NYC K-8 SCIENCE
SCOPE & SEQUENCE

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INQUIRY SKILLS – BASED ON NYS MST STANDARD ONE (Kindergarten – Grade 8)

It should be a goal of the instructor to foster the development of science process skills. The application of these skills allows students to investigate important issues in the world around them. Inquiry-based units will include many or most of the following process skills. These process skills should be incorporated into students’ instruction as developmentally appropriate.

Classifying – arranging or distributing objects, events, or information representing objects or events in classes according to some method or system

Communicating – giving oral and written explanations or graphic representations of observations

Comparing and contrasting – identifying similarities and differences between or among objects, events, data, systems, etc.

Creating models – displaying information, using multisensory representations

Gathering and organizing data – collecting information about objects and events which illustrate a specific situation

Generalizing – drawing general conclusions from particulars

Identifying variables – recognizing the characteristics of objects or factors in events that are constant or change

Inferring – drawing a conclusion based on prior experiences

Interpreting data – analyzing data that have been obtained and organized by determining apparent patterns or relationships in the data

Making decisions – identifying alternatives and choosing a course of action from among the alternatives after basing the judgment for the selection on justifiable reasons

Manipulating materials – handling or treating materials and equipment safely, skillfully, and effectively

Measuring – making quantitative observations by comparing to a conventional or nonconventional standard

Observing – becoming aware of an object or event by using any of the senses (or extensions of the senses) to identify properties

Predicting – making a forecast of future events or conditions expected to exist
Science is an ongoing process. Most often there is a question or problem that initiates an investigation searching for a possible solution or solutions. There is no single prescribed scientific method to govern an investigation. It is important that students practice the skills outlined below. For younger students, the emphasis is on discovery. For older students, the emphasis is on formulating and investigating their own questions.

Note: The use of “e.g.” denotes examples that may be used for in-depth study. The terms “for example” and “such as” denote material that is testable. Items in parentheses denote further definition of the word(s) preceding the item and are testable.

**General Skills**

i. Follow safety procedures in the classroom, laboratory, and field.

ii. Safely and accurately use the following tools:
   - hand lens
   - thermometer (°C, °F)
   - ruler (metric)
   - measuring cups
   - balance
   - graduated cylinder
   - gram weights
   - spring scale

iii. Develop an appreciation of and respect for all learning environments (classroom, laboratory, field, etc.).

iv. Manipulate materials through teacher direction and free discovery.

v. Use information systems appropriately.

vi. Select appropriate standard and nonstandard measurement tools for measurement activities.

vii. Estimate, find, and communicate measurements, using standard and nonstandard units.

viii. Use and record appropriate units for measured or calculated values.

ix. Order and sequence objects and/or events.

x. Classify objects according to an established scheme.

xi. Generate a scheme for classification.

xiii. Observe, analyze, and report observations of objects and events.

xiv. Observe, identify, and communicate patterns.

xv. Observe, identify, and communicate cause-and-effect relationships.

xvi. Generate appropriate questions (teacher- and student-based) in response to observations, events, and other experiences.

xvii. Observe, collect, organize, and appropriately record data, then accurately interpret results.

xviii. Collect and organize data, choosing the appropriate representation:
   - journal entries
   - graphic representations
   - drawings/pictorial representations

xix. Make predictions based on prior experiences and/or information.

xx. Compare and contrast organisms/objects/events in the living and physical environments.

xxi. Identify and control variables/factors.

xxii. Plan, design, and implement a short-term and long-term investigation based on a student- or teacher-posed problem.

xxiii. Communicate procedures and conclusions through oral and written presentations.

* In grades 5-8 the process skills are content-specific and are integrated into the units of study.

**Major Understandings Focused On Health**

The following Major Understandings from the NYS Elementary Science Core Curriculum should be covered in grades K-4:

**LE 5.3a** Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health.

**LE 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.
### kindergarten

#### UNIT 1
**EXPLORING PROPERTIES**

<table>
<thead>
<tr>
<th>How do we observe and describe objects?</th>
<th>What are some changes we see in trees during the year?</th>
<th>What are animals?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe and describe physical properties of objects using all of the appropriate senses: • Size, shape, texture, weight, color, etc. • Determine whether objects are alike or different</td>
<td>Identify the basic needs of organisms to live and thrive: • Needs of plants to live and thrive (e.g., air, water, light) • Living things grow and change.</td>
<td>Identify the basic needs of organisms to live and thrive: • Needs of animals to live and thrive (e.g., air, water, food, shelter) • Living things grow and change.</td>
</tr>
<tr>
<td>Observe and describe physical properties of objects using appropriate tools: • Hot/cold (thermometer) • Weight (pan balance) • Measurement (nonstandard units) including bigger/smaller, more/less, capacity of liquids • Observations (hand lenses)</td>
<td>Observe and compare the different structures that enable each plant to live and thrive: • Roots, leaves, stems, flowers, seeds</td>
<td>Observe and compare the different structures that enable each animal to live and thrive: • Wings, legs, fins, eyes, nose, ears, tongue, skin, claws, etc.</td>
</tr>
<tr>
<td>Observe, describe, and identify the properties of materials (e.g., wood, plastic, metal).</td>
<td>Observe adaptations of plants: • Plants respond to changes in the environment including seasonal changes such as: – Leaves falling in autumn and forming in springtime – Flowers blooming</td>
<td>Make clear that nonliving things do not live and thrive.</td>
</tr>
<tr>
<td>Sort or group objects according to their properties: • Texture, color, shape, etc. • Sink and float</td>
<td></td>
<td>Recognize that living things have offspring and that offspring closely resembles its parents: • Dogs /puppies, cats/kittens, cows/ calves, ducks/ducklings, frogs/tadpoles</td>
</tr>
<tr>
<td>PS 3.1b,c</td>
<td>LE 1.1b</td>
<td>LE 1.1a</td>
</tr>
<tr>
<td>PS 3.1c,d,e,g</td>
<td>LE 1.2a</td>
<td>LE 1.2a</td>
</tr>
<tr>
<td>PS 3.1b,c,e</td>
<td>LE 4.2a</td>
<td>LE 4.1g</td>
</tr>
<tr>
<td>PS 3.1f</td>
<td>LE 5.1a</td>
<td>LE 4.2a</td>
</tr>
</tbody>
</table>

