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Back Cover: (star field) Shigemi Numazawa/Atlas Photo Bank/Photo Researchers, Inc.; (moon) Guy Grenier/Masterfile.

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# Introduction

## What is in this book?

**Welcome to the Student Edition of *Standards Test Preparation for KCCT*.**

There are three sections in this workbook:

- ***Test-Taking Tips***

This page provides some helpful hints to prepare you for the test.

- ***Management System Tool***

This section identifies the page references for question practice in the four Subdomains of the KCCT: Physical Science, Earth and Space Science, Biological Science, and Unifying Science.

- ***Standardized Test Practice: Test Preparation***

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

# Test-Taking Tips

## ***Before the Test:***

1. Be sure to get plenty of sleep the week before the test. A healthy amount of sleep is 8–9 hours every night.
2. The night before the test, try to do something relaxing but stimulating, such as playing a board game, exercising, or reading an enjoyable book. Cramming the night before the test can often hamper your memory and make you tired.
3. The morning of the test, eat a healthy breakfast with fresh foods that are high in protein and carbohydrates.
4. The morning of the test, clear your mind of any outside distractions so that you will be better able to focus on the test. If breaks are given during the test, use that time to relax and clear your mind.

## ***During the Test:***

1. Listen to and read all directions.
2. Be sure you understand the question before reading the answer choices. Then, make sure to read and consider **every** answer choice.
3. Remember to carefully consider all the information presented in the test's graphics.
4. If the test is timed, be sure to pace yourself.
5. Always choose an answer. By eliminating as many incorrect choices as possible, you will have a good chance at guessing correctly and obtaining more points.

# Standards Test Preparation for KCCT

## Management System Tool

This workbook is designed to help you prepare for the KCCT. The content of the KCCT is divided by the four Subdomains: Physical Science, Earth and Space Science, Biological Science, and Unifying Concepts. Questions under these Subdomains are developed from the content organizers list below:

- Structure and Transformation of Matter
- Motion and Forces
- The Earth and the Universe
- Unity and Diversity
- Biological Change
- Energy Transformations
- Interdependence

Your teacher will assign pages using the table below to provide practice for the KCCT. Each page contains four multiple-choice questions and one open-response question. Each question is labeled with the Kentucky Core Content Assessment Standard to which it aligns.

Kentucky Subdomains of the Core Content Assessment	Pages
Physical Science	7–12, 17, 22–23, 30
Earth and Space Science	18–21, 24–25, 27–29, 31
Biological Science	26, 32–34, 36–41
Unifying Concepts	13–16, 35, 42–46

**MULTIPLE-CHOICE QUESTIONS**

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

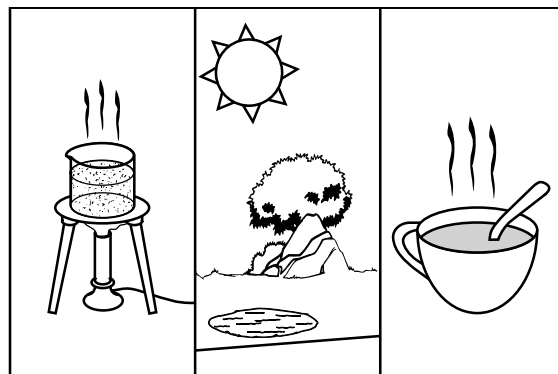
Helium	
Atomic number	2
Symbol	He
Atomic mass	4.003

**1** Based on the periodic table entry above, how many protons are in one helium atom?

- a 1
- b 2
- c 4
- d 6

**2** Which is a property of a nonmetal?

- a It has a hard and shiny surface.
- b It can be bent into different shapes.
- c It is a poor conductor of electricity.
- d It is a good conductor of heat.



**3** Which process is occurring in all three pictures?

- a condensation
- b vaporization
- c conservation
- d measurement

**4** In some solids, the particles occur in a repeating, three-dimensional pattern. This type of solid is called \_\_\_\_\_.

- a a diamond
- b crystalline
- c a prism
- d a cube

**OPEN-RESPONSE QUESTION**

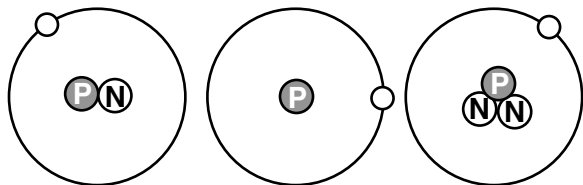
Write your answer to the following question on the lined answer sheet provided by your teacher.

