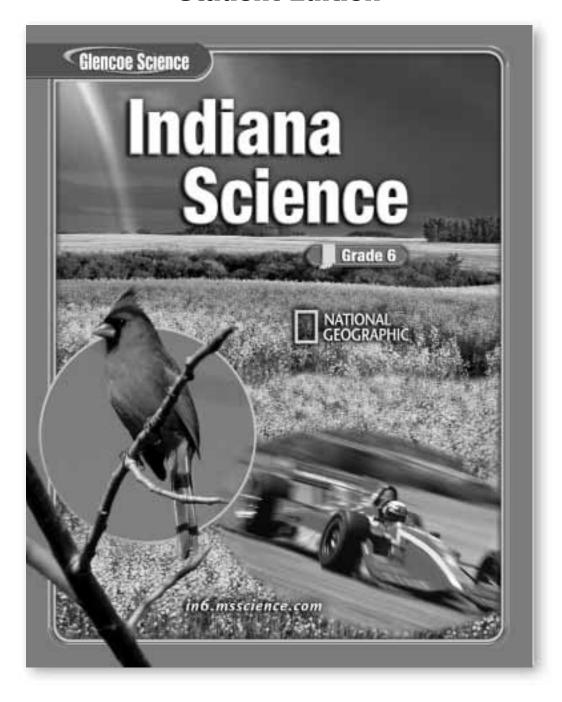
Mastering the ISTEP+ Grade 6

Student Edition







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Introduction

What is in this book?

Welcome to the Student Edition of Mastering the ISTEP+.

There are two sections in this workbook:

Task Regimen

This section provides you with methods to tackle test questions. Using the methods in this section, you will learn how to use the process of elimination, how to identify important information in the tests' graphs, charts, and tables, as well as other skills that can help you succeed on tests. Carefully study the methods in this section before you begin the test questions in this workbook. Each task has an assignment for you to do on your own at home and one to do in class.

• Test Practice: ISTEP+ Review, Practice, and Preparation

The questions in this section are designed to prepare you for the ISTEP+. The format of the questions found in these practice tests is very similar to the format of the questions found in the ISTEP+.

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Task Regimen

A unique three-part **Task Regimen** designed to maximize the benefits of using this workbook is presented in this section. Each of the three tasks is designed to help you identify challenges and improve your performance.

Each task has an assignment for you to do on your own at home and one to do in class. Often the homework and the in-class activities will be coordinated, so it is important that you concentrate on both equally.

TASK

At-Home Assignment

TASK 1

For each question you missed, find the pages in the textbook that cover the material and explain what specific information was needed to answer the question correctly. If you cannot find any helpful information in the textbook, write out three questions about the test question that you did not understand.

Task 2

For every incorrect question, go through each answer choice and explain why it is correct or incorrect. Include any tips or hints you noticed that helped you eliminate choices. Place a question mark beside any question you cannot figure out and bring it to class for discussion.

Task 3

Your teacher will provide you with a list of questions to work on. For each question, make observations and write down all of the information given in the test in the form of a graphic, a passage, or otherwise. Write the information directly onto the test.

In-Class Assignment

Work in a group to discuss any confusing questions and content areas. Then work through the confusing questions together.

Your teacher will lead a discussion for each question. Share your ideas and observations with the class. Keep notes of the discussion to help your review.

Work in a group to discuss each question. Make sure to note the location in the textbook where helpful information was found.

Standard I (6.1.1-6.1.9)

The Nature of Science and Technology

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

Below is a list of steps in a scientific method. Which sequence shows a likely order?

Α	Form a hypothesis
В	Gather information
С	Perform an experiment
D	State the problem
Е	Analyze the data

- **A** A, B, C, D, E
- **B** D, C, A, E, B
- **c** D, B, A, C, E
- **D** C, B, A, D, E
- Doug wanted to find out what kind of dog food his dog preferred. If he designed an experiment to answer this question, what would the independent variable be?
 - **A** what type of dog he has
 - **B** how many times a day his dog eats
 - **c** the different types of dog food
 - **D** how many days he did his experiment

- Before the atomic theory was scientifically developed, ancient Greeks believed that all matter is made up of tiny particles called *atoms* that *cannot* be further divided. Only part of this idea turned out to be correct. Which of the following observations proves that the atom is divisible?
 - A Atoms contain a nucleus surrounded by moving electrons.
 - **B** Atoms are too small to be seen with naked eyes.
 - **C** Atoms are in constant motion.
 - **D** An atom has a dense center.
- Babylonian astronomers divided the day into 12 equal periods called *beru*. Each beru was subdivided in 30 *gesh*. How many gesh are in 3 berus?
 - **A** 12
 - **B** 24
 - **C** 36
 - **D** 90

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

The Egyptian civic calendar is the first known calendar to use 365 days. The year was divided into 12 months. Each month was 30 days long and five extra days were grouped at the end of the year. Religious ceremonies, however, were based on a lunar calendar. In a lunar calendar, what determines the duration of a month?

Class:

Standard I (6.1.1-6.1.9)

The Nature of Science and Technology

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Albert and George suspected that lawn fertilizer from their neighborhood was causing excessive algae to grow in the pond at the end of their street. Which of the following would be the best test of their hypothesis?
 - **A** compare the growth of algae in ponds near fertilized lawns and other ponds near unfertilized lawns
 - **B** compare the growth of algae in ponds near fertilized lawns in spring, summer, fall, and winter
 - **c** conduct a neighborhood survey to find out what kind of fertilizers everyone uses
 - **D** suggest that the neighborhood use a different fertilizer to see if this results in an increase in algae
- **7** Television newsrooms hire a _____ to explain weather forecasts to the public.
 - A seismologist
 - **B** chemist
 - **C** biologist
 - **D** meteorologist

- A CAT scan produces an image of the brain that is useful for finding tumors and other brain abnormalities. The CAT scan is attached to a computer that performs which of the following function(s)?
 - A storing data
 - **B** collecting data
 - **C** analyzing data
 - **D** all of the above
- 9 A _____ of computers enables scientists to share information and data with other scientists.
 - A hard drive
 - **B** DVD-ROM
 - **C** network
 - **D** processor

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Suppose a ball is rolled along a cement floor with a certain force. When you apply the same force to the ball and roll it on a wooden surface, the ball travels more distance. Present a hypothesis to explain this observation. Suggest another experiment in favor of your hypothesis.

GO ON

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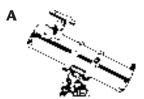
Standard I (6.1.1-6.1.9)

The Nature of Science and Technology

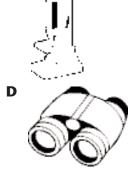
MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Which of the following institutions hire biomedical engineers?
 - **A** hospitals
 - **B** pharmaceutical companies
 - **C** universities
 - **D** all of the above
- Which of the following would provide the most detailed view of a diatom?







According to the chart, a spacecraft that is designed to take pictures of planets for scientists back on Earth is _____.

Types of Spacecraft

Туре	Example	Description
Space Station	Skylab 1	A spacecraft with supplies and areas for humans staying a long time in space.
Satellite	Sputnik 1	An object that revolves around another object.
Probe	Pathfinder	An instrument that sends information from space back to Earth.
Space Shuttle	Discovery	A spacecraft that can carry people and objects into and back from space.

- **A** a space station
- **B** a satellite
- **C** a probe
- **D** a space shuttle

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

To feed the growing population of the world, genetic engineers are trying to develop better crops. Describe one benefit of genetically engineered foods.



Standard 2 (6.2.1-6.2.9)

Scientific Thinking

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- At noon, the temperatures for a week are 72, 83, 79, 81, 78, 76, and 87. What is the mean temperature at noon for the week?
 - **A** 81
 - **B** 79.4
 - **C** 77
 - **D** 73.3
- In Sarah's history class, the median test score in history is 85. The class has nine students. At least how many students have a score of 85?
 - **A** 0
 - **B** 1
 - **C** 3
 - **D** 5
- On a test, half the students scored below 72 and the other half scored above 72.
 What is the median score on the test?
 - **A** 65
 - **B** 70
 - **C** 72
 - **D** 85

- The mean of two numbers is 120.
 One number is 90. What is the other number?
 - **A** 100
 - **B** 125
 - **C** 140
 - **D** 150
- The average rainfall for January through May is 2.2, 1.8, 2.8, 1.5, and 4. What is the median rainfall for the five months?
 - **A** 2.2
 - **B** 2.8
 - **C** 1.5
 - **D** 4

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

6 Describe how to find the median of the following numbers: 8, 9, 7, 12, 15, 13, 10, 12.



Standard 2 (6.2.1-6.2.9)

Scientific Thinking

MULTIPLE-CHOICE QUESTIONS

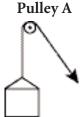
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- A biologist is monitoring the hunting behavior of a particular species of nocturnal owl. Which of the following tools would be the most useful for gathering data?
 - **A** a test tube with a rubber stopper
 - **B** a sturdy net that cannot be chewed through
 - **C** a digital thermometer
 - **D** a camera equipped to take pictures at night
- A biologist studying cells could use scientific tools to reveal
 - **A** the functions of different organelles
 - **B** why microscopes are so costly
 - **C** when the cells were harvested
 - **D** who put the cells on the microscope slide

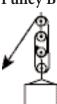
- Change in atmospheric pressure is measured by a _____.
 - **A** telescope
 - **B** barometer
 - **C** thermometer
 - **D** microscope

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.



