

**Correlation of  
*Seeds of Science/Roots of Reading*  
4<sup>th</sup> and 5<sup>th</sup> Grade Integrated Science and Literacy Units:**

*Aquatic Ecosystems  
Planets & Moons  
Models of Matter  
Chemical Changes*

**with the State of New York  
Science Standards for Grades K-4**



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**Correlation of *Seeds of Science/Roots of Reading* 4<sup>th</sup>/5<sup>th</sup> Grade Units  
to the New York Core Curriculum/Resource Guide —Science/Technology (K-4)**

	Planets & Moons	Aquatic Ecosystems	Models of Matter	Chemical Changes
<b>GRADES K-4 — STANDARD 1: Analysis, Inquiry, and Design —Scientific Inquiry</b>				
<b>Key Idea 1: The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.</b>				
S1.1 Ask "why" questions in attempts to seek greater understanding concerning objects and events they have observed and heard about.	• • •	• • •	• • •	• • •
S1.1a Observe and discuss objects and events and record observations	• • •	• • •	• • •	• • •
S1.1b Articulate appropriate questions based on observations	• • •	• • •	• • •	• •
S1.2 Question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings.	• • •	• • •	• • •	• • •
S1.2a Identify similarities and differences between explanations received from others or in print and personal observations or understandings	• • •	• • •	• • •	• • •
S1.3 Develop relationships among observations to construct descriptions of objects and events and to form their own tentative explanations of what they have observed.	• • •	• • •	• • •	• • •
S1.3a Clearly express a tentative explanation or description which can be tested	• • •	• • •	• • •	• • •

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**GRADES K-4 — STANDARD 1: Analysis, Inquiry, and Design —Scientific Inquiry (continued)**

**Key Idea 2: Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.**

S2.1 Develop written plans for exploring phenomena or for evaluating explanations guided by questions or proposed explanations they have helped formulate.	• •	• • •	• •	• • •
S2.1a Indicate materials to be used and steps to follow to conduct the investigation and describe how data will be recorded (journal, dates and times, etc.)	•	• • •	•	• • •
S2.2 Share their research plans with others and revise them based on their suggestions.	•	• • •	•	• • •
S2.2a Explain the steps of a plan to others, actively listening to their suggestions for possible modification of the plan, seeking clarification and understanding of the suggestions and modifying the plan where appropriate.	•	• • •	•	• • •
S2.3 Carry out their plans for exploring phenomena through direct observation and through the use of simple instruments that permit measurement of quantities, such as length, mass, volume, temperature, and time.	•	• • •	•	• • •
S2.3a Use appropriate "inquiry and process skills" to collect data	• • •	• • •	• • •	• • •
S2.3b Record observations accurately and concisely	• • •	• • •	• • •	• • •

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**Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.**

S3.1 Organize observations and measurements of objects and events through classification and the preparation of simple charts and tables.	• • •	• • •	• • •	• • •
S3.1a Accurately transfer data from a science journal or notes to appropriate graphic organizer	• •	•	•	
S3.2 Interpret organized observations and measurements, recognizing simple patterns, sequences, and relationships.	• • •	• • •	• • •	• • •
S3.2a State, orally and in writing, any inferences or generalizations indicated by the data collected	• • •	• • •	• • •	• • •
S3.3 Share their findings with others and actively seek their interpretations and ideas.	• • •	• • •	• • •	• • •

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**GRADES K-4 — STANDARD 1: Analysis, Inquiry, and Design —Scientific Inquiry (continued)**

**Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena. (continued)**

S3.3a Explain their findings to others, and actively listen to suggestions for possible interpretations and ideas	• • •	• • •	• • •	• • •
S3.4 Adjust their explanations and understandings of objects and events based on their findings and new ideas.	• • •	• • •	• • •	• • •
S3.4a State, orally and in writing, any inferences or generalizations indicated by the data, with appropriate modifications of their original prediction/explanation	• • •	• • •	• • •	• • •
S3.4b State, orally and in writing, any new questions that arise from their investigation	• • •	• • •	• • •	• • •

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**GRADES K-4 — STANDARD 1—Analysis, Inquiry, and Design —Engineering Design**

**Key Idea 1: Engineering design is an iterative process involving modeling and optimization (finding the best solution within given constraints); this process is used to develop technological solutions to problems within given constraints.**

