

Topic: The Living Environment

Key Idea 1 Living things are both similar to and different from each other and from nonliving things.					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
1.1 Describe the characteristics of and the variations between living and nonliving things.	1. What do living things need to survive? 2. Why are some things living and some things non-living?		Major Understandings: 1.1a Animals need air, water and food in order to live and thrive. 1.1b Plants require air, water, nutrients, and light in order to live and thrive 1.1c Nonliving things do not live and thrive. 1.1d Nonliving things can be human-created or naturally occurring.	Create different environments for plants (light, no light, water, no water) Collage of living and non-living things	Teacher observation Science Journals Teacher-made test Performance Assessment projects Classroom discussions
1.2 Describe the life processes common to all living things	3. What are living things? 4. Why are there plants? 5. Why are there animals? 6. What do living things do?		1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.	Create a food chain to recognize the importance of plants and animals	
Connections to text: Scott Foresman Text (SF), Unit A, Chapters 1-3					

Science Grade 2

Key Idea 2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
2.1 Recognize that traits of living things are both inherited and acquired or learned.				<ul style="list-style-type: none"> • Create a time line of physical accomplishments (crawling, walking, biking) • Classroom pets • Classroom plants • Family study and class discussion 	Teacher observation Science Journals Teacher-made test Performance assessment projects Classroom discussions
2.2 Recognize that for humans and other living things there is genetic continuity between generations.	1. How can we tell that living things are related?		Major Understandings: 2.2a Plants and animals closely resemble their parents and other individuals in their species. 2.2b Plants and animals can transfer specific traits to their offspring when they reproduce.		
Connections to text: SF, Unit A., Chapters 1-3					

Science Grade 2

Key Idea 3 Individual organisms and species change over time.					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
3.1 Describe how the structures of plants and animals complement the environment of the plant or animal.	<ol style="list-style-type: none"> 1. How do animals survive? 2. How do plants survive? 3. How do plants and animals thrive in certain environments? 		<p>Major Understandings:</p> <p>3.1a Each animal has different structures that serve different functions in growth, survival, and reproduction.</p> <ul style="list-style-type: none"> • wings, legs, or fins enable some animals to seek shelter and escape predators • the mouth, including teeth, jaws, and tongue, enable some animals to eat and drink • eyes, nose, ears, tongue of some animals enable the animals to sense their surroundings • claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food • some animals have parts that are used to produce sounds and smells to help the animal meet its needs • the characteristics of some animals change as seasonal conditions change (e.g. fur grows and is shed to help regulate body heat, body fat is a form of stored energy and it changes as the seasons change) 	<ul style="list-style-type: none"> • Draw habitats with animals that live there • Choose an animal and write a report including body parts and structures that help the animal function in its everyday environment 	same
Connections to text: SF, Unit A., Chapters 1-3					

Key Idea 3 Individual organisms and species change over time.

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
	<p>4. Why do plants have structures?</p> <p>5. How do plants and animals adapt to their environment ?</p>	<p>3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.</p> <ul style="list-style-type: none"> • roots help support the plant and take in water and nutrients • leaves help plants utilize sunlight to make food for the plant • stems, stalks, trunks, and other similar structures provide support for the plant • some plants have flowers • flowers are reproductive structures of plants that produce fruit which contains seeds • seeds contain stored food that aids in germination and the growth of young plants <p>3.1c In order to survive in their environment, plants and animals must be adapted to that environment</p> <ul style="list-style-type: none"> • seeds disperse by a plant's own mechanism and/or in a variety of ways that can include wind, water, and animals • leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell and texture • animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration 	<ul style="list-style-type: none"> • Draw/construct a plant diagram, label different parts • Read <u>The Tiny Seed</u> by Eric Carle • Read <u>The Colorful Chameleon</u> by Eric Carle and create an art project that represents camouflage 	<p>same</p>

Connections to text: SF, Unit A., Chapters 1-3

Science Grade 2

Key Idea 4 The continuity of life is sustained through reproduction and development

Performance Indicators	Essential Questions	ERM	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
4.1 Describe the major stages in the life cycles of selected plants and animals	1. Why do living things have life cycles? 2. Why do plants and animals live? 3. Why do plants and animals die?		Major Understandings: 4.1a Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death. 4.1b Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant. 4.1c The length of time from beginning of development to death of a plant is called its life span. 4.1d Life cycles of some plants include changes from seed to mature plant. 4.1e Each generation of animals goes through changes in form from young to adult. This completed sequence of changes in form is called a life cycle. 4.1f Each kind of animal goes through its own stages of growth and development during its life span. 4.1g The length of time from an animal's birth to its death is called its life span. Life spans of different animals vary.	<ul style="list-style-type: none"> • Collect caterpillars and observe life cycle changes • Diagram/sequence life cycle of frog, butterfly, chick • Plant seeds and record difference over time in journals 	same