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**UNIT 1**

**PROPERTIES OF MATTER**

<table>
<thead>
<tr>
<th>What are some properties of solids, liquids, and gases?</th>
<th>What are some of the changes we notice between seasons?</th>
<th>How are animals alike and different?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe and describe the three states of matter:</td>
<td>Observe and describe weather conditions that occur during each season.</td>
<td>Identify, describe, and compare the physical structures of animals (e.g., body coverings, sensory organs, appendages, beaks).</td>
</tr>
<tr>
<td>• Liquids take the shape of the containers they are in.</td>
<td>Observe, measure, record, and compare weather data throughout the year (e.g., cloud cover, cloud types, wind speed and direction, precipitation) by using thermometers, anemometers, wind vanes, and rain gauges.</td>
<td>Identify, in animals, the relationship between the physical structures and the functions of those structures (e.g., obtaining food and water, protection, movement, support).</td>
</tr>
<tr>
<td>• Air does not have a definite shape.</td>
<td>Compare temperatures in different locations (e.g., inside, outside, in the sun, in the shade).</td>
<td>Compare and contrast the physical characteristics in animals.</td>
</tr>
<tr>
<td>• Solids have a definite shape.</td>
<td>Compare day and night temperatures.</td>
<td>Describe how physical traits help a species to survive (e.g., giraffe’s neck, turtle’s shell).</td>
</tr>
<tr>
<td>Observe and describe how water evaporates when left in an open container (liquid water changes into gas as it moves into the air).</td>
<td>Illustrate and describe how the sun appears to move during the day.</td>
<td>Observe how animals grow and change in predictable ways:</td>
</tr>
<tr>
<td>Observe that the material(s) of which an object is made determines some specific properties of the object (sinking/floatation, solubility).</td>
<td>Illustrate and describe how the moon changes appearance over time (phases of the moon).</td>
<td>• Animals closely resemble their parents and other individuals in their species.</td>
</tr>
<tr>
<td>Predict, observe, and examine different substances to determine their ability to mix with water (e.g., oil, water; sugar, water; sand, water).</td>
<td>Describe the 24 hour day/night cycle (time).</td>
<td>• Some traits of living things have been inherited (e.g., number of limbs).</td>
</tr>
<tr>
<td>Use tools such as hand lenses, rulers, thermometers, and balances to observe and measure the properties of materials.</td>
<td>Observe and record the changes in the sun’s and other stars’ position, and the moon’s appearance relative to time of day and month, and note the pattern of this change.</td>
<td>Describe animal life cycles and life spans (e.g., baby/adult, puppy to dog).</td>
</tr>
<tr>
<td>Test objects to determine whether they sink or float:</td>
<td>Recognize that the sun’s energy warms the air.</td>
<td>LE 4.1a,e,f,g</td>
</tr>
<tr>
<td>• Different materials (plastic, rubber, etc.)</td>
<td>PS 1.1e,f</td>
<td>LE 2.2a</td>
</tr>
<tr>
<td>• Different shapes</td>
<td>PS 3.1e</td>
<td>LE 2.1a</td>
</tr>
<tr>
<td>• Boat design</td>
<td>PS 3.1f</td>
<td>LE 2.2b</td>
</tr>
<tr>
<td>Observe, and describe the change of objects when placed in different environments.</td>
<td>PS 3.1c,d,e,g</td>
<td></td>
</tr>
<tr>
<td>• Hot and cold</td>
<td>PS 1.1b</td>
<td></td>
</tr>
<tr>
<td>• Lighting and shadows</td>
<td>PS 1.1c</td>
<td></td>
</tr>
<tr>
<td>• Color</td>
<td>PS 4.2a</td>
<td></td>
</tr>
<tr>
<td>• Wet and dry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### UNIT 1
**FORCES AND MOTION**

**What causes objects to move?**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Standard PS 5.1a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe and describe the position of an object relative to another object (over, under, on top of, next to).</td>
<td></td>
</tr>
<tr>
<td>Identify a force as push or a pull</td>
<td></td>
</tr>
<tr>
<td>Demonstrate how the position or direction of an object can be changed by pushing or pulling (forces and motion):</td>
<td>PS 5.1b, 5.1c</td>
</tr>
<tr>
<td>▪ Change the direction of objects by pushing and pulling using blocks, ramps, cars, and balls.</td>
<td></td>
</tr>
<tr>
<td>▪ Inclined plane</td>
<td></td>
</tr>
<tr>
<td>Identify gravity as a force that pulls objects down:</td>
<td>PS 5.1c</td>
</tr>
<tr>
<td>▪ The balance scale</td>
<td></td>
</tr>
<tr>
<td>▪ Balance and the center of gravity</td>
<td></td>
</tr>
<tr>
<td>Observe and describe how the force of gravity can affect objects through air, liquids, and solids.</td>
<td>PS 5.2a</td>
</tr>
</tbody>
</table>

### UNIT 2
**EARTH MATERIALS**

**What materials make up the Earth?**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Standard PS 2.1d, PS 3.1b,c,d, PS 3.1e,f,g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe and describe the basic properties and components of soil:</td>
<td></td>
</tr>
<tr>
<td>▪ Living components</td>
<td></td>
</tr>
<tr>
<td>▪ Nonliving components</td>
<td></td>
</tr>
<tr>
<td>Investigate different types of soil according to:</td>
<td></td>
</tr>
<tr>
<td>▪ Color</td>
<td></td>
</tr>
<tr>
<td>▪ Texture</td>
<td></td>
</tr>
<tr>
<td>▪ Materials</td>
<td></td>
</tr>
<tr>
<td>▪ Capacity to retain water</td>
<td></td>
</tr>
<tr>
<td>Explore how erosion and deposition are the result of interactions between air, wind, water, and land.</td>
<td>PS 2.1d</td>
</tr>
<tr>
<td>Observe and describe the physical properties of rocks (size, shape, color, presence of fossils).</td>
<td>PS 3.1b,c, 3.1d,e</td>
</tr>
<tr>
<td>Compare and sort rocks by size, color, luster, texture, patterns, hardness/softness.</td>
<td>PS 3.1f</td>
</tr>
</tbody>
</table>