**5** The makers of the periodic table placed the elements in groups. Describe the criteria they used to place the elements into the groups.



**MULTIPLE-CHOICE QUESTIONS**

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

**Isotopes of Hydrogen**

- 1** Based on the diagram above, which statement is correct?
- a** All isotopes of hydrogen have one proton in the nucleus.
  - b** All isotopes of hydrogen have one neutron in the nucleus.
  - c** Isotopes of hydrogen have different numbers of electrons in them.
  - d** There are the same number of protons and neutrons in every isotope of hydrogen.



- 2** All chemical equations follow the law of conservation of mass. Which number should be used in place of the question mark to balance the equation above?
- a** 1
  - b** 2
  - c** 0
  - d** 4
- 3** Aiesha is investigating the law of conservation of mass. Her experiment with paper is shown. The law of conservation of mass and Aiesha's experiment suggest that the small pieces of paper \_\_\_\_\_.
- a** can serve as catalysts in most chemical reactions
  - b** have melting and boiling points that are lower than the full sheet
  - c** have the same amount of matter as the full sheet
  - d** have new chemical properties

**OPEN-RESPONSE QUESTION**

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

- 4** Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces.





**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** Calcium is a metal with an oxidation number of  $2^+$ . Chlorine is a nonmetal with an oxidation number of  $1^-$ . Which is the chemical formula for the compound formed by these two elements?

**a** CaCl  
**b** CaCl<sub>2</sub>  
**c** Ca<sub>2</sub>Cl  
**d** CaCl<sub>3</sub>

**Molecular Masses of  
Some Compounds**

Compound	Molecular Mass (atomic mass units)
NaCl	58.8
LiF	25.9
NaBr	102.9
KI	166.0

- 2** Which compound listed in the table above has the smallest molecular mass?

**a** NaCl  
**b** LiF  
**c** NaBr  
**d** KI

- 3** Which is a halogen?

**a** helium  
**b** chlorine  
**c** oxygen  
**d** nitrogen

- 4** A chemist performed a series of experiments on an element and found that it did not react with any other element, no matter what the chemist did. The element was **most** likely \_\_\_\_\_.

**a** a noble gas  
**b** a halogen  
**c** an alkaline earth metal  
**d** an alkali metal

- 5** Which compound listed below is an alcohol?

**a** CH<sub>3</sub>COOH  
**b** C<sub>2</sub>H<sub>5</sub>OH  
**c** C<sub>3</sub>H<sub>7</sub>NH<sub>2</sub>  
**d** C<sub>4</sub>H<sub>9</sub>Cl

**OPEN-RESPONSE QUESTION**

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

- 6** Some elements decay by emitting alpha particles. An alpha particle is made up of two protons and two neutrons. Use what you know about the structure of an atom to explain how an element that loses an alpha particle becomes a new element.

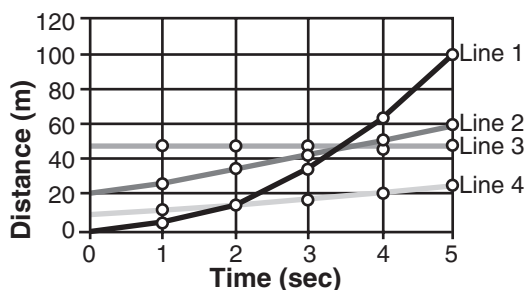
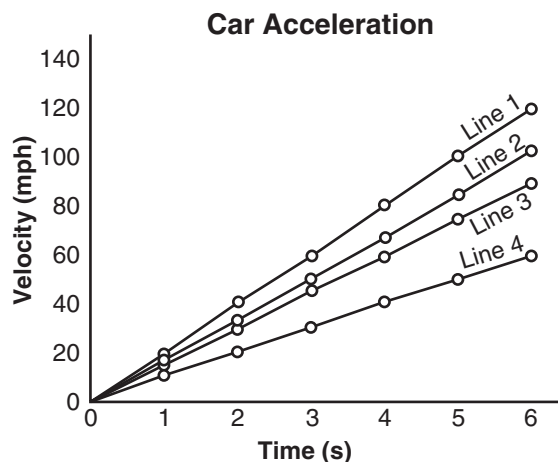


