**1st Grade Science Curriculum Guide**
**Lunenburg County Public Schools**
**2014-2015**

**Marking Period: 1st Nine Weeks**
**Days: Ongoing**
**Reporting Category/Strand: Scientific Investigation**

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| **SOL 1.1** | The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which<br>a) the senses are used to observe differences in physical properties;<br>b) observations are made from multiple positions to achieve a variety of perspectives and are repeated to ensure accuracy;<br>c) objects or events are classified and arranged according to characteristics or properties;<br>d) simple tools are used to enhance observations;<br>e) length, mass, volume, and temperature are measured using nonstandard units;<br>f) inferences are made and conclusions are drawn about familiar objects and events;<br>g) a question is developed from one or more observations;<br>h) predictions are made based on patterns of observations;<br>i) observations and data are recorded, analyzed, and communicated orally and with simple graphs, pictures, written statements, and numbers; and<br>j) simple investigations and experiments are conducted to answer questions |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>In order to meet this standard, it is expected that students will<br>● use their senses and simple tools, such as a magnifying glass and a balance to enhance their observations of physical properties.<br>● make repeated observations of an object or event from multiple positions.<br>● classify and arrange objects or events according to at least two attributes or properties so that similarities and differences become apparent.<br>● measure length, mass, and volume, using nonstandard units.<br>● use familiar events and objects to make inferences and draw conclusions.<br>● develop a question from one or more observations.<br>● predict outcomes based on actual observations and evidence rather than random guesses.<br>● communicate observations and data with simple graphs and pictures<br><br>● A prediction is a forecast about what may happen in some future situation. It is based on information and evidence. A prediction is different from a guess.<br>● Graphs are powerful ways to display data, making it easier to recognize important information. Describing |

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| | things as accurately as possible is important in science because it enables people to compare their observations with those of others.<br>● Data should be displayed in bar graphs and picture graphs at the grade one level.<br>● An experiment is a fair test designed to answer a question. |
| **Essential Questions** | |
| **Primary Resources** | |
| **Essential Vocabulary** | |

**Marking Period: 1st Nine Weeks**
**Days: 15**
**Reporting Category/Strand: Life Processes**

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| **SOL 1.5** | The student will investigate and understand that animals, including humans, have basic needs and certain distinguishing characteristics. Key concepts include<br>a) basic needs include adequate air, food, water, shelter, and space (habitat);<br>b) animals, including humans, have many different physical characteristics; and<br>c) animals can be classified according to a variety of characteristics. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>In order to meet this standard, it is expected that students will<br>● make and communicate observations of live animals, including humans, about their needs, physical characteristics, and where they live.<br>● describe the life needs of animals, including air, food, water, shelter, and space.<br>● identify and chart simple characteristics by which animals can be classified, including body coverings (hair, fur, feathers, scales, and shells), body shape, appendages (arms, legs, wings, fins, and tails), methods of movement (walking, crawling, flying, and swimming), wild or domestic, and water homes or land homes.<br>● distinguish between wild animals (raccoon, hawk, squirrel, shark) and domestic animals (dog, cat, sheep) and recognize examples of each.<br>● infer types of animal homes (water or land), using the physical characteristics of the animals, such as scales and fins that allow fish to live and move in water or fur and legs that allow dogs to live and move on land.<br>● classify animals by where they live (their homes). |

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| **Essential Questions** | |
| **Primary Resources** | Animal Groups: Beginning Classification and Review Grouping The Blue Dragon: The Grouping Ga |
| **Essential Vocabulary** | |

**Marking Period: 1st Nine Weeks**
**Days: 9 days**
**Reporting Category/Strand: Earth Patterns, Cycles and Changes**

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| **SOL 1.7** | The student will investigate and understand weather and seasonal changes. Key concepts include<br>a) changes in temperature, light, and precipitation affect plants and animals, including humans;<br>b) there are relationships between daily and seasonal changes; and<br>c) changes in temperature, light, and precipitation can be observed and recorded over time. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>● identify types of precipitation as rain, snow, and ice and the temperature conditions that result in each one.<br>● relate a temperature, light, and precipitation chart to the corresponding season (daily or weekly).<br>● observe and chart changes in plants, including budding, growth, and losing leaves. Recognize in what season budding and losing leaves will most likely occur.<br>● predict how an outdoor plant would change through the seasons.<br>● compare and contrast the four seasons of spring, summer, fall (autumn) and winter in terms of temperature, light, and precipitation.<br>● compare and contrast the activities of some common animals (e.g., squirrels, chipmunks, butterflies, bees, ants, bats, frogs, and humans) during summer and<br>●<br>● compare and contrast the activities of some common animals (e.g., squirrels, chipmunks, butterflies, bees, ants, bats, frogs, and humans) during summer and winter by describing changes in their behaviors and body covering.<br>● comprehend at an introductory level that some animals respond to seasonal changes by hibernating (e.g., frogs, bats) or migrating (e.g., some birds and butterflies). (It may be useful to recognize common Virginia animals that hibernate and migrate, but the specific names of animals are not the focus of student learning here.) |