### UNIT 3
**PLANT DIVERSITY**

**How are plants alike and different?**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Standard LE 3.1b, LE 2.1a, LE 2.2a,b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and compare the physical structures of a variety of plant parts (seeds, leaves, stems, flowers, roots).</td>
<td></td>
</tr>
<tr>
<td>Observe and describe how plants grow and change in predictable ways:</td>
<td></td>
</tr>
<tr>
<td>▪ Plants closely resemble their parents and other individuals of their species</td>
<td></td>
</tr>
<tr>
<td>▪ Some traits of living things have been inherited (e.g., color of flower)</td>
<td></td>
</tr>
<tr>
<td>Observe plant life cycles and life spans.</td>
<td></td>
</tr>
<tr>
<td>Observe that plants reproduce from:</td>
<td></td>
</tr>
<tr>
<td>▪ Seeds, bulbs and cuttings</td>
<td></td>
</tr>
<tr>
<td>Describe the basic needs of plants:</td>
<td></td>
</tr>
<tr>
<td>▪ Light, air, water, soil (nutrients)</td>
<td></td>
</tr>
<tr>
<td>Describe the basic life functions of plants:</td>
<td></td>
</tr>
<tr>
<td>▪ Grow</td>
<td></td>
</tr>
<tr>
<td>▪ Take in nutrients</td>
<td></td>
</tr>
<tr>
<td>▪ Reproduce</td>
<td></td>
</tr>
<tr>
<td>Observe that plants respond to changes in their environment (e.g., 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 to germinate, and leaves to form and grow).</td>
<td>LE 5.2a</td>
</tr>
</tbody>
</table>

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### UNIT 1
**MATTER**

<table>
<thead>
<tr>
<th>What are some of the properties of matter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure, compare and record physical properties of objects using:</td>
</tr>
<tr>
<td>• Standard (metric) and nonstandard units</td>
</tr>
<tr>
<td>• Appropriate tools (e.g., rulers, thermometers, pan balances, spring scales, graduated cylinders, beakers)</td>
</tr>
<tr>
<td>Describe and compare the physical properties of matter (size, shape, mass/weight, volume, flexibility, luster, color, texture, hardness, odor, etc.).</td>
</tr>
</tbody>
</table>

### UNIT 2
**ENERGY**

<table>
<thead>
<tr>
<th>What are some ways that energy can be changed from one form to another?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe, identify, and describe a variety of forms of energy:</td>
</tr>
<tr>
<td>• Sound</td>
</tr>
<tr>
<td>• Mechanical</td>
</tr>
<tr>
<td>• Heat</td>
</tr>
<tr>
<td>• Electrical</td>
</tr>
<tr>
<td>• Chemical</td>
</tr>
<tr>
<td>Identify the evidence for energy transformations and how humans use these energy transformations:</td>
</tr>
<tr>
<td>• Heat to light, chemical to electrical, electrical to sound, etc.</td>
</tr>
<tr>
<td>Observe and describe how heat is conducted and can be transferred from one place to another.</td>
</tr>
<tr>
<td>Observe and describe different ways in which heat can be released:</td>
</tr>
<tr>
<td>• Burning, rubbing (friction), or combining one substance with another.</td>
</tr>
<tr>
<td>Interactions of matter and energy (e.g., electricity lighting a bulb, dark colors absorbing light, etc.).</td>
</tr>
<tr>
<td>Sound energy:</td>
</tr>
<tr>
<td>• Pitch (frequency)</td>
</tr>
<tr>
<td>• Vibrations</td>
</tr>
<tr>
<td>• Volume</td>
</tr>
<tr>
<td>• How sound travels through solids, liquids, gases</td>
</tr>
<tr>
<td>• Noise pollution</td>
</tr>
</tbody>
</table>

### UNIT 3
**SIMPLE MACHINES**

<table>
<thead>
<tr>
<th>How do simple machines help us move objects?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate how mechanical energy may cause change in motion through the application of force or the use of simple machines such as:</td>
</tr>
<tr>
<td>• Levers, pulleys, inclined planes</td>
</tr>
<tr>
<td>• Wheel and axle</td>
</tr>
<tr>
<td>Observe and describe how the amount of change in the motion of an object is affected by friction.</td>
</tr>
<tr>
<td>Observe and describe how the position or direction of motion of an object can be changed by pushing or pulling.</td>
</tr>
<tr>
<td>Observe how the force of gravity pulls objects toward the center of the Earth.</td>
</tr>
</tbody>
</table>

### UNIT 4
**PLANT AND ANIMAL ADAPTATIONS**

<table>
<thead>
<tr>
<th>How are plants and animals well-suited to live in their environments?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe how all living things grow, take in nutrients, breathe, reproduce and eliminate waste.</td>
</tr>
<tr>
<td>Describe how plants must be adapted to their environment in order to survive.</td>
</tr>
<tr>
<td>• Structures and their functions (e.g., roots, leaves, flowers, etc.)</td>
</tr>
<tr>
<td>• Adaptations of these structures may include variations in size, shape, thickness, color, smell, and texture.</td>
</tr>
<tr>
<td>• Plants change as the seasons change</td>
</tr>
<tr>
<td>• Seed dispersal</td>
</tr>
<tr>
<td>Describe how animals must be adapted to their environment in order to survive:</td>
</tr>
<tr>
<td>• Structures and their functions (e.g., wings, legs, fins, scales, feathers, fur, etc.)</td>
</tr>
<tr>
<td>• Understand that animals respond to change in the environment (e.g., heart rate, eye blinking, shivering)</td>
</tr>
<tr>
<td>• Animals change as seasons change</td>
</tr>
<tr>
<td>• Hibernation</td>
</tr>
<tr>
<td>• Migration (i.e., moving from place to place to meet needs) including human</td>
</tr>
<tr>
<td>Recognize that traits of living things are both:</td>
</tr>
<tr>
<td>• Inherited (color of flowers, eye color).</td>
</tr>
<tr>
<td>• Learned/acquired (riding a bicycle, having scars)</td>
</tr>
</tbody>
</table>
# grade 4

## UNIT 1
### ANIMALS AND PLANTS IN THEIR ENVIRONMENT

**What roles do plants and animals play in their environments?**

- Classify populations of organisms as producers, consumers, or decomposers by the role they serve in the ecosystem (food chains and food web).
- Explore how plants manufacture food by utilizing air, water, and energy from the sun.
- Understand that food supplies energy and materials necessary for growth and repair.
- Identify populations within a community that are in competition with one another for resources.
- Recognize that individual variations within a species may cause certain individuals to have an advantage in surviving and reproducing.
- Describe how the health, growth, and development of organisms are affected by environmental conditions such as availability of food, water, air, space, shelter, heat, and sunlight.
- Understand that their senses help animals survive.
- Observe that when the environment changes, some plants and animals survive and reproduce, while others die or move to new locations.
- Describe the way that humans:
  - Depend on their natural and constructed environment.
  - Have changed their environment over time.
- Identify examples where human activity has had a beneficial or harmful effect on other organisms (e.g., deforestation).

