

First Nine Weeks

Grade: 2

Subject: Science

Year: 2016-2017

# Days	SOL	Student Essential Knowledge and Skills	Resources	Vocabulary	Bloom's
Ongoing throughout the whole year	<p><u>Scientific Investigation, Reasoning, and Logic</u> The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which</p> <ul style="list-style-type: none"> • observations and predictions are made and questions are formed; (2.1a) • observations are differentiated from personal interpretation; (2.1b) • observations are repeated to ensure accuracy; (2.1c) • two or more characteristics or properties are used to classify items; (2.1d) • length, volume, mass, and temperature are measured in metric units and standard English units using the proper tools; (2.1e) • time is measured using the proper tools; (2.1f) 	<p><u>Overview</u> Standard 2.1 is intended to develop investigative and inquiry skills and the understanding of the nature of science for all of the other second-grade standards. Standard 2.1 requires students to continue developing a range of inquiry skills and achieve proficiency with those skills, and develop and reinforce their understanding of the nature of science in the context of the concepts developed in second grade. Standard 2.1 does not require a discrete unit be taught on scientific investigation and the nature of science because the skills that make up the standard should be incorporated in all the other second-grade standards. It is also intended that by developing these skills, students will achieve greater understanding of scientific inquiry and the nature of science as well as more fully grasp the content-related concepts.</p> <ul style="list-style-type: none"> • conduct simple experiments, make predictions, gather data from those experiments, repeat observations to improve accuracy, and draw conclusions. 		<p>centimeters, meters, liters, degrees Celsius, grams, kilograms, inches, feet, yards, quarts, gallons, degrees Fahrenheit, ounces, pounds,</p> <p>data, pictures, bars, graphs, pictographs, axis, key</p>	

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	<ul style="list-style-type: none"> • conditions that influence a change are identified and inferences are made; (2.1g) • data are collected and recorded, and bar graphs are constructed using numbered axes; (2.1h) • data are analyzed, and unexpected or unusual quantitative data are recognized; (2.1i) • conclusions are drawn; (2.1j) • observations and data are communicated; (2.1k) • simple physical models are designed and constructed to clarify explanations and show relationships; and (2.1L) • current applications are used to reinforce science concepts. (2.1m) 	<ul style="list-style-type: none"> • differentiate among simple observations and personal interpretations. • classify items, using two or more attributes such as size, shape, color, texture, and weight. • use centimeters, meters, liters, degrees Celsius, grams, and kilograms in measurement. • use inches, feet, yards, quarts, gallons, degrees Fahrenheit, ounces, and pounds in measurement. • measure time using both digital and analog clocks. • identify conditions that influence a change in an experiment. • construct and interpret simple models (e.g., weathering and erosion of land surfaces — 2.7). • analyze sets of objects, numerical data, or pictures, and create basic categories to organize the data (descriptive or numerical). • judge which, if any, collected data in a small set appear to be unexpected or unusual. • construct and interpret picture and bar graphs with numbered axes depicting the distribution of data. • communicate observations and data. 			

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10	<p><u>Interrelationships in Earth/Space Systems</u> The student will investigate and understand basic types, changes, and patterns of weather. Key concepts include</p> <ul style="list-style-type: none"> • identification of common storms and other weather phenomena; (2.6a) • the uses and importance of measuring, recording, and interpreting weather data; and (2.6b) • the uses and importance of tracking weather data over time. (2.6c) 	<ul style="list-style-type: none"> • observe and describe seasonal weather patterns and local variations. • observe and record daily weather conditions, such as sunny, cloudy, windy, rainy, or snowy. • record and interpret daily temperature, using a graph with numbered axes. • measure and record weather data, using weather instruments, including a thermometer, rain gauge, and weather vane (standard English and metric measures). • describe weather in terms of temperature, wind, and precipitation. • observe and describe precipitation in terms of evaporation and condensation of water. • observe and describe types of precipitation, including rain, snow, and ice (sleet and hail). • describe how tracking weather data over time helps scientists make future weather predictions. • evaluate the influence of daily weather conditions on personal activities and dress. • identify common types of storms. Examples include hurricanes, tornadoes, blizzards, and thunderstorms. • compare and contrast droughts and floods. 		<p>temperature, wind, hurricanes, blizzards, tornadoes, thunderstorms, precipitation, rain, snow, sleet, hail, freezing rain, drought, flood</p> <p>thermometer, rain gauge, weather vane</p>	