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| **Essential Questions** | |
| **Primary Resources** | **Books:**<br>Bear Snores On by Karma Wilson<br>Earthsong by Sally Rogers<br>Early Autumn Comes the Bear by Jim Arnosky |
| **Essential Vocabulary** | |

**Marking Period: 2nd Nine Weeks**
**Days: 12**
**Reporting Category/Strand: Matter**

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| **SOL 1.3** | The student will investigate and understand how different common materials interact with water. Key concepts include<br>a) some liquids will separate when mixed with water, but others will not;<br>b) some solids will dissolve in water, but others will not; and<br>c) some substances will dissolve more readily in hot water than in cold water. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>In order to meet this standard, it is expected that students will<br>● describe and apply the term dissolve.<br>● predict and describe how various materials (vinegar, milk, baking soda, powdered drink mix, sugar, salt, sand, oil, soil, rocks) act when mixed with water.<br>● classify liquids and solids into those that will dissolve in water and those that will not. Use tables and/or charts to record and display the information.<br>● infer that some substances will dissolve more easily in hot water than in cold water by conducting investigations using water at different temperatures. |

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| **Essential Questions** | |
| **Primary Resources** | Dissolving Solids<br>Dissolving items in hot water<br>**Books:**<br>Mixing by Patricia Whitehouse |
| **Essential Vocabulary** | |

**Marking Period: 2nd Nine Weeks**
**Days: 13**
**Reporting Category/Strand: Force, Motion and Energy**

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| **SOL 1.2** | The student will investigate and understand that moving objects exhibit different kinds of motion. Key concepts include<br>a) objects may have straight, circular, and back-and-forth motions;<br>b) objects may vibrate and produce sound; and<br>c) pushes or pulls can change the movement of an object. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>In order to meet this standard, it is expected that students will<br>● make and communicate observations about moving objects. Examples should include balls, objects with wheels, windup toys, tops, rubber bands, and playground equipment.<br>● predict an object's movement, using its size, shape, and the force of the push or pull on it.<br>● manipulate objects in order to describe and classify the motion of each object as straight, circular, or back-and-forth.<br>● understand that vibrations may create sound, such as humming, strumming a guitar, or plucking a rubber band.<br>● record observations of movement (length/distance), using nonstandard units. |
| **Essential Questions** | |
| **Primary Resources** | |

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| | Motion |
| **Essential Vocabulary** | |

**Marking Period: 3rd Nine Weeks**
**Days: 5**
**Reporting Category/Strand: Life Processes/Earth Patterns, Cycles and Changes**

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| **SOL 1.4**<br><br>**SOL 1.7** | The student will investigate and understand that plants have basic life needs and functional parts and can be classified according to certain characteristics. Key concepts include<br>a) plants need nutrients, air, water, light, and a place to grow;<br>b) basic parts of plants; and<br>c) plants can be classified based on a variety of characteristics.<br>The student will investigate and understand weather and seasonal changes. Key concepts include<br>a) changes in temperature, light, and precipitation affect plants and animals, including humans;<br>b) there are relationships between daily and seasonal changes; and<br>c) changes in temperature, light, and precipitation can be observed and recorded over time. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>1.4 In order to meet this standard, it is expected that students will<br>● conduct simple experiments/investigations related to plant needs by changing one variable (nutrients, air, water, light, or place to grow) at a time. Students do not need to know the term variable.<br>● create and interpret a model/drawing of a plant, including seeds, roots, stems, leaves, flowers, and fruits.<br>● identify the functions of the seed, root, stem, and leaf.<br>● classify plants by the characteristics of edible/nonedible, flowering/nonflowering, and evergreen/deciduous, using charts.<br><br>1.7 In order to meet this standard, it is expected that students will<br>● identify types of precipitation as rain, snow, and ice and the temperature conditions that result in each one.<br>● relate a temperature, light, and precipitation chart to the corresponding season (daily or weekly).<br>● observe and chart changes in plants, including budding, growth, and losing leaves. Recognize in what season budding and losing leaves will most likely occur.<br>● predict how an outdoor plant would change through the seasons.<br>● compare and contrast the four seasons of spring, summer, fall (autumn) and winter in terms of temperature, |

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| | light, and precipitation.<br>● compare and contrast the activities of some common animals (e.g., squirrels, chipmunks, butterflies, bees, ants, bats, frogs, and humans) during summer and winter by describing changes in their behaviors and body covering.<br>● compare and contrast how some common plants (e.g., oak trees, pine trees, and lawn grass) appear during summer and winter.<br>● comprehend at an introductory level that some animals respond to seasonal changes by hibernating (e.g., frogs, bats) or migrating (e.g., some birds and butterflies). (It may be useful to recognize common Virginia animals that hibernate and migrate, but the specific names of animals are not the focus of student learning here.)<br>● infer what the season is from people's dress, recreational activities, and work activities.<br>. |
| **Essential Questions** | |
| **Primary Resources** | Plants-basic needs<br>Plants |
| **Essential Vocabulary** | |

