

# Introduction

## To the Teacher

Macmillan/McGraw-Hill *Standards Test Preparation for TCAP* is designed to familiarize students with standardized testing and to review the concepts covered in the Tennessee Science Standards.

## About This Book

The test items in this book will accustom students in a grade-appropriate manner with standardized testing in preparation for the Tennessee Comprehensive Assessment Program (TCAP). Each test item is correlated to a specific State Performance Indicator (SPI), or Grade Level Expectation (GLE) in the case of Grades 1 and 2.

- **Correlation Charts:** The first correlation chart illustrates how the SPIs or GLEs covered in this book align with lessons in Macmillan/McGraw-Hill *Tennessee Science A Closer Look*. The second chart illustrates how the SPIs or GLEs align with Macmillan/McGraw-Hill *Key Concept Cards* and other materials that can be used for intervention if test results indicate that students are having difficulty with particular SPIs or GLEs.
- **Diagnostic Tests:** Two Diagnostic Tests, which can be used as pretests or posttests, are provided. The Diagnostic Tests are designed to simulate the statewide TCAP tests that students will be taking. Each Diagnostic Test consists of multiple-choice questions that cover SPIs or GLEs spanning all 12 Conceptual Strands in Life Science, Earth and Space Science, and Physical Science. Inquiry and Technology & Engineering SPIs or GLEs are embedded within each test.
- **Standards Tests:** These practice tests give students the opportunity to answer questions that focus on each of the Conceptual Strands of the Tennessee Science Standards. One test is provided for each of the 12 Life Science, Earth and Space Science, and Physical Science Conceptual Strands. Inquiry and Technology & Engineering SPIs or GLEs are embedded within each test. These tests can also be used as pretests and posttests, or as homework assignments or extra practice.

Introduction .....	ii
Lesson Correlations for Tennessee State Performance Indicators .....	iv
Interventions for Tennessee State Performance Indicators .....	vi
Diagnostic Test 1 .....	1
<b>Standards and Scientific Inquiry Tests</b>	
Standard 1 Test. ....	19
Standard 2 Test. ....	22
Standard 3 Test. ....	29
Standard 4 Test. ....	32
Standard 5 Test. ....	35
Standard 6 Test. ....	38
Standard 7 Test. ....	45
Standard 8 Test. ....	47
Standard 9 Test. ....	50
Standard 10 Test. ....	55
Standard 11 Test. ....	59
Standard 12 Test. ....	61
Diagnostic Test II .....	65
Answer Sheet. ....	83

# Correlation Chart

## Lesson Correlations for Tennessee State Performance Indicators

State Performance Indicator	Chapter, Lesson
<b>SPI 0507.Inq.1</b> Select an investigation that could be used to answer a specific question.	Be a Scientist
<b>SPI 0507.T/E.1</b> Select a tool, technology, or invention that was used to solve a human problem.	Technology: A Closer Look, Lesson 4
<b>SPI 0507.T/E.2</b> Recognize the connection between a scientific advance and the development of a new tool or technology.	Technology: A Closer Look, Lesson 1
<b>SPI 0507.1.1</b> Identify the major parts of plant and animal cells such as, the nucleus, cell membrane, cell wall, and cytoplasm.	Chapter 1, Lesson 1
<b>SPI 0507.1.2</b> Compare and contrast basic structures and functions of plant and animal cells.	Chapter 1, Lesson 1
<b>SPI 0507.2.1</b> Describe the different types of nutritional relationships that exist among organisms.	Chapter 1, Lesson 2
<b>SPI 0507.2.2</b> Distinguish among symbiotic, commensal, and parasitic relationships.	Chapter 1, Lesson 2
<b>SPI 0507.2.3</b> Use information about the impact of human actions or natural disasters on the environment to support a simple hypothesis, make a prediction, or draw a conclusion.	Chapter 1, Lesson 3
<b>SPI 0507.3.1</b> Identify photosynthesis as the food manufacturing process in plants.	Chapter 1, Lesson 3
<b>SPI 0507.3.2</b> Compare how plants and animals obtain energy.	Chapter 1, Lesson 3
<b>SPI 0507.4.1</b> Recognize that information is passed from parent to offspring during reproduction.	Chapter 2, Lesson 1
<b>SPI 0507.4.2</b> Distinguish between inherited traits and those that can be attributed to the environment.	Chapter 2, Lesson 2
<b>SPI 0507.5.1</b> Identify physical and behavioral adaptations that enable animals such as, amphibians, reptiles, birds, fish, and mammals to survive in a particular environment.	Chapter 2, Lesson 3
<b>SPI 0507.5.2</b> Explain how fossils can be used to provide information about the past.	Chapter 2, Lesson 4
<b>SPI 0507.6.1</b> Distinguish among the planets according to their known characteristics such as appearance, composition, and apparent motion.	Chapter 3, Lesson 1; Chapter 3, Lesson 2
<b>SPI 0507.6.2</b> Select information from a complex data representation to draw conclusions about the planets.	Chapter 3, Lesson 1; Chapter 3, Lesson 2
<b>SPI 0507.6.3</b> Identify methods and tools for identifying star patterns.	Chapter 3, Lesson 3

# Correlation Chart

State Performance Indicator	Chapter in Macmillan/McGraw-Hill <i>Tennessee Science</i>
<b>SPI 0507.7.1</b> Describe internal forces such as volcanoes, earthquakes, faulting, and plate movements that are responsible for the earth's major geological features such as mountains, valleys, etc.	Chapter 4, Lesson 1; Chapter 4, Lesson 2; Chapter 4, Lesson 3
<b>SPI 0507.8.1</b> Describe the effects of the oceans on weather and climate.	Chapter 4, Lesson 4
<b>SPI 0507.8.2</b> Explain how mountains affect weather and climate.	Chapter 4, Lesson 4
<b>SPI 0507.9.1</b> Distinguish between physical and chemical properties.	Chapter 5, Lesson 2; Chapter 5, Lesson 4
<b>SPI 0507.9.2</b> Describe the differences among freezing, melting, and evaporation.	Chapter 5, Lesson 3
<b>SPI 0507.9.3</b> Describe factors that influence the rate at which different types of material freeze, melt, or evaporate.	Chapter 5, Lesson 3
<b>SPI 0507.10.1</b> Differentiate between potential and kinetic energy.	Chapter 6, Lesson 3
<b>SPI 0507.10.2</b> Use data from an investigation to determine the method by which heat energy is transferred from one object or material to another.	Chapter 6, Lesson 4
<b>SPI 0507.11.1</b> Explain the relationship that exists among mass, force, and distance traveled.	Chapter 6, Lesson 2
<b>SPI 0507.12.1</b> Recognize that the earth attracts objects without touching them.	Chapter 6, Lesson 2
<b>SPI 0507.12.2</b> Identify the force that causes objects to fall to the earth.	Chapter 6, Lesson 2
<b>SPI 0507.12.3</b> Use data to determine how shape affects the rate at which a material falls to earth.	Chapter 6, Lesson 2

## Interventions for Tennessee State Performance Indicators

State Performance Indicator	Intervention Resources
<b>SPI 0507.Inq.1</b> Select an investigation that could be used to answer a specific question.	Activity Lab Book pp. 1–3
<b>SPI 0507.T/E.1</b> Select a tool, technology, or invention that was used to solve a human problem.	Key Concept Cards 48, 98
<b>SPI 0507.T/E.2</b> Recognize the connection between a scientific advance and the development of a new tool or technology.	Reading and Writing pp. 134–136
<b>SPI 0507.1.1</b> Identify the major parts of plant and animal cells such as, the nucleus, cell membrane, cell wall, and cytoplasm.	Key Concept Card 1
<b>SPI 0507.1.2</b> Compare and contrast basic structures and functions of plant and animal cells.	Key Concept Cards 2, 5
<b>SPI 0507.2.1</b> Describe the different types of nutritional relationships that exist among organisms.	Key Concept Card 20
<b>SPI 0507.2.2</b> Distinguish among symbiotic, commensal, and parasitic relationships.	Reading and Writing pp. 6–9
<b>SPI 0507.2.3</b> Use information about the impact of human actions or natural disasters on the environment to support a simple hypothesis, make a prediction, or draw a conclusion.	Key Concept Card 46
<b>SPI 0507.3.1</b> Identify photosynthesis as the food manufacturing process in plants.	Key Concept Card 6
<b>SPI 0507.3.2</b> Compare how plants and animals obtain energy.	Key Concept Card 20
<b>SPI 0507.4.1</b> Recognize that information is passed from parent to offspring during reproduction.	Key Concept Cards 11, 12, 13, 17, 18
<b>SPI 0507.4.2</b> Distinguish between inherited traits and those that can be attributed to the environment.	Reading and Writing pp. 29–32
<b>SPI 0507.5.1</b> Identify physical and behavioral adaptations that enable animals such as, amphibians, reptiles, birds, fish, and mammals to survive in a particular environment.	Key Concept Cards 7, 8, 9, 21, 23, 24, 25
<b>SPI 0507.5.2</b> Explain how fossils provide information about the past.	Key Concept Card 47
<b>SPI 0507.6.1</b> Distinguish among the planets according to their known characteristics such as appearance, location, composition, and apparent motion.	Key Concept Card 63
<b>SPI 0507.6.2</b> Select information from a complex data representation to draw conclusions about the planets.	Key Concept Card 63
<b>SPI 0507.6.3</b> Identify methods and tools for identifying star patterns.	Key Concept Cards 65, 66

State Performance Indicator	Intervention Resources
<b>SPI 0507.7.1</b> Describe internal forces such as volcanoes, earthquakes, faulting, and plate movements that are responsible for the earth's major geological features such as mountains, valleys, etc.	Key Concept Cards 36, 37, 38, 39, 40
<b>SPI 0507.8.1</b> Describe the effects of the oceans on weather and climate.	Key Concept Cards 52, 58
<b>SPI 0507.8.2</b> Explain how mountains affect weather and climate.	Reading and Writing pp. 84–87
<b>SPI 0507.9.1</b> Distinguish between physical and chemical properties.	Key Concept Cards 67, 68, 76, 78, 90
<b>SPI 0507.9.2</b> Describe the differences among freezing, melting, and evaporation.	Key Concept Cards 73, 74
<b>SPI 0507.9.3</b> Describe factors that influence the rate at which different types of material freeze, melt, or evaporate.	Reading and Writing pp. 102–105
<b>SPI 0507.10.1</b> Differentiate between potential and kinetic energy.	Reading and Writing pp. 123–126
<b>SPI 0507.10.2</b> Use data from an investigation to determine the method by which heat energy is transferred from one object or material to another.	Reading and Writing pp. 127–130
<b>SPI 0507.11.1</b> Explain the relationship that exist among mass, force, and distance traveled.	Key Concept Card 82
<b>SPI 0507.12.1</b> Recognize that the earth attracts objects without touching them.	Reading and Writing pp. 119–122
<b>SPI 0507.12.2</b> Identify the force that causes objects to fall to the earth.	Reading and Writing pp. 119–122
<b>SPI 0507.12.3</b> Use data to determine how shape affects the rate at which a material falls to earth.	Reading and Writing pp. 119–122





**Directions:** On your answer sheet, mark the correct answer.

**1** Which of these is not a physical property?

**SPI 0507.9.1**

- A** ability to burn
- B** state of matter
- C** density
- D** mass

**2** Which of the following best describes reproduction?

**SPI 0507.4.1**

- F** the spreading of seeds in the forest
- G** the study of plants and animals living in the ocean
- H** the break down of dead plant and animal matter
- J** the passing of traits from one generation to the next

**3** Look at the chart below.

Planet	Approximate Distance from the Sun in miles
Mercury	36 million
Venus	67 million
Earth	93 million
Mars	149.6 million
Jupiter	483.6 million
Saturn	887 million
Uranus	1.784 billion
Neptune	2.794 billion
Pluto (a dwarf planet)	3.675 billion

According to this chart, how does the distance of Mercury from the Sun compare to the distance of Jupiter from the Sun?

**SPI 0507.6.2**

- A** Mercury is about 13 times farther from the Sun than Jupiter.
- B** Mercury is about  $\frac{1}{3}$  the distance from the Sun than Jupiter.
- C** Mercury is about  $\frac{1}{13}$  the distance from the Sun than Jupiter.
- D** Mercury is about 3 times farther from the Sun than Jupiter.



- 4** Which of the following best describes the actions of many kinds of birds when the weather gets warm?

 SPI 0507.5.1

- F** They migrate to a cooler climate.
- G** They hibernate in their nests.
- H** They grow more feathers for the winter.
- J** They migrate to a warmer climate.

Use the picture below to answer questions 5 and 6.



- 5** Look at the picture. What does the picture show?

 SPI 0507.6.3

- A** a topographic map
- B** a star chart
- C** a planetary guide
- D** a fault graph

- 6** How can you use the picture?

