

Tennessee Science Standards

Grade 3 : Inquiry

Conceptual Strand

Understandings about scientific inquiry and the ability to conduct inquiry are essential for living in the 21st century.

Guiding Question

What tools, skills, knowledge, and dispositions are needed to conduct scientific inquiry?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.Inq.1 Explore different scientific phenomena by asking questions, making logical predictions, planning investigations, and recording data.</p> <p>GLE 0307.Inq.2 Select and use appropriate tools and simple equipment to conduct an investigation.</p> <p>GLE 0307.Inq.3 Organize data into appropriate tables, graphs, drawings, or diagrams.</p> <p>GLE 0307.Inq.4 Identify and interpret simple patterns of evidence to communicate the findings of multiple investigations.</p> <p>GLE 0307.Inq.5 Recognize that people may interpret the same results in different ways.</p>	<p>✓0307.Inq.1 Identify specific investigations that could be used to answer a particular question and identify reasons for this choice.</p> <p>✓0307.Inq.2 Identify tools needed to investigate specific questions.</p> <p>✓0307.Inq.3 Maintain a science notebook that includes observations, data, diagrams, and explanations.</p> <p>✓0307.Inq.4 Analyze and communicate findings from multiple investigations of similar phenomena to reach a conclusion.</p>	<p>SPI 0307.Inq.1 Select an investigation that could be used to answer a specific question.</p>

GLE 0307.Inq.6 Compare the results of an investigation with what scientists already accept about this question.		
---	--	--

Grade 3 : Technology & Engineering

Conceptual Strand

Society benefits when engineers apply scientific discoveries to design materials and processes that develop into enabling technologies.

Guiding Question

How do science concepts, engineering skills, and applications of technology improve the quality of life?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.T/E.1 Describe how tools, technology, and inventions help to answer questions and solve problems.</p> <p>GLE 0307.T/E.2 Recognize that new tools, technology, and inventions are always being developed.</p> <p>GLE 0307.T/E.3 Identify appropriate materials, tools, and machines that can extend or enhance the ability to solve a specified problem.</p> <p>GLE 0307.T/E.4 Recognize the connection between scientific advances, new knowledge, and the availability of new tools and</p>	<p>✓0307.T/E.1 Explain how different inventions and technologies impact people and other living organisms.</p> <p>✓0307.T/E.2 Design a tool or a process that addresses an identified problem caused by human activity.</p> <p>✓0307.T/E.3 Determine criteria to evaluate the effectiveness of a solution to a specified problem.</p> <p>✓0307.T/E.4 Evaluate an invention that solves a problem and determine ways to improve the design.</p>	<p>SPI 0307.T/E.1 Select a tool, technology, or invention that was used to solve a human problem.</p> <p>SPI 0307.T/E.2 Recognize the connection between a scientific advance and the development of a new tool or technology.</p>

technologies.		
GLE 0307.T/E.5 Apply a creative design strategy to solve a particular problem generated by societal needs and wants.		

Grade 3 - Life Science

Grade 3 : Standard 1 - Cells

Conceptual Strand 1

All living things are made of cells that perform functions necessary for life.

Guiding Question 1

How are plant and animals cells organized to carry on the processes of life?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
GLE 0307.1.1 Use magnifiers to make observations of specific plant and body parts and describe their functions.	<p>✓0307.1.1 Use a magnifier to investigate and describe the function of root hairs, stem cross sections, and leaf veins.</p> <p>✓0307.1.2 Use a magnifier to investigate and describe the function of skin pores, hair follicles, finger nails, veins, and cuticles, etc.</p>	SPI 0307.1.1 Identify specific parts of a plant and describe their function.

Grade 3 : Standard 2 - Interdependence

Conceptual Strand 2

All life is interdependent and interacts with the environment.

Guiding Question 2

How do living things interact with one another and with the non-living elements of their environment?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.2.1 Categorize things as living or non-living.</p> <p>GLE 0307.2.2 Explain how organisms with similar needs compete with one another for resources.</p>	<p>✓0307.2.1 Use a T-Chart to compare and contrast the characteristics of living and non-living things.</p> <p>✓0307.2.2 Label a drawing of an environment to illustrate interrelationships among plants and animals.</p> <p>✓0307.2.3 Construct a diagram to demonstrate how plants, animals, and the environment interact to provide basic life requirements</p>	<p>SPI 0307.2.1 Distinguish between living and non-living things.</p> <p>SPI 0307.2.2 Determine how plants and animals compete for resources such as food, space, water, air, and shelter.</p>

Grade 3 : Standard 3 - Flow of Matter and Energy

Conceptual Strand 3

Matter and energy flow through the biosphere.

Guiding Question 3

What scientific information explains how matter and energy flow through the biosphere?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
GLE 0307.3.1 Describe how animals use food to obtain energy and materials for growth and repair.	✓0307.3.1 Label a diagram to illustrate the food relationships that exist between plant and animals. ✓0307.3.2 Create a chart to show how plants and animals satisfy their energy requirements. ✓0307.3.3 Identify structures used by different plants and animals to meet their basic energy requirements. ✓0307.3.4 Use a piece of text to obtain basic information about how plants and animals obtain food.	SPI 0307.3.1 Identify the basic needs of plants and animals. SPI 0307.3.2 Recognize that animals obtain their food by eating plants and other animals.