## UNIT 2
### ELECTRICITY AND MAGNETISM

**What are the properties of electricity and magnetism?**

- Observe, describe, and investigate the evidence of energy transfer in electrical circuits:
  - Simple circuits
  - Open and closed circuits
  - Switches
- Construct and diagram an electrical circuit.
- Identify conductors and insulators in an electrical circuit.
- Compare the electrical and magnetic properties of different materials.
- Investigate properties of magnets, including:
  - Magnets attract or repel certain objects
  - Magnets attract or repel each other
  - Magnetic forces can operate on objects across distances and through materials
  - A magnetic field is produced
- Explore the interaction of electricity and magnetism to create an electromagnet.
- Describe how electricity can be helpful or harmful to people (safety).

## UNIT 3
### PROPERTIES OF WATER

**What makes water so special?**

- Observe, describe, and explore the physical properties of water:
  - Color, texture, odor, sound
  - Changes in shape
  - Changes in the amount of space occupied (compare using containers of different shapes and sizes)
  - Volume, mass (weight)
- Explore how different factors affect evaporation.
- Test objects to determine whether they sink or float:
  - Different materials (plastic, rubber etc.)
  - Different shapes
  - Boat design
- Predict, observe, and examine different substances to determine their ability to mix with water (e.g., oil, water; sugar, water; wooden block, water).
- Examine and describe the transformation of matter from one state to another, e.g., solid water (ice) to liquid (water) to gas (water vapor).
- Water is recycled by natural processes by which earth materials.
- Observe and describe the Water Cycle.
- Describe and illustrate the natural processes by which water is recycled on earth (e.g., ground water, runoff).
- Investigate the negative and positive impact of extreme natural events on living things:
  - Earthquakes
  - Volcanoes
  - Hurricanes
  - Tornadoes
  - Floods
  - Fires

## UNIT 4
### INTERACTIONS OF AIR, WATER, AND LAND

**How do natural events affect our world?**

- Observe, investigate, and record examples of physical and chemical weathering.
- Describe how erosional processes (e.g., action of gravity, wind, and water) cause surface changes to the land.
- Investigate, measure, and observe the deposition of earth materials.
- Describe and illustrate the natural processes by which water is recycled on earth (e.g., ground water, runoff).
- Investigate the negative and positive impact of extreme natural events on living things:
  - Earthquakes
  - Volcanoes
  - Hurricanes
  - Tornadoes
  - Floods
  - Fires

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### UNIT 1
**THE NATURE OF SCIENCE**

**How do scientists gather and share information?**

- Formulate questions of scientific inquiry with the aid of references appropriate for guiding the search for explanations of everyday observations. 
  - S1.1a,b,c
- Identify questions; design and conduct scientific investigations to answer those questions. 
  - S1.2a
  - S2.1b,c
  - S2.2b,c,d,e
  - S2.3b,c
- Employ tools to gather, analyze, and interpret data. 
  - S2.1d
  - S3.1a,b
- Use mathematics in scientific inquiry. 
  - M3.1a
- Use data to construct reasonable explanations. 
  - S3.2a,b,c
- Develop and communicate explanations using evidence. 
  - S1.3
  - S3.2d,e
- Identify dependent and independent variables. 
  - M1.1a
  - S2.2d

### UNIT 2
**EARTH SCIENCE**

**What are the processes that help shape the land?**

- Differentiate between rocks and minerals. 
  - PS 2.1e
- Classify rocks as sedimentary, igneous, or metamorphic. 
  - PS 2.2g
- Investigate, record, and explain how rocks and soil form. 
  - PS 2.1g,h
  - PS 2.2g,h
- Observe, compare, and describe the features on topographic maps. 
  - PS 2.1c
- Investigate, record, and explain the variables that affect erosion and deposition. 
  - PS 2.1g,i
- Investigate and explain how weathering leads to the formation of sediment. 
  - PS 2.1h
- Identify events (earthquakes, volcanic eruptions, etc.) that cause earth movements. 
  - PS 2.2a,c,f
- Develop and construct models of landforms. 
  - S1.2b

### UNIT 3
**FOOD AND NUTRITION**

**How does nutrition and exercise affect our health?**

- Recognize that:
  - Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health. 
    - LE 5.2a,b
    - LE 5.2e,f
  - 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. 
    - LE 5.2a
    - LE 5.2e
- 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. 
  - LE 5.1d
  - LE 5.2a
  - LE 5.2b
- Food supplies the energy and materials necessary for growth and repair. 
  - PS 3.1c,d,e
  - PS 3.1g

### UNIT 4
**EXPLORING ECOSYSTEMS**

**How are plants and animals in an ecosystem connected?**

- Observe, identify, and record the components of a forest ecosystem. 
  - LE 7.1a
- Observe and describe how plants use air, water, and energy from the sun to produce their own food. 
  - LE 5.1d
  - LE 6.2a
- Describe how food supplies the energy and materials necessary for growth and repair of living organisms. 
  - LE 5.1c
  - LE 5.2a
- Classify populations of organisms as producers, consumers, or decomposers by the role they serve in the ecosystem (food chains and food web). 
  - LE 5.1d,e
  - LE 6.1 a,b
- Identify populations within a community that are in competition with one another for resources. 
  - LE 3.2a
- Food supplies the energy and materials necessary for growth and repair. 
  - PS 3.1c,d,e
  - PS 3.1g
- The way humans: 
  - Depend on their natural and constructed environment. 
    - LE 7.1a,b
  - Have changed their environment over time. 
    - LE 7.2a
  - Have changed their environment over time. 
    - LE 7.2b,c
  - Have changed their environment over time. 
    - LE 7.2d
- Identify examples where human activity has had a beneficial or harmful effect on other organisms (e.g., deforestation). 
  - LE 7.2b,c
  - LE 7.2d
### UNIT 1  
**THE NATURE OF SCIENCE**

**How do scientists gather and share information?**

**General Skills (from NYS Core Curriculum)**

1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools:
   - metric ruler
   - balance
   - stopwatch
   - graduated cylinder
   - thermometer
   - spring scale
   - voltmeter
3. Use appropriate units for measured or calculated values.
4. Recognize and analyze patterns and trends.
5. Classify objects according to an established scheme and a student-generated scheme.
6. Develop and use a dichotomous key.
7. Sequence events.
8. Identify cause-and-effect relationships.

