

7th Grade
Sample Test Questions
Science
from the
Teacher's Guide to State Assessment
(answers in the TGSA)

Compiled by:
Tangipahoa FIRST
Support Teachers

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 2— *Identify problems, factors, and questions that must be considered in a scientific investigation (SI-M-A1)*

- 1 A scientist studied a species of fish. She found that when a certain nutrient was added to the diet of the fish just after hatching, the fish gained an average of 3 kilograms in the first year. What additional information is needed to determine whether the nutrient is affecting the growth of the fish?
- A how much adult fish gained on average when the same nutrient was added to their diet
 - B how much newly hatched fish in this species gain in the first year without the nutrient in their diet
 - C how much of the nutrient is available for the fish species in their natural surroundings
 - D how much other species of fish gain in the first year when the nutrient is added to their diet

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 4—*Design, predict outcomes, and conduct experiments to answer guiding questions (SI-M-A2)*

Use this data chart to answer question 2.

Plant Experiment

Plant	Fertilizer (milliliters)	Sunlight (hours/day)	Water (milliliters per day)	Height at beginning of experiment (cm)	Height at end of experiment (cm)
1	50	8	100	22.5	
2	50	10	100	21.7	
3	50	12	100	21.5	
4	50	14	100	22.0	

- 2 Which question is the experiment **most likely** designed to answer?
- A What are the effects of water on plant growth?
 - B What amount of fertilizer is best to use for plants?
 - C How does the height of a plant affect how much sunlight it needs?
 - D How does the amount of sunlight a plant receives affect its growth?

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 12—Use data and information gathered to develop an explanation of experimental results (SI-M-A4)

Use the data table and picture to answer question 3.

Breathing Experiment

Glass	Time for candle to go out (seconds)
1	12
2	9
3	15
4	7



- 3 To model an animal breathing in an enclosed environment, Jackie lit a candle and placed a glass over the candle with the open end down. She measured how long it took for the candle flame to go out. She repeated her experiment with three other glasses, each time using the same candle. Jackie's results are shown in the data table.

Based on the data, which statement is **most likely** true?

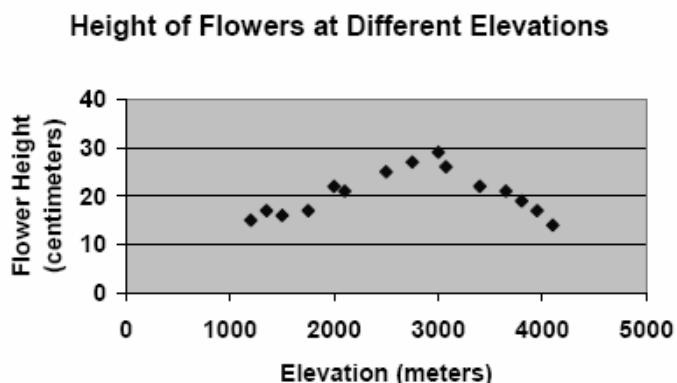
- A Glass 3 is the largest glass.
- B Glass 4 is the hottest glass.
- C Glass 1 is the coldest glass.
- D Glass 2 is the smallest glass.

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 13—Identify patterns in data to explain natural events (SI-M-A4)

Use this graph to answer question 4.



- 4 A scientist studying a species of flower that grows on the side of a mountain measured the height of many of the flowers at different elevations. His results are shown in the graph. Which statement best describes the pattern of growth for the flowers during this experiment?
- A The flowers' heights are unaffected by elevation.
 - B The flowers cannot grow below elevations of 1,000 meters.
 - C The flowers grow best at elevations of around 3,000 meters.
 - D The flowers' heights increase with higher elevation.

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 18—Identify faulty reasoning and statements that misinterpret or are not supported by the evidence (SI-M-A6)

Use the data table below to answer question 5.

Snail Coloring

Sea Snail Species	Shell Color	Underside Color	Maximum Length
Red Foot Snail	Brown	Red	150 mm
White Foot Snail	Brown	White	180 mm

- 5 A scientist studied two species of sea snail and recorded the physical characteristics in the data table. Which conclusion about the data is based on **correct reasoning**?
- A If a snail she studied had a brown shell, then it was a red foot snail.
 - B If a snail she studied had a brown shell, then it had a white underside.
 - C If a snail she studied was 125 millimeters long, then it was red foot snail.
 - D If a snail she studied was 175 millimeters long, then it had a white underside.