 SPI 0507.6.3

- A** to identify landforms
- B** to identify moons in the universe
- C** to identify star patterns
- D** to identify where earthquakes will form

Name \_\_\_\_\_ Date \_\_\_\_\_

**7** Which of these is an example of kinetic energy?

**SPI 0507.10.1**

- F** a ball sitting at the top of a hill
- G** a ball resting on the floor
- H** a ball rolling on the floor
- J** a ball being held by a person

**8** Which of the following is not a type of symbiosis?

**SPI 0507.2.2**

- A** commensalism
- B** mutualism
- C** parasitism
- D** decomposition

**9** Scientists found several fossils of a tropical plant in a desert area. What can the scientists infer about this ecosystem long ago?

**SPI 0507.5.2**

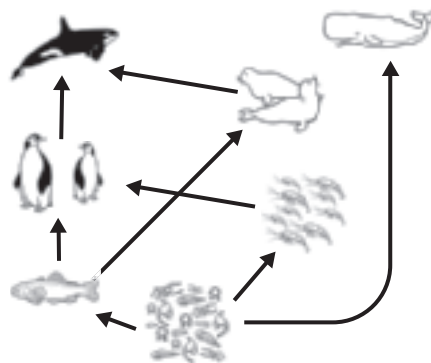
- F** There was once more water available in the area.
- G** There was less water available in the area.
- H** Temperatures were once much cooler in the area.
- J** The area has remained unchanged.

**10** Thermal energy can be transferred through empty space by

**SPI 0507.10.2**

- A** conduction
- B** radiation
- C** convection
- D** reflection

**11** Look at the food web.

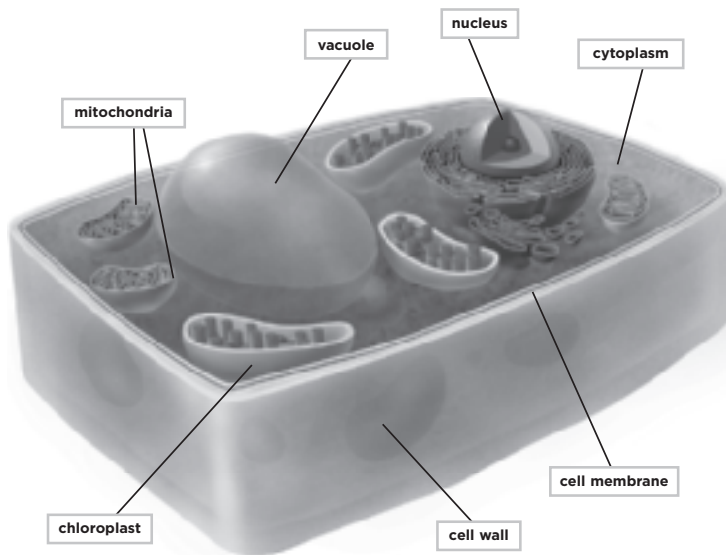


What do seals eat?

**SPI 0507.2.1**

- F** plankton
- G** killer whales
- H** fish
- J** krill

**12** Look at the diagram of a plant cell.



Which structures are also found in animal cells?

**SPI 0507.1.2**

- A** nucleus, mitochondria, vacuoles
- B** nucleus, chloroplasts, vacuoles
- C** mitochondria, cell wall, cell membrane
- D** vacuoles, mitochondria, chloroplasts

Name \_\_\_\_\_ Date \_\_\_\_\_

- 13** Juanita noticed droplets of water on a spider web one morning. She saw on the morning news that it was cool and dry the night before. Which best describes Juanita's observations?

 SPI 0507.9.2

- F** Water vapor from the air condenses on the web, forming water droplets.
- G** It really had rained the night before, but the weather reporter gave the wrong news.
- H** Water from nearby trees leaked out onto the web.
- J** Water from the ground evaporated on the web.

- 14** Look at the data table below.

Category A	Category B
tomato plant	elephant
fern	panther
algae	humpback whale
willow tree	field mouse
grass	hawk

Into what categories are the organisms grouped?

 SPI 0507.2.I

- A** decomposers and tertiary consumers
- B** primary consumers and scavengers
- C** producers and consumers
- D** omnivores and producers

- 15** Julie pushes two blocks with the same amount of force. One block has more mass than the other block. Which of the following is correct?

 SPI 0507.II.I

- F** The block with more mass will not move as far as the other block.
- G** The block with more mass will move farther than the other block.
- H** There is no relationship among force, mass, and distance.
- J** An object with more mass will need less force to move it.

**16** Which of the statements about Earth's gravity is true?

**SPI 0507.12.1**

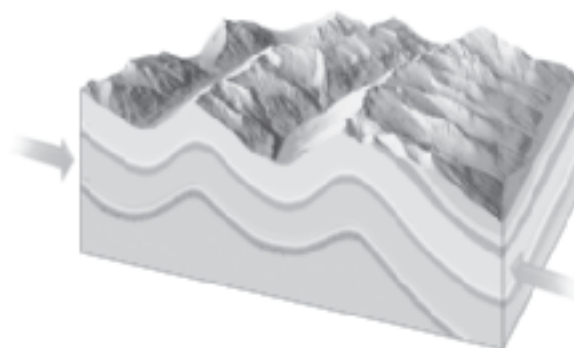
- A** Earth only pulls on objects that are touching the ground.
- B** Earth only pulls on objects with a lot of mass.
- C** Earth can pull on objects without touching them.
- D** Earth can pull on some objects and push others away.

**17** Which structure controls all the activities of a cell?

**SPI 0507.1.1**

- F** nucleus
- G** vacuole
- H** mitochondrion
- J** cell membrane

**18** Look at the picture.



Which of the following is true about how folded mountains are produced?

**SPI 0507.7.1**

- A** Folded mountains are produced when Earth's plates move away from each other.
- B** Folded mountains are produced when the crust is stretched.
- C** Folded mountains are produced when Earth's plates are pushed into each other.
- D** Folded mountains are produced when Earth's plates rub against each other.

**19** Which of the following statements about asexual reproduction is true?

 SPI 0507.4.1

- F** It produces a new offspring that has the same genetic information as the parent.
- G** It produces a new offspring that has different genetic information from its parent.
- H** It involves the joining of a sperm cell from a male parent and an egg cell from a female parent.
- J** It occurs only in plants.

**20** Which best describes what happens to the particles in a substance as the substance condenses?

 SPI 0507.9.2


- A** The particles become larger.
- B** The particles stick together.
- C** The particles move more slowly.
- D** The particles disappear.

**21** Toads need water to lay their eggs. Many toads lay their eggs in small puddles and ponds. One spring, there is a drought. What is most likely to happen to the toads?

 SPI 0507.2.3

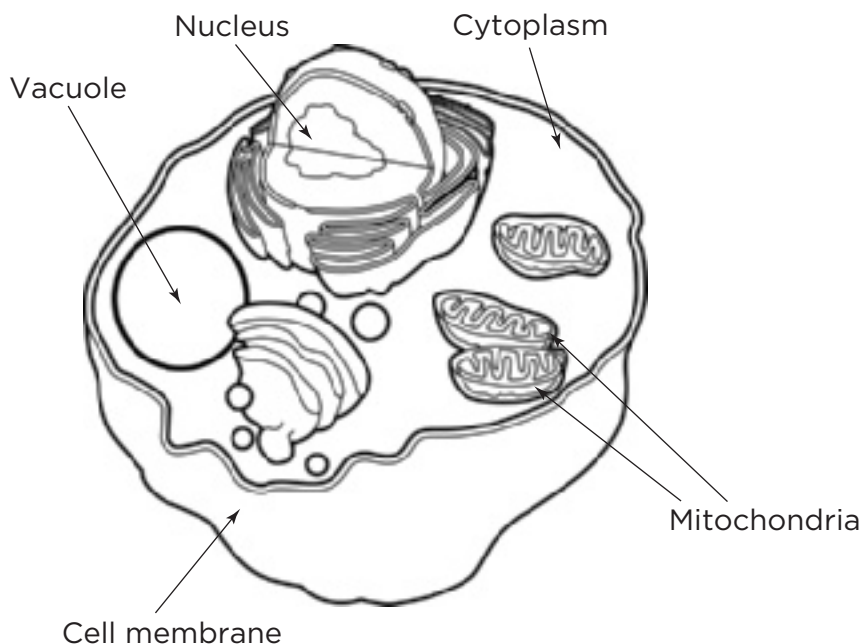
- F** The toads will be eaten by predators.
- G** The toads will have less food.
- H** The toads will have fewer offspring.
- J** The toads will lay their eggs on the ground.

**22** Which of these is an example of only potential energy?

 SPI 0507.10.1

- F** A roller coaster at the bottom of a hill.
- G** A ball rolling on the ground.
- H** A roller coaster stopped at the top of a hill.
- J** A ball thrown from third base to first base.

**23** Look at the picture of a cell.



Which cell part is correctly paired with its function?

**SPI 0507.1.1**

- F** nucleus – stores water, food, and wastes
- G** cytoplasm – traps light energy
- H** vacuole – stores genetic information
- J** cell membrane – gives the cell its shape

**24** A fossil skull with large flat teeth was found in Tennessee. What can scientists infer about this animal from the fossil?

**SPI 0507.5.2**

- F** it probably ate plants
- G** it probably ate meat
- H** it probably hunted at night
- J** it probably hibernated in winter

**25** Which word best describes kinetic energy?

**SPI 0507.10.1**

- F** stretch
- G** elasticity
- H** stored
- J** motion

Name \_\_\_\_\_ Date \_\_\_\_\_

- 26** Jake pours liquid substance A into a glass of water, and the water remains clear. Then he pours liquid substance B in another glass of the same amount of water and it remains clear. Then he pours the two glasses of liquid into a glass bowl, and white solid particles appear. Which of the following questions would best help Jake to develop a hypothesis for his experiment?

SPI 0507.Inq.1

- A** How does substance A react when mixed with water?
- B** How can water be changed from a liquid to a solid?
- C** Is substance A heavier than substance B?
- D** Do substances A and B change chemically when combined in water?

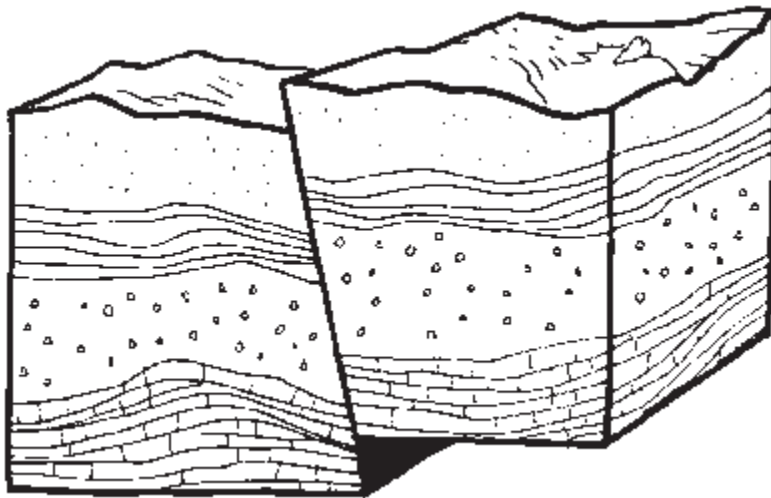
- 27** What happens when cool, damp air approaches a mountain range?

SPI 0507.8.2

- F** it gets warmer
- G** water vapor in the air condenses and forms rain
- H** water vapor in the air evaporates
- J** it gets heavier



- 28** Look at the picture below.



The picture above represents a place in Earth's crust where two plates come together. What happens when the plates move?

**SPI 0507.7.1**

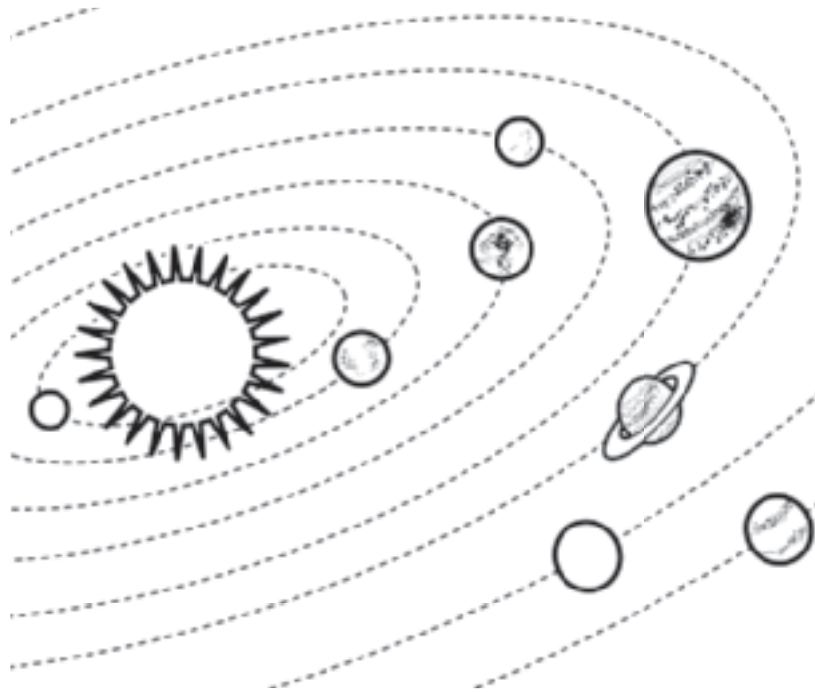
- A** A storm surge forms.
- B** An earthquake occurs.
- C** Nothing happens because fault areas are stable.
- D** A canyon forms when heavy rains occur.

