3rd Grade Science

Chapter 3: iLEAP Science, Grade 3

This section describes the overall design of the *i*LEAP Science test to be administered to students in grade 3. Test specifications and sample test questions are provided so that teachers may align classroom practices with the state assessment.

Test Structure

The Science test consists of one part and is administered in a single day.

The Science test is a criterion-referenced test (CRT) that includes items based entirely on Louisiana's science content standards. These items are aligned with Louisiana's Grade-Level Expectations (GLEs) and were developed specifically for Louisiana.

Item Types

The test has forty (40) multiple-choice items.

The multiple-choice items consist of an interrogatory stem and four answer options. These items assess a student's knowledge and conceptual understanding, and responses will be scored 1 if correct and 0 if incorrect.

To maximize the meaningfulness of multiple-choice test items, questions are typically cast in a practical problem-solving context, referring to a single stimulus (e.g., chart) or to a description of a single scenario. The reading difficulty level of test questions is minimized to the extent possible (except for necessary scientific terms) so that students' reading ability does not interfere with their ability to demonstrate their science knowledge and skills.

Description of the Science Test

The Science test was developed specifically for Louisiana. Committees of Louisiana educators reviewed all items for content and alignment with Louisiana's standards, benchmarks, and GLEs. Separate committees reviewed the items for potential bias and sensitive material.

The Science test is **untimed.** About one hour (60 minutes) is the suggested time to allow students to answer the questions.

The grade 3 Science test assesses student learning in the five science strands delineated in the Louisiana Science Framework and the Comprehensive Curriculum: Science as Inquiry, Physical Science, Life Science, Earth and Space Science, and Science and the Environment.

Description of Stimulus Material

The stimulus material may include:

- Data tables or graphs presenting data to be read or interpreted;
- Charts, illustrations, or graphic organizers;
- Descriptions and details of science investigations; and/or
- Maps showing geographical features.

Scoring Information

The *i*LEAP Science test contains multiple-choice items only. These items have four response options (A, B, C, D) and are scored right or wrong. Correct answers receive a score of 1; incorrect answers receive a score of 0.

Science Test Specifications

Table 3.1 provides the test specifications for the grade 3 *i*LEAP Science assessment. The values in the table are approximations due to slight variations in the content across test forms.

Table 3.1: Grade 3 Science Test Specifications

| Strand/Category | % of Total Points |
|---|-------------------|
| Science as Inquiry | 20 |
| A. The Abilities Necessary to Do Scientific Inquiry | |
| B. Understanding Scientific Inquiry | |
| Physical Science | 20 |
| A. Properties of Objects and Materials | |
| B. Position and Motion of Objects | |
| C. Forms of Energy | |
| Life Science | 20 |
| A. Characteristics of Organisms | |
| B. Life Cycles of Organisms | |
| C. Organisms and their Environments | |
| Earth and Space Science | 20 |
| A. Properties of Earth Materials | |
| B. Objects in the Sky | |
| Science and the Environment | 20 |
| Total | 100 |

Strands, Benchmarks, and GLEs Assessed

Louisiana's Science Framework encompasses five strands: Science as Inquiry, Physical Science, Life Science, Earth and Space Science, and Science and the Environment. At grade 3, all five strands are taught.

The Louisiana science strands are each associated with a single standard, which present broad goals for what all students in Louisiana should know and be able to do in science:

Science as Inquiry (SI) Strand

Standard: Students will do science by engaging in partial and full inquiries that are within their developmental capabilities.

Physical Science (PS) Strand

Standard: Students will develop an understanding of the characteristics and interrelationships of matter and energy in the physical world.

Life Science (LS) Strand

Standard: The students will become aware of the characteristics and life cycles of organisms and understand their relationships to each other and to their environment.

Earth and Space Science (ESS) Strand

Standard: The students will develop an understanding of the properties of earth materials, the structure of Earth's systems, Earth's history, and Earth's place in the universe.

Science and the Environment (SE) Strand

Standard: In learning environmental science, students will develop an appreciation of the natural environment, learn the importance of environmental quality, and acquire a sense of stewardship. As consumers and citizens, they will be able to recognize how our personal, professional, and political actions affect the natural world.

The focus for grade 3 Louisiana students is general science concepts as delineated by the GLEs. The content explored at this grade level includes measuring and describing matter and materials, forces and motion, energy, plants and animals, rocks, soils, and change, the solar system, the environment, and weather patterns. For this reason, the grade 3 *i*LEAP Science test assesses all five strands.

Science as Inquiry is a **process** strand; the others are **content** strands. The organization into strands does not imply that science should be taught in isolated units. In fact, teachers are encouraged to integrate study units. Inquiry should be integrated across all the science content strands.

GLEs further define the knowledge and skills students are expected to master by the end of each grade or high school course. The GLEs for each grade are developmentally appropriate and increase in complexity to build the knowledge and skills students need.

Most of the grade 3 GLEs are eligible for assessment on the grade 3 *i*LEAP. Some, however, do not lend themselves to testing on a statewide assessment in multiple-choice format. For example, some GLEs require students to use a particular technology, measure temperature, or construct graphs. Other GLEs, in accordance with the Comprehensive Curriculum, may not

be taught prior to the spring test administration and therefore will not be assessed. Science as Inquiry GLE 9 is not assessed. Physical Science GLEs 20 and 23 are not assessed. Life Science GLE 44 is not assessed. It is important, however, that the skills represented by these GLEs are taught at this grade level to prepare students for classroom assessment purposes as well as for the grade 4 LEAP test.

Explanation of Codes

GLEs are numbered consecutively in each grade level and grouped by strand and thematic category. For example:

Strand: Physical Science

Categories: A. Properties of Objects and Materials

B. Position and Motion of Objects

C. Forms of Energy

Benchmarks are coded by strand, grade cluster (E, M, H), and benchmark number. The first term in the code refers to the strand. The second term refers to the grade cluster, and the third term refers to the category and benchmark number. Categories are indicated by letters.

Table 3.2 provides three examples of benchmark codes.

Table 3.2: Examples of Science Codes

| Code | Translation |
|---------|---|
| SI-E-A5 | SI strand, Elementary level, category A, benchmark 5 |
| PS-M-B4 | PS strand, Middle School level, category B, benchmark 4 |
| SE-H-A6 | SE strand, High School level, category A, benchmark 6 |

For most grade clusters, strands are divided into categories, or major topical areas. However, the SE strand has no substrands for prekindergarten through 4 and 5 through 8.

Science GLEs are numbered consecutively in Science as Inquiry and consecutively within the content strands.