Pulley B



The figure shows two different types of pulley systems. Using a rope over the rotating wheel(s), you can lift an object by applying a downward force on one end of the pulley. Which pulley system, A or B, would require the LEAST amount of effort to lift an object? How can you make this pulley even more efficient?

Standard 2 (6.2.1-6.2.9)

Scientific Thinking

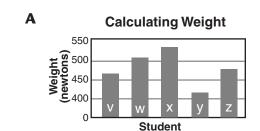
MULTIPLE-CHOICE QUESTION

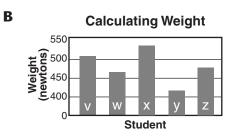
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

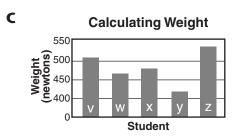
Calculating Weight

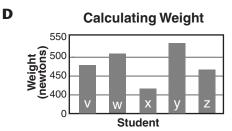
Student	Mass (kilograms)	Weight (newtons)
V	48.0	470.4
W	52.0	509.6
Х	55.0	539.0
Y	43.0	421.4
Z	49.0	480.2

The table above shows the data collected by a class that calculated five students' weights. Which of the following graphs best represents each student's weight?









CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Suppose you want to organize the total annual sales of a company using a bar graph. The horizontal axis is labeled January through December. What does the length of each bar represent in this graph? How can you represent the same information in a different way?



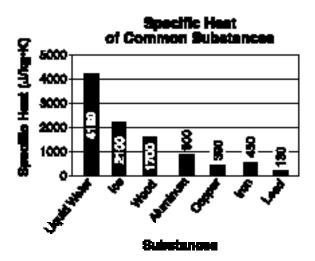
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Standards I & 2 (6.1.1-6.2.9)

Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- The specific heat of a substance is the amount of energy required to raise the temperature of 1 kg of that substance 1 K. A reasonable hypothesis based on the data in the graph is that _____.
 - **A** liquid water requires the least amount of energy to raise its temperature 1K
 - **B** lead requires more energy than ice to raise its temperature 1K
 - metals require more energy than nonmetals to raise their temperatures 1K
 - **D** metals require less energy than nonmetals to raise their temperatures 1K

- Which of the following is a reason why scientific experiments are conducted?
 - **A** to learn how things work
 - **B** to clean up the environment
 - **C** to help living things survive
 - **D** all of the above
- On two tests, Larry's mean score is 85. On one test, his score is 88. What did Larry get on the other test?
 - **A** 80
 - **B** 82
 - **C** 85
 - **D** 90
- Which of these is most useful when studying cells?
 - A microscope
 - **B** pencil and paper
 - C mass scale
 - **D** telescope



Standards I & 2 (6.1.1-6.2.9)

Benchmark Test

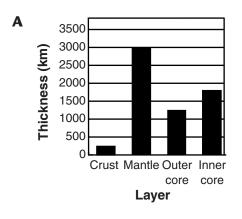
MULTIPLE-CHOICE QUESTIONS

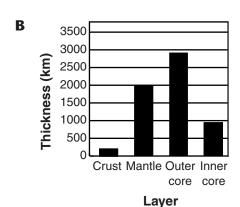
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

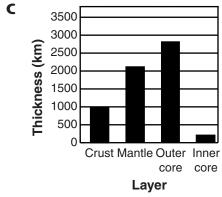
The chart to the right shows the thickness of Earth's layers. Which graph below best represents the data?

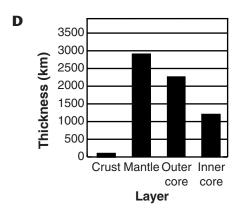
Layers of Earth

Layer	Thickness (km)
Crust	60
Mantle	2,885
Outer core	2,270
Inner core	1,216









CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

6 Write a set of three numbers in which the median is equal to the mean.



The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- is the largest planet in the solar system, is the fifth planet from the Sun, and has colorful clouds.
 - **A** Jupiter
 - **B** Saturn
 - **C** Uranus
 - **D** Neptune
- Which of the following planets is the coldest?
 - **A** Venus
 - **B** Mars
 - **C** Mercury
 - **D** Pluto
- **3** Two of the inner planets are ______
 - **A** Venus and Saturn
 - **B** Mars and Venus
 - **C** Earth and Pluto
 - **D** Mercury and Jupiter

- Some of the objects that orbit Earth include _____.
 - **A** comets
 - **B** debris
 - **C** asteroids
 - **D** stars
- The three planets farthest from the Sun are _____.
 - A Saturn, Jupiter, and Uranus
 - **B** Mercury, Venus, and Earth
 - C Mars, Saturn, and Pluto
 - **D** Uranus, Neptune, and Pluto

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

One night in June, you notice that Mars is very close to a particular constellation. If you view Mars later in December, what might you observe about Mars's position relative to the constellation?

The Physical Setting

MULTIPLE-CHOICE QUESTIONS

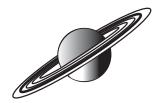
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- A scientist is attempting to classify a large object in space. The scientist has determined that the object is in orbit around the planet Jupiter. The object is most likely a _____.
 - **A** planet
 - **B** star
 - C moon
 - **D** meteor
- Which of the following orbits the Sun?
 - **A** Mercury
 - **B** Earth
 - **C** Saturn
 - **D** all of the above

A galaxy is made up of a collection of stars, gas, and dust. Which of the following best represents a galaxy?



В



C





Write your answer to the following question on the lined answer sheet provided by your teacher.

10 Imagine that you are able to visit the planets in our solar system. Choose one planet that you would like to visit. Use what you have learned about that planet to explain its characteristics and why you would like to visit it.

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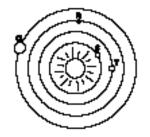
The Physical Setting

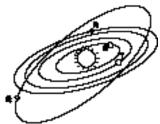
MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- If you observed the stars for a period of several months, you would notice that
 - **A** they never move
 - **B** they are all part of constellations
 - **c** they change their positions
 - **D** they are all equally bright
- Which planet moves in an orbit that is not nearly circular?
 - A Earth
 - **B** Mars
 - **C** Jupiter
 - **D** Pluto

- has colorful clouds in bands of white, red, tan, and brown.
 - **A** Saturn
- **B** Uranus
- **C** Jupiter
- **D** Neptune
- Which of the following lists the planets in order from closest to the Sun to farthest from the Sun?





- **A** Q, R, S, T
- **B** R, T, S, Q
- **c** S, T, R, Q
- **D** Q, R, T, S

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Describe the movement of a communications satellite in relation to Earth, and name another object in space that moves in a similar way.

The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Which of the following is NOT an inner planet?
 - **A** Mars
 - **B** Earth
 - **C** Jupiter
 - **D** Venus
- 17 Evidence suggests that _____ originate in the Oort Cloud located beyond the orbit of Pluto.
 - **A** comets
 - **B** asteroids
 - **C** meteoroids
 - **D** meteorites

- Which of the following best describes the Moon's relation to Earth?
 - **A** The Moon orbits Earth.
 - **B** Both the Moon and Earth orbit the
 - **C** The Moon is located between Earth and the Sun.
 - **D** The Moon and Earth are the same size.
- Which of the following planets moves in a perfectly circular orbit?
 - **A** Mercury
 - **B** Earth
 - **C** Saturn
 - **D** none of the above

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Briefly describe the structure of the solar system in terms of what orbits what. What are the positions of the Sun, the planets, and the moons?