Grade 3 : Standard 4 - Heredity

Conceptual Strand 4

Plants and animals reproduce and transmit hereditary information between generations.

Guiding Question 4

What are the principal mechanisms by which living things reproduce and transmit information between parents and offspring?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.4.1 Identify the different life stages through which plants and animals pass.</p> <p>GLE 0307.4.2 Recognize common human characteristics that are transmitted from parents to offspring.</p>	<p>✓0307.4.1 Sequence diagrams that illustrate various stages in the development of an organism.</p> <p>✓0307.4.2 Create a timeline to depict the changes that occur during an organism’s life cycle.</p> <p>✓0307.4.3 Differentiate among the stages in the life cycle of a butterfly, mealworm, frog, and plant.</p> <p>✓0307.4.4 Draw conclusions about the similarities and differences between parents and their offspring</p> <p>✓0307.4.5 Make a list of human characteristics that are transmitted from parents to their offspring.</p>	<p>SPI 0307.4.1 Select an illustration that shows how an organism changes as it develops.</p> <p>SPI 0307.4.2 Distinguish between characteristics that are transmitted from parents to offspring and those that are not.</p>

Grade 3 : Standard 5 - Biodiversity and Change

Conceptual Strand 5

A rich variety of complex organisms have developed in response to a continually changing environment.

Guiding Question 5

How does natural selection explain how organisms have changed over time?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.5.1 Explore the relationship between an organism’s characteristics and its ability to survive in a particular environment.</p> <p>GLE 0307.5.2 Classify organisms as thriving, threatened, endangered, or extinct.</p>	<p>✓0307.5.1 Create representations of animals that have characteristics necessary to survive in a particular environment.</p> <p>✓0307.5.2 Investigate the connection between an organism’s characteristics and its ability to survive in a specific environment.</p> <p>✓0307.5.3 Describe how environmental factors change over place and time.</p> <p>✓0307.5.4 Determine how changes in an environmental variable can affect plants and animals of an area.</p> <p>✓0307.5.5 Construct a diorama that shows plants and animals in an appropriate environment.</p> <p>✓0307.5.6 Identify evidence used to determine the previous existence of an organism.</p> <p>✓0307.5.7 Use a data chart or informational text to classify organisms as thriving, threatened, endangered, or extinct.</p>	<p>SPI 0307.5.1 Investigate an organism’s characteristics and evaluate how these features enable it to survive in a particular environment.</p> <p>SPI 0307.5.2 Investigate populations of different organisms and classify them as thriving, threatened, endangered, or extinct.</p> <p>SPI 0307.5.3 Match the organism with evidence of its prior existence.</p>

Grade 3 - Earth and Space Science

Grade 3 : Standard 6 - The Universe

Conceptual Strand 6

The cosmos is vast and explored well enough to know its basic structure and operational principles.

Guiding Question 6

What big ideas guide human understanding about the origin and structure of the universe, Earth's place in the cosmos, and observable motions and patterns in the sky?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
GLE 0307.6.1 Identify and compare the major components of the solar system.	✓0307.6.1 Create a model of the solar system depicting the major components and their relative positions and sizes. ✓0307.6.2 Use a table to compare and contrast the major solar system components.	SPI 0307.6.1 Identify the major components of the solar system, i.e., sun, planets and moons.

Grade 3 : Standard 7 – The Earth

Conceptual Strand 7

Major geologic events that occur over eons or brief moments in time continually shape and reshape the surface of the Earth, resulting in

continuous global change.

Guiding Question 7

How is the earth affected by long-term and short term geological cycles and the influence of man?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.7.1 Use information and illustrations to identify the earth's major landforms and water bodies.</p> <p>GLE 0307.7.2 Recognize that rocks can be composed of one or more minerals.</p> <p>GLE 0307.7.3 Distinguish between natural and manmade objects.</p> <p>GLE 0307.7.4 Design a simple investigation to demonstrate how earth materials can be conserved or recycled.</p>	<p>✓0307.7.1 Use a Venn diagram to compare and contrast two different landforms or bodies of water.</p> <p>✓0307.7.2 Analyze the physical characteristics of different kinds of rocks.</p> <p>✓0307.7.3 Use a magnifier to observe, describe, and compare materials to determine if they are natural or manmade.</p> <p>✓0307.7.4 Design and evaluate a method for reusing or recycling classroom materials.</p> <p>✓0307.7.5 Create a web that demonstrates the link between basic human needs and the earth's resources.</p>	<p>SPI 0307.7.1 Classify landforms and bodies of water according to their geological features and identify them on a map.</p> <p>SPI 0307.7.2 Describe how rocks can be classified according to their physical characteristics.</p> <p>SPI 0307.7.3 Identify an object as natural or manmade.</p> <p>SPI 0307.7.4 Determine methods for conserving natural resources.</p>

Grade 3 : Standard 8 - The Atmosphere

Conceptual Strand 8

The earth is surrounded by an active atmosphere and an energy system that controls the distribution life, local weather, climate, and

global temperature.