- 29** Which of the following does a plant cell have that an animal cell does not have?

**SPI 0507.1.2**

- F** cell membrane
- G** vacuole
- H** cell wall
- J** mitochondria

- 30** Look at the diagram of the solar system.



The planets known as gas giants are also called the

**SPI 0507.6.I**

- A** inner planets
- B** terrestrial planets
- C** outer planets
- D** planets between the Sun and the asteroid belt

- 31** Which is not a method of heat transfer?

**SPI 0507.10.2**

- F** convection
- G** specific heat
- H** conduction
- J** radiation

- 32** What is the food manufacturing process in plants?

**SPI 0507.3.I**

- A** reproduction
- B** photosynthesis
- C** respiration
- D** pollination

**33** Which of the following is an inherited trait?

SPI 0507.4.2

- F** a person's ability to use tools
- G** a person's height
- H** where a person lives
- J** what language a person speaks

**34** Why do sea breezes form?

SPI 0507.8.1

- A** Land heats faster than water.
- B** Water heats faster than land.
- C** The ocean pushes air toward land.
- D** The ocean pulls air from the land.

**35** Look at the table below.

Planetary Data				
planet name	radius at the equator (km)	mean surface temperature (°C)	surface materials	rings
Mercury	2,440	179	rocks	no
Venus	6,052	482	rocks	no
Earth	6,378	15	rocks	no
Mars	3,397	-63	rocks	no
Jupiter	71,492	-121	gases	yes
Saturn	60,268	-125	gases	yes
Uranus	25,559	-193	gases	yes
Neptune	24,746	-193 to -153	gases	yes

How much larger is the radius of Jupiter than the radius of Earth?

SPI 0507.6.2

- F** about 5 times larger
- G** about 10 times larger
- H** over 15 times larger
- J** 13 times larger

Name \_\_\_\_\_ Date \_\_\_\_\_

**36** Which of the following decreases the rate at which a substance melts?

 SPI 0507.9.3


- A** decreasing the temperature
- B** increasing the temperature
- C** increasing the humidity
- D** decreasing the pressure

**37** Why does a ball thrown in the air fall back to Earth?

 SPI 0507.12.1

- F** It runs out of energy.
- G** Air resistance causes it to fall.
- H** Earth pulls it back down without touching it.
- J** It loses inertia.

**38** Which planets have rings?

 SPI 0507.6.1


- A** Saturn, Venus, Jupiter
- B** Jupiter, Saturn, Uranus, Neptune
- C** Mercury, Mars
- D** Saturn only

**39** An apple falls to the ground because of

 SPI 0507.12.2

- F** magnetism
- G** gravity
- H** friction
- J** inertia

**40** Which of these can cause an area to have a mild climate?

 SPI 0507.8.1

- A** nearness to a large body of water
- B** nearness to a desert
- C** insulation
- D** high tides

- 41** Look at the picture of a bowling ball and a baseball.



Which best describes how mass affects the way a baseball and a bowling ball move?

**SPI 0507.II.I**

- F** The bowling ball has greater mass, so it encounters less friction.
- G** The bowling ball has greater mass, so it requires greater force to overcome inertia.
- H** The baseball has less mass, which gives it more momentum.
- J** The baseball has greater acceleration because a force is exerted on it by an object with greater mass.

- 42** Cindy has pierced ears. This trait is

**SPI 0507.4.2**

- A** inherited
- B** learned
- C** acquired
- D** rejected

- 43** Acacia trees and ants share a special relationship. Acacias are a home and a food source for ants. Ants in turn defend the trees from other insect pests. This relationship can best be described as

**SPI 0507.2.2**

- F** parasitism
- G** commensalism
- H** mutualism
- J** mimicry

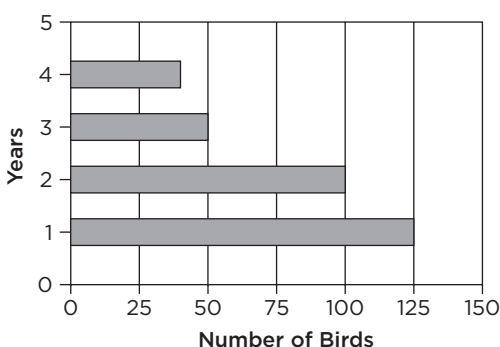
Name \_\_\_\_\_ Date \_\_\_\_\_

**44** Which of the following statements about gravity is true?

**SPI 0507.12.2**

- A** Gravity causes objects to fall to Earth.
- B** Gravity exists only between objects that touch.
- C** Gravity is a type of matter.
- D** The same amount of gravity exists between all objects.

**45** The bar graph shows the number of birds in an environment over a four-year period.



What would be a reasonable explanation for this data?

**SPI 0507.2.3**

- F** New laws restricting the hunting of birds were passed.
- G** New laws restricting the hunting of predator populations were passed.
- H** People began to build more homes and factories in the area.
- J** People built a nature preserve in the area.

**46** Which behavioral adaptation helps penguins survive in cold Antarctic weather?

**SPI 0507.5.1**

- A** streamlined body
- B** huddling closely together
- C** hibernating
- D** dark black skin

**47** Which side of a mountain tends to be dry?

**SPI 0507.8.2**

- F** windward
- G** leeward
- H** frontal
- J** equatorial

**48** What do plants obtain through photosynthesis?

**SPI 0507.3.1**

- A** food
- B** water
- C** carbon dioxide
- D** oxygen

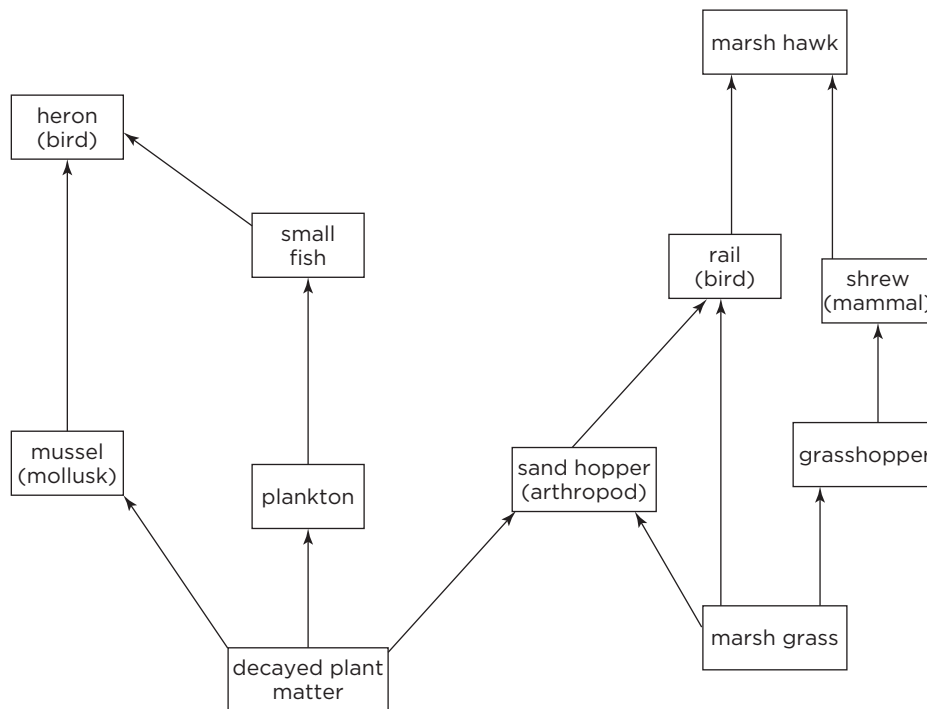
**49** Which of the following is true about a raindrop and a large rock?

**SPI 0507.12.3**

- F** The raindrop will fall to the ground faster than the large rock.
- G** The large rock will fall to the ground faster than the raindrop.
- H** Both the raindrop and the large rock will fall to the ground at the same rate.
- J** The raindrop will condense as it falls, but the rock will not change.

Name \_\_\_\_\_ Date \_\_\_\_\_

**50** Look at the food web diagram.



Which organism gets its energy directly from Sun?

- A** shrew
- B** marsh grass
- C** sand hopper
- D** grasshopper

**SPI 0507.3.2**

**51** Marissa saw a muddy puddle in the street in the morning. By two o'clock, the puddle had disappeared. Which is the best inference about what happened?

- F** It was very cold throughout the day.
- G** It was sunny and hot throughout the day.
- H** The water rolled down a hill.
- J** It was windy throughout the day.

**SPI 0507.9.2**



- 52** The force that opposes the downward motion of objects falling through the air is called

 **SPI 0507.12.3**

- A** air tension
- B** cohesion
- C** air resistance
- D** air pressure

- 53** Which best describes why animals cannot make their own food?

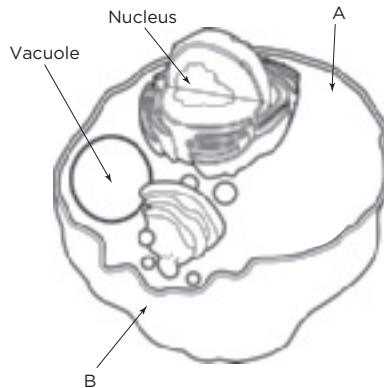
 **SPI 0507.3.2**

- F** Animal cells do not contain chloroplasts.
- G** Animals do not use water.
- H** Animals need extra energy to survive.
- J** Animals breathe in oxygen.



**Directions:** On your answer sheet, mark the correct answer.

Use the diagram below to answer questions 1, 2, and 3.



- 1** Look at the diagram of a cell. Which of the following organelles is the cell missing?

SPI 0507.1.1

- A** mitochondria
- B** cytoplasm
- C** nucleus
- D** vacuole

- 2** To which structure on the diagram is line A pointing?

SPI 0507.1.1

- F** mitochondrion
- G** cytoplasm
- H** chloroplast
- J** cell wall

- 3** To which structure on the diagram is line B pointing?

SPI 0507.1.1

- A** mitochondrion
- B** cytoplasm
- C** chloroplast
- D** cell membrane

**4** What cell part gives strength to a plant cell?

**SPI 0507.1.1**

- F** cell membrane
- G** mitochondria
- H** cell wall
- J** nucleus

**5** Which cell part is correctly paired with its function?

**SPI 0507.1.1**

- A** vacuole-controls all the functions of the cell
- B** mitochondrion-provides energy for the cell
- C** nucleus-gives the cell its shape
- D** cell membrane-traps light energy

**6** Look at this cell.



To what kind of organism does this cell belong?

**SPI 0507.1.2**

- F** unicellular
- G** plant
- H** animal
- J** bacterium

**7** Which cell part is not found in an animal cell?

 SPI 0507.1.2

- A** nucleus
- B** vacuole
- C** chloroplast
- D** mitochondrion

**8** Which of the following is not true of animal cells?

 SPI 0507.1.2


- F** Animal cells have a nucleus.
- G** Animal cells have cell walls that give structure to the cell.
- H** Animal cells have mitochondria that break down food and release energy for the cell to use.
- J** Animal cells store wastes in their vacuoles.

**9** Which best explains why plants can make their own food while animals cannot?

 SPI 0507.1.2

- A** Plant cells contain chlorophyll.
- B** Animal cells do not use water.
- C** Plants need extra energy to survive.
- D** Animals breathe in oxygen.

**10** What is the job of chloroplasts?

 SPI 0507.1.2

- F** to control the cell's functions
- G** to be the cell's power plant
- H** to store water, food, and wastes for the cell
- J** to use sunlight to produce food



**Directions:** On your answer sheet, mark the correct answer.

- 1** Which of the following statements about predators is not correct?

**SPI 0507.2.1**

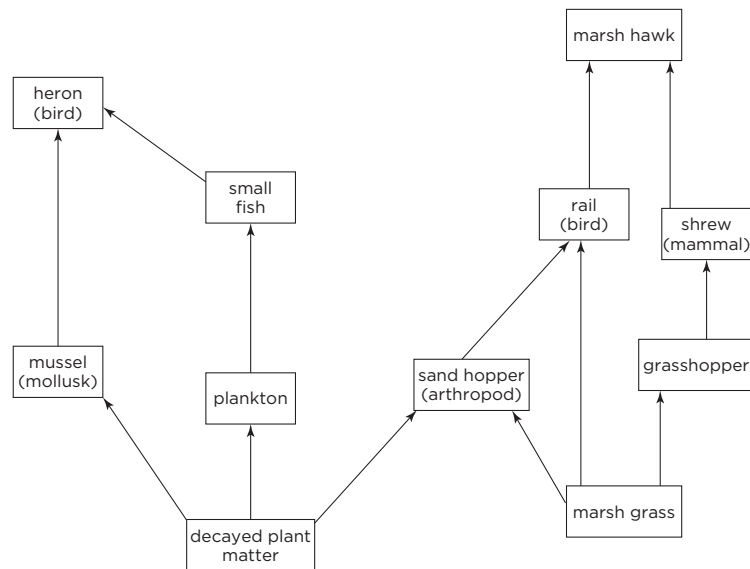
- A** In catching and eating prey, predators help reduce the size of prey populations.
- B** A predator is an organism that hunts other organisms for food.
- C** When predators are absent, prey species disappear.
- D** Not all predators are animals.