T1.1 Describe objects, imaginary or real, that might be modeled or made differently and suggest ways in which the objects can be changed, fixed, or improved.	• • •
T1.1a Identify a simple/common object which might be improved and state the purpose of the improvement	
T1.1b Identify features of an object that help or hinder the performance of the object	• • •
T1.1c Suggest ways the object can be made differently, fixed, or improved within given constraints	• • •
T1.2 Investigate prior solutions and ideas from books, magazines, family, friends, neighbors, and community members.	• • •
T1.2a Identify appropriate questions to ask about the design of an object	• • •
T1.2b Identify the appropriate resources to use to find out about the design of an object	• •
T1.2c Describe prior designs of the object	•
T1.3 Generate ideas for possible solutions, individually and through group activity; apply age-appropriate mathematics and science skills; evaluate the ideas and determine the best solution; and explain reasons for the choices.	• • •

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**GRADES K-4 — STANDARD 1—Analysis, Inquiry, and Design —Engineering Design (continued)**

**Key Idea 1: Engineering design is an iterative process involving modeling and optimization (finding the best solution within given constraints); this process is used to develop technological solutions to problems within given constraints. (continued)**

T1.3a List possible solutions, applying age-appropriate math and science skills	• • •
T1.3b Develop and apply criteria to evaluate possible solutions	• • •
T1.3c Select a solution consistent with given constraints and explain why it was chosen	• • •
T1.4 Plan and build, under supervision, a model of the solution, using familiar materials, processes, and hand tools.	•
T1.4a Create a grade-appropriate graphic or plan listing all materials needed, showing sizes of parts, indicating how things will fit together, and detailing steps for assembly	• •
T1.4b Build a model of the object, modifying the plan as necessary	•
T1.5 Discuss how best to test the solution; perform the test under teacher supervision; record and portray results through numerical and graphic means; discuss orally why things worked or didn't work; and summarize results in writing, suggesting ways to make the solution better.	•
T1.5a Determine a way to test the finished solution or model	• • •
T1.5b Perform the test and record the results, numerically and/or graphically	
T1.5c Analyze results and suggest how to improve the solution or model, using oral, graphic, or written formats	•

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<b>Key Idea 1: Information technology is used to retrieve, process, and communicate information and as a tool to enhance learning.</b>				
•use computer technology, traditional paper-based resources, and interpersonal discussions to learn, do, and share science in the classroom	••	••	••	••
•select appropriate hardware and software that aids in word processing, creating databases, telecommunications, graphing, data display, and other tasks	•	•	•	•
•use information technology to link the classroom to world events	•	•		
<b>Key Idea 2: Knowledge of the impacts and limitations of information systems is essential to its effectiveness and ethical use.</b>				
•use a variety of media to access scientific information	••	••	••	••
•consult several sources of information and points of view before drawing conclusions	••	••	••	••
•identify and report sources in oral and written communications	•	•	•	•
<b>Key Idea 3: Information technology can have positive and negative impacts on society, depending upon how it is used.</b>				
•distinguish fact from fiction (presenting opinion as fact is contrary to the scientific process)	••	••	••	••
•demonstrate an ability to critically evaluate information and misinformation	••	••	••	••
•recognize the impact of information technology on the daily life of students				

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**STANDARD 6—Interconnectedness: Common Themes**

Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

**SYSTEMS THINKING Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.**

•observe and describe interactions among components of simple systems

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•identify common things that can be considered to be systems (e.g., a plant, a transportation system, human beings)

**MODELS Key Idea 2: Models are simplified representations of objects, structures, or systems, used in analysis, explanation, or design.**

•analyze, construct, and operate models in order to discover attributes of the real thing

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•discover that a model of something is different from the real thing but can be used to study the real thing

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•use different types of models, such as graphs, sketches, diagrams, and maps, to represent various aspects of the real world

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**MAGNITUDE AND SCALE Key Idea 2: The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect behavior and design of systems.**

•observe that things in nature and things that people make have very different sizes, weights, and ages

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•recognize that almost anything has limits on how big or small it can be

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**STANDARD 6—Interconnectedness: Common Themes (continued)**

**EQUILIBRIUM AND STABILITY Key Idea 4: Equilibrium is a state of stability due either to a lack of changes (static equilibrium) or a balance between opposing forces (dynamic equilibrium).**

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|---|----|----|----|-----|
| •observe that things change in some ways and stay the same in some ways   | •• | •• | •• | ••  |
| •recognize that things can change in different ways such as size, weight, color, and movement. Some small changes can be detected by taking measurements. | •  | •• | •  | ••• |

**PATTERNS OF CHANGE Key Idea 5:**

**Identifying patterns of change is necessary for making predictions about future behavior and conditions.**

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|--|----|-----|-----|-----|
| •use simple instruments to measure such quantities as distance, size, and weight and look for patterns in the data | •  | •   | ••• | ••  |
| •analyze data by making tables and graphs and looking for patterns of change                                       | •• | ••• | ••  | ••• |

