steven Kroll Gregory's Shadow by Don Freeman Wake Up Groundhog by Leonard Hill</p> <p><u>Downloadable Resources</u> Ground Shadow Booklet</p>
Essential Vocabulary	shadow, light sources

Marking Period: 4th Nine Weeks

Days: 5 Days

Reporting Category/Strand: Life processes

SOL SK.6	The student will investigate and understand the differences between living organisms and nonliving objects. Key concepts include
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	<p>a) all things can be classified as living or nonliving; and</p> <p>b) living organisms have certain characteristics that distinguish them from nonliving objects including growth, movement, response to the environment, having offspring, and the need for food, air, and water.</p>
Essential Knowledge/Skills/Understandings	<p>In order to meet this standard, it is expected that students will</p> <ul style="list-style-type: none"> - identify and describe the basic characteristics of living things (growth, movement, response to the environment, having offspring, and the need for food, air, and water). - identify living organisms and nonliving objects found at home and at school. - classify items by living or nonliving.
Essential Questions	What are the characteristics of living things and how can we classify items as living or nonliving?
Primary Resources	<p><u>Lesson Plans</u> <u>VDOE Living and Nonliving</u> <u>Downloadable Resources</u> <u>Living and Non-living free download Teachers Pay Teachers</u> <u>Animals and their Babies-Enchanted Learning</u> <u>Washoe County-What Do Living Things Need to Grow??</u> <u>Interactive Websites</u> <u>National Geographic, animals and their babies photos</u></p>
Essential Vocabulary	living/nonliving objects

Marking Period: 4th Nine Weeks

Days: 5 Days

Reporting Category/Strand: Earth Resources

SOL SK.11 a-c	<p>The student will investigate and understand that materials can be reused, recycled, and conserved. Key concepts include</p> <p>a) materials and objects can be used over and over again;</p> <p>b) everyday materials can be recycled; and</p> <p>c) water and energy conservation at home and in school helps ensure resources are available for future use.</p>
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will

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	<ul style="list-style-type: none"> - give examples of objects, such as paper, plastic containers, and glass containers, that can be recycled. - identify materials that can be reused. - describe the difference between recycle and reuse. - name ways to conserve water and energy. - describe how to properly dispose of a given material — paper, oil, aluminum, glass and plastics — by recycling. - predict what would happen if recycling and reusing were not practiced.
Essential Questions	How do humans reuse, recycle, and conserve objects?
Primary Resources	<p><u>Lesson Plans</u> VDOE Recycling</p> <p><u>Downloadable Resources</u> Earth Day Recycling Activities</p> <p><u>Literature Connections</u> Scholastic Knowledge Quest-Taking Care of our Earth</p> <p><u>Videos</u> Natural Resources Taking Care of our Earth</p> <p><u>Literature Connection</u> The Lorax by Dr.Seuss</p>
Essential Vocabulary	recycle, reuse, conserve