- 2** How do parasites affect their hosts?

**SPI 0507.2.1**

- F** They help their hosts by consuming or using their cells.
- G** They help their hosts by growing in size.
- H** They harm their hosts by growing in size.
- J** They harm their hosts by using their hosts as a food source.

Use the diagram below to answer questions 3 and 4.



- 3** Look at the food web. What is the relationship between the marsh grass and the grasshopper?

**SPI 0507.2.1**

- A** decomposer—producer
- B** producer—producer
- C** producer—consumer
- D** consumer—decomposer

- 4** Which of the following animals shown in the food web is both a predator and a prey?

**SPI 0507.2.1**

- F** grasshopper
- G** heron
- H** mussel
- J** shrew

- 5** When rabbits were introduced to Australia in the mid-1800s, they had few predators. Which of the following was a likely outcome of that introduction?
- A** The rabbit population decreased very quickly.  
**B** The vegetation on the grasslands began to grow more quickly.  
**C** The kangaroo population, which also fed on the vegetation, decreased.  
**D** Predator populations decreased.

 **SPI 0507.2.1**

- 6** Small, hard-shelled animals called barnacles attach themselves to the bodies of some whales. This increases the barnacles' chances of finding food. The whale is unharmed by the barnacles. What type of relationship is this?

 **SPI 0507.2.2**

- F** commensalism  
**G** mutualism  
**H** parasitism  
**J** predation

- 7** The animal known as a ratel likes honey but often has trouble finding a supply. The honey guide bird loves to eat beeswax but is not big enough to break into a bee's nest easily. When the honey guide bird finds a bee's nest, it chirps loudly. The ratel moves toward the sound. When the ratel reaches the nest, it tears it open with its sharp claws and enjoys a meal. The honey guide bird feasts on beeswax. Which relationship do these species illustrate?

 **SPI 0507.2.2**

- A** mutualism  
**B** predation  
**C** parasitism  
**D** commensalism

- 8** The dodder plant wraps itself around another plant, such as a clover or alfalfa plant. It pushes its “suckers” into the host plant and then releases itself completely from the soil. Staying attached to the host, it obtains all of its food from the host. The host is harmed by the dodder plant in this relationship, which is called

 **SPI 0507.2.2**

- F** mutualism
- G** commensalism
- H** parasitism
- J** predation

- 9** The relationship between a mosquito and a human is best described as

 **SPI 0507.2.2**

- A** commensalism
- B** reproduction
- C** mutualism
- D** parasitism

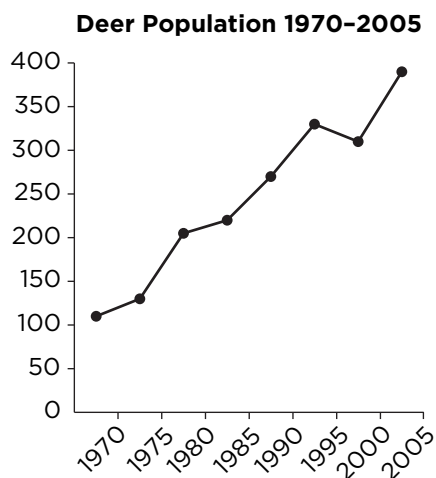
- 10** In the symbiotic relationship between a honeybee and a flower, the honeybee gets nectar and pollen to eat and also brings pollen from one flower to another. What type of relationship is this?

 **SPI 0507.2.2**

- F** parasitism
- G** mutualism
- H** commensalism
- J** pollination



The graph below shows the deer population in a forest ecosystem in which deer hunting has been strictly regulated over a period of time. Use the graph to answer questions 11 and 12.



- 11** Look at the graph. Which is the best prediction of how the change in the deer population will affect the plants in the forest?

**SPI 0507.2.3**

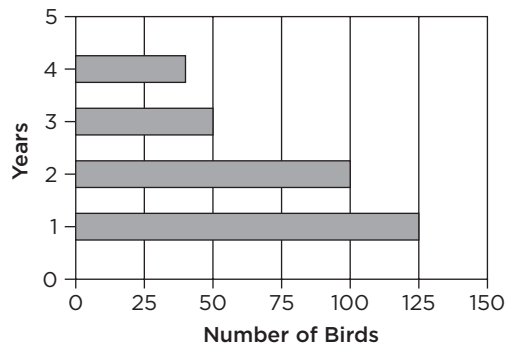
- A** The number of plants will decrease.
- B** The number of plants will increase.
- C** The number of plants will remain the same.
- D** The number of plants will not be affected by the deer population.

- 12** According to the graph, which is the best prediction about what will eventually happen to the deer?

**SPI 0507.2.3**

- F** The amount of food available to the deer will eventually decrease so the deer population will decrease.
- G** The amount of food available to the deer will eventually increase so the deer population will increase.
- H** The deer population will decrease because the population of animals that prey on the deer will eventually decrease.
- J** The deer population will increase because the population of animals that prey on the deer will eventually decrease.

The bar graph below shows the number of birds in an environment over a four-year drought. Use the bar graph to answer questions 13, 14, and 15.



- 13** Which is the best prediction about how many birds there will be in the environment in Year 5 if the drought continues?

**SPI 0507.2.3**


- A** 125
- B** 100
- C** 75
- D** 25

- 14** What conclusion can be drawn from the information in the bar graph?

**SPI 0507.2.3**

- F** The pollutant DDT has caused the bird population to decrease.
- G** More birds are moving to a new environment each year.
- H** The drought is causing the bird population in the environment to decrease.
- J** A predator was introduced into the environment.

**15** Which of the following events could cause a similar change to the bird population?

 **SPI 0507.2.3**

- A** severe thunderstorms over one season
- B** an increase in the amount of building humans are doing in the environment
- C** a decrease in the amount of hunting of animals that the birds depend on for food
- D** a disease striking predator populations that prey on the birds



**Directions:** On your answer sheet, mark the correct answer.

**1** What would happen to a plant without the Sun?

 SPI 0507.3.I

- A** It would grow faster.
- B** It could not eat other plants.
- C** It could not make food.
- D** It would give off more oxygen.

**2** What is photosynthesis?

 SPI 0507.3.I

- F** the process by which plants make new plants
- G** the process by which plants make food
- H** the process by which plants spread their seeds
- J** the process by which plants use oxygen

**3** What is the correct word equation for photosynthesis?

 SPI 0507.3.I

- A** carbon dioxide + water + light energy      sugar + oxygen
- B** carbon dioxide + oxygen + light energy      sugar + water
- C** sugar + oxygen + light energy      carbon dioxide + water
- D** carbon dioxide + water      sugar + oxygen + light energy

**4** Why is the Sun necessary for photosynthesis?

 SPI 0507.3.I

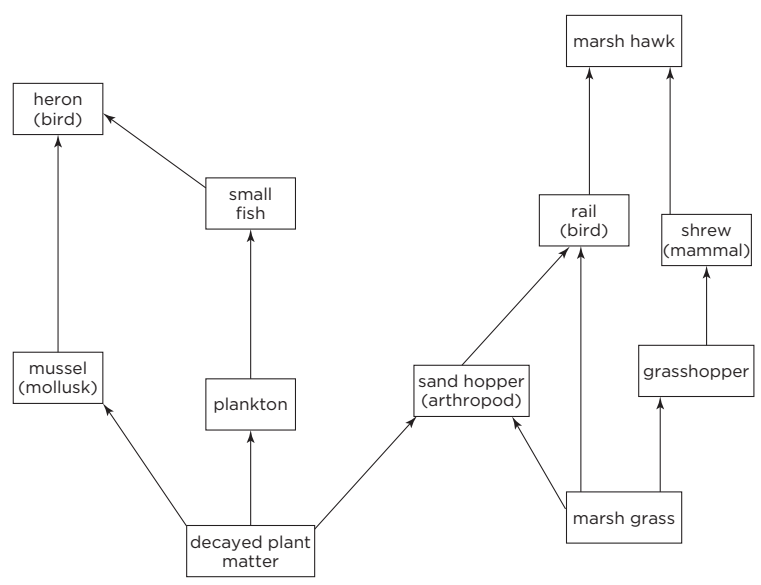
- F** It provides oxygen.
- G** It provides carbon dioxide.
- H** It provides water.
- J** It provides energy.

**5** Which of the following organisms carries out photosynthesis?

 SPI 0507.3.I

- A** pine tree
- B** mushroom
- C** octopus
- D** deer

Use the food web diagram below to answer questions 6, 7, and 8.



**6** Look at the food web. Which organism is an herbivore?  
**SPI 0507.3.2**

- F** shrew
- G** rail
- H** grasshopper
- J** heron

**7** In the food web, which organism is an omnivore?  
**SPI 0507.3.2**

- A** rail
- B** mussel
- C** heron
- D** shrew

**8** In the food web, which organism makes its own food through photosynthesis?  
**SPI 0507.3.2**

- F** heron
- G** marsh grass
- H** mussel
- J** grasshopper

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**9** How are consumers different from producers?

 **SPI 0507.3.2**

- A** Consumers do not need energy, while producers do.
- B** Consumers need water, while producers do not need water.
- C** Consumers make their own food, while producers eat other organisms for energy.
- D** Consumers eat other organisms for energy, while producers make their own food.

**10** How could you classify a tulip plant?

 **SPI 0507.3.2**

- F** as a producer
- G** as a consumer
- H** as a decomposer
- J** as an omnivore



**Directions:** On your answer sheet, mark the correct answer.

**1** Some fish have cartilage instead of bones. This is an example of

 **SPI 0507.4.2**

- A** an inherited trait
- B** a characteristic acquired over time
- C** a genetic mystery
- D** an instinct

**2** Which of the following is an example of an inherited trait?

 **SPI 0507.4.2**

- F** riding a bicycle
- G** blinking
- H** webbed feet on a duck
- J** playing an instrument

**3** Which of the following best describes genetics?

 **SPI 0507.4.1**

- A** spreading seeds in the forest
- B** comparing plants and animals living in the ocean
- C** watching animals blend into their environment
- D** passing traits from one generation to the next through reproduction

**4** How are inherited traits passed from parents to offspring?

 **SPI 0507.4.1**

- F** as chemical “instructions” called genes
- G** by the separation of chromosomes
- H** during the process of pollination
- J** according to the rules of a pedigree

**5** What conclusion can you draw about the parents of a brown-eyed offspring?

 SPI 0507.4.1

- A** At least one of the parents must carry a trait for brown eyes.
- B** Neither of the parents carry a trait for brown eyes.
- C** Both parents probably have blue eyes.
- D** The parents' eye color does not have an effect on the offspring's eye color.

**6** Laura is looking at two plants that are the same type of plant. The plants do not look exactly alike. She wonders which characteristics are inherited and which are a result of the environment. Which of the following traits could you tell Laura is caused by the environment?

 SPI 0507.4.2


- F** the shape of the plants leaves
- G** the size of each plant
- H** the health of each plant's leaves
- J** the thickness of each plant's stem

**7** Which of the following is an inherited trait?

 SPI 0507.4.2

- A** Betty's dancing skills
- B** Marco's excellent Spanish
- C** Tara's red hair
- D** Ryan's bank account

**8** Which of the following is a learned behavior?

 SPI 0507.4.2

- F** having a dream
- G** crying in pain
- H** throwing a ball
- J** imprinting



**9** Which of the following is not an example of an inherited trait?

**SPI 0507.4.2**

- A** the shape of a plant's flowers
- B** a scar on an animal's leg
- C** the color of an animal's fur
- D** a pattern on a plant's leaves

**10** Carmelita has a short, turned-up nose. She sneezes when she is around daffodils. What is the relationship between these two traits of Carmelita's?

**SPI 0507.4.2**

- F** Carmelita inherited both the shape of her nose and her sneezing.
- G** Carmelita inherited her sneezing, but the shape of her nose is an environmental factor.
- H** Carmelita inherited the shape of her nose, but her sneezing is an environmental factor.
- J** Both the shape of her nose and her sneezing are the result of the environment.



**Directions:** On your answer sheet, mark the correct answer.

- 1** Which of the following adaptations would be the most useful in a polar region?

 SPI 0507.5.I


- A** horns
- B** an extra layer of fat
- C** good eyesight
- D** good hearing

- 2** Salmon have strong muscles in their tails for swimming in fast-moving water. Where would you expect to find salmon?