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10	<p><u>Matter</u> The student will investigate and understand basic properties of solids, liquids, and gases. Key concepts include</p> <ul style="list-style-type: none"> changes in phases of matter with the addition or removal of energy. (2.3c) 	<ul style="list-style-type: none"> examine and describe the transformation of matter from one phase to another, i.e., solid water (ice) to liquid (water) to gas (water vapor). conduct an investigation to observe the condensation of water. design and conduct an investigation to determine basic factors that affect the evaporation of water. identify the phases of water and the uses of water in its various phases in the home and at school. 		condensation, evaporation, melting, freezing, phase, energy, heat, cycle, precipitation (rain, snow, sleet, hail, ice), matter, changing state, expanding and contracting	

Second Nine Weeks

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10	<p><u>Matter</u> The student will investigate and understand basic properties of solids, liquids, and gases. Key concepts include</p> <ul style="list-style-type: none"> • identification of distinguishing characteristics of solids, liquids, and gases; (2.3a) • measurement of the mass and volume of solids and liquids; (2.3b) 	<ul style="list-style-type: none"> • classify materials as to whether they are liquids, solids, or gases. • describe and identify examples of condensation, evaporation, melting, and freezing of water. • measure the mass of solids and the volume of liquids in metric and standard English units. 		<p>solid, liquid, gas</p> <p>mass, volume</p>	
10	<p><u>Earth, Patterns, Cycles, and Changes</u> The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surroundings. Key concepts include</p> <ul style="list-style-type: none"> • effects of weather and seasonal changes on the growth and behavior of living things; (2.7a) 	<ul style="list-style-type: none"> • identify growth and behavioral responses of plants and animals to weather and seasonal changes. Examples of responses that are adaptive include migration, hibernation, camouflage, and dormancy. • identify animals that migrate, hibernate, or show other changes throughout the seasons or in the presence of adverse environmental conditions. • evaluate the usefulness of camouflage in an animal's habitat (for example, coloration patterns of frogs). • compare and contrast the responses of plants and animals to weather and seasonal changes. 		<p>migration, hibernation, camouflage, dormancy</p>	

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10	<p><u>Living Systems</u> The student will investigate and understand that living things are part of a system. Key concepts include</p> <ul style="list-style-type: none"> • habitats change over time due to many influences; (2.5c) 	<ul style="list-style-type: none"> • predict and describe seasonal changes in habitat and their effects on plants and animals, for example, how trees change through the seasons and how animals respond to changes in the seasons. • describe how animals are dependent on their surroundings, for example, how squirrels and other animals are affected by the loss of forest habitat. 		shelter, habitats, seasonal change, dependent	

Third Nine Weeks

# Days	SOL	Student Essential Knowledge and Skills	Resources	Vocabulary	Bloom's
10	<p><u>Force, Motion, and Energy</u> The student will investigate and understand that natural and artificial magnets have certain characteristics and attract specific types of metals. Key concepts include</p> <ul style="list-style-type: none"> • magnetism, iron, magnetic/nonmagnetic, poles, attract/repel; and (2.2a) • important applications of magnetism. (2.2b) 	<ul style="list-style-type: none"> • identify the north and south magnetic poles of magnets. • use magnetic compasses to determine the directions of north and south poles. • predict which materials will be attracted to magnets, test the predictions, and create a chart that shows the results, classifying materials as to whether they are attracted to magnets or not. • conduct an investigation to determine how the different poles of magnets react to the poles of other magnets. • identify important applications of magnets in everyday life: <ul style="list-style-type: none"> - refrigerator magnets and chalkboard letters - toys - door latches - paper clip holders - computers - motors - credit card magnetic strips. • compare natural magnets (lodestone or magnetite) and artificial magnets. • create a new application for using a magnet. 		magnetic, non-magnetic, poles, attract, repel, lodestone, like, unlike, iron, nickel, natural, artificial, magnetic field, magnetic compass, magnetite	