Connections to text: SF, Unit A., Chapters 1-3

<p>4.2 Describe evidence of growth, repair, and maintenance, such as nails, hair and bone, and the healing of cuts and bruises.</p>	<p>4. Why do we grow? 5. Why do we need to grow? 6. How do we grow?</p>		<p>Major Understandings: 4.2a Growth is the process by which plants and animals increase in size. 4.2b Food supplies the energy and materials necessary for growth and repair.</p>	<ul style="list-style-type: none"> • BOCES Health Kit • Food Pyramid • Read <u>Dragon Gets By</u> in Houghton Mifflin Series • Create a healthy meal 	<p>same</p>
<p>Connections to text: SF, Unit D., Chapters 1-3</p>					

Science Grade 2

Key Idea 5 Organisms maintain a dynamic equilibrium that sustains life.

Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>5.1 Describe basic life functions of common living specimens (e.g. guppies, mealworms, gerbils).</p>	<ol style="list-style-type: none"> 1. What do all living things do? 2. What is a life function? 3. How do external physical features help living things? 		<p>Major Understandings:</p> <p>5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.</p> <p>5.1b An organism's external physical features can enable it to carry out life functions in particular environment.</p>	<ul style="list-style-type: none"> • Study Digestive System • BOCES health Kit • Discussion about animal parts and how they enable the animal to survive in their environment 	<p>same</p>

Connections to text: SF, Unit A, Chapters 1-3

Key Idea 5 Organisms maintain a dynamic equilibrium that sustains life.

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>5.2 Describe some survival behaviors of common living specimens.</p>	<p>4. What is an environment? 5. Why are environments different? 6. How does the environment affect living things? 7. How do living things survive?</p>	<p>Major Understandings: 5.2a Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow. 5.2b Animals respond to change in their environment (e.g. perspiration, heart rate, breathing rate, eye blinking, shivering, and salivating). 5.2c Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment. 5.2d Some animals, including humans, move from place to place to meet their needs. 5.2e Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur. 5.2f Some animal behaviors are influenced by environmental conditions. These behaviors may include: nest building, hibernating, hunting, migrating, and communicating. 5.2g The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat, and sunlight.</p>	<ul style="list-style-type: none"> • Experiment to show plant growth towards the light • Monitor pulse doing different activities 	<p>same</p>

Key Idea 5 Organisms maintain a dynamic equilibrium that sustains life.

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>5.3 Describe the factors that help promote good health and growth in humans.</p>	<p>8. How do we stay healthy?</p>	<p>Major Understandings: 5.3a Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health. 5.3b Good health habits include hand washing and personal cleanliness; avoiding harmful substances (including alcohol, tobacco, illicit drugs); eating a balanced diet; engaging in regular exercise.</p>	<ul style="list-style-type: none"> • Students reproduce food pyramid • BOCES health Kit • Nurse presentation • Journal daily physical activities 	<p>same</p>

Science Grade 2

Key Idea 6 Plants and animals depend on each other and their physical environment.

Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>6.1 Describe how plants and animals, including humans, depend upon each other and the nonliving environment.</p>	<ol style="list-style-type: none"> 1. Why do we need the environment? 2. Why do we need each other? 3. How does the environment affect living things? 4. How do living things affect the environment? 		<p>Major Understandings:</p> <p>6.1a Green plants are producers because they provide the basic food supply for themselves and animals.</p> <p>6.1b All animals depend on plants. Some animals (predators) eat other animals (prey).</p> <p>6.1c Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.</p> <p>6.1d Decomposers are living things that play a vital role in recycling nutrients.</p> <p>6.1e An organism's pattern of behavior is related to the nature of that organism's environment, including the kinds and number of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.</p> <p>6.1f When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.</p>	<ul style="list-style-type: none"> • Students will create/replicate a food chain • <u>Project Wild</u> Unit on Interdependence • <u>The Bug Book</u> by Robin Bernard 	<p>same</p>

Connections to text: Project Wild (K-12 Curriculum Activity Guide) SF Unit A, Chapters 1-3
 The Bug Book by Robin Bernard

Key Idea 6 Plants and animals depend on each other and their physical environment.

Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
6.2 Describe the relationship of the sun as an energy source for living and nonliving cycles.	5. Why is the sun important?		<p>Major Understandings:</p> <p>6.2a Plants manufacture food by utilizing air, water, and energy from the Sun.</p> <p>6.2b The Sun's energy is transferred on Earth from plants to animals through the food chain.</p>	<ul style="list-style-type: none"> • Food chain projects • <u>Science Is</u> by Susan Basak • Mini Investigations p. 244 	same

Science Grade 4

Key Idea 7 Human decisions and activities have had a profound impact on the physical and living environments.					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
7.1 Identify ways in which humans have changed their environment and the effects of those changes.	<ol style="list-style-type: none"> 1. How do people affect the environment? 2. Why do people change environment? 		<p>Major Understandings:</p> <p>7.1a Humans depend on their natural and constructed environments.</p> <p>7.1b Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities.</p> <p>7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.</p>	<ul style="list-style-type: none"> • Earth Day celebrations • Reduce, Reuse, Recycle in Daily Life 	same

Science Grade 2

Topic: Physical Setting					
Key Idea 1 The Earth and celestial phenomena can be described by principles of relative motion and perspective.					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
1.1 Describe patterns of daily, monthly, and seasonal changes in their environment	<ol style="list-style-type: none"> 1. How do we get day and night? 2. What causes the phase of the moon? 3. Why do we have seasons? 		<p>1.1A. Natural cycles and patterns include</p> <ul style="list-style-type: none"> • Earth spinning around once every 24 hours (rotation), resulting in day and night • Earth moving in a path around the Sun (revolution), resulting in one Earth year • the length of daylight and darkness varying with the seasons • weather changing from day to day and through the seasons • the appearance of the Moon changing as it moves in a path around Earth to complete a single cycle <p>1.1B. Humans organize time into units based on natural motions of Earth</p> <ul style="list-style-type: none"> • second, minute, hour • week, month <p>1.1C. The sun and other stars appear to move in a recognizable pattern both daily and seasonally</p>	<ul style="list-style-type: none"> ▪ Night Day Planetarium visit ▪ Phases of the Moon project SF p. C61 ▪ Students create constellations ▪ Weather graphing ▪ Charting apple tree through seasons 	<p>Teacher observation</p> <p>Science Journal</p> <p>Teacher-made test</p> <p>Performance Assessment projects</p> <p>Classroom discussions</p>
Connections to text: SF Unit C Chapters 1-3					

Science Grade 2

Physical Setting: Key Idea 2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
2.1 Describe the relationship among air, water, and land on Earth	<ol style="list-style-type: none"> 1. What causes weather? 2. What is the water cycle? 3. How does weather affect the environment? 4. How do natural events affect the environment? 		<p>Major Understandings:</p> <p>2.1A. Weather is the condition of the outside air at a particular moment.</p> <p>2.1B. Weather can be described and measured by:</p> <ul style="list-style-type: none"> • temperature • wind speed and direction • form and amount of precipitation • general sky conditions (cloudy, sunny, partly cloudy) <p>2.1C. Water is recycled by natural processes on Earth</p> <ul style="list-style-type: none"> ▪ evaporation: changing of water (liquid) into water vapor (gas) ▪ condensation: changing of water vapor (gas) into water (liquid) ▪ precipitation: rain, sleet, snow, hail ▪ runoff: water flowing on Earth's surface ▪ groundwater: water that moves downward into the ground 	<ul style="list-style-type: none"> ▪ Water cycle ▪ Ronnie Raindrop ▪ Make and erupt volcanoes ▪ Land forms model from library 	same

Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
			<p>2.1D. Erosion and deposition result from the interaction among air, water, and land.</p> <ul style="list-style-type: none"> ▪ interaction between air and water breaks down earth materials ▪ pieces of earth material may be moved by air, water, wind, and gravity ▪ pieces of earth material will settle or deposit on land or in the water in different places ▪ soil is composed of broken-down pieces of living and nonliving earth material <p>2.1E. Extreme natural events (floods, fires, earthquakes, volcanic eruptions, hurricanes, tornadoes, and other severe storms) may have positive or negative impacts on living things.</p>		same

Connections to text: SF Unit C Chapters 1-2
Connections to technology: Movie Magic School Bus Volcanoes, Landforms

Science Grade 2

Physical Setting: Key Idea 3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>3.1 Describe chemical and physical changes including changes in states of matter.</p>	<p>1. What is matter? 2. How can we sort different objects? 3. How do the surrounding conditions change properties of an object?</p>	<p>Major Understandings: 3.1A Matter takes up space and has mass. 3.1B. Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses 3.1C. Objects have properties (length, width, volume, size, shape, mass or weight, temperature, texture, and reflectiveness) that can be observed or measured. Two objects cannot occupy the same place at the same time. 3.1D. Measurements can be made with standard and nonstandard units.</p>	<ul style="list-style-type: none"> ▪ Observation of materials using magnifying glass (leaves, bugs, wood) ▪ Make freeze pops observe changes in states of matter ▪ Add heat and cold to different materials and record observations in journal 	<p>same</p>