 SPI 0507.5.I

- F** the deep ocean
- G** a wetland
- H** a river
- J** a small pond

- 3** Many desert animals are nocturnal. How does this adaptation help them survive in their environment?

 SPI 0507.5.I

- A** It helps them hunt during the heat of the day.
- B** It helps them lose excess water.
- C** It causes them to sleep at night when temperatures are cooler.
- D** It causes them to sleep during the heat of the day and hunt at night.

- 4** Which of the following best describes how caribou survive when the weather gets cold in their environment?

 SPI 0507.5.I

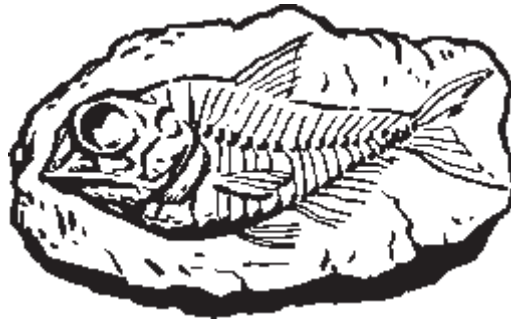
- F** They migrate to a cooler climate.
- G** They hibernate in a den.
- H** They turn white and blend in with the snow.
- J** They migrate to a warmer climate.

- 5** A lizard has the same color as the leaf on a tree. Predators cannot see this lizard very easily. This is an example of

**SPI 0507.5.1**

- A** hibernation
- B** migration
- C** mimicry
- D** camouflage

- 6** Look at this fossil



Which would scientists most likely conclude about a desert after seeing this fossil?

**SPI 0507.5.2**

- F** The desert did not have any oxygen until recently.
- G** The desert once supported amphibians.
- H** Many kinds of plants once grew in this desert.
- J** There was once water where the desert is now.

- 7** Which of the following cannot be learned from a fossil?

**SPI 0507.5.2**

- A** the type of organism
- B** the organism's hunting patterns
- C** the organism's size
- D** the organism's shape

- 8** What three parts of an animal often become fossils preserved in rock?

 **SPI 0507.5.2**

- F** heart, lungs, and stomach
- G** nails, bones, and hair
- H** shells, bones, and teeth
- J** soil, rocks, and dirt

- 9** A scientist found a fossil of a woolly mammoth on the bottom of the ocean. What inference can the scientist make from her discovery?


 **SPI 0507.5.2**

- A** Someone placed the fossil in the ocean.
- B** This area was not always covered by water.
- C** This mammoth lived in the ocean.
- D** There were fewer mammoths in ancient times.

- 10** Look at the chart below.

Animal	Feature
triceratops	leathery skin
pterodactyl	long wingspan
mammoth	flat teeth
saber-toothed cat	long, sharp teeth

Based on the information in this chart, which animal could you conclude most likely ate meat?

 **SPI 0507.5.2**

- F** triceratops
- G** pterodactyl
- H** mammoth
- J** saber-toothed cat



**Directions:** On your answer sheet, mark the correct answer.

**1** Which planet is closest to the Sun?

**SPI 0507.6.1**

- A** Earth
- B** Saturn
- C** Mercury
- D** Uranus

**2** Look at the data table below.

Planet	Distance to the Sun (in miles)
Mercury	36,000,000
Venus	67,000,000
Earth	93,000,000
Mars	142,000,000

Which conclusion can you draw from the data in the table?

**SPI 0507.6.2**


- F** There are four planets in the solar system.
- G** Earth is farther from the Sun than Venus.
- H** Mars revolves around the Sun more quickly than Earth.
- J** Mars rotates more slowly than Mercury.

**3** What is the smallest planet in the solar system?

**SPI 0507.6.1**

- A** Saturn
- B** Earth
- C** Mercury
- D** the Sun

**4** Which of these planets shows evidence of past volcanic activity?

 SPI 0507.6.I

- F** Jupiter
- G** Uranus
- H** Saturn
- J** Venus

**5** Which planet rotates on its side?

 SPI 0507.6.I

- A** Saturn
- B** Jupiter
- C** Uranus
- D** Neptune

Use the table below to answer questions 6, 7, and 8.

### Venus

Diameter	12,100 kilometers (7,500 miles)
Distance from the Sun	108.2 million kilometers (67.2 million miles)
Length of Day	243 Earth days
Length of Year	225 Earth days
Number of Moons	None
Atmosphere	Dense with carbon dioxide, 90 times greater atmospheric pressure than Earth
Temperature	900 degrees Fahrenheit (500 degrees Celsius)
Special features	Volcanoes

**6** Look at the table. According to the table, which of the following is true?

**SPI 0507.6.2**

- F** A Venus day is longer than a Venus year.
- G** A Venus year is longer than a Venus day.
- H** A day on Venus is like a day on Earth.
- J** A Venus year has seasons.

**7** According to the table, how does the temperature on Venus compare with the temperature on Earth?

**SPI 0507.6.2**

- A** The two planets have about the same temperature.
- B** The temperature of Venus is much hotter than Earth.
- C** Venus temperatures change faster than Earth temperatures.
- D** Venus has no atmosphere.

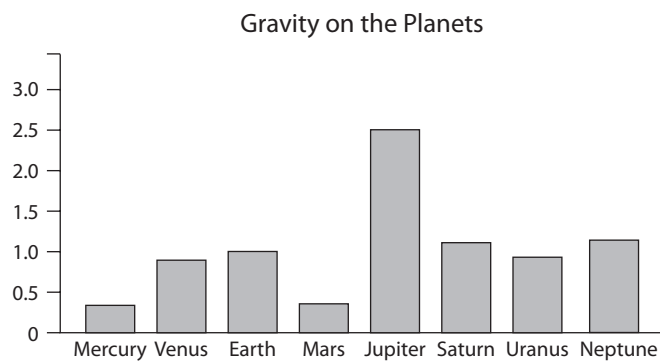
Name \_\_\_\_\_ Date \_\_\_\_\_

**8** What can you conclude about Venus from the information in the table?

**SPI 0507.6.2**

- F** The atmosphere of Venus would not support life as we know it.
- G** A Venus year is longer than an Earth year.
- H** Venus revolves around the Sun, but does not rotate.
- J** Venus is the only planet with volcanoes.

**9** Look at the bar graph below.



On which planet would a person weigh more than two times as much as he or she weighs on Earth?

**SPI 0507.6.2**

- A** Mars
- B** Jupiter
- C** Saturn
- D** Mercury



**10** Look at the data table below.

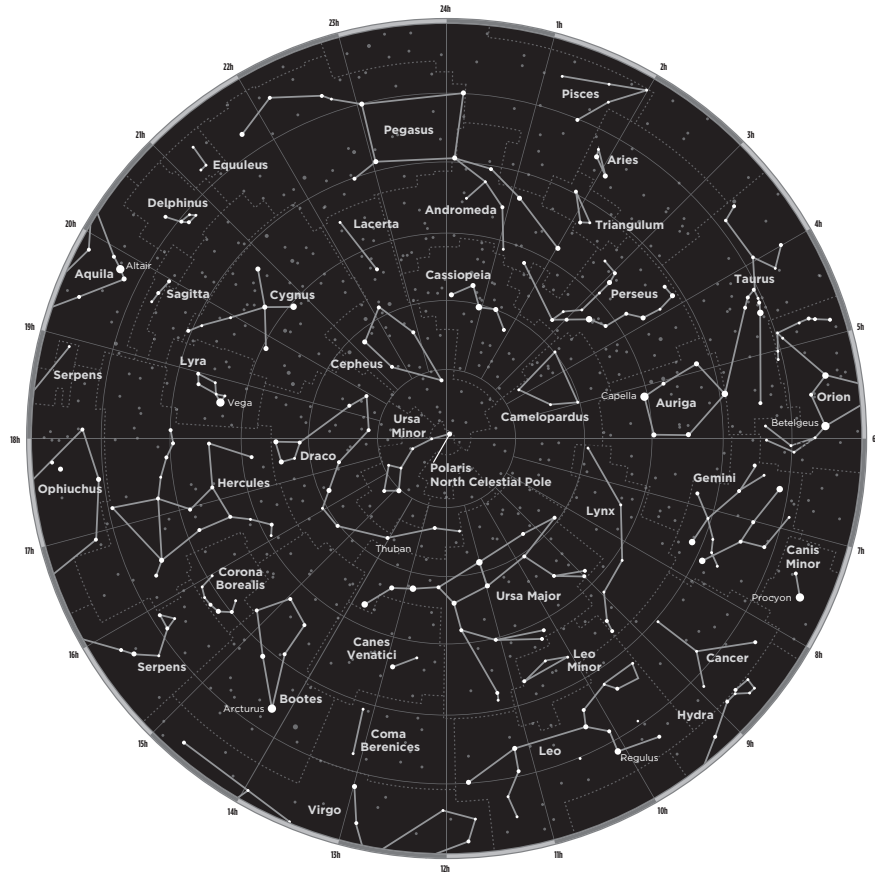
Planet	Approximate Radius at the Equator (km)
Mercury	2,440
Venus	6,052
Earth	6,378
Mars	3,397
Jupiter	71,492
Saturn	60,262
Uranus	25,559
Neptune	24,476

According to this table, about how many times greater is the radius of the largest planet than the radius of the smallest planet?

 SPI 0507.6.2

- F** 10 times greater
- G** 30 times greater
- H** 100 times greater
- J** 300 times greater

Use the diagram below to answer questions 11 through 15.



**11** Look at the diagram. How might this diagram be used?

 SPI 0507.6.3


- A** to locate distant universes
- B** to locate asteroids
- C** to identify star patterns in the night sky
- D** to identify bodies that orbit the Sun

**12** What do the dots represent on the diagram?

 SPI 0507.6.3

- F** planets
- G** stars
- H** comets
- J** asteroids

**13** Why are some dots on the diagram larger than others?

 SPI 0507.6.3

- A** The size of a dot represents the brightness of a star.
- B** The size of a dot represents the size of a planet.
- C** The size of a dot represents how quickly a comet is traveling.
- D** The size of a dot represents how close an asteroid is to Earth.

**14** What do the hours represent on the diagram?

 SPI 0507.6.3

- F** lines of inclination
- G** lines of declination
- H** lines of right ascension
- J** lines of longitude

**15** According to the diagram, Cassiopeia can be found close to

 SPI 0507.6.3

- A** Pisces
- B** Taurus
- C** Orion
- D** Perseus



**Directions:** On your answer sheet, mark the correct answer.

**1** Locations where Earth's plates collide are

**SPI 0507.7.I**

- A** transform boundaries
- B** divergent boundaries
- C** convergent boundaries
- D** strike-slip boundaries

**2** Mountains that form as plates rub past each other are called

**SPI 0507.7.I**

- F** Himalayas
- G** fault block mountains
- H** folded mountains
- J** volcanoes

**3** Where magma rises through the ocean floor,

**SPI 0507.7.I**

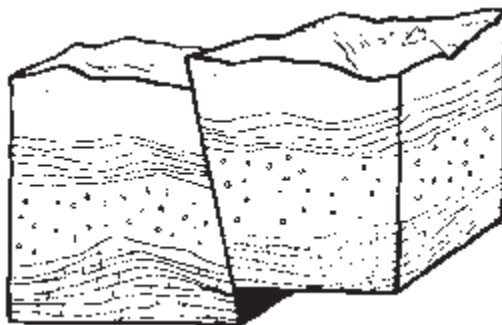
- A** continents come closer together
- B** continents collide
- C** the sea floor spreads apart
- D** nothing happens

**4** Which causes a rapid change to occur on Earth's surface?

**SPI 0507.7.I**

- F** an earthquake
- G** snow storm
- H** acid rain
- J** wind

- 5** Look at the diagram below.



What is pictured in this diagram?

- A** volcano
- B** fault
- C** tornado
- D** canyon

SPI 0507.7.1



**Directions:** On your answer sheet, mark the correct answer.

- 1** In winter, a city that is far away from an ocean will generally be

**SPI 0507.8.I**

- A** rainier than a city near a large body of water
- B** colder than a city near a large body of water
- C** warmer than a city near a large body of water
- D** sunnier than a city near a large body of water

- 2** Two climates that are at the same latitude may be different because of

**SPI 0507.8.I**

- F** bodies of water
- G** distance from the poles
- H** Earth's magnetic field
- J** air pollution

- 3** Look at the data table below. It shows average seasonal temperatures for two cities at the same latitude in the United States.


Seasons	Average Temperature in City A	Average Temperature in City B
Winter	38°F	46°F
Spring	59°F	65°F
Summer	80°F	78°F
Fall	60°F	66°F

What would be a reasonable conclusion based on the data in the table?

**SPI 0507.8.I**

- A** City A is near a coast.
- B** City B is near a coast.
- C** City B gets more rain than City A.
- D** City A gets more rain than City B.

- 4** The normally cool and dry northwestern coast of South America becomes much warmer and wetter due to which of the following?

 **SPI 0507.8.1**


- F** global warming
- G** El Niño
- H** the Greenland current
- J** deep-sea vents

- 5** What is true of coastal areas as compared with inland areas at the same latitude?