### UNIT 2  
**EARTH SCIENCE**

**What are the processes that help shape the land?**

**General Skills (from NYS Core Curriculum)**

1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools:
   - metric ruler
   - balance
   - graduated cylinder
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3. Use appropriate units for measured or calculated values.
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(continued)

### UNIT 3  
**FOOD AND NUTRITION**

**How does nutrition and exercise affect our health?**

**General Skills (from NYS Core Curriculum)**

1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools:
   - metric ruler
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8. Identify cause-and-effect relationships.
9. Use indicators and interpret results.

### UNIT 4  
**EXPLORING ECOSYSTEMS**

**How are plants and animals in an ecosystem connected?**

**General Skills (from NYS Core Curriculum)**

1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools:
   - metric ruler
   - balance
   - graduated cylinder
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3. Use appropriate units for measured or calculated values.
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9. Use indicators and interpret results.

(continued)
### UNIT 1
**THE NATURE OF SCIENCE**

**How do scientists gather and share information?**

**Physical Setting Skills**
(from NYS Core Curriculum)
1. Given the latitude and longitude of a location, indicate its position on a map and determine the latitude and longitude of a given location on a map.
2. Using identification tests and a flow chart, identify mineral samples.
3. Use a diagram of the rock cycle to determine geological processes that led to the formation of a specific rock type.
4. Plot the location of recent earthquake and volcanic activity on a map and identify patterns of distribution.
5. Generate and interpret field maps including topographic and weather maps.

### UNIT 2
**EARTH SCIENCE**

**What are the processes that help shape the land?**

**Living Environment Skills**
(from NYS Core Curriculum)

- Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web.
- Identify pulse points and pulse rates.
- Identify structure and function relationships in organisms.

### UNIT 3
**FOOD AND NUTRITION**

**How does nutrition and exercise affect our health?**

**Living Environment Skills**
(from NYS Core Curriculum)

1. Manipulate a compound microscope to view microscopic objects.
2. Determine the size of a microscopic object, using a compound microscope.
3. Prepare a wet mount slide.
4. Use appropriate staining techniques.
5. Classify living things according to a student-generated scheme and an established scheme.
6. Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web.

### UNIT 4
**EXPLORING ECOSYSTEMS**

**How are plants and animals in an ecosystem connected?**

**Living Environment Skills**
(from NYS Core Curriculum)

- Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web.
### UNIT 1 | SIMPLE AND COMPLEX MACHINES

**How does energy play a role in our lives? How do machines impact our lives?**

- Potential and kinetic energy PS 4.1e
- Mechanical energy PS 4.1d, PS 5.2c
- Machines can affect the magnitude or direction of a force required to do work, or the distance over which that force is applied. PS 5.2f
- Simple machines include the lever, the pulley, the wheel and axle, and the inclined plane. PS 5.2g
- Complex machines PS 5.2g
- Transformation of energy within simple and complex machines PS 4.1c, PS 5.2c
- Principle of the conservation of energy PS 4.5a,b, PS 5.2c
- Friction and machines PS 5.2d,e

### UNIT 2 | WEATHER

**How do matter and energy interact to produce weather patterns?**

#### Properties of Matter
- Matter is anything that takes up space and has mass. PS 3.1a
- Solids, liquids, and gases PS 3.1a,c-f, PS 4.2c
- Relationship between phases of matter and particle motion PS 3.1c,f, PS 4.2c,d
- Density PS 3.1a,h

#### Heating and Cooling Events
- Principle of the conservation of energy PS 4.5a,b
- Transfer of heat: radiation, convection, and conduction PS 4.1a, PS 4.2a,b
- Heat and its relationship to phase changes PS 3.1c, PS 3.2a, PS 4.2c,d
- Expansion and contraction PS 4.2d

### UNIT 3 | DIVERSITY OF LIFE

**How does the transfer of matter and energy through biological communities support diversity of living things?**

#### Kingdoms of Life
- What makes something “alive”? LE 1.1a
- The cell is a basic unit of structure and function of living things. LE 1.1a-c
- Unicellular vs. multicellular organisms LE 1.1d-g
- Biological classification systems LE 1.1h

#### Food Chains and Food Webs
- Principle of the conservation of energy PS 4.1d, PS 4.5a,b
- Flow of energy and matter through food chains and food webs LE 5.1c, LE 5.2a, LE 6.1a-c
- Methods for obtaining nutrients LE 5.1d,e, LE 5.2b
- Role of producers LE 6.2a-c

### UNIT 4 | INTERDEPENDENCE

**How is interdependence essential in maintaining life on Earth?**

#### Climate and Biomes
- Climatic regions PS 2.2j
- Biomes: Tundra, Tropical Rain Forest, Temperate Forests, Grasslands, Desert LE 7.1a, ICT 1.2, 1.4, 4.1
- Seasonal variations PS 1.1i
- Effect of elevation PS 2.1b
- Global Warming: natural cycles vs. human impact LE 7.2d, PS 2.2r, ICT 1.4, 2.1-2.3, 4.1, 5.1, 5.2, 6.1, 6.2, IPS 1.3

#### Ecosystems and Interdependence
- Populations and definition of species LE 1.1h, LE 7.1a
- Communities LE 7.1a
- Ecosystems (including basic abiotic factors such as water, nitrogen, CO₂, and oxygen) LE 7.1a, LE 7.2a, ICT 1.2

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## TRANSFORMATION OF ENERGY; SYSTEMS

### UNIT 1 - SIMPLE AND COMPLEX MACHINES

**How does energy play a role in our lives? How do machines impact our lives?**

### UNIT 2 - WEATHER

**How do matter and energy interact to produce weather patterns?**

**Weather**
- Weather is the result of complex interactions of the atmosphere, hydrosphere, and lithosphere; all weather is caused by the unequal heating of the earth’s surface.
- Light energy vs. heat energy
- Hydrosphere/atmosphere interactions: Water cycle, Precipitation
- Weather factors: Pressure, relative humidity, temperature, wind
- Air masses and fronts
- Extreme weather events: hurricanes, tornadoes, blizzards, drought

**General Skills**
- Follow safety procedures in the classroom and laboratory.
- Safely and accurately use the following measurement tools: metric ruler, spring scale.
- Use appropriate units for measured or calculated values.
- Recognize and analyze patterns and trends.
- Sequence events.
- Identify cause-and-effect relationships.