**Marking Period: 3rd Nine Weeks**
**Days: 15**
**Reporting Category/Strand: Earth Resources**

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| **SOL 1.8** | The student will investigate and understand that natural resources are limited. Key concepts include<br>a) identification of natural resources;<br>b) factors that affect air and water quality; and<br>c) recycling, reusing, and reducing consumption of natural resources. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>In order to meet this standard, it is expected that students will |

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| | • identify natural resources such as plants and animals, water, air, land, minerals, forests, and soil.<br>• recognize that many natural resources are limited.<br>• compare and contrast ways of conserving resources. This includes recycling, reusing, and reducing consumption of natural resources.<br>• classify factors that affect air and water quality.<br>• describe ways students and schools can help improve water and air quality in our communities.<br>• determine some basic factors that affect water quality by conducting simple investigations in the school environment. Students should be able to make and record observations of what happens to runoff water on rainy days. (Related to 1.3.)<br>• predict what would happen if natural resources were used up, and explain ways to prevent this from happening.<br>• discuss the value of parks to wildlife and to people. |
| **Essential Questions** | |
| **Primary Resources** | Learning about Natural Resources |
| **Essential Vocabulary** | |

**Marking Period: 4th Nine Weeks**
**Days: 12**
**Reporting Category/Strand: Life Processes/Earth Patterns, Cycles and Changes**

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| **SOL 1.4** | The student will investigate and understand that plants have basic life needs and functional parts and can be classified according to certain characteristics. Key concepts include<br>a) plants need nutrients, air, water, light, and a place to grow;<br>b) basic parts of plants; and<br>c) plants can be classified based on a variety of characteristics. |
| **SOL 1.7** | The student will investigate and understand weather and seasonal changes. Key concepts |

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| | include<br>a) changes in temperature, light, and precipitation affect plants and animals, including humans;<br>b) there are relationships between daily and seasonal changes; and<br>c) changes in temperature, light, and precipitation can be observed and recorded over time. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>1.4 In order to meet this standard, it is expected that students will<br>● conduct simple experiments/investigations related to plant needs by changing one variable (nutrients, air, water, light, or place to grow) at a time. Students do not need to know the term variable.<br>● create and interpret a model/drawing of a plant, including seeds, roots, stems, leaves, flowers, and fruits.<br>● identify the functions of the seed, root, stem, and leaf.<br>● classify plants by the characteristics of edible/nonedible, flowering/nonflowering, and evergreen/deciduous, using charts.<br><br>1.7 In order to meet this standard, it is expected that students will<br>● identify types of precipitation as rain, snow, and ice and the temperature conditions that result in each one.<br>● relate a temperature, light, and precipitation chart to the corresponding season (daily or weekly).<br>● observe and chart changes in plants, including budding, growth, and losing leaves. Recognize in what season budding and losing leaves will most likely occur.<br>● predict how an outdoor plant would change through the seasons.<br>● compare and contrast the four seasons of spring, summer, fall (autumn) and winter in terms of temperature, light, and precipitation.<br>● compare and contrast the activities of some common animals (e.g., squirrels, chipmunks, butterflies, bees, ants, bats, frogs, and humans) during summer and winter by describing changes in their behaviors and body covering.<br>● compare and contrast how some common plants (e.g., oak trees, pine trees, and lawn grass) appear during summer and winter.<br>● comprehend at an introductory level that some animals respond to seasonal changes by hibernating (e.g., frogs, bats) or migrating (e.g., some birds and butterflies). (It may be useful to recognize common Virginia animals that hibernate and migrate, but the specific names of animals are not the focus of student learning here.)<br>● infer what the season is from people's dress, recreational activities, and work activities. |
| **Essential Questions** | |

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| **Primary Resources** | Plant Parts We Eat |
| **Essential Vocabulary** | |

**Marking Period: 4th Nine Weeks**
**Days: 12**
**Reporting Category/Strand: Interrelationships in Earth/Space systems**

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| **SOL 1.6** | The student will investigate and understand the basic relationships between the sun and Earth. Key concepts include<br>a) the sun is the source of energy and light that warms the land, air, and water; and<br>b) the sun's relative position in the morning is east and in the late afternoon is west. |
| **Essential Knowledge/Skills/Understandings** | **Essential Knowledge, Skills, and Processes**<br>In order to meet this standard, it is expected that students will<br>● infer that sunlight striking an object makes the object warmer.<br>● conduct simple experiments to show how sunlight changes the temperature of land, air, and water.<br>● interpret the relationship between the sun's position in the sky and the general time of day. This includes the sun's relative position in the morning (east), at noon, and in the late afternoon (west). |
| **Essential Questions** | |
| **Primary Resources** | Uncle Percy's Adventures in Space: The Sun |
| **Essential Vocabulary** | |