Science As Inquiry—GLEs 1–17

Physical Science—GLEs 18–33

Life Science—GLEs 34–44

Earth and Space Science—GLEs 45-56

Science and the Environment—GLEs 57–62

Key Concepts for the Grade 3 Assessment

The key concepts are provided to guide teachers in their classroom instruction as it relates to the assessment. These concepts describe important content emphasis regarding the knowledge and skills eligible for assessment of each strand.

Science as Inquiry

1. Questions, Observations, and Predictions

- Identify which questions can or cannot be answered based on a given scenario
- Identify which questions can be answered by doing a scientific investigation
- Identify components of an investigation that help answer testable questions (e.g., select the correct set-up)
- Predict outcomes based on a given scenario
- Identify which sense is used to describe observations
- Make predictions and reach conclusions using one or more sets of data
- Identify questions that cannot be answered during an investigation or answered using different types of experimentation
- Identify scientific discoveries that have positively and negatively affected society

2. Procedures and Tools

- Use more than one source (e.g. Venn diagram and data table) to answer a question
- Identify the correct way to measure temperature, mass, and volume
- Select the appropriate tool and units of measurement to answer questions
- Use a variety of formats (e.g. charts, data tables, and graphs) to describe procedures or experimental results
- Identify correct safety procedures
- Identify what needs to be known before beginning an investigation
- Identify which tools are used to look at objects of different magnification
- Identify correct procedures in an investigation so that the same investigation can be replicated

Physical Science

1. Physical Properties

- Using experimentation, compare and classify objects by physical property (e.g., electricity, density, shape, and magnetism
- Measure mass (weight), length, width, volume, and temperature using metric system or U.S. system tools
- Identify the original material from which objects are made (e.g. paper, pencil)
- Explain how matter changes shape and identify examples (e.g. freezing, boiling, melting, evaporation)

2. Energy, Electricity, and Forces

- Identify the correct shadow as indicated by the direction of the light source
- Identify the correct motion or position of an object based on previous movement patterns
- Compare the pitch of sound using the words *high/low*
- Compare the volume of sound using the words *loud/soft*
- Identify the correct reflection/absorption of light as it is transmitted through colored objects
- Describe how common forms of energy are used in everyday life
- Using given experimental data, identify the best insulating material
- Recognize how electricity flows through an open and a closed system
- Determine the amount and direction an object will move when a force acts upon it
- Identify which force causes an object to move
- Identify which type of energy moves or lifts objects
- Identify simple machines and the tasks they make possible

Life Science

1. Plants and Animals

- Compare the common body structures of a variety of animals (e.g. fish, mammals, reptiles, amphibians, birds, and insects)
- Identify the functions of each plant part and describe how each function helps the plant survive
- Group plants and animals based on common characteristics

2. Humans

- Identify the organs in the digestive system and describe the functions of each
- Describe the function of bones within the human body
- Describe what the human body needs to grow and be healthy (e.g. for survival, for bone growth)
- Determine how healthy eating habits help maintain a healthy body
- Identify a well-balanced meal that includes all food groups

Earth and Space Science

1. Earth

- Recognize that rocks are made up of minerals
- Identify that erosion, weathering, and rusting are earth processes that are happening all around
- Compare the characteristics of igneous, metamorphic, and sedimentary rocks
- Identify and compare the components of soil (e.g. humus, rock particles)
- Identify characteristics of given fossils and describe the how fossils provide information about the past

2. Atmosphere

- Identify the components and processes of the water cycle (e.g. evaporation, condensation, precipitation, and runoff)
- Identify climate patterns based on given weather conditions
- Explain the difference between weather and climate

3. Solar System

- Identify, in order, the planets of the solar system
- Describe why the Sun appears to move across the sky
- Explain the difference between rotation and revolution of Earth (e.g. day and night, season of the year)
- Compare the length of shadows and direction of shadows at different times of the day or year

Science and the Environment

1. Ecosystems

- Describe how living and nonliving components of various ecosystems interact
- Describe how humans have positive and negative effects on organisms and their environment
- Describe how endangered animals have recovered and identify Louisiana examples

2. Resources

- Classify manufactured objects from the natural resources from which they are made (e.g. plastic from petroleum, paper from trees, aluminum from metal ore)
- Identify renewable and nonrenewable resources and describe the difference between them

Grade 3 Science Standards, Benchmarks, and GLEs

The following chart presents all grade 3 science strands and standards, benchmarks, and GLEs.

GRADE 3 SCIENCE STANDARDS, BENCHMARKS, AND GLES

| within their developmental capabilities. A. The Abilities Necessary to Do Scientific Inquiry | | | | | | |
|---|---|--|--|--|--|--|
| | | | | | | |
| SI-E-A1: asking appropriate questions about organisms and events in the environment | Ask questions about objects and events in the environment (e.g., plants, rocks, storms) (SI-E-A1) Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations (SI-E-A1) | | | | | |
| SI-E-A2: planning and/or designing and conducting a scientific investigation | Use observations to design and conduct simple investigations or experiments to answer testable questions (SI-E-A2) Predict and anticipate possible outcomes (SI-E-A2) Use a variety of methods and materials and multiple trials to investigate ideas (observe, measure, accurately record data) (SI-E-A2) | | | | | |
| SI-E-A3: communicating that observations are made with one's senses | 6. Use the five senses to describe observations (SI-E-A3) | | | | | |
| SI-E-A4: employing equipment and tools to gather data and extend the sensory observations | 7. Measure and record length, temperature, mass, volume, and area in both metric system and U.S. system units (SI-E-A4) 8. Select and use developmentally appropriate equipment and tools (e.g., magnifying lenses, microscopes, graduated cylinders) and units of measurement to observe and collect data (SI-E-A4) | | | | | |
| SI-E-A5: using data, including numbers and graphs, to explain observations and experiments | 9. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate (SI-E-A5) (SI-E-B4) 10. Combine information, data, and knowledge from one or more of the science content areas to reach a conclusion or make a prediction (SI-E-A5) | | | | | |