**OPTIMIZATION Key Idea 6:**

**In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.**

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|--|-----|
| •choose the best alternative of a set of solutions under given constraints | ••• |
| •explain the criteria used in selecting a solution orally and in writing   | ••• |

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**STANDARD 7—Interdisciplinary Problem Solving**

**Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.**

**CONNECTIONS Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.**

•analyze science/technology/society problems and issues that affect their home, school, or community, and carry out a remedial course of action

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•make informed consumer decisions by applying knowledge about the attributes of particular products and making cost/benefit trade-offs to arrive at an optimal choice

•design solutions to problems involving a familiar and real context, investigate related science concepts to determine the solution, and use mathematics to model, quantify, measure, and compute

•observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions

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**STANDARD 7—Interdisciplinary Problem Solving (continued)**

**STRATEGIES Key Idea 2:**

**Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.**

•work effectively	•••	•••	•••	•••
•gather and process information	•••	•••	•••	•••
•generate and analyze ideas	•••	•••	•••	•••
•observe common themes	•••	•••	•••	•••
•realize ideas	•••	•••	•••	•••
•present results	•••	•••	•••	•••

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## THE PHYSICAL SETTING

**Key Idea 1: The Earth and celestial phenomena can be described by principles of relative motion and perspective.**

**PERFORMANCE INDICATOR 1.1 Describe patterns of daily, monthly, and seasonal changes in their environment.**

### Major Understandings:

1.1a Natural cycles and patterns include:

- 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 •••

1.1b Humans organize time into units based on natural motions of Earth:

- second, minute, hour
- week, month •

1.1c The Sun and other stars appear to move in a recognizable pattern both daily and seasonally. •

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**Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.**  
**PERFORMANCE INDICATOR 2.1 Describe the relationship among air, water, and land on Earth.**

Major Understandings:

2.1a Weather is the condition of the outside air at a particular moment.

2.1b Weather can be described and measured by:

- temperature
- wind speed and direction
- form and amount of precipitation
- general sky conditions (cloudy, sunny, partly cloudy)

2.1c Water is recycled by natural processes on Earth.

- 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

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**Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.**  
**PERFORMANCE INDICATOR 2.1 Describe the relationship among air, water, and land on Earth.**

Major Understandings:

2.1d Erosion and deposition result from the interaction among air, water, and land.

- 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

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.

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

**PERFORMANCE INDICATOR 3.1 Observe and describe properties of materials, using appropriate tools.**

**Major Understandings:**

3.1a Matter takes up space and has mass. Two objects cannot occupy the same place at the same time.

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3.1b Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses.

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•••

3.1c Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.

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3.1d Measurements can be made with standard metric units and nonstandard units.

(Note: Exceptions to the metric system usage are found in meteorology.)

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**Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity. (cont.)**

**PERFORMANCE INDICATOR 3.1 Observe and describe properties of materials, using appropriate tools. (cont.)**

**Major Understandings:**

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.

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3.1f Objects and/or materials can be sorted or classified according to their properties.

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3.1g Some properties of an object are dependent on the conditions of the present surroundings in which the object exists. For example:

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- temperature - hot or cold
- lighting - shadows, color
- moisture - wet or dry

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**Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity. (cont.)**

**PERFORMANCE INDICATOR 3.2 Describe chemical and physical changes, including changes in states of matter.**

**Major Understandings:**

3.2a Matter exists in three states: solid, liquid, gas.

•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

3.2b Temperature can affect the state of matter of a substance.

3.2c Changes in the properties or materials of objects can be observed and described.

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

**PERFORMANCE INDICATOR 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.**

**Major Understandings:**

4.1a Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.

4.1b Energy can be transferred from one place to another.

4.1c Some materials transfer energy better than others (heat and electricity).

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; dark colors may absorb light, light colors may reflect light.

4.1e Electricity travels in a closed circuit.

4.1f Heat can be released in many ways, for example, by burning, rubbing (friction), or combining one substance with another.

4.1g Interactions with forms of energy can be either helpful or harmful.

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**Key Idea 4:**

**Energy exists in many forms, and when these forms change energy is conserved.**

**PERFORMANCE INDICATOR 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).**

**Major Understandings:**

4.2a Everyday events involve one form of energy being changed to another.

• •

- animals convert food to heat and motion
- the Sun's energy warms the air and water

4.2b Humans utilize interactions between matter and energy.

- chemical to electrical, light, and heat: battery and bulb
- electrical to sound (e.g., doorbell buzzer)
- mechanical to sound (e.g., musical instruments, clapping)
- light to electrical (e.g., solar-powered calculator)

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**Key Idea 5: Energy and matter interact through forces that result in changes in motion.**

**PERFORMANCE INDICATOR 5.1 Describe the effects of common forces (pushes and pulls) of objects, such as those caused by gravity, magnetism, and mechanical forces.**

**Major Understandings:**

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.).