Science as Inquiry

The Abilities Necessary to Do Scientific Inquiry

GLE 22—*Use evidence and observations to explain and communicate the results of investigations (SI-M-A7)*

- 6 A scientist discovers that a certain substance will be useful in treating nerve damage. What is the **best** way she can communicate her results to the scientific community?
- A She can call other scientists who also work in nerve research.
 - B She can write a letter to hospitals that treat patients with nerve damage.
 - C She can put her conclusions on a Web site that focuses on the nervous system.
 - D She can publish her results in a scientific journal that covers issues relating to nerves.

Science as Inquiry

Understanding Scientific Inquiry

GLE 27—*Recognize that science uses processes that involve a logical and empirical, but flexible, approach to problem solving (SI-M-B1)*

- 7 Leslie's science teacher told her she must take a flexible approach to solving problems. What did Leslie's teacher **most likely** mean?
- A Leslie should not follow the experimental instructions exactly.
 - B Leslie should only write down lab results that seem to be correct.
 - C Leslie should accept all scientific theories even if they have been proven wrong.
 - D Leslie should be willing to consider many possible causes for her observations.

Science as Inquiry

Understanding Scientific Inquiry

GLE 28—*Recognize that investigations generally begin with a review of the work of others (SI-M-B2)*

- 8 A scientist plans to investigate the nervous system of sea slugs. What should the scientist do first?
- A Develop a theory about sea slugs that can be tested.
 - B Go to the ocean to observe the behavior of sea slugs.
 - C Obtain several sea slugs and conduct experiments with them.
 - D Review the research other scientists have done on sea slugs.

Science as Inquiry
Understanding Scientific Inquiry

GLE 30—*Describe why all questions cannot be answered with present technologies (SI-M-B3)*

- 9 Researchers recently discovered a gene in humans that previously was unknown to science. Which statement **best** explains why the gene probably was not discovered much sooner?
- A The gene only recently evolved in humans.
 - B The technology used to study genes is still being developed.
 - C Scientists were not interested in genes until a few years ago.
 - D Scientists were sure they had already discovered every possible gene.

Science as Inquiry
Understanding Scientific Inquiry

GLE 32—*Explain the use of statistical methods to confirm the significance of data (e.g., mean, median, mode, range) (SI-M-B3)*

- 10 A scientist studied the number of eggs a species of bird lays each year. He found that the most common number of eggs laid in a year is three. Which statistical measurement did the scientist find?
- A the mean number of eggs laid in a year
 - B the median number of eggs laid in a year
 - C the mode of the number of eggs laid in a year
 - D the range of the number of eggs laid in a year

Science as Inquiry
Understanding Scientific Inquiry

GLE 35—*Explain how skepticism about accepted scientific explanations (i.e., hypotheses and theories) leads to new understanding (SI-M-B5)*

- 11 Joanne's science teacher cautioned the class to be skeptical when learning about new scientific discoveries. Why is it important to be skeptical about new discoveries in science?
- A because many scientific discoveries are not based on facts
 - B because most scientific discoveries have no scientific value
 - C because most scientists make errors when formulating scientific discoveries
 - D because all scientific discoveries must be examined critically before they can be accepted

Science as Inquiry

Understanding Scientific Inquiry

GLE 40—*Evaluate the impact of research on scientific thought, society, and the environment (SI-M-B7)*

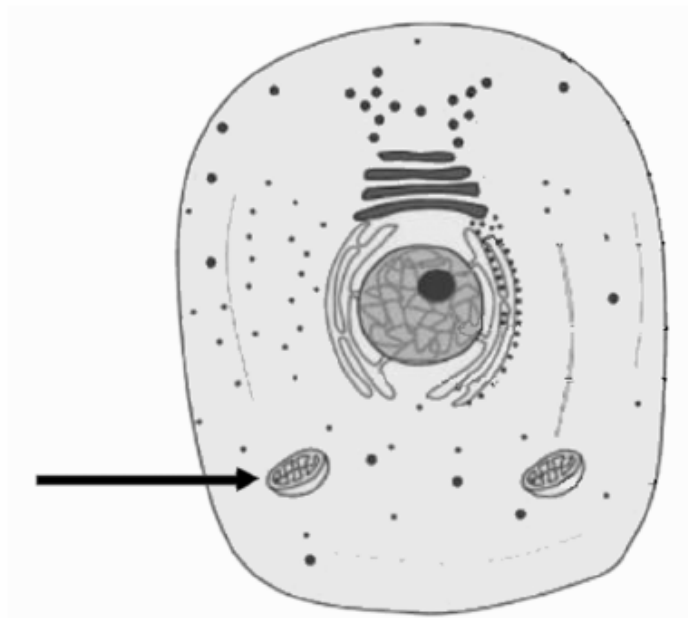
- 12 Louis Pasteur discovered that the bacteria in a substance can be killed by heating the substance for a short period of time. Which of these practices benefited **most** from Pasteur's discovery?
- A storing foods for longer periods of time
 - B building ovens and other heating devices
 - C creating medicines that cure infections
 - D transporting living organisms without injuring them