| SI-E-A6: communicating observations and experiments in oral and written formats | 11. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios) (SI-E-A6) | | | | |
|--|---|--|--|--|--|
| SI-E-A7: utilizing safety procedures during experiments | 12. Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties) (SI-E-A7) | | | | |
| B. Understanding Scientific Inquiry | | | | | |
| SI-E-B1: categorizing questions into what is known, what is not known, and what questions need | 13. Identify questions that need to be explained through further inquiry (SI-E-B1) | | | | |
| to be explained | 14. Distinguish between what is known and what is unknown in scientific investigations (SI-E-B1) | | | | |
| SI-E-B2: using appropriate experiments depending on the questions to be explored | Not addressed at grade 3 | | | | |
| SI-E-B3: choosing appropriate equipment and tools to conduct an experiment | 15. Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope) (SI-E-B3) | | | | |
| SI-E-B4: developing explanations by using observations and experiments | See GLE no. 9 | | | | |
| SI-E-B5: presenting the results of experiments | 16. Describe procedures and communicate data in a manner that allows others to understand and repeat an investigation or experiment (SI-E-B5) | | | | |
| SI-E-B6: reviewing and asking questions about the results of investigations | 17. Explain and give examples of how scientific discoveries have affected society (SI-E-B6) | | | | |
| Physical Science: Students will develop an unders of matter and energy in the physical world. A. Properties of Objects and Materials | tanding of the characteristics and interrelationships | | | | |
| | | | | | |
| Benchmarks | Grade-Level Expectations | | | | |
| | Grade-Level Expectations 18. Compare and classify objects on properties determined through experimentation (e.g., ability to conduct electricity, tendency to float or sink in water) (PS-E-A1) | | | | |
| Benchmarks PS-E-A1: observing, describing, and classifying objects by properties (size, weight, shape, color, | 18. Compare and classify objects on properties determined through experimentation (e.g., ability to conduct electricity, tendency to float | | | | |
| Benchmarks PS-E-A1: observing, describing, and classifying objects by properties (size, weight, shape, color, texture, and temperature) PS-E-A2: measuring properties of objects using | 18. Compare and classify objects on properties determined through experimentation (e.g., ability to conduct electricity, tendency to float or sink in water) (PS-E-A1) 19. Select the appropriate metric system and U.S. system tools for measuring length, width, | | | | |

| PS-E-A4: describing the properties of the different states of matter and identifying the conditions that cause matter to change states | 22. Investigate and explain conditions under which matter changes physical states: heating, freezing, evaporating, condensing, boiling (PS-E-A4) | | | |
|--|---|--|--|--|
| PS-E-A5: creating mixtures and separating them based on differences in properties (salt, sand) | Not addressed at grade 3 | | | |
| B. Position and Motion of Objects | | | | |
| PS-E-B1: observing and describing the position of an object relative to another object or the background | Not addressed at grade 3 | | | |
| PS-E-B2: exploring and recognizing that the position and motion of objects can be changed by pushing or pulling (force) over time | 23. Demonstrate how force is a <i>push</i> or a <i>pull</i> by using students' bodies, toy cars, or balls (PS-E-B2) 24. Explain how the amount and direction of force exerted on an object (e.g., push, pull, friction, gravity) determine how much the object will move (PS-E-B2) | | | |
| PS-E-B3: describing an object's motion by tracing and measuring its position over time | 25. Observe and analyze motion and position of objects over time (e.g., shadows, apparent path of the Sun across the sky) (PS-E-B3) | | | |
| PS-E-B4: investigating and describing how the motion of an object is related to the strength of the force (pushing or pulling) and the mass of the object | 26. Explain the effect of varying amounts of force on the motion of an object (PS-E-B4) | | | |
| C. Forms of Energy | | | | |
| PS-E-C1: experimenting and communicating how vibrations of objects produce sound and how changing the rate of vibration varies the pitch | 27. Use the words <i>high/low</i> to compare the pitch of sound and the words <i>loud/soft</i> to compare the volume (amplitude) of sound (PS-E-C1) | | | |
| PS-E-C2: investigating and describing how light travels and what happens when light strikes an object (reflection, refraction, and absorption) | 28. Describe the reflection/absorption properties of various colored objects (PS-E-C2) | | | |
| PS-E-C3: investigating and describing different ways heat can be produced and moved from one object to another by conduction | 29. Determine which materials insulate best by using experimental data (PS-E-C3) | | | |
| PS-E-C4: investigating and describing how electricity travels in a circuit | 30. Demonstrate and explain the movement of electricity in closed and open circuits (PS-E-C4) | | | |
| PS-E-C5: investigating and communicating that magnetism and gravity can exert forces on objects without touching the objects | 31. Compare and describe the common forms of energy and explain how they are used in everyday life (e.g., light, electricity, heat, mechanical) (PS-E-C6) | | | |
| | 32. Give examples of how energy can be used to move or lift objects (PS-E-C6) | | | |
| | 33. Identify simple machines and the tasks they make possible (PS-E-C6) | | | |
| PS-E-C6: exploring and describing simple energy transformations | Not addressed at grade 3 | | | |
| PS-E-C7: exploring and describing the uses of energy at school, home, and play | | | | |

Life Science: The students will become aware of the characteristics and life cycles of organisms and understand their relationships to each other and to their environment.

| A. Characteristics of Organisms | | | | | | | |
|---|--|--|--|--|--|--|--|
| Benchmarks | Grade-Level Expectations | | | | | | |
| LS-E-A1: identifying the needs of plants and animals based on age-appropriate recorded observations | 34. Describe what the human body needs to grow and be healthy (LS-E-A1) | | | | | | |
| LS-E-A2: distinguishing between living and nonliving things | Not addressed at grade 3 | | | | | | |
| LS-E-A3: locating and comparing major plant and animal structures and their functions | 35. Compare structures (parts of the body) in a variety of animals (e.g., fish, mammals, reptiles, amphibians, birds, insects) (LS-E-A3) 36. Compare structures (e.g., roots, leaves, stems, flowers, seeds) and their functions in a variety of plants (LS-E-A3) 37. Describe how plant structures enable the plant to meet its basic needs (LS-E-A3) | | | | | | |
| LS-E-A4: recognizing that there is great diversity among organisms | 38. Classify groups of organisms based on common characteristics (LS-E-A4) 39. Compare organisms from different groups (e.g., birds with mammals, terrestrial plants with aquatic plants) (LS-E-A4) | | | | | | |
| LS-E-A5: locating major human body organs and describing their functions | 40. Explain how the organs of the digestive system function (LS-E-A5) 41. Describe how the components of the skeletal system function (LS-E-A5) | | | | | | |
| LS-E-A6: recognizing the food groups necessary to maintain a healthy body | 42. Describe the relationship between eating habits and maintaining a healthy body (LS-E-A6) 43. Identify a meal that includes representatives from each group of the food pyramid (LS-E-A6) | | | | | | |
| B. Life Cycles of Organisms | | | | | | | |
| LS-E-B1: observing and describing the life cycles of some plants and animals LS-E-B2: observing, comparing, and grouping plants and animals according to likenesses and/or differences | Not addressed at grade 3 | | | | | | |
| LS-E-B3: observing and recording how the offspring of plants and animals are similar to their parents | | | | | | | |
| LS-E-B4: observing, recording, and graphing student growth over time using a variety of quantitative measures (height, weight, linear measure of feet and hands, etc.) | 44. Graph, analyze, and interpret personal and class data (LS-E-B4) | | | | | | |
| C. Organisms and Their Environments | | | | | | | |
| There are no Grade-Level Expectations for benchma | urks in grade 3 for this substrand. | | | | | | |