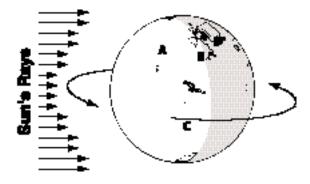


The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Scientists have found proof that life exists on which of the following planets in our solar system?
 - **A** Mars
 - **B** Venus
 - **C** Jupiter
 - **D** none of the above
- The tilt of Earth's axis is responsible for _____.
 - **A** the change between day and night
 - **B** the changing seasons
 - **C** solar eclipses
 - **D** lunar eclipses
- Summer occurs on the hemisphere of Earth that is _____.
 - A turned away from the Sun
 - **B** tilted toward the Sun
 - **C** tilted away from the Sun
 - **D** turned toward the Sun



- Which of the locations in the above drawing would enter the nighttime side of Earth next?
 - A A
 - **B** B
 - **C** C
 - **D** D
- Which two countries experience winter at the same time?
 - **A** Great Britain and Argentina
 - **B** Canada and Australia
 - **C** Russia and the United States
 - **D** Japan and South Africa

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

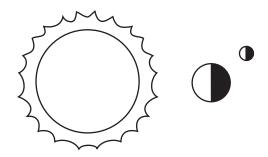
6 What effect does the Earth's tilt have on the Arctic Circle during the winter months?



The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- Which of these objects contributes most to making half of the Moon bright in the picture?
 - **A** light from distant stars
 - **B** light from other planets
 - **C** light from street lamps on Earth
 - **D** light from the Sun
- 8 It takes _____ for the moon to complete its cycle of phases.
 - A about 14 days
 - **B** about 28 days
 - **C** about 6 months
 - **D** about 1 year

- Which of the following describes a new moon?
 - **A** The Moon is entirely visible.
 - **B** The left side of the Moon is half illuminated.
 - **C** The Moon is not visible.
 - **D** The right side of the Moon can be seen in a crescent shape.
- Occasionally, a full moon seems to temporarily darken as Earth passes between the Moon and the Sun. This situation is called a(n) _____.
 - A lunar eclipse
 - **B** solar eclipse
 - **C** planetary eclipse
 - **D** Earth eclipse

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

While reading a book about weather, Maria comes across the term *relative humidity*. What is relative humidity?

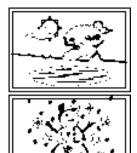


The Physical Setting

MULTIPLE-CHOICE QUESTIONS

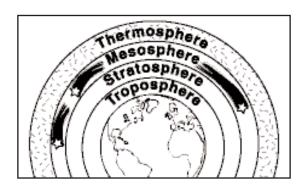
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

In which one of Earth's systems are these pictures taking place?



- **A** mesosphere
- **B** stratosphere
- **C** hydrosphere
- **D** thermosphere
- Cloudy weather usually indicates an area of _____ pressure.
 - A low
 - **B** high
 - **C** descending
 - **D** equalized

- 14 The dew point can be defined as _____.
 - **A** the temperature at which air is saturated and condensation forms
 - **B** the time in the morning when dew first appears on the grass
 - **c** the first day in spring with no frost
 - **D** a measurement of how much moisture is in the atmosphere



- In the thermosphere, there is a layer called the ionosphere that can help radio waves travel. The ionosphere is made up of _____.
 - **A** electrically charged particles
 - **B** prevailing easterlies
 - **C** ultraviolet radiation from the sun
 - **D** carbon dioxide gas from cars

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Volcanic eruptions can blast particles and various chemical compounds high into the atmosphere. These materials can reduce the amount of solar radiation that reaches Earth's surface. Describe how a major volcanic eruption would affect Earth's temperature.

The Physical Setting

MULTIPLE-CHOICE QUESTIONS

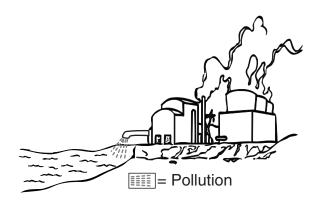
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- can damage a freshwater ecosystem.
 - **A** Water pollution
 - **B** Conservation
 - **C** Groundwater
 - **D** Fish

FERTILIZER RUNOFF SPILLED GASOLINE

- Which of these is the best title for the group above?
 - **A** causes of nonpoint-source pollution
 - **B** causes of radiation pollution
 - **C** causes of air pollution
 - **D** causes of point-source pollution
- Humans rely on many natural resources for energy. A water-based source of energy is called ______.
 - **A** geothermal power
 - **B** hydroelectric power
 - **c** nuclear power
 - **D** solar power

- A scientist measured the pH of rain in a town and found it to be slightly acidic. What is one possible cause of acid rain?
 - **A** air pollution
 - **B** recycling
 - **C** conservation
 - **D** evaporation



- The kind of pollution shown in the picture is known as _____.
 - A nonpoint-source pollution
 - **B** groundwater pollution
 - **C** point-point pollution
 - **D** point-source pollution

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Pollution comes from many sources. Describe how a person washing a car in a driveway can contribute to groundwater pollution.



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The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Humidity is the amount of moisture in the air. What would cause the humidity to decrease?
 - **A** lightning
 - **B** snow
 - **C** rain
 - **D** drought
- Which of these facts best explains why warmer air causes an increase in humidity and cooler air causes a decrease in humidity?
 - **A** Sunlight evaporates moisture.
 - **B** Saturated air cannot hold any more moisture.
 - **C** Cool air causes water molecules to join and condense.
 - **D** The dew point changes with the amount of moisture in the air.

- **3** Earth's ocean tides are caused by _____
 - A the force of the wind
 - **B** the rotation of Earth
 - **C** the gravitational attraction of the Moon and the Sun
 - **D** the positions of Venus and Mars
- A meteorologist has located a storm on radar. She would most likely use this technology to determine _____.
 - **A** where the storm is headed
 - **B** where the storm started
 - **C** when the storm started
 - **D** what areas have no storms

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Oceans are a major component of the water cycle. Name the key processes of the water cycle and describe the oceans' key role in maintaining the cycle.



The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 6 One result of people cutting down forests is _____.
 - **A** more oxygen is left in the atmosphere
 - **B** more water is left in the atmosphere
 - **C** soil erosion is decreased
 - **D** more carbon dioxide is left in the atmosphere
- Car exhaust combines with the air to form brown haze. A decrease in the number of people driving cars that burn fossil fuels would result in _____.
 - **A** an increase in the amount of pollution
 - **B** a decrease in the amount of clean air
 - **C** an increase in the amount of traffic
 - **D** a decrease in the amount of brown haze

- Which of the following is an effect of the use of solar power to generate energy?
 - **A** an increase in Earth's temperature
 - **B** an abundance of smog
 - **C** an increase in acid rain
 - **D** cleaner air
- 9 In general, using renewable resources benefits humans the most by _____.
 - A keeping energy costs low
 - **B** decreasing harmful pollutants
 - **C** providing as much energy as is needed
 - **D** being easier to obtain than nonrenewable resources

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.





The burning of fossil fuels, such as coal, oil, and natural gas, generates most of the world's electricity. Burning fossil fuels is a major cause of air pollution. The world's supply of fossil fuels is limited. Three alternative methods for generating electricity are pictured above. Explain some similarities and differences among these methods.

GO ON

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The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Most rocks are composed of which of the following minerals?
 - **A** feldspar
 - **B** mica
 - **C** quartz
 - **D** all of the above
- All of the following methods help conserve aluminum EXCEPT
 - A recycling aluminum cans
 - **B** trying to reuse products with aluminum
 - **C** finding a substitute for aluminum
 - **D** throwing aluminum cans in the regular trash

- Soil is primarily made up of _____
 - **A** animal debris
 - **B** pieces of decomposing tree trunk
 - **C** weathered rock
 - **D** bacteria
- Which of the following is not important during natural soil formation?
 - **A** topography
 - **B** climate
 - **C** organisms
 - **D** manure

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Explain how certain organisms can influence soil development by taking nutrients from rocks and by adding organic matter.



The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Excessive and unwise use of land can result in _____.
 - **A** conservation
 - **B** loss of habitat
 - **C** select cutting
 - **D** purification
- As a result of human activities, the rate of species extinction is _____.
 - **A** declining
 - **B** unknown
 - **C** increasing
 - **D** unaffected

- Which of the following is not associated with the select-cutting of trees?
 - **A** a form of land conservation
 - **B** new trees are planted to replace cut trees
 - **C** the ecosystem is seriously affected by loss of forest habitat
 - **D** young saplings grow among older trees
- What is the main purpose of setting aside large areas of desert to be national parks?
 - **A** to help increase rainfall in the desert
 - **B** to provide more space for constructing new buildings
 - **C** to prevent animals from preying upon each other
 - **D** to protect habitats for desert plants and animals

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

A forest is cut down to make space for a new mall. What will be some of the effects of this human activity on the forest ecosystem?