**MULTIPLE-CHOICE QUESTIONS**

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

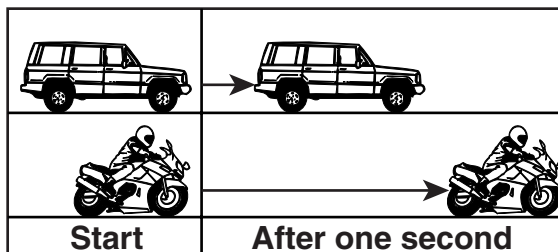
- 1** The graph at the right represents the change in velocity of four cars over a period of 6 seconds. Which line represents the car with the greatest acceleration?

**a** 1  
**b** 2  
**c** 3  
**d** 4



- 2** Which line on the graph represents an object that is accelerating?

**a** 1  
**b** 2  
**c** 3  
**d** 4



- 3** Which scientific law does the diagram illustrate?

**a** law of gravity  
**b** Newton's first law of motion  
**c** Newton's second law of motion  
**d** Newton's third law of motion

**OPEN-RESPONSE QUESTION**

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

- 4** A cross-country runner runs 10 km in 40 minutes. What is his average speed?

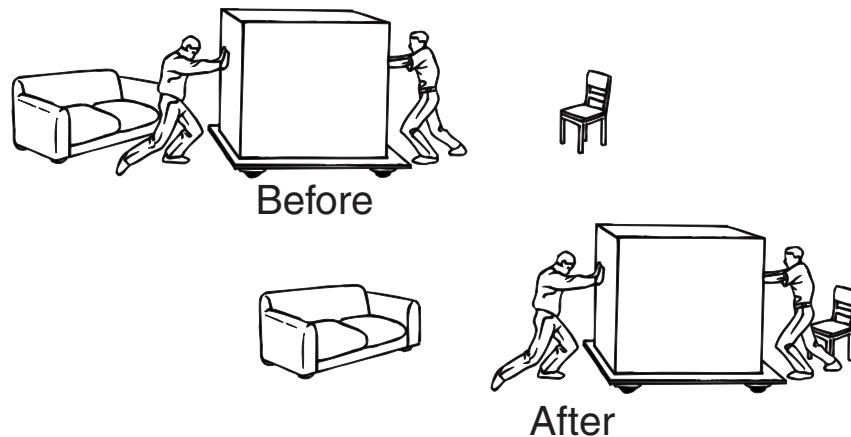


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** Which is an example of balanced forces acting on an object?
- a** an acorn falling from a tree
  - b** a car moving at a constant speed of 55 miles per hour
  - c** a motorcycle changing speed from 50 miles per hour to 70 miles per hour
  - d** a truck slowing down as it approaches a red light

- 2** Instantaneous speed is the rate of motion at an instant in time. If an object's instantaneous speed does not change over time, then \_\_\_\_\_.
- a** the object is quickly speeding up
  - b** the object is very gradually slowing down
  - c** the object is moving at a constant speed
  - d** the object has returned to its beginning position



- 3** The pictures show a large box being pushed in opposite directions by two men. The box changed its position in the room because \_\_\_\_\_.
- a** the opposing forces were balanced
  - b** the smooth floor created no friction
  - c** the man on the left side applied more force than the man on the right side
  - d** the man on the right side applied more force than the man on the left side