Life Science

Structure and Function in Living Systems

GLE 2—Compare the basic structures and functions of different types of cells (LS-M-A1)

Use this diagram to answer question 13.



13 What is the main purpose of the mitochondria shown by the arrow?

- A** cell reproduction
- B** cellular digestion
- C** energy production
- D** protein manufacture

Life Science

Structure and Function in Living Systems

GLE 3—*Illustrate and demonstrate osmosis and diffusion in cells (LS-M-A1)*

- 14 In which situation would osmosis **most likely** occur in cells?
- A across a permeable membrane that separates solutions of the same concentration
 - B across a permeable membrane that separates solutions of different concentrations
 - C across a nonpermeable membrane that separates solutions of the same concentration
 - D across a nonpermeable membrane that separates solutions of different concentrations

Life Science

Structure and Function in Living Systems

GLE 7—*Construct a word equation that illustrates the processes of photosynthesis and respiration (LS-M-A4)*

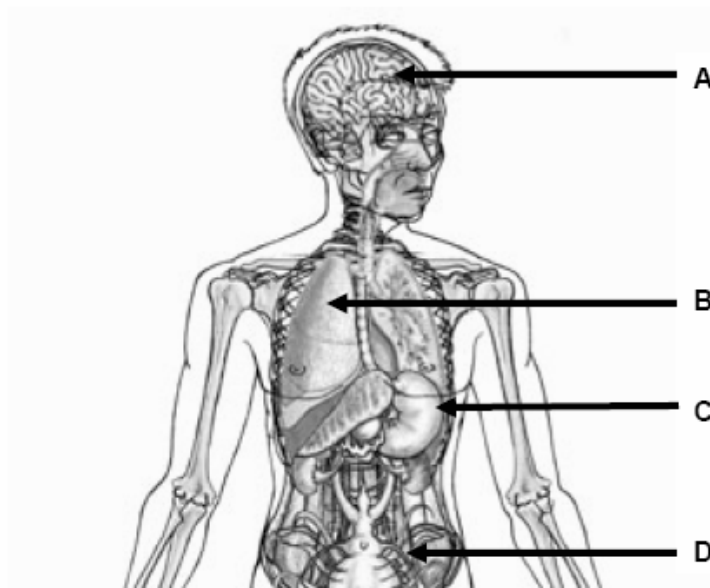
- 15 Which statement **best** describes the process of respiration?
- A Oxygen and sugar are used in the process that provides energy to cells; water and carbon dioxide are its waste products.
 - B Water and sugar are used to in the process that provides energy to cells; oxygen and carbon dioxide are its waste products.
 - C Oxygen and carbon dioxide are used in the process that provides energy to cells; sugar and water are its waste products.
 - D Carbon dioxide and sugar are used in the process that provides energy to cells; water and oxygen are its waste products.

Life Science

Structure and Function in Living Systems

GLE 9—*Relate structural features of organs to their functions in major systems (LS-M-A5)*

Use this diagram to answer question 16.



- 16 Which arrow points to an organ directly involved in the exchange of gases between a human and his or her environment?
- A arrow A
 - B arrow B
 - C arrow C
 - D arrow D

Life Science

Reproduction and Heredity

GLE 15—*Contrast the processes of mitosis and meiosis in relation to growth, repair, reproduction, and heredity (LS-M-B1)*

- 17 What is a difference between mitosis and meiosis?
- A Mitosis occurs in all the cells in animals and plants, while meiosis occurs in only in bacteria.
 - B In mitosis, the products are identical to the parent cell, while in meiosis the products are different from the parent cell.
 - C In mitosis, one cell divides into two cells, while in meiosis two cells combine to make one cell.
 - D Mitosis involves separating the chromosomes, while meiosis involves only the cytoplasm of the cell.