 **SPI 0507.8.1**

- A** Coastal areas have hotter summers and colder winters.
- B** Coastal areas have more moderate temperatures.
- C** Coastal areas have no seasonal changes in temperature.
- D** Coastal areas are in the rain shadow.

- 6** When moist winds approach a mountain, they often drop rain as they rise over the mountain. The air coming down the other side of the mountain is

 **SPI 0507.8.2**

- F** warmer and wetter
- G** cooler and drier
- H** warmer and drier
- J** cooler and wetter

- 7** What is a rain shadow?

 **SPI 0507.8.2**

- A** the dry, leeward side of a mountain
- B** the wet, windward side of a mountain
- C** a shadow under a rain cloud
- D** the wet region near a coast

**8** Which side of a mountain tends to be dry?

 **SPI 0507.8.2**

- F** windward
- G** leeward
- H** frontal
- J** equatorial

**9** As air rises up one side of a mountain, it

 **SPI 0507.8.2**

- A** cools
- B** heats up
- C** becomes drier
- D** changes to water vapor

**10** Deserts often form on which side of a mountain?

 **SPI 0507.8.2**

- F** the leeward side
- G** the windward side
- H** the north side
- J** the fault side





**Directions:** On your answer sheet, mark the correct answer.

**1** Which of these is **not** a physical property?

- A** density
- B** color
- C** flammability
- D** ability to conduct electricity

**SPI 0507.9.I**

**2** Tomas classified properties of matter into the chart below.

Group A	Group B
ability to rust	ability to float
acidic	magnetic

Look at the chart. Which property could Tomas add to Group A?

- F** melting point
- G** ability to react with water
- H** ability to dissolve
- J** malleability

**SPI 0507.9.I**

**3** Which of the following is an example of a chemical property?

- A** the ability to form a mixture
- B** the ability to evaporate
- C** the ability to freeze
- D** the ability to react with another substance to form a new substance

**SPI 0507.9.I**

**4** Which of the following is correct?

 SPI 0507.9.1

- F** A chemical property can be observed without changing the substance.
- G** A physical property cannot be observed without changing the substance.
- H** A chemical property cannot be observed without changing the substance.
- J** A chemical property is the same thing as a physical property.

**5** Rachel has a sample of matter for which she wants to determine the chemical properties. What is the best experiment she can do to answer her question?

 SPI 0507.Inq.1, 0507.9.1

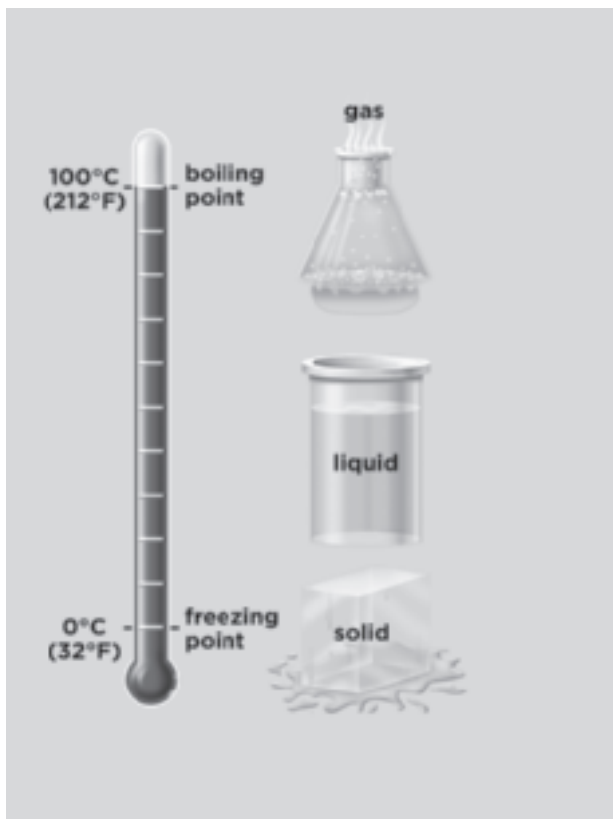
- A** determine its ability to produce heat
- B** determine its reactivity with an acid
- C** determine its ability to conduct electricity
- D** determine its ability to form a mixture

**6** A puddle forms after a rainstorm. What happens to the puddle after the Sun heats Earth?

 SPI 0507.9.2

- F** The puddle condenses.
- G** The puddle evaporates.
- H** The puddle gets bigger.
- J** The puddle changes location.

Use the diagram below to answer questions 7 and 8.



- 7** Look at the diagram. At what temperature does water change from a liquid to a gas?

SPI 0507.9.2

- A** 212° C
- B** 100° C
- C** 32° C
- D** 0° C

- 8** In which form does the diagram show water to be at its freezing point?

SPI 0507.9.2

- F** water vapor
- G** liquid water
- H** ice
- J** liquid gas

**9** How are freezing and condensation alike?

 SPI 0507.9.2

- A** Both describe ways a solid can change.
- B** Both occur when particles of matter spread apart.
- C** Both involve the addition of heat.
- D** Both involve the loss of heat.

**10** What causes the particles of a substance to evaporate?

 SPI 0507.9.2

- F** The particles gain energy.
- G** The particles lose energy.
- H** Some particles disappear.
- J** Some particles increase in size.

**11** Which of the following will increase the rate at which a substance melts?

 SPI 0507.9.3

- A** decreasing the temperature
- B** increasing the temperature
- C** increasing the humidity
- D** decreasing the pressure

**12** Which of the following will increase the rate at which a substance condenses?

 SPI 0507.9.3

- F** decreasing the temperature
- G** increasing the temperature
- H** increasing the humidity
- J** decreasing the density

**13** Lucy is conducting an experiment with a jar of water. She does not want the water to evaporate before her experiment is finished. What could Lucy do to decrease the rate at which the water evaporates?


- A** Carry out the experiment in a warm place.
- B** Carry out the experiment in a cool place.
- C** Carry out the experiment under a heat lamp.
- D** Carry out the experiment in a bowl that is wider than the jar.

- 14** Liam placed two containers of equal size holding equal amounts of water in the freezer to form ice. One container was made of metal. The other container was made of plastic foam. What is a likely outcome of Liam's experiment?

 **SPI 0507.9.3**

- F** The water in the metal container froze faster than the water in the plastic-foam container.
- G** It took longer for the water in the metal container to freeze.
- H** The water in the metal container never froze.
- J** The water in both containers froze at the same time.

- 15** Francesca placed two containers of equal size holding equal amounts of water in the freezer to form ice. To one container of water she added a few spoonfuls of salt. What is a correct prediction of the outcome of Francesca's experiment?

 **SPI 0507.9.3**

- A** The water in the container with salt will freeze faster than the water in the container without salt.
- B** The water in neither container will freeze.
- C** The water in the container without salt will freeze faster than the water in the container with salt.
- D** The water in both containers will freeze at the same time.



**Directions:** On your answer sheet, mark the correct answer.

- 1** You see a marble sitting on a table. The marble then falls and rolls across the floor. Which of the following correctly describes the marble in terms of potential and kinetic energy?

**SPI 0507.10.1**

- A** When the marble falls off the table, its kinetic energy turns to potential energy.
- B** When the marble falls off the table, its potential energy turns to kinetic energy.
- C** The marble loses kinetic energy and gains potential energy as it rolls across the floor.
- D** The marble has no potential or kinetic energy until it falls.

- 2** Which of the following statements about potential energy is true?

**SPI 0507.10.1**

- F** Potential energy is energy of motion.
- G** Potential energy is stored energy.
- H** Potential energy cannot be changed to kinetic energy.
- J** Potential energy is dependent on velocity.

**3** Look at the picture.



Where does the roller coaster have the greatest amount of kinetic energy?

**SPI 0507.10.1**

- A** at the bottom of its climb
- B** as it climbs up the hill
- C** at the top of its climb
- D** halfway down its climb

**4** Which of the following has the most potential energy?

**SPI 0507.10.1**

- F** a book resting on a bookshelf that is 3 feet tall
- G** a book falling from a bookshelf that is 3 feet tall
- H** a book resting on a bookshelf that is 5 feet tall
- J** a book falling from a bookshelf that is 5 feet tall

**5** Which of these is an example of only potential energy?

**SPI 0507.10.1**

- A** a ball rolling on the floor
- B** a rubber band vibrating
- C** a stretched rubber band
- D** a ball being hit by a bat

- 6** A metal pot sitting on an electric burner becomes hot as a result of

**F** radiation  
**G** conduction  
**H** convection  
**J** insulation

 **SPI 0507.10.2**

- 7** Heat from the Sun reaches Earth as a result of

**A** radiation  
**B** conduction  
**C** convection  
**D** insulation

 **SPI 0507.10.2**

- 8** The transfer of thermal energy by the movement of warmer and cooler material is called

**F** conduction  
**G** radiation  
**H** convection  
**J** insulation

 **SPI 0507.10.2**

- 9** The wire of an electric appliance becoming hot is an example of what type of heat transfer?

**A** radiation  
**B** conduction  
**C** convection  
**D** electromagnetism

 **SPI 0507.10.2**



- 10** Heather and Brian can toast marshmallows over a fire. The marshmallows become brown and warm even though flames do not touch them because of the transfer of thermal energy by

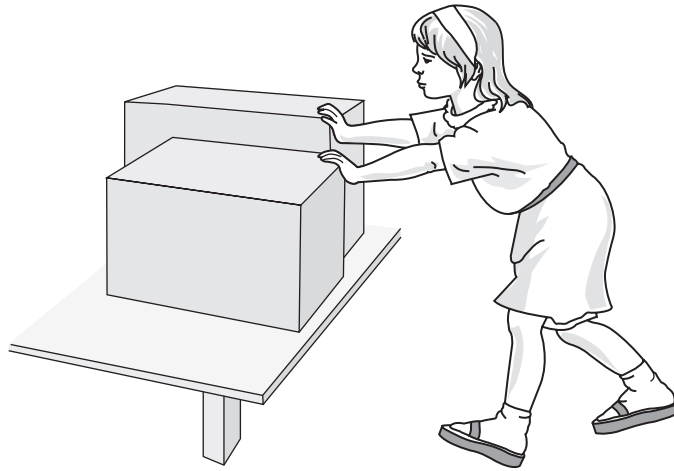
 **SPI 0507.10.2**

- F** radiation
- G** conduction
- H** convection
- J** induction



**Directions:** On your answer sheet, mark the correct answer.

- 1** Look at the diagram of a girl pushing two blocks with the same amount of force.



In this diagram, one block has more mass than the other block. Which statement is correct?

**SPI 0507.II.1**

- A** The block with more mass will move farther than the block with less mass.
- B** The block with less mass will move farther than the block with more mass.
- C** The blocks will move the same distance.
- D** The blocks will not move.

- 2** Domenic is cleaning up his room. There are two books on the floor that he needs to put away on his bookshelf. One book has more mass than the other. Which of the following is true?

**SPI 0507.II.1**

- F** Domenic will need to use more force to lift the book with less mass.
- G** Domenic will need to use more force to lift the book with more mass.
- H** Domenic will need to use the same amount of force to lift each book.
- J** Domenic will need to use any force to lift the book with less mass.

- 3** If different forces are applied to two objects of the same mass, which of the following is true?

 **SPI 0507.II.1**

- A** Neither object will move.
- B** Both objects will move the same distance.
- C** The object pushed with less force will move farther.
- D** The object pushed with more force will move farther.

- 4** Two objects of the same mass are pushed and travel the same distance. What is true of the force of the pushes?

 **SPI 0507.II.1**

- F** The forces are equal.
- G** The forces are unequal.
- H** There is no relationship among force, mass, and distance.
- J** The forces are inversely proportional to each other.

- 5** If a ball resting on the ground is hit with very little force, how will the ball move?

 **SPI 0507.II.1**

- A** It will not move far.
- B** It will move very far.
- C** It will roll downhill.
- D** It will stop moving.



**Directions:** On your answer sheet, mark the correct answer.

- 1** Why do scientists measure and record the mass of objects rather than their weight?

**SPI 0507.12.1**

- A** Weight depends on the pull of gravity, so it changes depending on an object's location while mass remains the same.
- B** Weight fluctuates with changes in temperature; mass does not.
- C** Mass depends on the pull of gravity, so it changes depending on an object's location while weight remains the same.
- D** Mass fluctuates with changes in temperature; weight does not.

- 2** What is the strength of the pull of gravity between two objects affected by?

**SPI 0507.12.1**

- F** the masses of the two objects and the weight of the two objects
- G** the weight of the two objects and distance between them
- H** the masses of the two objects and the distance between them
- J** the masses of the two objects and the momentum of the two objects

- 3** What attractive force keeps the Moon in orbit around Earth?

**SPI 0507.12.1**

- A** gravity
- B** magnetism
- C** inertia
- D** friction

- 4** What force acts over a distance and attracts all objects to each other?