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10	<p><u>Life Processes</u> The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. Key concepts include</p> <ul style="list-style-type: none"> • animal life cycles; (2.4a) 	<ul style="list-style-type: none"> • describe changes in the life cycles of a butterfly and a white-tailed deer. • compare and contrast life cycles of a butterfly and a white-tailed deer. • construct and interpret models/diagrams of animal and plant life cycles. 		life cycle, undergo, distinct changes, resemble, egg, pupa, larva, caterpillar, chrysalis. butterfly, insect	
10	<p><u>Living Systems</u> The student will investigate and understand that living things are part of a system. Key concepts include</p> <ul style="list-style-type: none"> • an animal's habitat includes adequate food, water, shelter or cover, and space; (2.5b) • fossils provide information about living systems that were on Earth years ago. (2.5d) 	<ul style="list-style-type: none"> • describe the basic components of an animal habitat (food, water, shelter or cover, and space). • construct and interpret simple models of different kinds of habitats, including a forest and a stream. • describe how scientists use the study of fossils to show past weather/climate conditions and environmental characteristics. 		living, nonliving, fossil, climate	

Fourth Nine Weeks

# Days	SOL	Student Essential Knowledge and Skills	Resources	Vocabulary	Bloom's
10	<p><u>Life Processes</u> The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. Key concepts include</p> <ul style="list-style-type: none"> plant life cycles. (2.4b) 	<ul style="list-style-type: none"> identify the stages in the life cycle of a flowering plant. construct and interpret models/diagrams of animal and plant life cycles. 		life cycle, undergo, distinct changes, resemble, germination, fertilization, pollination, flower, stem, root, leaves, blossom	
10	<p><u>Living Systems</u> The student will investigate and understand that living things are part of a system. Key concepts include</p> <ul style="list-style-type: none"> living organisms are interdependent with their living and nonliving surroundings; (2.5a) 	<ul style="list-style-type: none"> classify objects as to whether they are living or nonliving. classify the parts of an animal's habitat as living or nonliving. 		living, nonliving,	
10	<p><u>Resources</u> The student will investigate and understand that plants produce oxygen and food, are a source of useful products, and provide benefits in nature. Key concepts include</p> <ul style="list-style-type: none"> important plant products are identified and classified; (2.8a) 	<ul style="list-style-type: none"> understand that plants produce oxygen and food. classify and identify the sources and uses of plant products, such as fiber, cotton, oil, spices, lumber, rubber, medicines, and paper. describe how the availability of certain plant products in a geographic area would affect the development of that area. 		products, lumber, cotton, oxygen, clothing, shelter, fiber, oils, spices, rubber, medicine, paper	

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	<ul style="list-style-type: none"> • the availability of plant products affects the development of a geographic area; (2.8b) • plants provide oxygen, homes, and food for many animals; and (2.8c) • plants can help reduce erosion. (2.8d) 	<ul style="list-style-type: none"> • describe plant products grown in Virginia that are useful to people, including wood, fruits, and vegetables. List and classify plant products (e.g., peanuts, cotton, soybeans, apples, evergreens). • compare and contrast different ways animals use plants as homes and shelters. • construct and interpret a chart illustrating the plant foods consumed by different animals. • construct and interpret a model that demonstrates how plants reduce soil erosion. 			
10	<p><u>Earth, Patterns, Cycles, and Changes</u> The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surroundings. Key concepts include</p> <ul style="list-style-type: none"> • weathering and erosion of land surfaces. (2.7b) 	<ul style="list-style-type: none"> • compare and contrast the responses of plants and animals to weather and seasonal changes. • model the effects of weathering and erosion on the land surface. 		erosion, weathering, land surface	