**General Skills**
- Idea of respiration/ recycling; herbivores/carnivores/omnivores.
- The role of decomposers.

**General Skills**
- Follow safety procedures in the classroom and laboratory.
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### UNIT 3 - DIVERSITY OF LIFE

**How does the transfer of matter and energy through biological communities support diversity of living things?**

**General Skills**
- Idea of respiration/ recycling; herbivores/carnivores/omnivores.
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**General Skills**
- Follow safety procedures in the classroom and laboratory.
- Manipulate a compound microscope to view microscopic objects.
- Determine the size of a microscopic object using a compound microscope.

### UNIT 4 - INTERDEPENDENCE

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**General Skills**
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- Idea of respiration/ recycling; herbivores/carnivores/omnivores.
- The role of decomposers.

**General Skills**
- Follow safety procedures in the classroom and laboratory.
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# Grade 6

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| Use appropriate units for measured or calculated values. | Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web. | Identify cause-and-effect relationships. |
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| Recognize and analyze patterns and trends. | Identify structure and function relationships in organisms. | Use indicators and interpret results. |
| 5. | 3. | 7. |
| Classify objects according to an established scheme and a student-generated scheme. | Sequence events. | Use a magnetic compass to find cardinal directions. |
| 7. | 8. | 6. |
| Generate and interpret field maps including topographic and weather maps. | Identify cause-and-effect relationships. | Measure the angular elevation of an object, using appropriate instruments. |
| 9. | 4. | 10. |
| Measure weather variables such as wind speed and direction, relative humidity, barometric pressure, etc. | Recognize and analyze patterns and trends. | Generate and interpret field maps including topographic and weather maps. |
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| Determine the density of liquids, and regular- and irregular-shaped solids. |  |  |

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### How is interdependence essential in maintaining life on Earth?

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### grade 7

#### CYCLES OF MATTER AND ENERGY; FORM AND FUNCTION; CLASSIFICATION

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**How do we as scientists gather and interpret evidence that Earth is continually changing?**

**Earth as a System**
- Layers and composition: Lithosphere, Hydrosphere, Atmosphere, Biosphere
- Rock cycle
- Classification of rocks: Sedimentary, metamorphic, and igneous rocks
- Properties of minerals including density
- Erosion and weathering

**Rocks and Minerals**
- Rock cycle
- Classification of rocks: Sedimentary, metamorphic, and igneous rocks
- Properties of minerals including density
- Erosion and weathering

**Fossils and Earth’s History**
- Where fossils are found
- Dating of rocks: Absolute and relative age
- The importance of the fossil record

**Properties of Sound and Light**
- Electromagnetic energy
- Wave behavior: Light reflection and refraction, Vibrations and sound waves

**Properties of Matter**
- The properties of materials, such as: density, conductivity, magnetic materials, and solubility
- Elements and compounds
- Atoms and molecules: The Periodic Table as a way of organizing the elements

**Levels of Organization**
- Cells – structure and function
- Tissues; organs; systems; organism
- The Human Body: Maintaining homeostasis: The human body systems
  - Digestive
  - Respiratory
  - Circulatory
  - Excretory
  - Skeletal and Muscular
- Obtaining energy
- Obtaining nutrients

**Other Animals**
- Animal structures and systems
- Maintaining homeostasis
- Obtaining energy
- Obtaining nutrients
- Regulation of the internal environment
- Metabolism
- Responding to the external environment

**Plants**
- Plant structures and systems
- Maintaining homeostasis
- Obtaining energy

### CYCLES OF MATTER AND ENERGY; FORM AND FUNCTION; CLASSIFICATION

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#### How do we as scientists gather and interpret evidence that Earth is continually changing?

**Plate Tectonics**
- Theory of plate movement and evidence supporting the theory
- Convection currents
- Buoyancy (relative density)
- Sea-floor spreading
- Earthquakes: faulting and folding of the earth’s crust
- Volcanoes
- Mountain building
- Topography of Earth’s surface

**General Skills**
- Follow safety procedures in the classroom and laboratory.
- Safely and accurately use the following measurement tools:
  - metric ruler
  - balance
  - graduated cylinder.

#### How do the properties and interactions of matter and energy explain physical and chemical change?

**Physical and Chemical Changes**
- Characteristics of physical changes:
  - Review of phase change/states of matter
  - Mixtures and solutions
  - Temperature and its effect on solubility
- Characteristics of chemical changes

**Understanding Chemical Reactions: Photosynthesis and Respiration**
- Law of Conservation of Mass
- Energy changes in chemical reactions
- Law of Conservation of Energy

**General Skills**
- Follow safety procedures in the classroom and laboratory.
- Safely and accurately use the following measurement tools:
  - metric ruler
  - stopwatch (for pulse rate)
  - thermometer
- Use appropriate units for measured or calculated values.
- Sequence events.
- Identify cause-and-effect relationships.

#### How do human body systems function to maintain homeostasis?

**General Skills**
- Unicellular vs. multicellular organisms
- Maintaining homeostasis
- Obtaining energy
- Obtaining nutrients
- Regulation of the internal environment
- Metabolism
- Responding to the external environment

#### How is homeostasis maintained in other organisms?

**One-celled Organisms**
- Unicellular vs. multicellular organisms
- Maintaining homeostasis
- Obtaining energy
- Obtaining nutrients
- Regulation of the internal environment
- Metabolism
- Responding to the external environment

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**How do we as scientists gather and interpret evidence that Earth is continually changing?**

3. Use appropriate units for measured or calculated values.
4. Recognize and analyze patterns and trends.
5. Classify objects according to an established scheme and a student-generated scheme.
7. Sequence events.
9. Use indicators and interpret results.