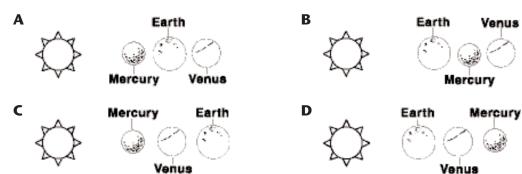


Benchmark Test

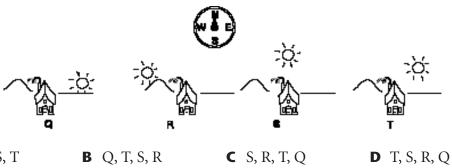
MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

Which of the diagrams below shows the three planets in the correct order?



2 Which is the order of the stages, from the earliest in the day to the end of the day, of the position of the Sun in the sky?



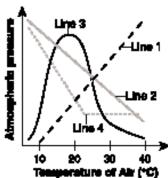
A Q, R, S, T

- 3 Upwelling has a major influence on _
 - **A** soil erosion
- **B** climate
- **C** ocean tides
- **D** light intensity
- Which of the lines to the right correctly represents the relationship of temperature to atmospheric pressure?
 - **A** 1

B 2

C 3

D 4



Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- The gravitational pull of the Moon has a greater effect than the pull of the Sun on Earth's tides. This is because _____.
 - A the Sun is closer to Earth
 - **B** the Moon is closer to Earth
 - **C** the Sun is larger than the Moon
 - **D** Earth is larger than the Moon
- Which statement best explains what causes the seasons?
 - **A** Earth rotates on an axis, which causes winds to circle around the planet.
 - **B** The Moon revolves around Earth in orbit, which causes the oceans to periodically rise and fall.
 - C Earth revolves around the Sun in an orbit that is slightly elliptical, which causes some parts of the planet to be closer to the Sun and other parts to be farther away from the Sun for periods of time.
 - **D** Earth rotates on an axis that is tilted with respect to the Sun, which causes some parts of the planet to receive more sunlight than other parts of the planet for periods of time.

- 7 The careful use of resources with the goal of reducing damage to the environment is called _____.
 - **A** pollution
 - **B** nonpoint resources
 - **C** conservation
 - **D** ecology
- **8** All of the following directly affect soil formation EXCEPT ______.
 - **A** the parent rock
 - **B** the shape of the land
 - **C** the climate
 - **D** glaciers

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CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

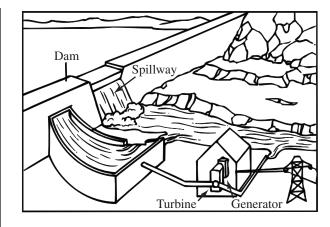
9 Explain how acid rain forms. Describe the effects of acid rain on buildings, wildlife, and plant life.

The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 1 _____ is the human perception of the energy a wave carries.
 - **A** Loudness
 - **B** Pitch
 - **C** Wavelength
 - **D** Amplitude
- Ms. Markas takes an insulated bottle filled with hot coffee to work each day. The bottle keeps the coffee hot
 - **A** using a battery-powered heating element
 - **B** collecting solar heat energy
 - **c** recirculating hot air inside
 - **D** slowing heat transfer
- is a measure of the average kinetic energy of the atoms in an object.
 - **A** Temperature
 - **B** Heat
 - **C** Potential
 - **D** Amplitude



- This structure produces power for use in the home by converting _____.
 - **A** chemical energy into mechanical energy
 - **B** electrical energy into mechanical energy
 - **c** chemical energy into electrical energy
 - **D** mechanical energy into electrical energy

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

5 In a light bulb, electrical energy is converted into which two forms of energy?



The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Where is the chemical energy in a material stored?
 - **A** the nucleus
 - **B** the electrons
 - **C** the protons
 - **D** the bonds between atoms
- Which of the following is an example of mechanical energy?
 - **A** the fire from the burner on the stove
 - **B** pushing a box across the floor
 - **C** hydrochloric acid reacting with copper
 - **D** the flow of energy from a hot pan to your hand
- According to the law of conservation of energy, the total amount of energy in the universe _____.
 - A remains constant
 - **B** changes constantly
 - **C** increases
 - **D** decreases

Mechanical energy turns oven knob

M

Electrical energy enters the oven

Chemical energy moves hand

N

The oven heats up

Р

- Which sequence of the steps listed above correctly represents the energy transformations used to turn on an oven?
 - **A** M, N, O, P

0

- **B** O, M, N, P
- **c** N, M, O, P
- **D** P, O, N, M

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Energy is released when gasoline is burned in automobiles. This energy is used to turn the wheels of the car. What type of energy is stored in gasoline and into what type of energy is it converted?

The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Four airplanes are flying to one airport.
 A scientist wants to know which airplane has the greatest potential energy. Finding which of the following would be the LEAST helpful?
 - **A** the mass of each airplane
 - **B** the weight of each airplane without passengers
 - **C** each airplane's distance to the airport
 - **D** each airplane's altitude
- A skier is at the top of a hill, ready to begin travelling down it. What kind of energy does the skier have?
 - A nuclear energy
 - **B** atomic energy
 - **C** potential energy
 - **D** kinetic energy

- Which of these is an energy-absorbing chemical reaction?
 - A endothermic
 - **B** exothermic
 - **C** catalytic
 - **D** dissipative
- Both hydrogen and oxygen exist as gases under Earth's atmospheric temperature and pressure. Water (H₂O) is formed when hydrogen and oxygen combine chemically. On Earth, water exists as a
 - A solid
 - **B** liquid
 - **C** gas
 - **D** all of the above

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

A solution is made from two or more substances. Give an example of a solution. Describe how the solution is different from the properties of the original substances.



The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- When sugar is dissolved in water, the sugar solution is denser than water.
 This is a _____ change.
 - **A** chemical
 - **B** electrical
 - C physical
 - **D** mechanical
- What is the advantage of putting some medications in dark brown bottles rather than in clear ones?
 - **A** to prevent light from chemically changing the medications
 - **B** to decrease the cost of the medications
 - **C** to provide larger containers to hold medications
 - **D** to prevent water from damaging the medications

- Which of the following pairs of liquids would most likely chemically neutralize each other when mixed in equal amounts?
 - A orange juice and lemonade
 - **B** ammonia and water
 - **c** orange juice and oven cleaner
 - **D** vinegar and lemonade
- A 100× microscope enlarges the image of an object to one-hundred times its original size. If a slice of coral reef 0.01 cm high is studied under this microscope, how large will its image appear?
 - **A** 100 cm
 - **B** 25 cm
 - **C** 10 cm
 - **D** 1 cm
- Which of the following parts of a fly is too small to see without magnification?
 - **A** wings
 - **B** legs
 - **C** eyes
 - **D** abdomen

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

21 To study the small details of a flower, which optical instrument is most useful? Explain why.



MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

The density of an object tells you how much mass the object contains in a unit volume. Which formula describes density?

A density =
$$\frac{\text{mass}}{\text{volume}}$$

B density =
$$\frac{\text{volume}}{\text{mass}}$$

$$\mathbf{C}$$
 density = mass \times volume

- **D** density = mass + volume
- Suppose a piece of ice and a piece of iron have equal volumes. Which of the following describes the relationship between their densities?
 - **A** both the densities are equal
 - **B** the density of iron is greater than the density of ice
 - **C** the density of ice is greater than the density of iron
 - **D** not enough information to compare their densities

- A small piece of gold sinks in water. However, a large piece of wood floats in water. Which of the following is NOT a correct statement?
 - **A** The volume of the gold piece is smaller than the volume of the wood piece.
 - **B** The wood piece has a greater mass than the gold piece.
 - **C** The density of gold is greater than the density of wood.
 - **D** The density of wood is greater than the density of gold.
- 4 When a gas expands, its volume increases but its mass doesn't change. What is the effect of expansion on the density of the gas?
 - **A** the density increases
 - **B** the density decreases
 - **C** the density doesn't change
 - **D** none of the above

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

5 Two substances, A and B, have equal masses. Can they have different densities? Explain.

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Visible light is a type of electromagnetic wave. Which of the following colors is NOT in the spectrum of visible light?
 - **A** red
 - **B** violet
 - **C** white
 - **D** blue
- A rainbow is formed when sunlight passes through _
 - **A** air pollution
 - **B** water vapor
 - C ocean water
 - **D** dust

- 8 How does white light behave when it passes through a prism?
 - **A** the original light appears unchanged
 - **B** dark and light bands appear
 - **C** the light breaks into its component colors
 - **D** none of the above
- 9 The spectrum colors correspond to different frequencies of light. Violet has a higher frequency than red. From violet to red, the frequencies of colors continuously decrease. Therefore, the frequency of green is _____ the frequency of red.
 - **A** less than
 - **B** greater than
 - **C** equal to
 - **D** none of the above

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

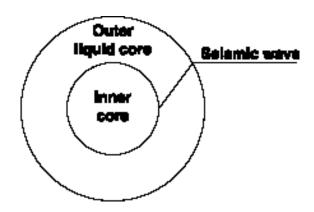
10 Describe what happens when you combine the colors of the rainbow.