Life Science

Reproduction and Heredity

GLE 17—*Explain the relationship of genes to chromosomes and genotypes to phenotypes (LS-M-B2)*

- 18** In humans, B is the allele for brown eyes and b is the allele for blue eyes. Two brothers both have brown eyes, but one of them has both the B and b alleles while the other only has B alleles. Which statement is true about the brothers?
- A** They have the same genotype and phenotype.
 - B** They have different phenotypes and genotypes.
 - C** They have the same phenotype but different genotypes.
 - D** They have the same genotype but different phenotypes.

Life Science

Reproduction and Heredity

GLE 19—*Apply the basic laws of Mendelian genetics to solve simple monohybrid crosses, using a Punnett square (LS-M-B3)*

Use this Punnett square to answer question 19.

	W	W
w		
w		

- 19** In horses, the gene for white hair (W) is dominant to the gene for non-white hair (w). A horse with genotype (WW) was crossed with a horse with genotype (ww), as shown in the Punnett square.

What fraction of the offspring should be expected to have white hair?

- A** none
- B** one-half
- C** three-quarters
- D** all

Life Science

Populations and Ecosystems

GLE 23—Classify organisms based on structural characteristics, using a dichotomous key (LS-M-C1)

Use this dichotomous key to answer question 20.

Reptiles and Amphibians

1a.	Has external gills	Go to 6.
1b.	Does not have external gills	Go to 2.
2a.	Has scales	Go to 3.
2b.	Does not have scales	Go to 4.
3a.	Has a shell	turtle
3b.	Does not have a shell	Go to 5.
4a.	Has a tail as an adult	Go to 6.
4b.	Does not have a tail as an adult	frog
5a.	Has legs	lizard
5b.	Does not have legs	snake
6a.	Has coastal grooves along the side	salamander
6b.	Does not have coastal grooves along the side	newt

- 20 Trish constructed a dichotomous key to help identify the reptiles and amphibians living in a certain area.

Which phrase describes a lizard?

- A an animal with scaly skin and a shell but no external gills
- B an animal with scaly skin and legs but no shell
- C an animal with legs and coastal grooves but no tail
- D an animal with external gills and a tail but no coastal grooves

Life Science

Populations and Ecosystems

GLE 26—Describe and compare the levels of organization of living things within an ecosystem (LS-M-C3)

- 21 What do scientists mean when they refer to a *population*?

- A all the organisms in an ecosystem
- B all the species that share similar anatomical features
- C all the animals that acquire resources through similar methods
- D all the interbreeding members of a certain species in an ecosystem

Life Science

Populations and Ecosystems

GLE 27—Identify the various relationships among plants and animals (e.g., mutualistic, parasitic, producer/consumer) (LS-M-C4)

- 22 Which relationship is mutualistic?
- A an insect that lives and feeds on the body of an alligator
 - B an ant that lives on a plant and defends the plant from other insects
 - C a bird that migrates to follow the movements of the butterflies that it eats
 - D a deer that eats one kind of plant, which allows another kind of plant to grow in its place

Life Science

Adaptations of Organisms

GLE 30—Differentiate between structural and behavioral adaptations in a variety of organisms (LS-M-D1)

- 23 Which example describes a behavioral adaptation?
- A A bird builds its nest in the ash near a volcano.
 - B A whale has the ability to hold its breath for 20 minutes.
 - C A fox's hair is white in the winter and brown in the summer.
 - D A monkey has long arms that allow it to swing from one branch to another.