Earth and Space Science: The students will develop an understanding of the properties of earth materials, the structure of the Earth system, the Earth's history, and the Earth's place in the universe.

| A. Properties of Earth Materials | | | | | |
|---|---|--|--|--|--|
| Benchmarks | Grade-Level Expectations | | | | |
| ESS-E-A1: understanding that earth materials are rocks, minerals, and soils | 45. Recognize and describe that rock is composed of different combinations of minerals (ESS-E-A1) (ESS-E-A5) 46. Describe earth processes that have affected selected physical features in students' | | | | |
| | neighborhoods (e.g., rusting, weathering, erosion) (ESS-E-A1) Also see GLE no. 51 | | | | |
| ESS-E-A2: understanding that approximately three-fourths of the Earth's surface is covered with water and how this condition affects weather patterns and climates | 47. Describe the difference between weather and climate (ESS-E-A2) | | | | |
| ESS-E-A3: investigating, observing, and describing how water changes from one form to another and interacts with the atmosphere | 48. Identify examples of the processes of a water cycle (e.g., evaporation, condensation, precipitation, collection of runoff) (ESS-E-A3) | | | | |
| ESS-E-A4: investigating, observing, measuring, and describing changes in daily weather patterns and phenomena | 49. Describe climate patterns from recorded weather conditions over a period of time (ESS-E-A4) | | | | |
| ESS-E-A5: observing and communicating that rocks are composed of various substances | 50. Compare and group common rocks according to their characteristics (i.e., igneous, metamorphic, sedimentary) (ESS-E-A5) Also see GLE no. 45 | | | | |
| ESS-E-A6: observing and describing variations in soil | 51. Identify and compare the components found in soil (ESS-E-A6) (ESS-E-A1) | | | | |
| ESS-E-A7 : investigating fossils and describing how they provide evidence about plants and animals that lived long ago and the environment in which they lived | 52. Identify characteristics of selected fossils and explain how fossil records are used to learn about the past (ESS-E-A7) | | | | |
| B. Objects in the Sky | | | | | |
| ESS-E-B1: observing and describing the characteristics of objects in the sky | 53. Identify, in order, the planets of the solar system (ESS-E-B1) | | | | |
| ESS-E-B2: demonstrating how the relationship of the Earth, Moon, and Sun causes eclipses and moon phases | 54. Describe the patterns of apparent change in the position of the Sun (ESS-E-B2) | | | | |
| ESS-E-B3: observing and recording the changing appearances and positions of the Moon in the sky at night and determining the monthly pattern of lunar change | Not addressed at grade 3 | | | | |
| ESS-E-B4: modeling changes that occur because of the rotation of the Earth (alternation of night and day) and the revolution of the Earth around the Sun | 55. Explain the results of the rotation and revolution of Earth (e.g., day and night, year) (ESS-E-B4)56. Compare shadow direction and length at different times of day and year (ESS-E-B4) | | | | |

| ESS-E-B5: understanding that the Sun, a star, is a source of heat and light energy and identifying its effects upon the Earth | Not addressed at grade 3 |
|--|--------------------------|
| ESS-E-B6: understanding that knowledge of the Earth as well as of the universe is gained through space exploration | |

Science and the Environment: In learning environmental science, students will develop an appreciation of the natural environment, learn the importance of environmental quality, and acquire a sense of stewardship. As consumers and citizens, they will be able to recognize how our personal, professional, and political actions affect the natural world.

| Benchmarks | Grade-Level Expectations | | | | |
|---|--|--|--|--|--|
| SE-E-A1: understanding that an <i>ecosystem</i> is made of living and nonliving components | 57. Describe the interrelationships of <i>living (biotic)</i> and <i>nonliving (abiotic)</i> components within various ecosystems (e.g., terrarium, swamp, backyard) (SE-E-A1) | | | | |
| SE-E-A2: understanding the components of a food chain | Not addressed at grade 3 | | | | |
| SE-E-A3: identifying ways in which humans have altered their environment, both in positive and negative ways, either for themselves or for other living things | 58. Describe how humans have had negative and positive effects on organisms and their environments (SE-E-A3) (SE-E-A5) | | | | |
| SE-E-A4: understanding that the original sources of all material goods are natural resources and that the conserving and recycling of natural resources is a form of stewardship | 59. Classify manufactured products according to the natural resources from which they are made (e.g., copper wire from copper ore, plastic from petroleum) (SE-E-A4) | | | | |
| _ | 60. Explain how renewable and nonrenewable resources can be replenished or depleted (SE-E-A4) | | | | |
| SE-E-A5: understanding that most plant and animal species are threatened or endangered today due to habitat loss or change | 61. Explain how selected animals once classified as endangered have recovered (SE-E-A5) | | | | |
| today due to habitat loss of change | 62. Identify animals in Louisiana that have recovered and that are no longer considered endangered (SE-E-A5) | | | | |
| | Also see GLE no. 58 | | | | |

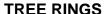
Sample Test Items: Grade 3 Science

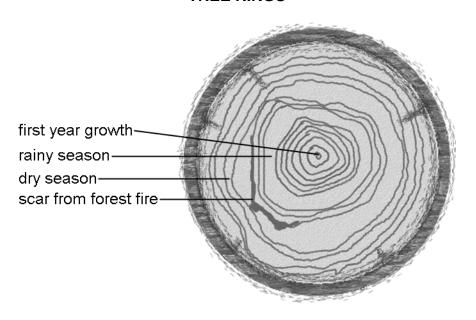
Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 2—Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations (SI-E-A1)

Use the picture below to answer question 1.





- A scientist is studying the rings of a fallen tree. What question can be answered by studying the tree rings?
 - **A** How old is the tree?
 - **B** How tall is the tree?
 - **C** Who planted the tree?
 - **D** Where was the tree planted?

Correct Response: A

Match to GLE: This item asks students to pose a scientific question that can be answered from an observation. Other grade 3 iLEAP items that measure this GLE may address other questions students can pose based on observations, scientific knowledge, and investigations.