**OPEN-RESPONSE QUESTION**

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

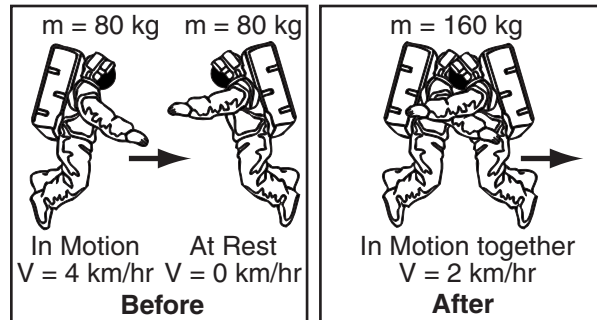
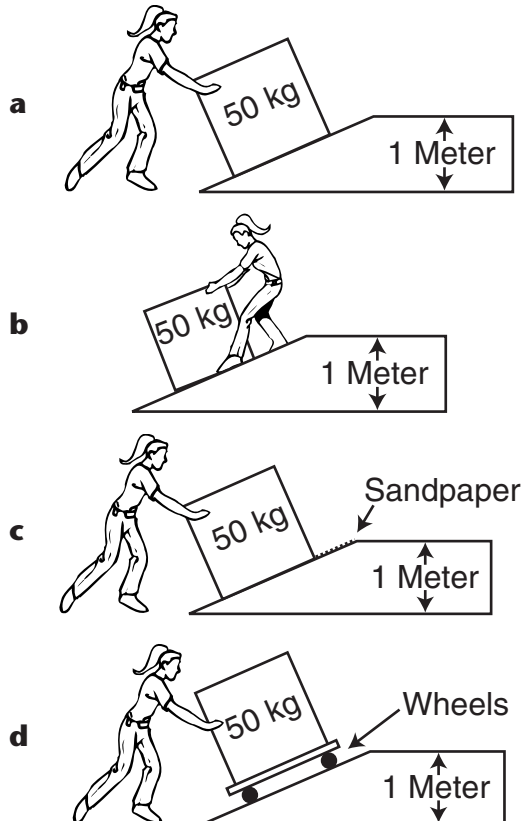
- 4** State Newton's first law of motion.



**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** Which illustration demonstrates how a box could be moved up a ramp with the **least** amount of force?



- 2** According to the illustrations, what happens when two astronauts collide in space?
- a Their kinetic energy increases.
  - b Their velocity increases.
  - c Their momentum is conserved.
  - d Their potential energy increases.
- 3** Which increases when the force applied to an object increases?
- a the acceleration of the object
  - b the force of gravity on the object
  - c the effects of inertia on the object
  - d the velocity of the object

**OPEN-RESPONSE QUESTION**

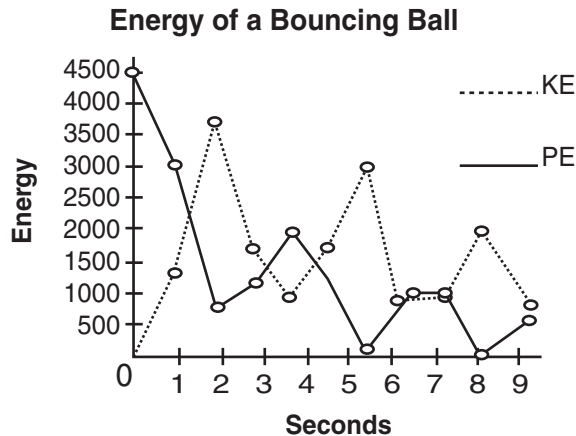
Write your answer to the following question on the lined answer sheet provided by your teacher.

- 4** A bowling ball loses momentum of  $0.5 \text{ kg} \times \text{m/s}$  when it hits some pins. How much momentum did the pins gain?



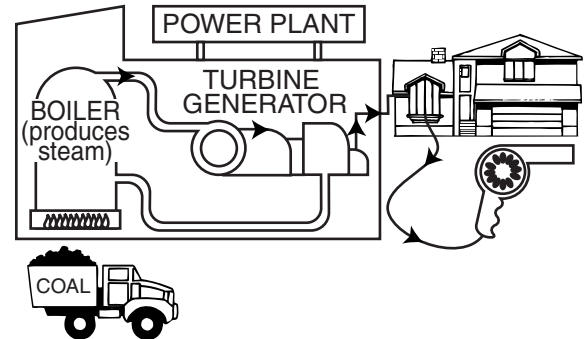
**MULTIPLE-CHOICE QUESTIONS**

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



**1** The **best** conclusion based on the data in the graph is that as the kinetic energy decreases, \_\_\_\_\_.

- a** the ball will stop bouncing
- b** the potential energy will remain unchanged
- c** the potential energy will also decrease
- d** the potential energy will increase