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MULTIPLE-CHOICE QUESTIONS

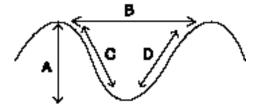
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- You are creating a wave on a spring. If you start shaking the spring more slowly, the wavelength of the resulting wave will _
 - **A** increase
 - **B** decrease
 - **C** remain the same
 - **D** depend on the amplitude



- In this cross-section of Earth's internal structure, the seismic wave represented is a _____.
 - A primary wave
 - **B** secondary wave
 - **C** surface wave
 - **D** Richter wave

- When you speak, your words are transferred to a friend _____.
 - **A** by transverse waves
 - **B** in between air molecules
 - **C** by molecules colliding
 - **D** by electromagnetic waves



- In the picture, the wavelength of these waves is the distance noted by _____.
 - A A
 - **B** B
 - CC
 - **D** D

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

15 When a rock is dropped in water, circular waves are formed. These waves travel out from the center. Describe how the water molecules move when a wave travels on the water's surface.

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- When tectonic plates move, they place a lot of stress on rocks, sometimes causing them to break. Why are earthquakes caused by rocks breaking?
 - **A** The tectonic plates keep moving.
 - **B** The ground sinks in between the tectonic plates.
 - **C** The tectonic plates create strong surface waves.
 - **D** The breaking rocks produce vibrations.
- 17 Which of the following has been the greatest benefit of studying and measuring seismic waves?
 - **A** prevention of all earthquakes worldwide
 - **B** accurate prediction of earthquakes
 - **C** mapping of Earth's internal structure
 - **D** understanding tides

- 18 Which of the following is the best description of the cause of sound waves?
 - **A** a decrease in pressure
 - **B** one object bumping into another
 - **C** a vibration in material causing a vibration in an adjacent area
 - **D** molecules becoming electrically charged
- 19 Earthquakes create all of these types of waves EXCEPT _____.
 - **A** initial
 - **B** secondary
 - **C** primary
 - **D** surface

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CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

20 Describe a common characteristic of seismic waves and water waves.

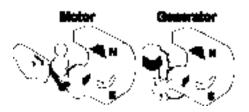


Standard 3 (6.3.23)

The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- The diagram above shows an electric motor and a generator. Which two areas of physical science are closely related to the development of these devices?
 - A sound and light
 - **B** light and magnetism
 - **C** electricity and sound
 - **D** electricity and magnetism
- Moving a wire through a magnetic field
 - A has no effect on the wire
 - **B** creates an electrical current in the wire
 - **c** reduces the strength of the magnetic field
 - **D** changes electrical energy into mechanical energy

- Blectromagnetic induction is the process of producing an electric current by moving a loop of wire _____.
 - A through a magnetic field
 - **B** around an iron core
 - **C** through a magnetic domain
 - **D** around a magnetic pole



- This equation shows Ohm's law, which says current is equal to voltage divided by resistance. In what units is electrical current measured?
 - **A** tesla
 - **B** joules
 - **C** ohms
 - **D** amperes

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Ohm's law describes the flow of current and its relationship to voltage and resistance. How is the current affected across a wire if its resistance increases?

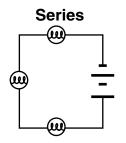
Standard 3 (6.3.23)

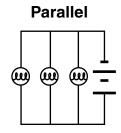
The Physical Setting

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Which of the following factors would have the LEAST effect on a battery's ability to power a portable radio?
 - **A** the voltage of the battery
 - **B** the battery's ability to separate charges
 - **c** the resistance inside the battery
 - **D** the shape of the battery







@ Bulb

Battery

- 7 These boxes show two ways of connecting a circuit. The series circuit differs from the parallel circuit because the lights in the series circuit all experience _____.
 - **A** the same current
 - **B** the same voltage
 - **C** different current
 - **D** alternating current

- According to Ohm's Law, if the voltage in a battery is increased, what will happen to the current produced by the battery?
 - A It will increase.
 - **B** It will decrease.
 - **C** It will stay the same.
 - **D** It is impossible to determine.
- **9** What role does a generator play in an electrical circuit?
 - **A** The circuit routes energy through the generator.
 - **B** The generator is located in the wall outlet.
 - **C** The generator is the source of the energy transferred by the circuit.
 - **D** none of the above

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

10 Explain how current is produced in a circuit.



Standard 3 (6.3.17-6.3.23)

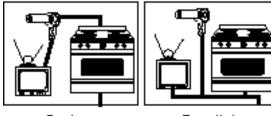
Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- The universe is filled with different forms of energy. Which type of energy is LEAST involved when a camper starts a fire with a match?
 - A chemical
 - **B** mechanical
 - **C** heat
 - **D** electrical
- Which of the following is a description of temperature?
 - **A** potential energy from atoms moving in many directions
 - **B** measure of the average kinetic energy of atoms in an object
 - **c** transfer of kinetic energy from one object to another
 - **D** when two objects cause each other to lose atoms
- Which of the following is not a form of heat transfer?
 - A conduction
 - **B** diffusion
 - **C** convection
 - **D** radiation

- **4** What is true about surface waves?
 - **A** They cause the majority of the destruction associated with earthquakes.
 - **B** They are the fastest-moving waves associated with earthquakes.
 - **C** They do not pass through liquid.
 - **D** They do not slow down when entering a denser layer of Earth.



Series

Parallel

- These boxes illustrate parts of two different circuits. Which of the following describes the best way to wire these elements in a home?
 - **A** The parallel circuit is best because the current is branched.
 - **B** The series circuit is best because the current is unbranched.
 - **C** The parallel circuit is best because each element reduces the current.
 - **D** The series circuit is best because each element increases the current.

Standard 3 (6.3.17-6.3.23)

Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- In the United States, a type of current is used that varies from positive to negative 60 times per second. This type of current is called _____.
 - A direct current
 - **B** alternating current
 - **C** variable current
 - **D** simulating current
- 7 The current passing through a circuit is affected by its resistance. If the resistance in the circuit increases, the current ______.
 - **A** increases
 - **B** decreases
 - **C** remains constant
 - **D** none of the above

- White light consists of different colors. The color of the wave is related to its frequency. When a wave passes through a prism, the light bends at a specific angle depending on its frequency. This explains why white light _____ when it passes through a prism.
 - A bounces
 - **B** deflects
 - **C** splits
 - **D** interferes

CONSTRUCTED-RESPONSE QUESTIONS

Write your answer to the following question on the lined answer sheet provided by your teacher.

9 Explain why the density of ice is less than the density of water.



Class:

Standard 4 (6.4.1–6.4.5)

The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- What is the main reason that trees belong to the plant kingdom instead of the animal kingdom?
 - **A** Trees are green, like all other plants.
 - **B** Many animals live in trees and eat their fruit.
 - **C** Trees can adapt to different environments.
 - **D** Trees use sunlight and water to produce their own food.
- Which of the following is NOT a defining characteristic of animals?
 - **A** ability to move
 - **B** ability to make their own food
 - **c** radial or bilateral symmetry
 - **D** multicellular organism

- What makes the Venus Flytrap different from most other green plants?
 - **A** It has no chlorophyll and is not green.
 - **B** Sunlight slows its ability to harvest energy and grow.
 - **C** Like many animals, it is carnivorous and eats insects.
 - **D** Since it is not rooted in soil, it can fly.
- Plants have chlorophyll. The chlorophyll usually helps the plants by _____.
 - **A** disguising the plants from predators
 - **B** protecting the plants from sunlight
 - **c** capturing energy from sunlight
 - **D** absorbing oxygen from the air

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

In what ways are mushrooms similar to plants and in what ways are mushrooms similar to animals?