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 6—*Use the five senses to describe observations (SI-E-A3)*

- **2** Li walked into a room. She said, "I can tell that someone has perfume." What sense did Li **most likely** use to know that there was perfume?
 - **A** taste
 - **B** sight
 - **C** smell
 - **D** hearing

Correct Response: C

Match to GLE: This item asks students to associate an object with the sense it most affects. Other grade 3 iLEAP items that measure this GLE may relate to senses other than smell.

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 10—Combine information, data, and knowledge from one or more of the science content areas to reach a conclusion or make a prediction (SI-E-A5)

Use the data chart below to answer question 3.

SUN DATA FOR NEW ORLEANS

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| Day | Time the Sun Rises |
|-------------|--------------------|
| July 1 | 5:03 A.M. |
| August 1 | 5:20 а.м. |
| September 1 | 5:38 а.м. |
| October 1 | ? |
| November 1 | 6:15 а.м. |

- The chart shows the time that the sun rises on different days in New Orleans. What would **most likely** be the time that the sun rises on October 1 in New Orleans?
 - **A** 5:10 A.M.
 - **B** 5:35 A.M.
 - **C** 5:55 A.M.
 - **D** 6:20 A.M.

Correct Response: C

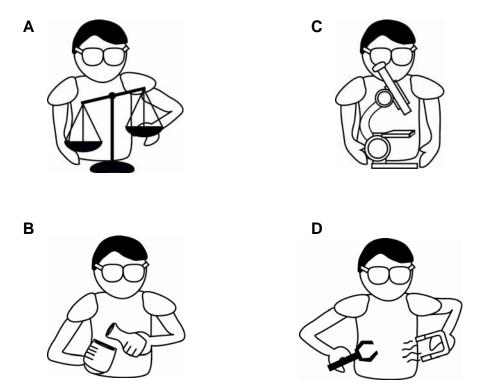
Match to GLE: This item asks students to make a prediction from data in a table. Other grade 3 iLEAP items that measure this GLE may ask students to make a prediction or draw a conclusion using other sources of information.

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 12—*Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties) (SI-E-A7)*

Which student needs to wear protective goggles the **most**?



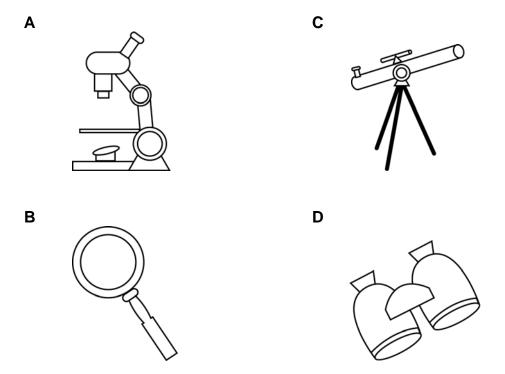
Correct Response: B

Match to GLE: This item asks students to identify pouring chemicals as an activity that may require safety goggles. Other grade 3 iLEAP items that measure this GLE may address other procedures and equipment important to safety.

Science as Inquiry Understanding Scientific Inquiry

GLE 15—Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope) (SI-E-B3)

Kerri is studying cells that are much too small to see with her eyes alone. Which tool would be **most** helpful to Kerri?



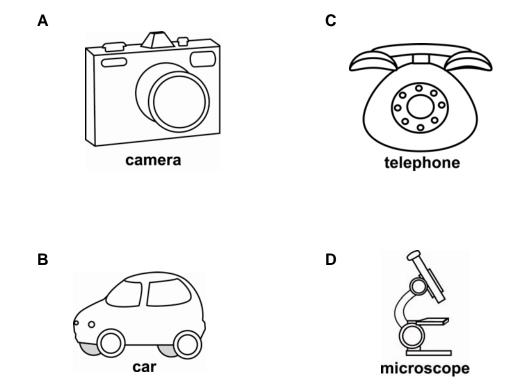
Correct Response: A

Match to GLE: This item asks students to identify a microscope as the object that would magnify a very small object most effectively. Other grade 3 iLEAP items that measure this GLE may relate to other tools that magnify objects.

Science as Inquiry Understanding Scientific Inquiry

GLE 17—Explain and give examples of how scientific discoveries have affected society (SI-E-B6)

Which invention has been the most helpful in allowing people to communicate quickly with each other?



Correct Response: C

Match to GLE: This item asks students to relate a telephone to communication among humans. Other grade 3 iLEAP items that measure this GLE may address other scientific discoveries and their impact on society.

Physical Science Properties of Objects and Materials

GLE 18—Compare and classify objects on properties determined through experimentation (e.g., ability to conduct electricity, tendency to float or sink in water) (PS-E-A1)

Use the data table below to answer question 7.

MATERIAL PROPERTIES

| Material | Does it conduct electricity? | Does it float in water? |
|----------|------------------------------|-------------------------|
| Α | Yes | No |
| В | No | Yes |
| С | No | No |
| D | Yes | Yes |

- **7** Kira is testing several materials to see whether they conduct electricity and float in water. Which material conducts electricity **and** floats in water?
 - **A** material A
 - **B** material B
 - **C** material C
 - **D** material D

Correct Response: D

Match to GLE: This item requires students to identify an object with specific properties based on information in a table. Other grade 3 iLEAP items that measure this GLE may relate to the classification of objects in other ways.

Physical Science Properties of Objects and Materials

GLE 22—Investigate and explain conditions under which matter changes physical states: heating, freezing, evaporating, condensing, boiling (PS-E-A4)

- A scientist is studying a liquid. If she lowers the temperature of the liquid, which of the following will **most likely** occur?
 - **A** The liquid will boil.
 - **B** The liquid will melt.
 - **C** The liquid will freeze.
 - **D** The liquid will evaporate.

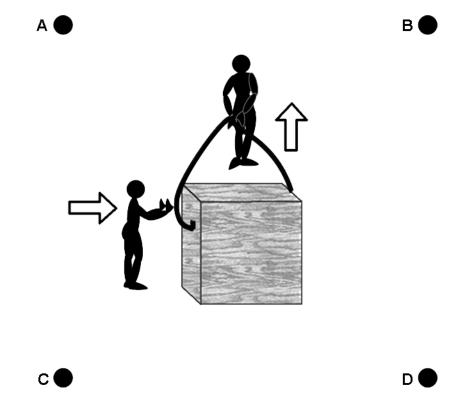
Correct Response: C

Match to GLE: This item relates to the state change from liquid to solid. Other grade 3 iLEAP items that measure this GLE may relate to other changes of state.