• •

5.1b The position or direction of motion of an object can be changed by pushing or pulling.

5.1c The force of gravity pulls objects toward the center of Earth.

• • •

5.1d The amount of change in the motion of an object is affected by friction.

5.1e Magnetism is a force that may attract or repel certain materials.

5.1f Mechanical energy may cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, and inclined planes.

**PERFORMANCE INDICATOR 5.2 Describe how forces can operate across distances.**

**Major Understandings:**

5.2a The forces of gravity and magnetism can affect objects through gases, liquids, and solids.

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5.2b The force of magnetism on objects decreases as distance increases.

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#### STANDARD 4: THE LIVING ENVIRONMENT

**Key Idea 1: Living things are both similar to and different from each other and from nonliving things.**

**PERFORMANCE INDICATOR 1.1 Describe the characteristics of and variations between living and nonliving things.**

**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.

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1.1d Nonliving things can be human-created or naturally occurring.

**PERFORMANCE INDICATOR 1.2 Describe the life processes common to all living things.**

**Major Understandings:**

1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.

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#### **STANDARD 4: THE LIVING ENVIRONMENT**

**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 INDICATOR 2.1 Recognize that traits of living things are both inherited and acquired or learned.**

**Major Understandings:**

2.1a Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).

2.1b Some characteristics result from an individual's interactions with the environment and cannot be inherited by the next generation (e.g., having scars; riding a bicycle).

**PERFORMANCE INDICATOR 2.2 Recognize that for humans and other living things there is genetic continuity between generations.**

**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.

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**Key Idea 3: Individual organisms and species change over time.**

**PERFORMANCE INDICATOR 3.1 Describe how the structures of plants and animals complement the environment of the plant or animal.**

**Major Understandings:**

3.1a Each animal has different structures that serve different functions in growth, survival, and reproduction.

- wings, legs, or fins enable some animals to seek shelter and escape predators ••
- the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink ••
- eyes, nose, ears, tongue, and skin 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)

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**Key Idea 3: Individual organisms and species change over time.**

**PERFORMANCE INDICATOR 3.1**

3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.

- 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

3.1c In order to survive in their environment, plants and animals must be adapted to that environment.

- 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

• •

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**Key Idea 3: Individual organisms and species change over time.**

**PERFORMANCE INDICATOR 3.2**

**Observe that differences within a species may give individuals an advantage in surviving and reproducing.**

**Major Understandings:**

3.2a Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.

• • •

3.2b All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.

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

**PERFORMANCE INDICATOR 4.1**

**Describe the major stages in the life cycles of selected plants and animals.**

**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.

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

**PERFORMANCE INDICATOR 4.1 continued**

4.1c The length of time from beginning of development to death of the 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. Some insects change from egg to larva to pupa to adult.

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.

**PERFORMANCE INDICATOR 4.2 Describe evidence of growth, repair, and maintenance, such as nails, hair, and bone, and the healing of cuts and bruises**

**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.

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

**PERFORMANCE INDICATOR 5.1 Describe basic life functions of common living specimens (e.g., guppies, mealworms, gerbils).**

**Major Understandings:**

5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.

• • •

5.1b An organism's external physical features can enable it to carry out life functions in its particular environment.

• • •

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

**PERFORMANCE INDICATOR 5.2 Describe some survival behaviors of common living specimens.**

**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.

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**PERFORMANCE INDICATOR 5.3 Describe the factors that help promote good health and growth in humans.**

**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.

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

**PERFORMANCE INDICATOR 6.1 Describe how plants and animals, including humans, depend upon each other and the nonliving environment.**

**Major Understandings:**

6.1a Green plants are producers because they provide the basic food supply for themselves and animals.

• • •

6.1b All animals depend on plants. Some animals (predators) eat other animals (prey).

• • •

6.1c Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.

• • •

6.1d Decomposers are living things that play a vital role in recycling nutrients.

6.1e An organism's pattern of behavior is related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.

• • •

6.1f When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.

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

**PERFORMANCE INDICATOR 6.2 Describe the relationship of the Sun as an energy source for living and nonliving cycles.**

**Major Understandings:**

6.2a Plants manufacture food by utilizing air, water, and energy from the Sun.

• • •

6.2b The Sun's energy is transferred on Earth from plants to animals through the food chain.

• • •

6.2c Heat energy from the Sun powers the water cycle (see Physical Science Key Idea 2).

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**Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environments.**

**PERFORMANCE INDICATOR 7.1**

**Identify ways in which humans have changed their environment and the effects of those changes.**

**Major Understandings:**

7.1a Humans depend on their natural and constructed environments.

• •

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.

• • •

7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.

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