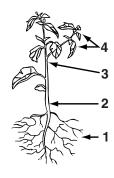
Standard 4 (6.4.1-6.4.5)

The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Which of the following could be classified as a fungus?
 - A Euglena
 - **B** mold
 - **C** a tree
 - **D** algae
- 7 are not considered to be plants or animals.
 - **A** Gymnosperms
 - **B** Algae
 - **C** Bacteria
 - **D** Vertebrates
- 8 Diatoms can produce their own food while amoeba cannot because diatoms contain ______.
 - A micronuclei
 - **B** flagella
 - **C** chlorophyll
 - **D** cilia



- This diagram shows the main parts of a plant. Which part of the plant is best adapted for capturing energy?
 - **A** 1
 - **B** 3
 - **C** 3
 - D 4

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Most plants are rooted in soil and unable to actively seek out mates. What enables seed plants to sexually reproduce with other plants far away?



Class:

Standard 4 (6.4.1–6.4.5)

The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Sponges are filter feeders. Filter feeders eat by _____.
 - **A** catching and chewing prey with sharp teeth
 - **B** ingesting nutrients through wet skin
 - **c** straining large quantities of water for food
 - **D** ensnaring prey in a web spun from spinnerets on the abdomen
- Stomata are small openings in a leaf's epidermis. Stomata could affect the health of a plant by ______.
 - A limiting the spread of disease-carrying spores into the plant's systems
 - **B** limiting the amount of oxygen lost from plant systems
 - **c** allowing carbon dioxide, water, and oxygen to enter and exit the leaf
 - **D** allowing leaves to be lighter in weight and not break as a result of harsh winds

- What is true about organisms that belong to the same species?
 - **A** They can breed with each other and have fertile offspring.
 - **B** They are closely related, and have a similar shape and appearance.
 - **C** They also belong to the same kingdom.
 - **D** all of the above
- Which of the following pairs of animals belong to the same species?
 - **A** German shepherd and collie
 - **B** dolphin and fish
 - **C** donkey and horse
 - **D** lion and wolf

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Animal cells are about 10 μ m in size and plant cells are about 100 μ m. For which cell would you need a more powerful microscope? Explain why.



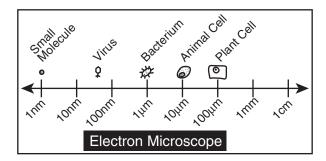
Standard 4 (6.4.1-6.4.5)

The Living Environment

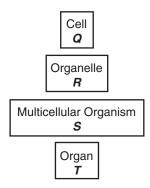
MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Which of the following tools is most useful when studying cells?
 - A microscope
 - **B** pencil and paper
 - C mass scale
 - **D** telescope



- According to the diagram, which statement is accurate?
 - **A** Viruses are larger than bacteria.
 - **B** Objects as small as 100 μm in diameter can be observed using a light microscope.
 - **C** Bacteria are smaller than plant and animal cells.
 - **D** Animal cells are usually larger than plant cells.



- Which is the order of these biological objects from the least to the most complex?
 - **A** R, Q, T, S
 - **B** S, T, R, Q
 - **c** T, S, Q, R
 - **D** R, Q, S, T
- 19 A(n) _____ is the basic unit of which all living things are composed.
 - A cell
 - **B** molecule
 - **C** proton
 - **D** organ

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Alan is looking at a human cell through a microscope. Describe the basic structure he would see.



Standard 4 (6.4.6-6.4.8)

The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Most animal cells are eukaryotic. What are distinguishing features of eukaryotic cells?
 - **A** a nucleus with a membrane around it
 - **B** a cell wall and cytoplasm
 - **c** chloroplasts and photosynthesis
 - **D** mitosis and meiosis
- Chloroplasts are ______ that contain chlorophyll, a green-colored pigment that is receptive to light.
 - A a kind of plant cell
 - **B** organelles found only in plant cells
 - **C** organelles found only in animal cells
 - **D** parasites that attach to plants

- What substance makes up about 2/3 of the mass of a cell?
 - A oxygen
 - **B** blood
 - **C** fat
 - **D** water
- 4 The cell membrane acts as a gatekeeper by regulating the flow of materials into and out of a cell. The movement of these materials depends mostly on _____.
 - A how much energy the cell has
 - **B** how thick the nucleus is
 - **C** the temperature inside and outside the cell membrane
 - **D** the structure of the cell membrane

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

When the cut ends of limp celery stalks are placed in water, the stalks straighten up and regain some of their crispness. What does this action have to do with the water content of the celery cells?

Standard 4 (6.4.6-6.4.8)

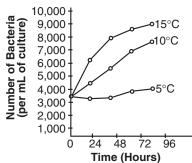
The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 6 Sometimes a population cannot grow to its biotic potential due to environmental factors. What are these environmental factors called?
 - **A** limiting factors
 - **B** biomes
 - **c** ecological pyramids
 - **D** carrying capacities
- 7 The struggle among organisms to obtain the resources they need to survive and reproduce is called _____.
 - A symbiosis
 - **B** carrying capacity
 - C population spacing
 - **D** competition





- Three identical bacteria cultures were grown at three different temperatures. The change in population for each temperature is shown on the graph above. Based on these data, which of these statements is true?
 - **A** These bacteria do not live past 72 hours.
 - **B** These bacteria cannot survive at temperatures lower than 15°C.
 - **C** These bacteria reproduce faster at warmer temperatures.
 - **D** These bacteria cannot reproduce at temperatures higher than 15°C.

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Rooks are large black birds similar to crows. Like squirrels, rooks prefer to live in wooded areas and on farmland. Why might two different species like rooks and squirrels be drawn to the same habitat?

Class:

Standard 4 (6.4.6–6.4.8)

The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- As population density increases, the competition among individuals for the resources in their environment ______.
 - **A** decreases
 - **B** is not affected
 - **C** is dependent on spacing
 - **D** also increases
- Habitat loss is a major reason why species become _____.
 - A endangered
 - **B** extinct
 - **C** threatened
 - **D** all of the above

- A trait that makes an organism better suited to its environment is a(n) _____.
 - A abiotic factor
 - **B** biome
 - **C** adaptation
 - **D** limiting factor
- A local company dumped sewage into the wetlands. As a result, most of the fish in the wetlands died. This decrease in the number of fish will probably result in _____.
 - A fewer mice
 - **B** fewer birds
 - **C** fewer spiders
 - **D** fewer insects

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Deserts do not support as much plant life as other environments. Plants that do exist in the desert, like sagebrush and creosote bush, are usually spaced far apart from each other. They have large root systems. How do these characteristics help them to survive?

Standard 4 (6.4.9-6.4.10)

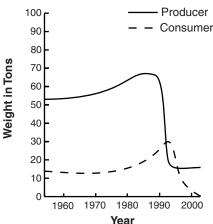
The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Lichens are made up of fungi and algae living together. The algae help the lichens by ______.
 - A decomposing the material the lichens are growing on
 - **B** producing water for the lichens
 - **C** being food for animals
 - **D** making food from sunlight for the lichens
- **2** _____ obtain energy by eating other organisms.
 - **A** Consumers
- **B** Producers
- **C** Autotrophs
- **D** Decomposers

Consumer / Producer Relationships



- The graph shows consumer/producer populations over several years. A reasonable hypothesis based on these data is that if the producer population decreases, then _____.
 - **A** the predator population will increase
 - **B** the producer population will become extinct
 - **C** soil nutrients will decrease
 - **D** the consumer population will decrease

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Tapeworms are parasites that live inside human intestines and can grow to as long as 10 meters. They attach to the intestinal wall and absorb partially digested food. How might this behavior harm the human host?

Class:

Standard 4 (6.4.9–6.4.10) The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- In general, predators capture the members of the prey population that are ____
 - **A** largest
 - **B** old, ill, or young
 - **C** fastest
 - **D** most colorful
- Some species of mistletoe harm the trees on which they grow. The mistletoe's roots grow into the tree and take nutrients from the tree. This relationship is an example of _
 - A parasitism
 - **B** mutualism
 - **C** commensalism
 - **D** biotic potential

- A symbiotic relationship that benefits both species is called _____.
 - **A** predation
 - **B** mutualism
 - **C** biotic potential
 - **D** parasitism
- 8 Which of these is the ultimate source of energy in the energy pyramid?
 - **A** water
 - **B** air
 - **C** sunlight
 - **D** soil

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Some scientists believe that the dinosaurs became extinct after a large asteroid crashed into Earth. The impact threw giant clouds of dust up into the sky, which blocked out light and heat from the sun. What chain of events would need to take place for the dinosaurs to die out as a result?