Physical Science Position and Motion of Objects

GLE 24—Explain how the amount and direction of force exerted on an object (e.g., push, pull, friction, gravity) determine how much the object will move (PS-E-B2)

Use the diagram below to answer question 9.



- The diagram shows two people moving an object. Bob is pushing the object, and Carol is pulling it. Use the arrows to help you figure out which dot the object will move toward.
 - A dot A
 - **B** dot B
 - C dot C
 - **D** dot D

Correct Response: B

Match to GLE: This item requires students to identify the effect of pushing and pulling an object. Other grade 3 iLEAP items that measure this GLE may address other forces.

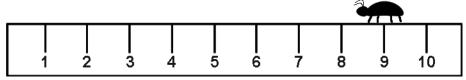
Physical Science Position and Motion of Objects

GLE 25—Observe and analyze motion and position of objects over time (e.g., shadows, apparent path of the Sun across the sky) (PS-E-B3)

Use the pictures below to answer question 10.

Insect Motion

Picture 1

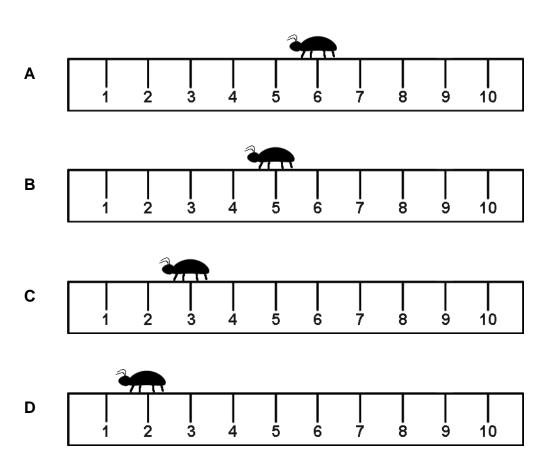


Picture 2 (one minute later)

| | | | | | 4 | | | | |
|---|-----|-----|----------|-----|-----|-----|-----|-----|---|
| 2 | 2 ; | 3 4 | 1 | 5 6 | 3 7 | 7 8 | 3 9 | 9 1 | 0 |

- 10 Tina was measuring the speed of a moving insect.
 - Picture 1 shows where the insect was when Tina started observing it.
 - Picture 2 shows where the insect was after 1 minute.

If the insect keeps moving at the same speed, which picture shows where it will **most likely** be after 1 more minute?



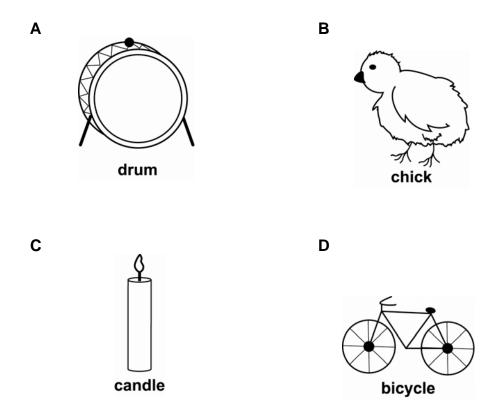
Correct Response: B

Match to GLE: This item asks students to predict the position of an insect moving at uniform speed. Other grade 3 iLEAP items that measure this GLE may address other objects that move over time.

Physical Science Forms of Energy

GLE 25—*Use the words* high/low *to compare the pitch of sound and the words* loud/soft *to compare the volume (amplitude) of sound (PS-E-C1)*

Which of these makes the loudest sound?



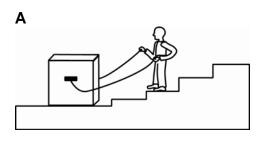
Correct Response: A

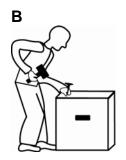
Match to GLE: This item asks students to identify an object that produces a loud sound. Other grade 3 iLEAP items that measure this GLE may relate to pitch.

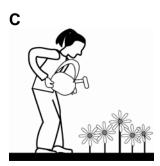
Physical Science Forms of Energy

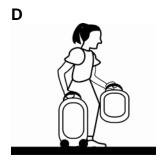
GLE 33—Identify simple machines and the tasks they make possible (PS-E-C6)

When would a ramp be most useful?









Correct Response: A

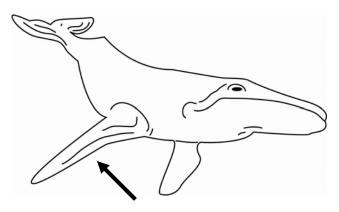
Match to GLE: This item asks students to identify a use of a ramp. Other grade 3 iLEAP items that measure this GLE may relate to pulleys, levers, or other simple machines.

Characteristics of Organisms

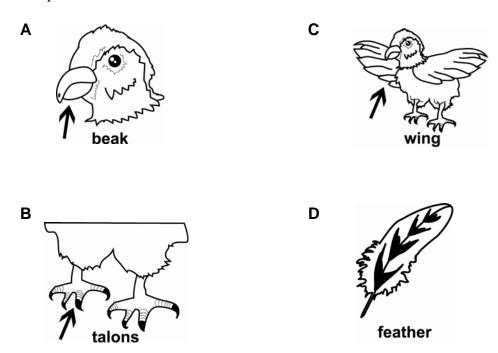
GLE 35—Compare structures (parts of the body) in a variety of animals (e.g., fish, mammals, reptiles, amphibians, birds, insects) (LS-E-A3)

Use the picture below to answer question 13.





Look where the arrow is pointing on the whale. What part of a bird is **most** similar to this part of the whale?



Correct Response: C

Match to GLE: This item asks students to recognize the relationship between a whale's fin and a bird's wing. Other grade 3 iLEAP items that measure this GLE may address other animals and their body parts.

Characteristics of Organisms

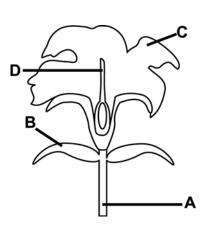
GLE 36—Compare structures (e.g., roots, leaves, stems, flowers, seeds) and their functions in a variety of plants (LS-E-A3)

Use the pictures below to answer question 14.





Flower



- What part of the flower is most similar in use to the tree trunk?
 - **A** part A
 - **B** part B
 - **C** part C
 - **D** part D

Correct Response: A

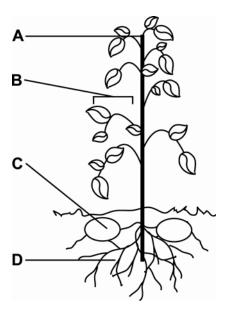
Match to GLE: This item asks students to relate the stem of a flower with the trunk of a tree. Other grade 3 iLEAP items that measure this GLE may relate to other structures of plants and their functions.