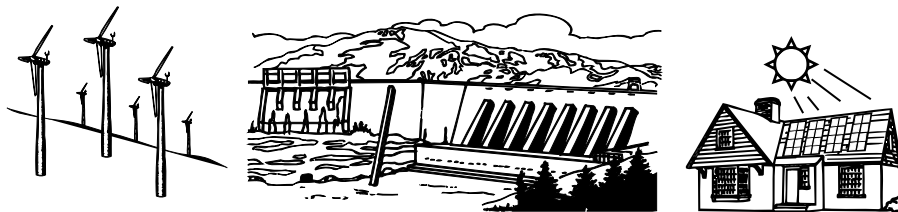


**2** Based on the diagram above, which is the correct sequence of energy changes needed to produce energy for the hair dryer?

- a** Heat → Mechanical → Chemical → Electrical
- b** Chemical → Heat → Mechanical → Electrical
- c** Electrical → Mechanical → Heat → Chemical
- d** Chemical → Mechanical → Heat → Electrical

**OPEN-RESPONSE QUESTION**

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

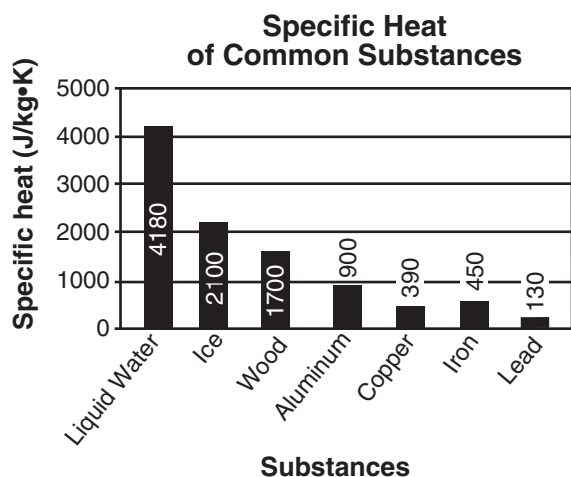


**3** The burning of fossil fuels, such as coal, oil, and natural gas, generates most of the world's electricity. Burning fossil fuels is a major cause of air pollution. The world's supply of fossil fuels is limited. Three alternative methods for generating electricity are pictured above. Explain the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



## 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** The specific heat of a substance is the amount of energy required to raise the temperature of 1 kilogram of that substance 1 kelvin. The **best** conclusion based on the data in the graph is that \_\_\_\_\_.

- a** water requires the least amount of energy to raise its temperature 1K
- b** lead requires more energy than ice to raise its temperature 1K
- c** metals require more energy than nonmetals to raise their temperatures 1K
- d** metals require less energy than nonmetals to raise their temperatures 1K

- 2** Convection is the transfer of energy by the motion of the heated particles in a fluid. Which statement **best** describes an example of convection?
- a** a shirt heated by an iron
  - b** a puddle of rainwater heated by sunlight
  - c** a dark-color car heated by sunlight
  - d** warm air rising in the atmosphere



- 3** Which process is taking place in all three pictures?

- a** conduction                      **c** radiation
- b** boiling                         **d** insulation

- 4** All of the following are methods by which heat energy is transferred from a warmer object to a cooler one EXCEPT \_\_\_\_\_.

- a** conduction                      **c** insulation
- b** convection                      **d** radiation

## OPEN-RESPONSE QUESTION

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

- 5** Kichu has noticed that he feels hotter on humid days than on dry days even when the temperatures are the same. Explain why this happens.



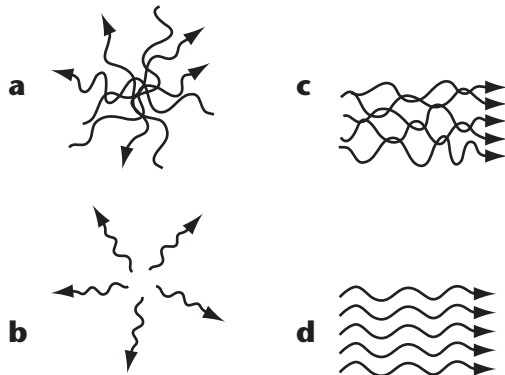
**MULTIPLE-CHOICE QUESTIONS**

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

- 1** The *Hubble Space Telescope* is a remotely controlled observatory that orbits Earth. *Hubble* can detect the light waves that distant stars emit. If a redshift is detected in a star's light emissions, then that star is probably \_\_\_\_\_.