**Living Environment Skills** (from NYS Core Curriculum)
(if using microscopes to look at crystals)
1. Manipulate a compound microscope to view microscopic objects.
2. Determine the size of a microscopic object, using a compound microscope.

**Physical Setting Skills** (from NYS Core Curriculum)
1. Given the latitude and longitude of a location, indicate its position on a map and determine the latitude and longitude of a given location on a map.

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<th>How do the properties and interactions of matter and energy explain physical and chemical change?</th>
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<td>Interactions among atoms and/or molecules result in chemical reactions.</td>
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**(PHOTOSYNTHESIS and RESPIRATION)**
- as context for chemical change as well as transformation of energy: light; chemical; heat)

**General Skills** (from NYS Core Curriculum)
1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools:
   - balance
   - graduated cylinder
   - thermometer
   - spring scale
   - voltmeter.
3. Use appropriate units for measured or calculated values.
4. Recognize and analyze patterns and trends.
5. Classify objects according to an established scheme and a student-generated scheme.
6. Develop and use a dichotomous key.
7. Sequence events.
8. Identify cause-and-effect relationships.

**How do human body systems function to maintain homeostasis?**

7. Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web (with regard to nutrients and calories).
8. Identify pulse points and pulse rates.
9. Identify structure and function relationships in organisms.

**How is homeostasis maintained in other organisms?**

**General Skills** (from NYS Core Curriculum)
1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tool:
   - metric ruler.
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### UNIT 1: GEOLOGY

**How do we as scientists gather and interpret evidence that Earth is continually changing?**

2. Using identification tests and a flow chart, identify mineral samples.
3. Use a diagram of the rock cycle to determine geological processes that led to the formation of a specific rock type.
4. Plot the location of recent earthquake and volcanic activity on a map and identify patterns of distribution.
5. Use a magnetic compass to find cardinal directions.
6. Measure the angular elevation of an object, using appropriate instruments.
7. Generate and interpret field maps including topographic and weather maps.
10. Determine the density of liquids, and regular- and irregular-shaped solids.
11. Determine the volume of a regular- and an irregular-shaped solid, using water displacement.
13. Determine the identity of an unknown element, using physical and chemical properties.

### UNIT 2: INTERACTIONS BETWEEN MATTER AND ENERGY

**How do the properties and interactions of matter and energy explain physical and chemical change?**

4. Recognize and analyze patterns and trends.
5. Classify objects according to an established scheme and a student-generated scheme.
7. Sequence events.
9. Use indicators and interpret results.

**Physical Setting Skills (from NYS Core Curriculum)**

10. Determine the density of liquids, and regular- and irregular-shaped solids.
12. Using the periodic table, identify an element as a metal, nonmetal, or noble gas.
13. Determine the identity of an unknown element, using physical and chemical properties.
14. Using appropriate resources, separate the parts of a mixture.
15. Determine the electrical conductivity of a material, using a simple circuit.

### UNIT 3: DYNAMIC EQUILIBRIUM: THE HUMAN ANIMAL

**How do human body systems function to maintain homeostasis?**

### UNIT 4: DYNAMIC EQUILIBRIUM: OTHER ORGANISMS

**How is homeostasis maintained in other organisms?**

Living Environment Skills (from NYS Core Curriculum)

1. Manipulate a compound microscope to view microscopic objects.
2. Determine the size of a microscopic object using a compound microscope.
3. Prepare a wet mount slide.
4. Use appropriate staining techniques.
5. Classify living things according to a student-generated scheme and an established scheme.
6. Identify structure and function relationships in organisms.
### Constancy and Change

<table>
<thead>
<tr>
<th>Grade 8</th>
<th>Unit 1</th>
<th>Reproduction, Heredity, and Evolution</th>
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<td></td>
<td>How does life on Earth continue and adapt in response to environmental change?</td>
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<tr>
<td></td>
<td>Reproductive Patterns and the Continuity of Life</td>
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<tr>
<td></td>
<td>- Asexual Reproduction, e.g., Binary fission in unicellular organisms, budding, and vegetative propagation. LE 2.1d LE 4.1a,b</td>
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<tr>
<td></td>
<td>- Sexual Reproduction – formation of gametes LE 2.1e LE 4.1a,c,d LE 4.2b LE 4.4c</td>
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<td></td>
<td>- Compare and contrast results, contexts, advantages, and disadvantages of each method LE 4.1a</td>
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<td></td>
<td>Patterns of Development and the Continuity of Life</td>
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<td>- Patterns of development in plants LE 4.3a,c,e,f</td>
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<tr>
<td></td>
<td>- Patterns of development in animals LE 4.3a,c,d,f</td>
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<td>- Cell division-growth, maintenance, and repair – Cancer is the result of abnormal cell division LE 4.4a,b LE 4.4d</td>
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<tr>
<td></td>
<td>- Renewable and non-renewable sources of materials LE 6.1c ICT 5.1, 5.2</td>
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<th>Unit 2</th>
<th>Humans in Their Environment: Needs and Tradeoffs (Exit Projects)</th>
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<td>How does human consumption of resources impact the environment and our health?</td>
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<td>Natural Resources and Energy</td>
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<td>- Energy needs LE 3.2a PS 4.1a-d PS 4.4d,e ICT 1.1-1.4, 2.1-2.3, 4.1, 4.2, 5.1, 5.2, 6.1, 6.2 IPS 1.1-1.4 IPS 2.1</td>
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<td>- Renewable and non-renewable sources of energy LE 4.1a,b ICT 5.1, 5.2</td>
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<td></td>
<td>- Material needs LE 3.2a ICT 1.1-1.4, 2.1-2.3, 4.1, 4.2, 5.1, 5.2, 6.1, 6.2 IPS 1.1-1.4 IPS 2.1</td>
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<td>What roles do forces play in the patterns and stability of the Solar System?</td>
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<td>Seasons and Cycles: Relationships Among the Sun, Earth, and Moon</td>
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<td>- Day: rotation PS 1.1e,h</td>
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<td>- Year: revolution PS 1.1e,h</td>
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<td>- Seasons: tilt of Earth’s axis of rotation PS 1.1i</td>
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<td>- Phases of the Moon PS 1.1g</td>
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<td>- Eclipses PS 1.1e</td>
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<td>- Tides PS 1.1e</td>
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<td>Solar System</td>
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<td>- Classification of celestial objects: stars including the sun; planets; comets; moons; and asteroids. PS 1.1a-c,j</td>
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<tr>
<td></td>
<td>- Patterns of motion, frame of reference and position, direction, and speed. PS 1.1c-i</td>
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<tr>
<td></td>
<td>Motion and Newton’s Laws</td>
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<tr>
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<td>- Patterns of motion, frame of reference and position, direction, and speed. PS 5.1a,b</td>
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<tr>
<td></td>
<td>- Newton’s First Law of Motion: Inertia PS 5.1c</td>
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<td></td>
<td>- Newton’s Second Law: F = ma (conceptual understanding as opposed to teaching the formula) PS 5.1d</td>
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<tr>
<td></td>
<td>- Newton’s Third Law: For every reaction there is an equal and opposite reaction; Force as an interaction PS 5.1e</td>
</tr>
</tbody>
</table>