Standard 4 (6.4.11-6.4.13)

The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Groups of similar cells that do the same sort of work are _____.
 - **A** organs
 - **B** organ systems
 - **C** tissues
 - **D** organelle
- In humans, different life processes such as respiration and digestion are carried out by different body systems. Each body system consists of ______.
 - A nutrients and minerals
 - **B** specialized cells, tissues, and organs
 - **C** hormone glands
 - **D** bones

- Which of the following enables humans to process food for energy?
 - A respiratory system
 - **B** immune system
 - **C** endocrine system
 - **D** digestive system
- Which body systems work together to provide muscle cells with oxygen?
 - A respiratory and circulatory
 - **B** respiratory and nervous
 - **C** circulatory and digestive
 - **D** reproductive and hormonal

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

When you touch a hot stove, your hand automatically jerks itself away. How does this defensive response involve both the nervous and muscular body systems?

GO ON

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Standard 4 (6.4.11-6.4.13) The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 6 All modern-day humans are classified as belonging to which genus and species?
 - **A** homo erectus
 - **B** homo sapiens
 - C animalia rodentia
 - **D** chordata animalia
- 7 Blood serves the same function in all humans, but there are four types of blood that contain different proteins. Which of the following is not a human blood type?
 - \mathbf{A} O
 - **B** AO
 - C AB
 - **D** B

- Healthy humans may differ in any of the following ways, EXCEPT _____.
 - **A** the function of organs
 - **B** height and weight
 - **C** personality
 - **D** eye color
- Which of the following statements is true?
 - **A** Children are exact copies of both their parents.
 - **B** Only people with the same genes can reproduce.
 - **C** Humans can reproduce with other species.
 - **D** Humans can only reproduce with members of the opposite sex.

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

10 Why is it important that the organ donor and the organ recipient share the same blood type?



Standard 4 (6.4.11–6.4.13) The Living Environment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 11 Eagles have the sharpest eyesight of any animal on Earth, which enables them to spot their prey from far above ground. The strongest telescopes, however, allow humans to see ____
 - **A** the nucleus in a cell
 - **B** birds in their nests
 - **C** stars and other bodies in space
 - **D** ships on the horizon
- Using _____, humans are able to locate objects, calculate distances, and communicate underwater as effectively as whales.
 - **A** submarines
 - **B** oxygen tanks
 - **C** sonar
 - **D** telepathy

- 13 The cheetah is the fastest runner on Earth. It can reach speeds up to 72 miles per hour, and keep that pace for over 3 miles while chasing prey. The latest racecars designed by humans, however, can drive over _____ until they run out of gas.
 - **A** 400 miles per hour
 - **B** 200 miles per hour
 - **C** 100 miles per hour
 - **D** 60 miles per hour

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

14 Many mammals, including humans, have natural methods of coping with high body heat. Sweating, panting, and going for a swim are a few examples. What technological advances allow humans more effective ways of staying cool than other animals?

Standard 4 (6.4.1-6.4.13)

Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- Scientists use many different characteristics to classify organisms. The main difference between plants and animals, for example, is _____.
 - A how many cells they have
 - **B** how they reproduce
 - **C** how they obtain the energy they need to live
 - **D** how many offspring they have
- Angiosperms are vascular, flowering plants with seed-containing fruit.
 According to this information, all of these plants are angiosperms EXCEPT ______.

A



В



(



D



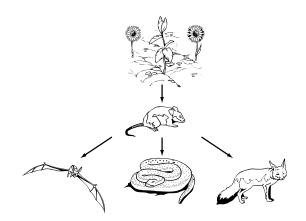
- Mules are the offspring of horses and donkeys. They are usually unable to reproduce and have shorter life spans. What is the main reason that a mule is a rare case in nature?
 - A Horses and donkeys are two different species.
 - **B** Most animal offspring are able to reproduce.
 - **C** Most horses breed with other horses.
 - **D** Most donkeys do not breed.
- Which of these supports and protects a plant cell?
 - **A** photosynthesis
 - **B** cell wall
 - C DNA
 - **D** tissue

Standard 4 (6.4.1-6.4.13)

Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- If a larger, fast-breeding species of mouse were introduced into this environment, what might be the consequence(s)?
 - **A** The new species could disrupt the food web and cause the extinction of all the species pictured.
 - **B** The original mouse species, unable to compete with the larger mouse species, could be forced out or become extinct.
 - **C** The larger mouse could prove too large to provide a food source for the bat, causing its extinction.
 - **D** all of the above

- A symbiotic relationship in which one species benefits while the other species is harmed is called ______.
 - A parasitism
 - **B** commensalism
 - **C** mutualism
 - **D** biotic potential
- 7 The endocrine system produces the chemical substances that are used to regulate many functions in the body. These chemical substances are called
 - **A** hormones
 - **B** inhibitors
 - **C** ribosomes
 - **D** chromosomes

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CONSTRUCTED-RESPONSE QUESTIONS

Write your answer to the following question on the lined answer sheet provided by your teacher.

All donated blood is tested to determine what proteins exist on the surface of the red blood cells. Why must this information be determined before giving the donated blood to another human?



The Mathematical World

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- The equation x 5 = 8 can be solved by using which of the following operations?
 - **A** adding 0 on both sides
 - **B** multiplying both sides with additive inverse of 5
 - **c** adding the additive inverse of +5 on both sides
 - **D** adding the additive inverse of -5 on both sides
- The product of any number and its multiplicative inverse equals
 - **A** 0
 - **B** 1
 - C 1
 - **D** the original number
- What is the sum of 12 and its additive inverse?
 - $\mathbf{A} \quad 0$
 - **B** -1
 - **C** 12
 - **D** 6

- Within a five minute period, Sally took three readings to measure the temperature of a lake. Her readings were 16.1°C, 15.4°C, and 15.7°C. Which of the following could NOT be a possible reason for the differences in her readings?
 - A Pollution was dumped a half mile downstream.
 - **B** Each reading was taken at a different depth in the lake.
 - **C** She used a different thermometer each time.
 - **D** Each reading was taken at a different spot on the lake.
- A set of data is precise if the measurement values in the set are close to one another. Consider the following data sets for the density of water. (The unit of measurement for density is gram/milliliter.) Whose data is more precise?

Nayala's data = $\{0.88, 0.97, 0.77\}$

Ken's data = $\{0.86, 0.89, 0.84\}$.

- A Ken's data
- **B** Nayala's data
- **C** Both Ken's and Nayala's data(um)
- **D** Both their data(um) is not precise

CONSTRUCTED-RESPONSE QUESTION

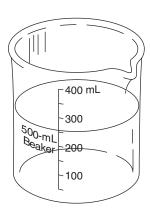
Write your answer to the following question on the lined answer sheet provided by your teacher.

A set of measurements can be precise but still not accurate. The density of water is 1 g/ml. Evaluate Ken's data {0.86, 0.89, 0.84} based on its precision and accuracy.

The Mathematical World

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- Sarah wanted to know how much of the 500 mL of water that she poured onto her potted plant drained out of the bottom of the pot, so she captured the water in a beaker. Use the markings on the beaker to estimate to the nearest 10 mL how much water drained through Sarah's pot.
 - **A** 260 mL
 - **B** 240 mL
 - **C** 300 mL
 - **D** 255 mL
- 8 Of the following, the planet Earth is shaped most like a _____.
 - **A** circle
- **B** sphere
- **C** cylinder
- **D** flat plane

- On a flat surface, the distance between two points *A* and *B* is given by the length of the straight line joining the two points. This distance represents _____.
 - A the shortest path between the two points
 - **B** the longest path between the two points
 - **c** the length that is between the lengths of the longest and the shortest paths
 - **D** none of the above
- A map is constructed by projecting points on the spherical Earth onto a flat plane. Because Earth is _____ locations on a map are slightly distorted.
 - **A** flat
 - **B** curved
 - **C** large
 - **D** uneven

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

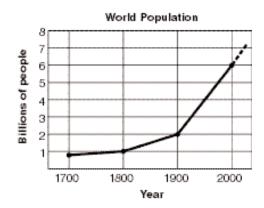
Suppose the length of a room is 2.5 m and the width is 1.2 m. Explain how you would round the length and width to the nearest meter.

GO ON

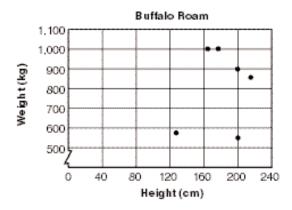
The Mathematical World

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- The line graph above shows how the number of people on Earth has increased over the last several hundred years. Based on the graph, which of the following conclusions is correct?
 - **A** Human population increased much more rapidly between the years 1900 and 2000 than at any earlier time.
 - **B** Human population in the year 1800 was about 4 billion.
 - **C** The year 1800 marks a decrease in the rate of population increase.
 - **D** Human population tripled between the years 1700 and 1800.