**SPI 0507.12.1**


- F** friction
- G** gravity
- H** inertia
- J** magnetism

**5** Which of the following statements about gravity is true?

 **SPI 0507.I2.1**

- A** Gravity is a force that exists only between objects that touch.
- B** Gravity is a force that exists only between objects that do not touch.
- C** Gravity is a force that exists between all objects.
- D** Gravity is a force that exists only between very large objects.

**6** Briana threw a ball into the air. Why did the ball eventually land on the ground?

 **SPI 0507.I2.1**


- F** The friction between the ball and the air caused the ball to fall back to Earth.
- G** She didn't kick the ball hard enough to keep it in the air.
- H** Gravity pulled the ball back to Earth.
- J** The revolution of Earth around the Sun caused the Earth to catch up to the ball.

**7** A landslide, mudslide, and avalanche are all caused by

 **SPI 0507.I2.2**

- A** magnetic fields
- B** weather
- C** inertia
- D** gravity

**8** Gravity is a force of

 **SPI 0507.I2.2**

- F** attraction
- G** repulsion
- H** cohesion
- J** friction

**9** What must a spacecraft do to leave Earth?

 **SPI 0507.I2.2**

- A** It must overcome Earth's mass.
- B** It must overcome Earth's inertia.
- C** It must overcome Earth's friction.
- D** It must overcome Earth's gravity.

**10** What is the force that pulls objects toward Earth?

 SPI 0507.I2.2

- F** friction
- G** gravity
- H** weight
- J** magnetism

**11** Sophie drops an acorn and an oak leaf from the same height. She observes that it takes the oak leaf much longer to reach the ground. What can Sophie correctly conclude?

 SPI 0507.I2.3

- A** The mass of the acorn makes it fall faster.
- B** The height from which she released the acorn and oak leaf affects how they fall.
- C** The shape of the oak leaf decreases its mass.
- D** Drag acts against the leaf's motion more than it does against the acorn's motion.

**12** If a hammer and a feather were dropped at the same time while standing on the surface of the Moon, what would happen?

 SPI 0507.I2.3


- F** The hammer would land first.
- G** The feather would land first.
- H** Both objects would land at the same time.
- J** Both objects would float upward.

**13** Which of the following explains why a flat sheet of paper dropped from a height of 2 meters will not fall at the same rate and land at the same time as a sheet of paper crumpled into a ball?

 SPI 0507.I2.3


- A** The flat sheet of paper has more mass and falls faster.
- B** The crumpled sheet of paper has more mass and falls faster.
- C** The flat sheet of paper experiences more air resistance and does not fall as fast.
- D** The crumpled sheet of paper experiences more air resistance and does not fall as fast.

- 14** Which of the following is true about the air resistance an object experiences as it falls?

 **SPI 0507.I2.3**

- F** An object with a large surface area experiences less air resistance.
- G** An object with a large surface area experiences more air resistance.
- H** An object with a large mass experiences less air resistance.
- J** An object with a large mass experiences more air resistance.

- 15** Which will fall faster, an elephant or a mouse if dropped from the same height? Assume there is no air resistance.

 **SPI 0507.I2.3**

- A** an elephant
- B** a mouse
- C** They will both fall at the same rate.
- D** It is impossible to tell without doing the experiment.



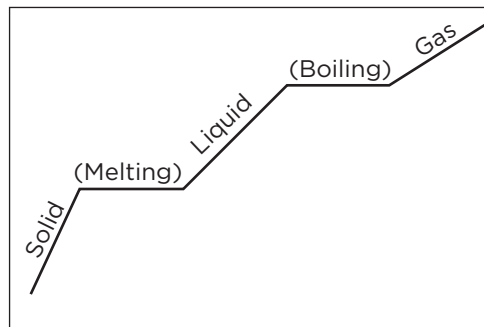
**Directions:** On your answer sheet, mark the correct answer.

- 1** Which of the following resources do plants use to make food through photosynthesis?

**SPI 0507.3.I**

- A** water, oxygen, and sunlight
- B** salt, water, and sunlight
- C** chlorophyll, sunlight, and gases
- D** water, sunlight, and minerals

- 2** Sean made this chart about an experiment in his science class. In this experiment, the students watched a piece of ice warm and change from a solid to a gas on a stove.



What should Sean label the x-axis and the y-axis on the chart?

**SPI 0507.9.3**

- F** x-axis: time; y-axis: temperature
- G** x-axis: temperature; y-axis: time
- H** x-axis: weight; y-axis: time
- J** x-axis: temperature; y-axis: weight

- 3** What was the most important outcome of Gregor Mendel's experiments with pea plants?

**SPI 0507.T/E.2, 0507.4.I**

- A** Inherited traits are in fact chemical "instructions" called genes.
- B** Inherited traits are passed from parent to offspring.
- C** Inherited traits can be mapped out with a pedigree.
- D** Inherited traits are subject to evolutionary pressures.



- 4** Look at the picture of a dinosaur fossil.

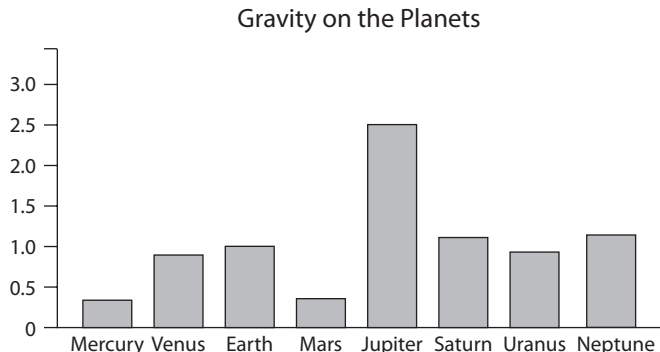


What can you infer about this animal from this fossil?

**SPI 0507.5.2**

- F** It was a carnivore.
- G** It was an herbivore.
- H** It was nocturnal.
- J** It migrated during winter.

- 5** Look at the bar graph showing gravity on different planets.



On which planet would a person weigh about as much as he or she weighs on Earth?

**SPI 0507.6.2**

- A** Mars
- B** Jupiter
- C** Saturn
- D** Mercury

Name \_\_\_\_\_ Date \_\_\_\_\_

- 6** Which of the following is not present in an animal cell?

SPI 0507.1.2

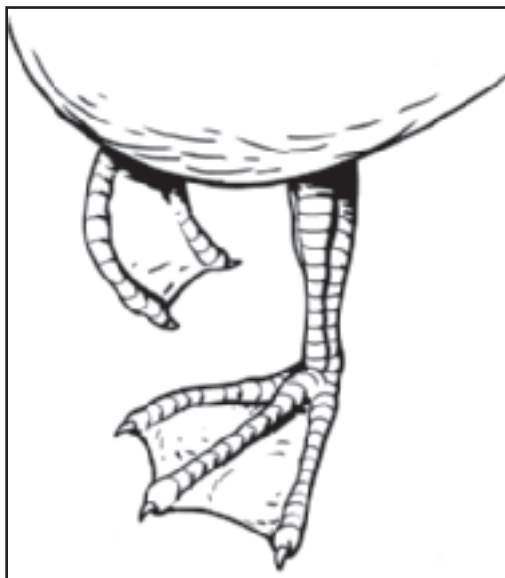
- F** chloroplast
- G** mitochondrion
- H** nucleus
- J** cytoplasm

- 7** When does a bouncing ball have the greatest amount of potential energy?

SPI 0507.10.1

- A** when it reaches the floor
- B** when it reaches its highest point in the air
- C** when it is half way back to the floor
- D** when it is half way to its highest point in the air

- 8** Look at the picture of a duck's webbed feet.



How do webbed feet help ducks survive?

SPI 0507.5.1

- F** They allow ducks to run faster.
- G** They help ducks shred their food.
- H** They help ducks swim.
- J** They allow ducks to walk better.

- 9** Rinaldo and his lab partner Reggie put on their safety goggles and filled a metal container and a plastic-foam container of the same size with equal amounts of boiling water. They placed thermometers in each container. Then they recorded the temperatures over a 20-minute period. The temperature of the water in the metal container dropped faster than the temperature of the water in the plastic-foam container. Which conclusion would be correct for them to draw?

 SPI 0507.10.2

- A** Metal is a better conductor of heat.
- B** Plastic foam is a better conductor of heat.
- C** Metal is a better insulator.
- D** There is no correct conclusion to be made from their observations.

- 10** All of the following are examples of learned behavior except

 SPI 0507.4.2

- F** a dog sitting on command
- G** a dog salivating when it smells food
- H** a dog catching a flying disc
- J** a dog helping a blind person to cross the street

- 11** Which of the following is an example of a change from vapor to solid?

 SPI 0507.9.2

- A** hail
- B** frost
- C** salt
- D** ice

Name \_\_\_\_\_ Date \_\_\_\_\_

- 12** Tessa conducted an experiment to see how long it takes different objects to drop to the floor. She dropped each object from the same height. Her results are shown in the table below.

Object	Shape	Mass	Time to Drop
apple	round	150g	3 seconds
sheet of paper	flat rectangle	4.5g	6 seconds
book	rectangular solid	60g	4 seconds
tennis ball	round	57g	3 seconds

What can Tessa correctly conclude from her data?

 SPI 0507.12.3


- F** The mass of an object affects the rate at which it falls.
- G** The shape of an object affects the rate at which it falls.
- H** Objects with more mass fall more quickly than objects with less mass.
- J** Objects that are round fall more slowly than objects that are flat.

- 13** What best explains why objects fall towards Earth?

 SPI 0507.12.1

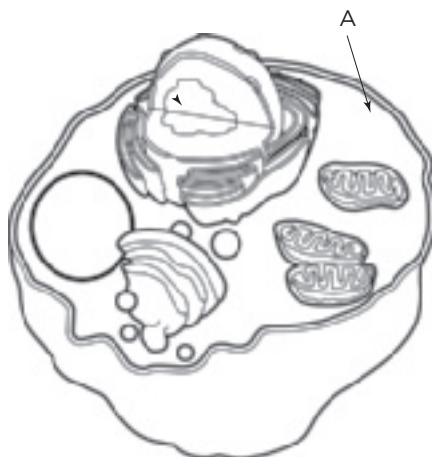
- A** Earth's gravity attracts objects without touching them.
- B** Earth's magnetism attracts objects without touching them.
- C** Momentum causes objects to fall down.
- D** Air pressure pushes down on objects, causing them to fall towards Earth.

- 14** William dropped two sheets of paper from the same height at the same time. One sheet of paper was crumpled into a ball while the other was not. What happened?

 SPI 0507.12.3

- F** The sheet that was not crumpled landed first.
- G** The sheet that was crumpled landed first.
- H** The two sheets of paper landed at the same time.
- J** The outcome cannot be predicted.

- 15** Look at the cell.



To which part is line A pointing?

**SPI 0507.I.I**

- A** mitochondrion
- B** cytoplasm
- C** nucleus
- D** cell wall

- 16** Look at the drawing of a roller coaster.



Where does a roller coaster have the greatest amount of potential energy?

**SPI 0507.I0.I**

- F** at the bottom of its climb
- G** as it climbs up
- H** at the top of its climb
- J** as it travels down

Name \_\_\_\_\_ Date \_\_\_\_\_

**17** What do plants obtain through photosynthesis?

 SPI 0507.3.1


- A** water
- B** food
- C** minerals
- D** carbon dioxide

**18** What force acts over a distance and attracts all objects to each other?

 SPI 0507.12.1


- F** friction
- G** inertia
- H** magnetism
- J** gravity

**19** To help you identify constellations in the night sky using a star chart you use

 SPI 0507.6.3

- A** lines of declination
- B** lines of inclination
- C** angles of longitude
- D** angles of latitude

**20** Which of the following is an example of a chemical property?

 SPI 0507.9.1

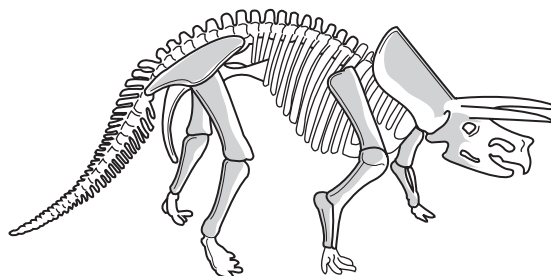
- F** melting point
- G** the ability to react with metals
- H** ductility
- J** the ability to float

**21** What causes acid rain?

 SPI 0507.2.3

- A** polluted water from landfills in major cities
- B** winds that blow in from the ocean
- C** polluted air from some factories, cars, and trucks
- D** recycling

- 22** Look at the picture of a fossil.



Which of the following can be learned from the fossil?