Characteristics of Organisms

GLE 37—Describe how plant structures enable the plant to meet its basic needs (LS-E-A3)

Use the picture below to answer question 15.

POTATO PLANT



- Which part of the potato plant absorbs the **most** water?
 - **A** part A
 - **B** part B
 - **C** part C
 - **D** part D

Correct Response: D

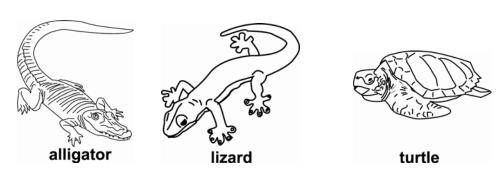
Match to GLE: This item asks students to identify the part of a potato plant that absorbs the most water. Other grade 3 iLEAP items that measure this GLE may relate to other structures of plants and their purposes.

Characteristics of Organisms

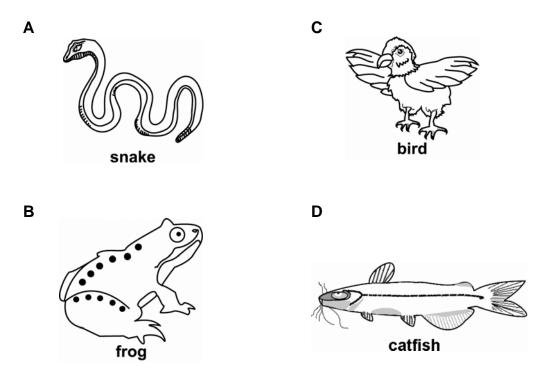
GLE 38—Classify groups of organisms based on common characteristics (LS-E-A4)

Use the three pictures of related animals below to answer question 16.

Related Animals



Which animal is **most** closely related to the animals in the pictures above?



Correct Response: A

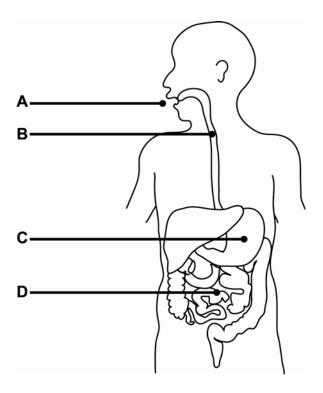
Match to GLE: This item asks students to identify an animal that is similar to other animals. Other grade 3 iLEAP items that measure this GLE may relate to plants or other organisms.

Characteristics of Organisms

GLE 40—Explain how the organs of the digestive system function (LS-E-A5)

Use the diagram below to answer question 17.





- Which part of the digestive system gets nutrients from food?
 - **A** part A
 - **B** part B
 - **C** part C
 - **D** part D

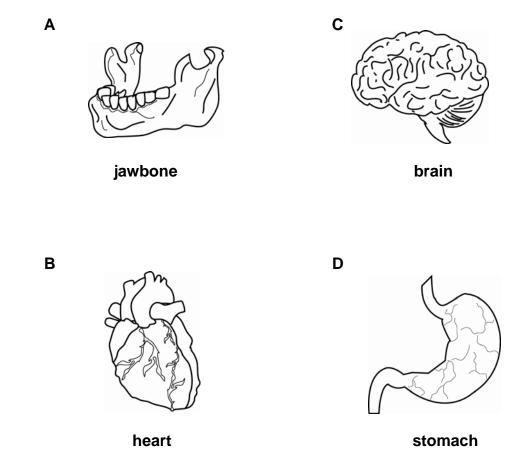
Correct Response: D

Match to GLE: This item requires students to identify the role of the small intestine. Other grade 3 iLEAP items that measure this GLE may address the role of other parts of the digestive system.

Characteristics of Organisms

GLE 41—Describe how the components of the skeletal system function (LS-E-A5)

Which body part belongs to the skeletal system?



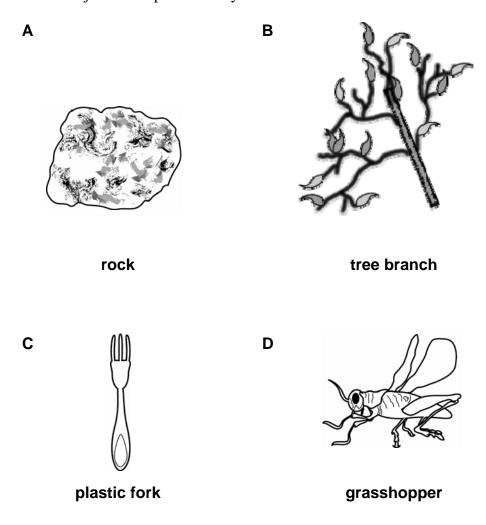
Correct Response: A

Match to GLE: This item requires students to identify a part of the skeletal system. Other grade 3 iLEAP items that measure this GLE may address the function of various components of the skeletal system.

Earth and Space Science Properties of Earth Materials

GLE 45—Recognize and describe that rock is composed of different combinations of minerals (ESS-E-A1) (ESS-E-A5)

19 Which object is composed mostly of minerals?



Correct Response: A

Match to GLE: This item requires students to identify an object made from minerals. Other grade 3 iLEAP items that measure this GLE may ask students to describe the composition of a rock.

Earth and Space Science

Properties of Earth Materials

GLE 47—*Describe the difference between weather and climate (ESS-E-A2)*

- Susan lives in a city where the days are usually very warm. However, yesterday was very cold. Which statement is true about the city yesterday?
 - **A** The city had cold weather and climate.
 - **B** The city had warm weather and climate.
 - **C** The city had warm weather but a cold climate.
 - **D** The city had cold weather but a warm climate.

Correct Response: D

Match to GLE: This item requires students to distinguish between weather and climate. Other grade 3 iLEAP items that measure this GLE may address weather and climate in other ways.

Earth and Space Science

Properties of Earth Materials

GLE 48—*Identify examples of the processes of a water cycle (e.g., evaporation, condensation, precipitation, collection of runoff) (ESS-E-A3)*

- Which statement is an example of precipitation?
 - **A** Water from a river enters the ocean.
 - **B** Water from a cloud falls to the ground.
 - **C** Water in a puddle soaks into the ground.
 - **D** Water in a cup is heated and enters the air.

Correct Response: B

Match to GLE: This item asks students to identify an example of precipitation. Other grade 3 iLEAP items that measure this GLE may address evaporation, condensation, or other components of the water cycle.

