First Grade
Essential Questions by Unit

Strand	Unit	Essential Questions
Strand 1 **Matter & Energy**	Properties of Matter: Mass Characteristics of Plants & Animals Earth Materials: Soil	**What makes up our world?** **How does energy move?**
Strand 2 **Force & Motion**	Investigating Motion	**How do objects move?**
Strand 3 **Living Systems**	Characteristics of Plants & Animals	**What is necessary for life?** **How can living things be so different yet be so alike?**
Strand 4 **Ecology**	Characteristics of Plants & Animals	**How connected are all living things?**
Strand 5 **Earth Systems**	Earth Materials: Soil	**What makes up our world?**
Strand 6 **Universe**		
Strand 7 **Scientific Inquiry**	Inquiry	**How can I investigate my ideas about nature?**
Strand 8 **Science, Technology & Human Activity**	Science, Technology & Human Activity	**How does science impact our life?**

First Grade Level Expectations

Strand 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter

A. Objects, and the materials they are made of, have properties that can be used to describe and classify them

Scope and Sequence – ***Properties of Matter: Mass***

a. Given an equal-arm balance and various objects, illustrate arrangements in which the beam is balanced
b. Measure and compare the mass of objects (more/less)
c. Order objects according to mass
d. Describe and compare the physical properties of objects by using simple tools (i.e., thermometer, magnifier, centimeter ruler, balance, magnet)

Scope and Sequence – ***Earth Materials: Soils***

a. Describe and compare the physical properties of objects by using simple tools (i.e., thermometer, magnifier, centimeter ruler, balance, magnet)
b. Classify objects as "one kind of material" or a mixture

B. Properties of mixtures depend upon the concentrations, properties, and interactions of particles

Scope and Sequence – ***Earth Materials: Soils***

a. Observe and describe how mixtures are made by combining solids
b. Describe ways to separate the components of a mixture by their physical properties (e.g., sorting, screening)

2. Energy has a source, can be transferred, and can be transformed into various forms but is conserved between and within systems

C. Electromagnetic energy from the Sun (solar radiation) is a major source of energy on Earth

Scope and Sequence – ***Characteristics of Plants and Animals***

a. Identify light from the Sun as a basic need of most plants

Strand 2: Properties and Principles of Force and Motion

1. The motion of an object is described by its change in position relative to another object or point

A. The motion of an object is described as a change in position, direction, and speed relative to another object (frame of reference)

Scope and Sequence – ***Investigating Motion***

a. Compare the position of an object relative to another object (e.g., left of or right of)
b. Describe an object's motion as straight, circular, vibrational (back and forth), zigzag, stopping, starting, or falling
c. Compare the speeds (faster vs. slower) of two moving objects

2. Forces affect motion

A. Forces are classified as either contact forces (pushes, pulls, friction, buoyancy) or non-contact forces (gravity, magnetism), that can be described in terms of direction and magnitude

Scope and Sequence – ***Investigating Motion***

a. Identify the force (i.e., push or pull) required to do work (move an object)

D. Newton's Laws of Motion explain the interaction of mass and forces, and are used to predict changes in motion

Scope and Sequence – ***Investigating Motion***

a. Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop)

Strand 3: Characteristics and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms

A. Organisms have basic needs for survival

Scope and Sequence – ***Characteristics of Plants and Animals***

a. Identify the basic needs of most animals (i.e., air, water, food, shelter)
b. Identify the basic needs of most plants (i.e., air, water, light)
c. Predict and investigate the growth of plants when growing conditions are altered (e.g., dark vs. light, water vs. no water)

D. Plants and animals have different structures that serve similar functions necessary for the survival of the organism

Scope and Sequence – ***Characteristics of Plants and Animals***

a. Identify and compare the physical structures of a variety of plants (e.g., stem, leaves, flowers, seeds, roots)
b. Identify and compare the physical structures of a variety of animals (e.g., sensory organs, beaks, appendages, body covering) (Do NOT assess terms: sensory organs, appendages)
c. Identify the relationships between the physical structures of plants and the function of those structures (e.g., absorption of water, absorption of light energy, support, reproduction)
d. Identify the relationships between the physical structures of animals and the function of those structures (e.g., taking in water, support, movement, obtaining food, reproduction)

E. Biological classifications are based on how organisms are related

Scope and Sequence – ***Characteristics of Plants and Animals***

a. Distinguish between plants and animals based on observable structures and behaviors

Strand 4: Changes in Ecosystems and Interactions of Organisms with their Environments

1. Organisms are interdependent with one another and with their environment

A. All populations living together within a community interact with one another and with their environment in order to survive and maintain a balanced ecosystem

Scope and Sequence – ***Characteristics of Plants and Animals***

a. Identify ways man depends on plants and animals for food, clothing, and shelter

Strand 5: Process and Interactions of the Earth's Systems

1. Earth's systems (geosphere, atmosphere, and hydrosphere) have common components and unique structures

A. The Earth's crust is composed of various materials, including soil, minerals, and rocks, with characteristic properties

Scope and Sequence – ***Earth Materials: Soils***

a. Observe and describe the physical properties (e.g., odor, color, appearance, relative grain size, texture, absorption of water) and different components (i.e., sand, clay, humus) of soils

3. Human activity is dependent upon and affects Earth's resources and systems

A. Earth's materials are limited natural resources affected by human activity

Scope and Sequence – ***Earth Materials: Soil***

a. Observe and describe ways humans use Earth's materials (e.g., soil) in daily life

Strand 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking

A. Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation

Scope and Sequence - ***All Units***

a. Pose questions about objects, materials, organisms, and events in the environment
b. Plan and conduct a simple investigation (fair test) to answer a question

B. Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations

Scope and Sequence - ***All Units***

a. Make qualitative observations using the five senses
b. Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)
c. Measure length, mass, and temperature using standard and non-standard units
d. Compare amounts/measurements

C. Evidence is used to formulate explanations

Scope and Sequence - ***All Units***

a. Use observations as support for reasonable explanations
b. Use observations to describe relationships and patterns and to make predictions to be tested

D. Scientific inquiry includes evaluation of explanations (hypotheses, laws, theories) in light of scientific principles (understandings)

Scope and Sequence - ***All Units***

a. Compare explanations with prior knowledge

E. The nature of science relies upon communication of results and justification of explanations

Scope and Sequence - ***All Units***

a. Communicate simple procedures and results of investigations and explanations through:
   - ⇒ oral presentations
   - ⇒ drawings and maps
   - ⇒ data tables
   - ⇒ graphs (bar, pictograph)
   - ⇒ writings

Strand 8: Impact of Science, Technology and Human Activity

1. The nature of technology can advance, and is advanced by, science as it seeks to apply scientific knowledge in ways that meet human needs

A. Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all

Scope and Sequence – ***Properties of Matter***

a. Recognize some objects occur in nature (natural objects); others have been designed and made by people

B. Advances in technology often result in improved data collection and an increase in scientific information

Scope and Sequence – ***Properties of Matter/Plants and Animals***

a. Describe how tools have helped scientists make better observations (i.e., magnifiers)

3. Science and technology affect, and are affected by, society

A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done

Scope and Sequence - ***All Units***

a. Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of individuals solving everyday problems or learning through discovery)
b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (Assess Locally)