### How does life on Earth continue and adapt in response to environmental change?

**Heredity**
- Genes and DNA: LE 2.1a-e
- Mendelian genetics: LE 2.2a-c
- Mutations: LE 3.1a

**Role of Sexual and Asexual Reproduction in Human Growth and Development**
- The role of the sperm and egg: LE 4.2a,b
- Human reproductive system: LE 1.2i
- Hormonal regulation: LE 1.2h
- Patterns of development: LE 4.3b
- Cell division and genetic expression: LE 4.3b
- Genetic diseases: LE 1.2j
- Genetic engineering, esp. cloning: IPS 1.2, 1.3

**Natural Selection: The Driving Mechanism Behind Evolution**
- Sources of variation in organisms: LE 3.1a
- Adaptations: LE 3.1a-c

**Environmental concerns:**
- Acquisition and depletion of resources: LE 3.2b
- Waste disposal: LE 7.2c,d
- Land use and urban growth: ICT 1.2, 1.4, 2.1-2.3, 4.1, 4.2, 5.1, 5.2, 6.1, 6.2
- Overpopulation: IPS 1.1-1.4
- Global Warming: Ozone depletion: IPS 1.1-1.4
- Acid rain: Air pollution: Water pollution: IMP 1.1-1.4
- Impact on other organisms

**Energy conservation**
- LE 4.5a,b
- ICT 1.1-1.4, 2.1-2.3, 4.1, 5.1, 5.2, 6.1, 6.2
- IPS 1.1-1.4
- IPS 2.1

**Nutrition and Food Choices:**
- Environment: LE 7.2c,d
- Pesticides and herbicides: ICT 6.1
- Fertilizers: organic waste: IPS 1.1-1.4
- IMP 2.1

### How does human consumption of resources impact the environment and our health?

**General Skills (from NYS Core Curriculum)**
1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools:
   - Metric ruler
   - Balance
   - Stopwatch
   - Spring scale.
3. Use appropriate units for measured or calculated values.
4. Recognize and analyze patterns and trends.
5. Identify cause-and-effect relationships.

**Physical Setting Skills (from NYS Core Curriculum)**
16. Determine the speed and acceleration of a moving object.

---

### How does life on Earth continue and adapt in response to environmental change?

- Competition: LE 3.2a
- Extinction: LE 3.2b, LE 7.2d
- Evidence for evolution: LE 3.2c,d

#### General Skills
(from NYS Core Curriculum)
1. Follow safety procedures in the classroom and laboratory.
4. Recognize and analyze patterns and trends.
7. Sequence events.

#### Living Environment Skills
(from NYS Core Curriculum)
1. Manipulate a compound microscope to view microscopic objects (e.g., look at cells undergoing mitosis).
2. Determine the size of a microscopic object using a compound microscope.
5. Design and use a Punnett square or a pedigree chart to predict the probability of certain traits.
6. Classify living things (evolutionary relationships).

### How does human consumption of resources impact the environment and our health?

- Endangered species: Habitat destruction, over fishing
- Packaging and solid waste
- Water issues: depletion, pollution

#### Homeostasis and Health:
- Analyzing nutritional value: LE 5.2a,b, ICT 6.1
- Food-borne illness: Infectious disease and the immune system (bacteria, parasites)
- System failures: heart disease; high blood pressure; colon cancer; epidemics of childhood obesity and diabetes; osteoporosis

### What roles do forces play in the patterns and stability of the Solar System?

**Physical Setting Skills**
(from NYS Core Curriculum)
1. Given the latitude and longitude of a location, indicate its position on a map and determine the latitude and longitude of a given location on a map.

### How do we apply the laws of motion to explain the movement of objects on Earth?

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# CONSTANCY AND CHANGE

## grade 8

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### How does life on Earth continue and adapt in response to environmental change?

8. Identify cause-and-effect relationships.

9. Identify structure and function relationships in organisms.

**Genes and DNA**

**Mendelian genetics**

**Mutations**

### How does human consumption of resources impact the environment and our health?

General Skills (from NYS Core Curriculum)

1. Follow safety procedures in the classroom and laboratory.

2. Safely and accurately use the following measurement tools: (depends on project).

3. Use appropriate units for measured or calculated values.

4. Recognize and analyze patterns and trends.

7. Sequence events.

8. Identify cause-and-effect relationships.

9. Use indicators and interpret results.

[Note: Physical Setting and Living Environment skills will vary depending on projects pursued.]

### What roles do forces play in the patterns and stability of the Solar System?

### How do we apply the laws of motion to explain the movement of objects on Earth?

## grade 8

### CONSTANCY AND CHANGE

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| **How does life on Earth continue and adapt in response to environmental change?** | **How does human consumption of resources impact the environment and our health?** | **What roles do forces play in the patterns and stability of the Solar System?** | **How do we apply the laws of motion to explain the movement of objects on Earth?** |

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**Living Environment**

7. Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web.

9. Identify structure and function relationships in organisms (within the study of system failures).

**Physical Setting:**

Look for opportunities to address density, as this is a significant concept for the ILSE.

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