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
		<p>3.1E. The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders</p> <p>3.1F. Objects and/or materials can be sorted or classified according to their properties</p> <p>3.1G. Some properties of an object are dependent on the conditions of the present surroundings in which the object exists. For example:</p> <ul style="list-style-type: none"> • temperature - hot or cold • lighting - shadows, color • moisture - wet or dry 		
Connections to text: Sf Unit B Chapter 1 & 2				

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>3.2 Observe and describe properties of materials using appropriate tools.</p>	<ol style="list-style-type: none"> 1. What are the 3 states of matter and their properties? 2. How does temperature affect matter? 	<p>Major Understanding: 3.2 a Matter exists in three states: solid, liquid, gas.</p> <ul style="list-style-type: none"> ▪ solids have a definite Shape and volume ▪ liquids do not have a definite shape but have a definite volume ▪ gases do not hold their shape or volume <p>3.2b Temperature can affect the state of matter of a substance.</p> <p>3.2c Changes in the properties or materials of objects can be observed and described</p>		<p>same</p>
<p>Connections to text: SF Unit B Chapters 1 & 2</p>				

Key Idea 4. Energy exists in many forms and when these forms change energy is conserved.

<p>4.1 Describe a variety of forms of energy (e.g. heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy</p>	<ol style="list-style-type: none"> 1. What is energy? 2. How can energy be transferred? 3. How do energy and matter interact? 	<p>Major understandings:</p> <p>4.1A. Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.</p> <p>4.1B. Energy can be transferred from one place to another.</p> <p>4.1C. Some materials transfer energy better than others (heat and electricity).</p> <p>4.1D. Energy and matter interact: water is evaporated by the sun's heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound</p> <p>4.1E. Electricity travels in a closed circuit.</p> <p>4.1F. Heat can be released in many ways, for example, by burning, rubbing (friction), or combining one substance with another.</p> <p>4.1g Interactions with forms of energy can be either helpful or harmful.</p>	<ul style="list-style-type: none"> ▪ <u>Science Is</u> by Susan Bosak p. 172 Secret Messages ▪ National Grid booklets and activities ▪ Foss Magnet Kit located in library ▪ SF Activity B57 Light a Bulb ▪ SF Activity B31 which container will warm up faster 	<p>same</p>
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Connections to text: SF Unit B Chapter 2-3

<p>4.2 Observe the way one form of energy can be transferred into another form of energy present in common situations (e.g. mechanical to heat energy, mechanical to electrical energy, chemical to heat energy).</p>	<ol style="list-style-type: none"> 1. Why does energy change forms? 2. How is energy used in everyday life? 	<p>Major understandings:</p> <p>4.2A. Everyday events involve one form of energy being changed to another</p> <ul style="list-style-type: none"> • animals convert food to heat and motion ▪ the Sun's energy warms the air and water <p>4.2B. Humans utilize interactions between matter and energy.</p> <ul style="list-style-type: none"> ▪ chemical to electrical, light, and heat (battery and bulb) ▪ electrical to sound (e.g., doorbell or buzzer) ▪ mechanical to sound (e.g., musical instruments) 	<p>National Grid Booklets & activities</p>	<p>Same</p>
<p>Connections to text: SF Unit B Chapters 2-3</p>				

Science Grade2

Physical Setting: Key Idea 5 Energy and matter interact through forces that result in changes in motion.					
Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
5.1 Describe the effects of common forces (pushes and pulls) on objects, such as those caused by gravity, magnetism, and mechanical forces.	<ol style="list-style-type: none"> 1. How can the position of an object be changed? 2. What is gravity? 3. How do simple machines work? 		<p>Major Understandings</p> <p>5.1A. The position of an object can be described by locating it relative to another object or the background (e.g., on top of, next to, over, under, etc.).</p> <p>5.1B. The position or direction of motion of an object can be changed by pushing or pulling.</p> <p>5.1C. The force of gravity pulls objects toward the center of Earth.</p> <p>5.1D. The amount of change in the motion of an object is affected by friction.</p> <p>5.1E. Magnetism is a force that may attract or repel certain materials.</p> <p>5.1F. Mechanical energy maybe cause change in motion through the application of force and through the use of simple machines such as gears, pulleys, levers, and inclined planes.</p>	<p>SF Activity B47 Make an Object move SF Activity B49 Explore gravity</p> <p>FOSS Science kit - magnets located in library</p> <p>SF Lab manual Moving Objects over Different Surfaces - p. 61</p>	Same

Performance Indicators	Essential Questions		Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
5.2 Describe how forces can operate across distances.	1. How do the force of gravity and magnetism change?		Major Understandings: 5.2A. The forces of gravity and magnetism on objects decreases as distance increases. 5.2B. The forces of gravity and magnetism can affect objects through gases, liquids, and solids.		
Connections to text: SF Unit B Chapter 3					