Earth and Space Science

Properties of Earth Materials

GLE 50—Compare and group common rocks according to their characteristics (i.e., igneous, metamorphic, sedimentary) (ESS-E-A5)

- Ricky finds a rock that has tiny seashells in it. Which statement is **most likely** true about the rock?
 - **A** The rock was formed in outer space.
 - **B** The rock was formed in an ocean, lake, or river.
 - **C** The rock was formed by a volcano that erupted.
 - **D** The rock was formed by materials that were under heat and pressure.

Correct Response: B

Match to GLE: This item relates to properties of sedimentary rocks. Other grade 3 iLEAP items that measure this GLE may address igneous or metamorphic rocks.

Earth and Space Science

Objects in the Sky

GLE 55—Explain the results of the rotation and revolution of Earth (e.g., day and night, year) (ESS-E-B4)

- How long does it take Earth to spin around on its axis one time?
 - **A** a dav
 - **B** a week
 - **C** a month
 - **D** a year

Correct Response: A

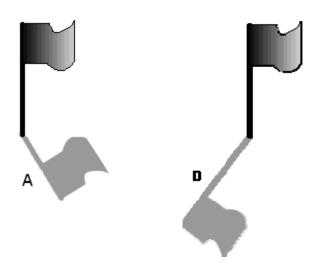
Match to GLE: This item relates to the rotation of Earth. Other grade 3 iLEAP items that measure this GLE may address the revolution of Earth around the Sun.

Earth and Space Science Objects in the Sky

GLE 56—Compare shadow direction and length at different times of day and year (ESS-E-B4)

Use the pictures below to answer question 24.





- The pictures show a flagpole and its shadow at two different times during the day. Which statement is **most likely** true?
 - **A** A occurred earlier in the day than B.
 - **B** A occurred later in the day than B.
 - **C** A occurred closer to noon than B.
 - **D** A occurred closer to midnight than B.

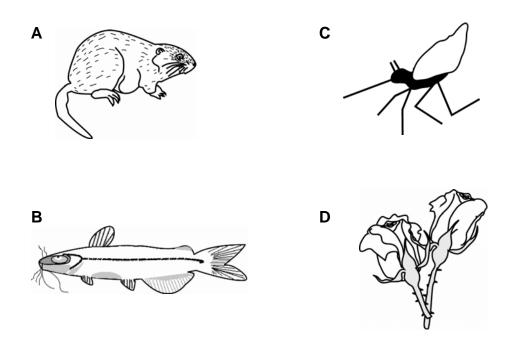
Correct Response: C

Match to GLE: This item requires students to know that shadows are shorter around mid-day than at other times. Other grade 3 iLEAP items that measure this GLE may address shadow direction or length at different times of year.

Earth and Space Science Science and the Environment

GLE 57—Describe the interrelationships of living (biotic) and nonliving (abiotic) components within various ecosystems (e.g., terrarium, swamp, backyard) (SE-E-A1)

Which of these living things depends **most** on good soil to grow?



Correct Response: D

Match to GLE: This item relates to the dependence by flowers upon healthy soil. Other grade 3 iLEAP items that measure this GLE may address other dependencies that living things have on their ecosystems.

Earth and Space Science Science and the Environment

GLE 58—Describe how humans have had negative and positive effects on organisms and their environments (SE-E-A3)

- Which human activity **most** affects the environment?
 - **A** rowing a boat
 - **B** driving in a car
 - **C** hiking on a trail
 - **D** talking on the phone

Correct Response: B

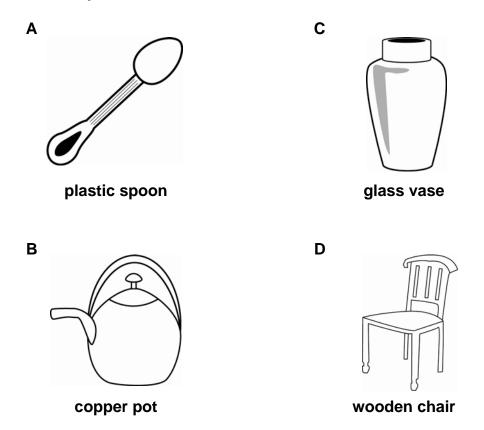
Match to GLE: This item asks students to identify an activity that affects the environment more than other activities. Other grade 3 iLEAP items that measure this GLE may address positive and negative ways that humans can affect the environment.

Earth and Space Science

Science and the Environment

GLE 59—Classify manufactured products according to the natural resources from which they are made (e.g., copper wire from copper ore, plastic from petroleum) (SE-E-A4)

Which object is made from material that comes from oil?



Correct Response: A

Match to GLE: This item asks students to identify an object that is made from an oil-based material. Other grade 3 iLEAP items that measure this GLE may address other materials and the natural resources from which they are made.

Earth and Space Science Science and the Environment

GLE 60—Explain how renewable and nonrenewable resources can be replenished or depleted (SE-E-A4)

- Which energy source cannot be used up by humans?
 - **A** oil
 - **B** coal
 - **C** natural gas
 - **D** solar power

Correct Response: D

Match to GLE: This item asks students to identify the Sun as a resource humans cannot exhaust. Other grade 3 iLEAP items that measure this GLE may address renewable and nonrenewable resources in other ways.

Earth and Space Science

Science and the Environment

GLE 61—Explain how selected animals once classified as endangered have recovered (SE-E-A5)

- 29 How can humans **best** help an endangered species avoid extinction?
 - **A** They can feed the animals.
 - **B** They can put the animals in a zoo.
 - **C** They can protect the animal's habitat.
 - **D** They can take the animal to new habitats.

Correct Response: C

Match to GLE: This item relates to a way in which an endangered species can recover. Other grade 3 iLEAP items that measure this GLE may address the recovery of formerly endangered species in other ways.

Earth and Space Science Science and the Environment

GLE 62—Identify animals in Louisiana that have recovered and that are no longer considered endangered (SE-E-A5)

- American alligators used to be an endangered species, but they are not endangered anymore. Which of the following is the **best** reason why there are more American alligators in Louisiana today than there were 50 years ago?
 - **A** American alligators have learned to live in new places.
 - **B** American alligators are bigger now than they were 50 years ago.
 - **C** American alligators are now protected from hunting by humans.
 - **D** American alligators have much more habitat than they did 50 years ago.

Correct Response: C

Match to GLE: This item asks students to relate the recovery of an animal population with a change in human activity. Other grade 3 iLEAP items that measure this GLE may address the recovery of formerly endangered species in other ways