Guiding Question 8

How do the physical characteristics and the chemical makeup of the atmosphere influence surface processes and life on Earth?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.8.1 Recognize that there are a variety of atmospheric conditions that can be measured.</p> <p>GLE 0307.8.2 Use tools such as the barometer, thermometer, anemometer, and rain gauge to measure atmospheric conditions.</p> <p>GLE 0307.8.3 Identify cloud types associated with particular atmospheric conditions.</p> <p>GLE 0307.8.4 Predict the weather based on cloud observations.</p>	<p>✓0307.8.1 Select appropriate tools used for collecting weather data that correspond to the atmospheric condition being measured.</p> <p>✓0307.8.2 Identify major cloud types and associate them with particular weather conditions.</p>	<p>SPI 0307.8.1 Choose the correct tool for measuring a particular atmospheric condition.</p> <p>SPI 0307.8.2 Match major cloud types with specific atmospheric conditions.</p>

Grade 3 - Physical Science

Grade 3 : Standard 9 - Matter

Conceptual Strand 9

The composition and structure of matter is known, and it behaves according to principles that are generally understood.

Guiding Question 9

How does the structure of matter influence its physical and chemical behavior?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.9.1 Design a simple experiment to determine how the physical properties of matter can change over time and under different conditions.</p> <p>GLE 0307.9.2 Investigate different types of mixtures.</p> <p>GLE 0307.9.3 Describe different methods to separate mixtures.</p>	<p>✓0307.9.1 Use physical properties to compare and contrast substances.</p> <p>✓0307.9.2 Compare and contrast events that demonstrate evaporation, crystallization, and melting.</p> <p>✓0307.9.3 Make predictions and conduct experiments about conditions needed to change the physical properties of particular substances.</p> <p>✓0307.9.4 Classify combinations of materials according to whether they have retained or lost their individual properties.</p> <p>✓0307.9.5 Investigate different ways to separate mixtures such as filtration, evaporation, settling, or using a sieve.</p>	<p>SPI 0307.9.1 Describe a substance in terms of its physical properties.</p> <p>SPI 0307.9.2 Identify methods for separating different types of mixtures.</p>

Grade 3 : Standard 10 - Energy

Conceptual Strand 10

Various forms of energy are constantly being transformed into other types without any net loss of energy from the system.

Guiding Question 10

What basic energy related ideas are essential for understanding the dependency of the natural and man-made worlds on energy?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.10.1 Investigate phenomena that produce heat.</p> <p>GLE 0307.10.2 Design and conduct an experiment to investigate the ability of different materials to conduct heat.</p>	<p>✓0307.10.1 Associate the sun's energy with the melting of an ice cube placed in a window.</p> <p>✓0307.10.2 Investigate various materials to explore heat conduction.</p>	<p>SPI 0307.10.1 Use an illustration to identify various sources of heat energy.</p> <p>SPI 0307.10.2 Classify materials according to their ability to conduct heat.</p>

Grade 3 : Standard 11 - Motion

Conceptual Strand 11

Objects move in ways that can be observed, described, predicted, and measured.

Guiding Question 11

What causes objects to move differently under different circumstances?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
---------------------------------	---------------------------------	-------------------------------------

<p>GLE 0307.11.1 Explore how the direction of a moving object is affected by unbalanced forces.</p> <p>GLE 0307.11.2 Recognize the relationship between the mass of an object and the force needed to move it.</p> <p>GLE 0307.11.3 Investigate how the pitch and volume of a sound can be changed.</p>	<p>✓0307.11.1 Plan an investigation to illustrate how changing the mass affects a balanced system.</p> <p>✓0307.11.2 Use a variety of materials to produce sounds of different pitch and volume.</p> <p>✓0307.11.3 Classify a variety of taped sounds according to their pitch and volume.</p>	<p>SPI 0307.11.1 Identify how the direction of a moving object is changed by an applied force.</p> <p>SPI 0307.11.2 Demonstrate how changing the mass affects a balanced system.</p> <p>SPI 0307.11.3 Distinguish between pitch and volume.</p> <p>SPI 0307.11.4 Identify how sounds with different pitch and volume are produced.</p>
--	---	--

Grade 3 : Standard 12 - Forces in Nature

Conceptual Strand 12

Everything in the universe exerts a gravitational force on everything else; there is an interplay between magnetic fields and electrical currents.

Guiding Question 12

What are the scientific principles that explain gravity and electromagnetism?

Grade Level Expectations	Checks for Understanding	State Performance Indicators
<p>GLE 0307.12.1 Explore how magnets attract objects made of certain metals.</p>	<p>✓0307.12.1 Experiment with magnets to determine how distance affects magnetic attraction.</p> <p>✓0307.12.2 Determine that only certain types of objects are attracted to magnets.</p>	<p>SPI 0307.12.1 Recognize that magnets can move objects without touching them.</p> <p>SPI 0307.12.2 Identify objects that are attracted to magnets.</p>