- The graph shows the average heights and weights of different species of buffalo. What can you conclude from the graph?
 - **A** The tallest buffalo is the heaviest.
 - **B** Most of the buffalo weigh more than 800 kg.
 - **C** The buffalo that are the same height are also the same weight.
 - **D** The buffalo that weigh the least run the fastest.

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

In an experiment, Michael spins a four-sided multicolored top 100 times. It lands on its blue side 28 times. From this information, what could he predict will happen if he spins the top another 50 times?

The Mathematical World

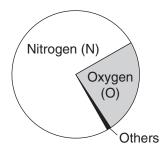
MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

Scores	Frequency
51–60	5
61–70	7
71–80	7
81–90	8
91–100	3

- The table shows the frequency of test scores on a science exam. What percentage of the students scored between 71 and 80?
 - **A** 5%
 - **B** 15%
 - **C** 18%
 - **D** 23%
- Suppose there is a one-out-of-four chance of choosing a green ball from a bag. Which of the following expresses the probability of choosing the green ball?
 - **A** $\frac{1}{4}$
 - **B** 0.25
 - **C** 1 to 3 odds
 - **D** all of the above

- When you flip a coin, there is a 50% chance of getting a head and a 50% chance of getting a tail. What are the odds of getting a tail?
 - **A** 1 to 1
 - **B** 2 to 1
 - **C** 1 to 2
 - **D** 1 to 3



- The circle graph above shows the abundance of various gases in Earth's atmosphere. Which of the following percentages show the data in the graph?
 - **A** N: 50%; O: 40%; others: 10%
 - **B** N: 78%; O: 21%; others: 1%
 - **C** N: 37%; O: 58%; others: 5%
 - **D** N: 90%; O: 9%; others: 1%

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

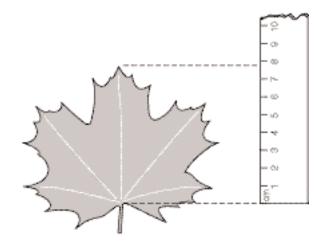
19 In an experiment like flipping a coin, what does the frequency of an event signify?



Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- Jason wants to determine the average length of the leaves of a particular type of maple tree. To do this, he will measure the lengths of a large number of leaves from many different trees of the same species and average the results. One of the leaves is sketched above. What is the length of this leaf to the nearest centimeter?
 - **A** 7 cm
 - **B** 7.5 cm
 - **C** 7.7 cm
 - **D** 8 cm
- To find the average length of the maple leaves in the previous problem, it would be more useful to take the measurement to the _____.
 - **A** nearest meter
 - **B** nearest centimeter
 - **C** nearest millimeter
 - **D** nearest inch

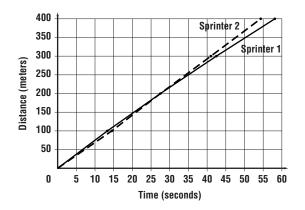
- A less than 1, but not equal to 1
- **B** greater than 1
- **C** between 0 and 1, including 0 and 1
- **D** between 0 and 2
- What is the sum of −7 and its additive inverse?
 - **A** 0
 - **B** 1
 - **C** 7
 - **D** 14
- **5** The multiplicative inverse of 0 is _____.
 - $\mathbf{A} \quad 0$
 - **B** 1
 - $\mathbf{C} \ 0.1$
 - **D** undefined



Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.



- The graph shows the distance-time data of two sprinters. From this graph, you can find the distance covered by each sprinter every 5 s. This information is useful to find the _____ of the two sprinters.
 - A time
 - **B** distance
 - **C** speed
 - **D** acceleration

- 7 Suppose the odds of winning a game are 1 to 5. What is the probability of winning the game?
 - **A** $\frac{1}{4}$
 - В
 - C -
 - **D** 1
- When you add the multiplicative inverse of 1 and additive inverse of -1, the sum is _____.
 - $\mathbf{A} 0$
 - **B** 1
 - C 1
 - **D** 2

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

A basket of laundry contains 8 black socks, 8 brown socks, 8 blue socks, and 8 white socks. Express the probability of randomly pulling one black sock out of the basket as a fraction, a percentage and as odds.

Standard 6 (6.6.1–6.6.3)

Historical Perspectives

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 1 German scientist Friedrich Wöhler founded the science of modern organic chemistry in the nineteenth century. All organic substances contain the element
 - **A** oxygen
 - **B** nitrogen
 - **C** carbon
 - **D** phosphorus
- In the late nineteenth century, scientists found that atoms were made of subatomic particles. Which subatomic particle has a negative charge?
 - A electron
 - **B** proton
 - **C** neutron
 - **D** positron

- In ancient Greece, the philosopher Democritus suggested that the smallest piece of a pure substance was _____.
 - **A** an element
 - **B** an atom
 - **C** a particle
 - **D** an isotope
- The French scientist Antoine Lavoisier introduced the principle that the mass of the reactants in a chemical reaction must be ______ the mass of the products.
 - **A** greater than
 - **B** less than
 - **C** equal to
 - **D** twice

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

Some ancient peoples believed that the basic substances were earth, water, air, and fire. How is the modern world theory of matter different from this ancient one?

Standard 6 (6.6.1-6.6.3)

Historical Perspectives

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 6 People have combined elemental metals for centuries in order to create stronger materials. Bronze, for example, is a durable substance made of copper and tin. These combinations are called
 - A new matter
 - **B** reactions
 - **C** suspensions
 - **D** alloys
- 7 Some ancient peoples believed that water was an elemental substance. We now know that water is a combination of _____.
 - A nitrogen and oxygen
 - **B** oxygen and hydrogen
 - **c** hydrogen and ozone
 - **D** oxygen and helium

- In the 1960s, scientists introduced the idea that small particles called quarks were the basis of subatomic particles. In 1991, scientists used a ______ to show that quarks actually exist.
 - A microscope
 - **B** laser
 - **C** particle accelerator
 - **D** telescope
- In the early 1900s, Marie and Pierre Curie discovered the elements radium and polonium by examining a _____ uranium ore.
 - A dense
 - **B** reactive
 - **C** pure
 - **D** radioactive

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

10 Why do scientists continue to look for the smallest components of matter?



Standard 7 (6.7.1-6.7.3)

Common Themes

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- The human body is composed of systems that perform different functions. The system that delivers materials to all parts of the body is the _____.
 - **A** digestive system
 - **B** skeletal system
 - **C** respiratory system
 - **D** circulatory system
- Within the human digestive system, which organ produces bile to help break down fat?
 - A pancreas
 - **B** liver
 - **C** small intestine
 - **D** large intestine

- Meteorologists use instruments such as thermometers, barometers, and Doppler radar to create a model of _____.
 - A past climate conditions
 - **B** ecosystem health
 - **C** future weather conditions
 - **D** geologic time
- In the human body, high blood sugar signals the pancreas to release insulin. Insulin causes the liver to remove sugar from the blood. When blood sugar levels are back to normal, the pancreas
 - A continues to release insulin
 - **B** releases glycogen
 - C removes insulin
 - **D** stops releasing insulin

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

When the thyroid hormone *thyroxine* is released into the blood, metabolism increases. What would be the effects of too much *thyroxine*?

Standards 6 & 7 (6.6.1-6.7.3)

Benchmark Test

MULTIPLE-CHOICE QUESTIONS

Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- In 1869, Dmitri Mendeleev organized the chemical elements into the first periodic table. In this table, elements were arranged according to ______.
 - A atomic mass
 - **B** chemical symbol
 - **C** name
 - **D** metallic luster
- In his experiments with combustion,
 Antoine Lavoisier determined that
 metal combined with an element in air
 to produce _____.
 - **A** nitride
 - **B** oxide
 - **C** soot
 - **D** vapor

- A flower is part of the _____ of an angiosperm.
 - A transport system
 - **B** defense system
 - **c** feedback mechanism
 - **D** reproductive system
- 4 Scientists believe that all natural elements formed from _____.
 - A hydrogen
 - **B** oxygen
 - **C** water
 - **D** carbon

CONSTRUCTED-RESPONSE QUESTION

Write your answer to the following question on the lined answer sheet provided by your teacher.

The greenhouse model explains why Earth's temperature might be increasing. Why is a greenhouse a good model for Earth's atmosphere?



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