Life Science

Adaptations of Organisms

GLE 32—Describe changes that can occur in various ecosystems and relate the changes to the ability of an organism to survive (LS-M-D2)

- 24 A forest is flooded when a natural dam breaks, leaving the forest floor under two meters of water. Which animal is **most** affected by the flooding?
- A a crow
 - B a rabbit
 - C a squirrel
 - D a butterfly

Science and the Environment

GLE 35—Identify resources humans derive from ecosystems (SE-M-A1)

- 25 Which resource is most likely found in large amounts in forest ecosystems?
- A iron
 - B wood
 - C plastic
 - D petroleum

Science and the Environment

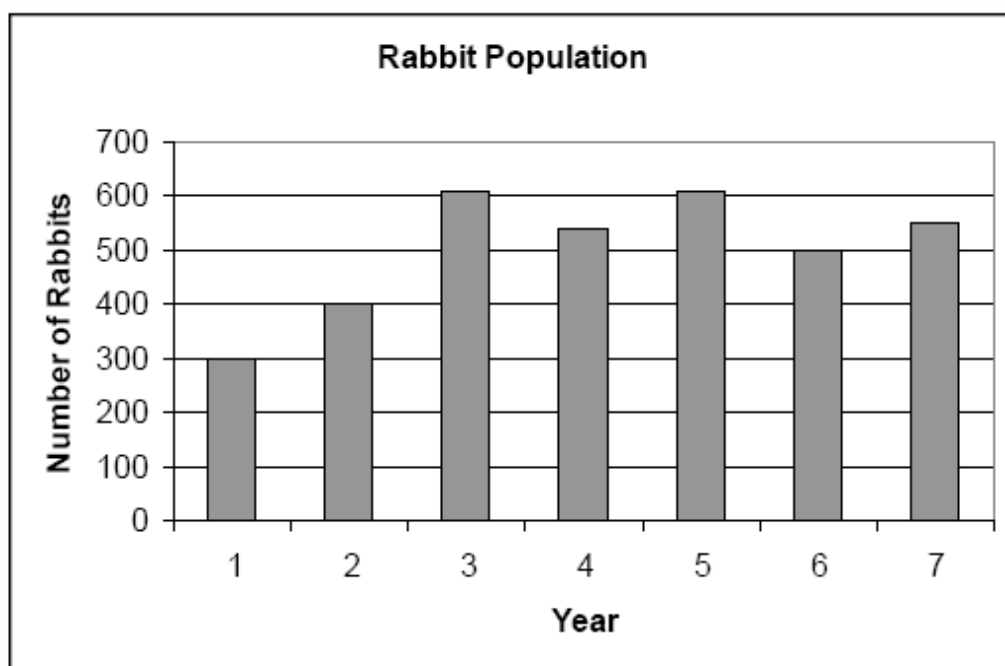
GLE 37—Identify and describe the effects of limiting factors on a given population (SE-M-A2)

- 26 In a large forest with many animals, there are only a small number of bears. Which of these most likely limits the population of bears in the forest?
- A supply of food
 - B type of tree
 - C predation by carnivores
 - D amount of suitable shelter

Science and the Environment

GLE 38—Evaluate the carrying capacity of an ecosystem (SE-M-A2)

Use the graph below to answer question 27.



- 27 The graph above shows the population of a rabbits in a field over a seven-year period. Based on the data, what is the approximate carrying capacity in the field for rabbits?
- A 200
 - B 400
 - C 500
 - D 600

Science and the Environment

GLE 41—Describe the nitrogen cycle and explain why it is important for the survival of organisms (SE-M-A7)

- 28 What is the **main** reason humans need nitrogen to survive?
- A Nitrogen is used in respiration to generate energy.
 - B Nitrogen is used in making the proteins in the body.
 - C Nitrogen is used to help the body eliminate wastes.
 - D Nitrogen is used by nerve cells to conduct impulses.

Science and the Environment

GLE 42—Describe how photosynthesis and respiration relate to the carbon cycle (SE-M-A7)

- 29 Which statement **best** describes the roles of photosynthesis and respiration in the carbon cycle?
- A Respiration and photosynthesis both add carbon to the atmosphere.
 - B Respiration and photosynthesis both remove carbon from the atmosphere.
 - C Respiration adds carbon to the atmosphere, while photosynthesis removes carbon from the atmosphere.
 - D Photosynthesis adds carbon to the atmosphere, while respiration removes carbon from the atmosphere.

Science and the Environment

GLE 43—Identify and analyze the environmental impact of humans' use of technology (e.g., energy production, agriculture, transportation, human habitation) (SE-M-A8)

- 30 Scientists have observed an increase in global temperatures over the past 100 years. Which phenomena do scientists believe contributes to the increase in temperatures?
- A an increase in undersea volcanic activity
 - B a decrease in the distance between Earth and the Sun
 - C an increase in certain gases released during the use of fossil fuels
 - D a decrease in the amount of water on Earth due to overconsumption