**SPI 0507.5.2**

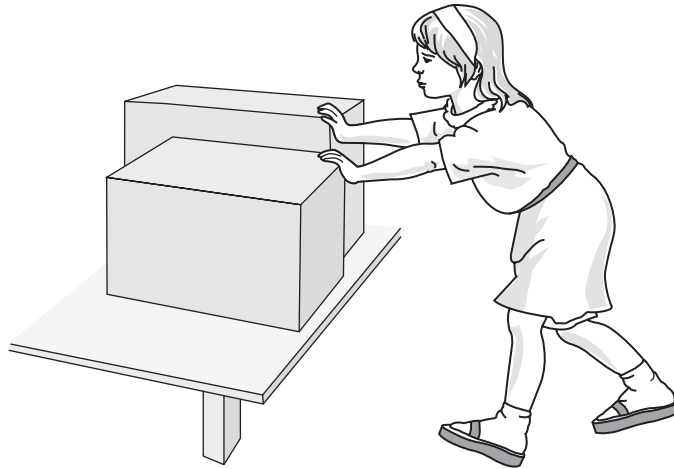
- A** the organism's color
- B** the organism's probable predators
- C** the organism's behavioral adaptations
- D** the organism's size

- 23** The air pressure at the top of a mountain is

**SPI 0507.8.2**

- A** lower than the air pressure at the bottom
- B** the same as the air pressure at the bottom
- C** higher than the air pressure at the bottom
- D** nonexistent

- 24** The drawing shows a girl pushing two blocks with the same amount of force. One block has more mass than the other block.



Which of the following statements are not true?

**SPI 0507.II.1**

- F** The block with more mass will move as far as the block with less mass.
- G** The block with more mass will not move as far as the block with less mass.
- H** An object with less mass will need less force to move it.
- J** An object with more mass will need more force to move it.

- 25** The Great Red Spot is a planetary feature that has been observed for hundreds of years. On which planet is the Great Red Spot?

**SPI 0507.6.1**

- A** Venus
- B** Mars
- C** Neptune
- D** Jupiter



- 26** Look at the picture.



A fish's ability to swim is

**SPI 0507.4.2**

- F** a learned trait
- G** a result of its environment
- H** an inherited trait
- J** a reflex

- 27** A student wants to observe the constellation Orion in the night sky. What can she use to help her locate this star pattern?

**SPI 0507.6.3**

- A** an anemometer
- B** a star chart
- C** a microscope
- D** a topographic map

- 28** What is the force that pulls objects toward Earth?

**SPI 0507.12.2**

- F** friction
- G** gravity
- H** weight
- J** magnetism

- 29** Which of the following can slowly affect Earth's surface?

**SPI 0507.7.1**

- A** volcanoes
- B** earthquakes
- C** a flowing river
- D** avalanches

Name \_\_\_\_\_ Date \_\_\_\_\_

- 30** A young fish is protected from predators by a jellyfish's stinging tentacles. The jellyfish is neither helped nor hurt by the presence of the fish. Which relationship does this illustrate?

**SPI 0507.2.2**

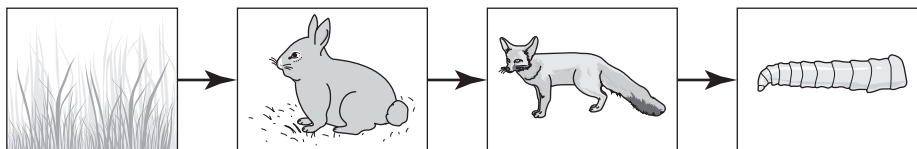
- F** mutualism
- G** commensalism
- H** parasitism
- J** predation

- 31** What causes the particles of a substance to condense?

**SPI 0507.9.2**

- A** The particles have lost energy.
- B** The particles have gained energy.
- C** Some particles have disappeared.
- D** Some particles have reproduced.

- 32** Look at the food chain.



Which organism is a decomposer?

**SPI 0507.3.2**

- F** grass
- G** rabbit
- H** fox
- J** maggot

- 33** The puma is an endangered species inof Tennessee. What is most likely to happen to the puma population if people make laws to protect it?

**SPI 0507.2.3**

- A** It will become endangered.
- B** It will decrease further.
- C** It will increase.
- D** It will not change.

- 34** Sunita has a sample of matter for which she wants to determine its chemical properties. What is the best experiment she can do to do this?

 SPI 0507.Inq.I, 0507.9.I

- F** determine its reactivity to metals
- G** determine its ability to conduct heat
- H** determine its ability to conduct electricity
- J** determine its ability to melt

- 35** Which of these is an example of camouflage?

 SPI 0507.5.I

- A** An earthworm digs deeper into the soil than other worms for food.
- B** Green frogs catch more insects than red frogs in a pond ecosystem.
- C** Brightly colored birds live in the forest tree tops while darkly colored birds do not.
- D** Rabbits can run faster than their predators when chased.

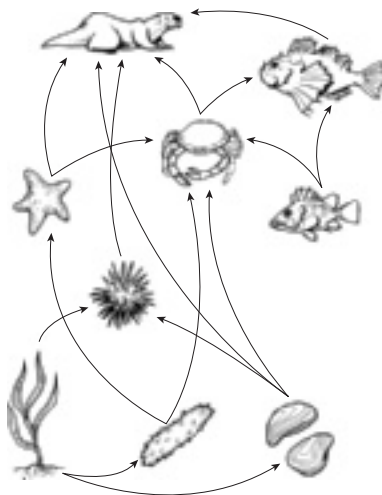
- 36** The Aleutian Islands in Alaska formed from volcanic eruptions along a plate boundary. What kind of islands are they?

 SPI 0507.7.I

- F** island chain
- G** island arc
- H** island string
- J** dormant islands

Name \_\_\_\_\_ Date \_\_\_\_\_

- 37** The diagram shows a food web in a kelp forest.



According to this food web, how many organisms does the sea otter eat?

**SPI 0507.2.I**

- A** 3
- B** 4
- C** 5
- D** 6

- 38** A planetary year is the time it takes for a planet to complete one revolution around the Sun. One planetary year is the longest on which of the following planets?

**SPI 0507.6.I**

- F** Neptune
- G** Jupiter
- H** Uranus
- J** Mercury

- 39** Look at the picture.



What could you do to increase the rate at which the water will evaporate?

**SPI 0507.9.3**

- A** Cool the bowl.
- B** Cover the bowl with a lid.
- C** Pour the water into a wider bowl.
- D** Pour the water into a narrower, taller bowl.

- 40** An egg cooking in a frying pan is an example of what type of heat transfer?

**SPI 0507.10.2**

- F** convection
- G** conduction
- H** cohesion
- J** radiation

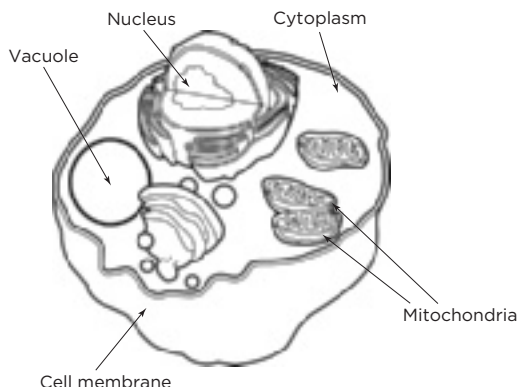
- 41** Why do the British Isles have a moderate climate?

**SPI 0507.8.1**

- A** because of their latitude
- B** because of their longitude
- C** because they are islands
- D** because the Gulf Stream carries warm water from the equator past the British Isles

Name \_\_\_\_\_ Date \_\_\_\_\_

**42** Look at the diagram of a cell.



The nucleus is located in the center of the cell and is known as the cell's

**SPI 0507.1.1**

- F** support system
- G** control center
- H** energy source
- J** storage facility

**43** Jonah kicked a ball into the air. Which explains why the ball eventually landed on the ground?

**SPI 0507.12.2**

- A** The friction caused by the ball moving through air brought it back down.
- B** He didn't kick the ball hard enough to keep it in the air.
- C** Gravity pulled the ball back to Earth.
- D** The revolution of Earth around the Sun caused the Earth to catch up to the ball.

**44** What is a rain shadow?

**SPI 0507.8.2**

- F** the dry, leeward side of a mountain
- G** the wet, windward side of a mountain
- H** a shadow under a rain cloud
- J** the wet region near a coast

**45** In which relationship do both species benefit?

**SPI 0507.2.2**

- A** parasitism
- B** predation
- C** mutualism
- D** commensalism

**46** Look at the data table below.

Planet	Time it takes to complete one revolution around the Sun	Time it takes to complete one rotation
Mercury	88 Earth days	58.7 Earth days
Venus	225 Earth days	243 Earth days
Earth	365 days	24 hours
Mars	687 Earth days	24.6 Earth hours
Jupiter	11.9 Earth years	9.84 Earth hours
Saturn	29.5 Earth years	10.2 Earth hours
Uranus	84 Earth years	17.9 Earth hours
Neptune	164.8 Earth years	19.1 Earth hours

On which planet is a day longer than a year?

**SPI 0507.6.2**

- F** Mercury
- G** Venus
- H** Mars
- J** Jupiter

Name \_\_\_\_\_ Date \_\_\_\_\_

- 47** The hemlock woolly adelgid is an insect. It is an invasive species that was introduced into the United States in the early 1900s. This pest feeds on the sap of hemlock needles. It blocks nutrients from reaching the needles, causing the needles to fall off. Over time, the hemlock tree dies as a result. How might the hemlock woolly adelgid affect an environment?

 SPI 0507.2.3

- A** Bird populations that nest in hemlock trees will decrease.
- B** Native insect populations that depend on hemlock trees for food will increase.
- C** Mammal populations that depend on hemlock trees for shelter will increase.
- D** The hemlock tree population will become immune to the pests.

- 48** What is the job of the cell wall in a plant cell?

 SPI 0507.1.2

- F** It provides the cell with strength and extra support.
- G** It keeps the plant from drying out.
- H** It uses energy from sunlight to produce food for the plant.
- J** It supports all the cell's structures.

- 49** How are offspring that result from asexual reproduction different from offspring that result from sexual reproduction?

 SPI 0507.4.1

- A** Offspring that result from asexual reproduction cannot reproduce.
- B** Offspring that result from asexual reproduction do not inherit traits from their parent.
- C** Offspring that result from asexual reproduction are identical to their parent.
- D** Offspring that result from asexual reproduction are similar, but not identical, to their parent.

- 50** Which organism can be added to a food chain to eat dead plant and animal material?

 SPI 0507.2.1

- F** tree
- G** squirrel
- H** butterfly
- J** worm



- 51** During an El Niño, water temperatures near the coast of Peru are

 SPI 0507.8.I

- A** warmer than usual
- B** the same as usual
- C** colder than usual
- D** cold near the surface with a hot layer just below

- 52** Stephanie wants to push a box weighing 20 kg and a box weighing 10 kg the same distance across the floor. What should Stephanie keep in mind when she pushes the boxes?

 SPI 0507.II.I

- F** She will have to use more force to move the box weighing 10 kg.
- G** She will have to use more force to move the box weighing 20 kg.
- H** She will have to use the same amount of force to move each box.
- J** She will have to overcome momentum to move each box.

**1**   **A** **B** **C** **D****2**   **F** **G** **H** **J****3**   **A** **B** **C** **D****4**   **F** **G** **H** **J****5**   **A** **B** **C** **D****6**   **F** **G** **H** **J****7**   **A** **B** **C** **D****8**   **F** **G** **H** **J****9**   **A** **B** **C** **D****10**   **F** **G** **H** **J****11**   **A** **B** **C** **D****12**   **F** **G** **H** **J****13**   **A** **B** **C** **D****14**   **F** **G** **H** **J****15**   **A** **B** **C** **D****16**   **F** **G** **H** **J****17**   **A** **B** **C** **D****18**   **F** **G** **H** **J****19**   **A** **B** **C** **D****20**   **F** **G** **H** **J****21**   **A** **B** **C** **D****22**   **F** **G** **H** **J****23**   **A** **B** **C** **D****24**   **F** **G** **H** **J****25**   **A** **B** **C** **D****26**   **F** **G** **H** **J****27**   **A** **B** **C** **D****28**   **F** **G** **H** **J****29**   **A** **B** **C** **D****30**   **F** **G** **H** **J****31**   **A** **B** **C** **D****32**   **F** **G** **H** **J****33**   **A** **B** **C** **D****34**   **F** **G** **H** **J****35**   **A** **B** **C** **D****36**   **F** **G** **H** **J****37**   **A** **B** **C** **D****38**   **F** **G** **H** **J****39**   **A** **B** **C** **D****40**   **F** **G** **H** **J****41**   **A** **B** **C** **D****42**   **F** **G** **H** **J****43**   **A** **B** **C** **D****44**   **F** **G** **H** **J****45**   **A** **B** **C** **D****46**   **F** **G** **H** **J****47**   **A** **B** **C** **D****48**   **F** **G** **H** **J****49**   **A** **B** **C** **D****50**   **F** **G** **H** **J****51**   **A** **B** **C** **D****52**   **F** **G** **H** **J****53**   **A** **B** **C** **D****54**   **F** **G** **H** **J****55**   **A** **B** **C** **D****56**   **F** **G** **H** **J****57**   **A** **B** **C** **D****58**   **F** **G** **H** **J****59**   **A** **B** **C** **D****60**   **F** **G** **H** **J**