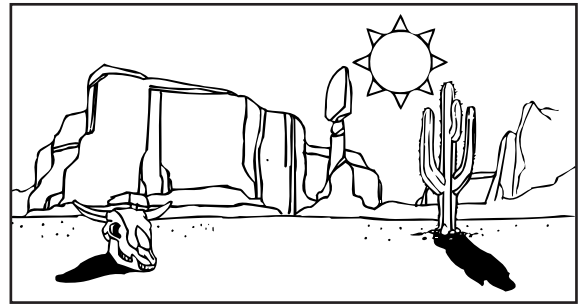
**a** approaching Earth  
**b** too far away to be seen  
**c** moving away from *Hubble*  
**d** emitting light with poor acoustics

- 2** Light rays have direction and can be depicted with arrows. Which of the following shows what coherent light looks like?



- 3** What process causes a plant stem to bend toward the light?

**a** fertilization  
**b** geotropism  
**c** phototropism  
**d** pollination



- 4** What type of plant would be **best** suited to the environment shown above?

**a** a large plant with large leaves  
**b** a small plant with large leaves  
**c** a large plant with no leaves  
**d** a small plant with small leaves

**OPEN-RESPONSE QUESTION**

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

- 5** At one time wetlands were not considered important to the environment. Today, they are recognized as valuable resources. Explain some of the reasons why wetlands are important to the environment.

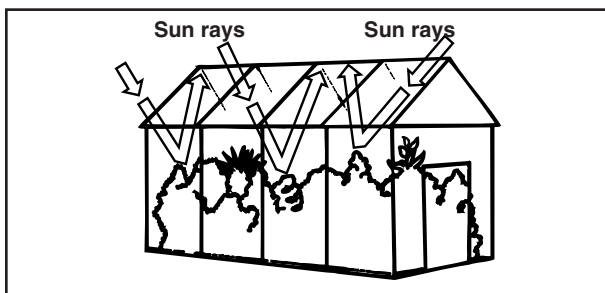


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** The Sun and the star Alpha Centauri shine with about the same brightness, yet the Sun appears to us to be several hundred times brighter than Alpha Centauri. Which is the **most** likely explanation for this?

- a** Alpha Centauri is a larger star than the Sun.
- b** The Sun generates energy through the process of fusion.
- c** The Sun is much closer to Earth than Alpha Centauri.
- d** Light from Alpha Centauri is blocked by the Moon.

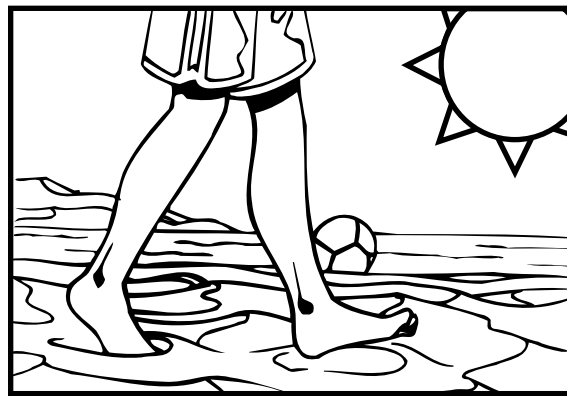


- 2** The illustration shows how a greenhouse traps energy from the Sun. If Earth's atmosphere acted similarly, what would happen to our climate?

- a** Many more plants would grow.
- b** An ice age would occur.
- c** It might get warmer.
- d** Nothing would change.

- 3** Ultraviolet waves from the Sun are known to cause damage to living cells. What protects living things on Earth from these potentially dangerous waves?

- a** carbon dioxide
- b** the ozone layer
- c** chlorofluorocarbons (CFCs)
- d** infrared waves



- 4** What type of energy transfer occurs when the heat in the sand transfers to the person's feet in the illustration above?

- a** convection
- b** conduction
- c** radiation
- d** potential

**OPEN-RESPONSE QUESTION**

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

- 5** The Gibson family lives in Arizona, where the days are warm and sunny all year round. On the side of their house that faces south, they have a solar heating system. This system uses the Sun's energy to heat water for family use. What are some of the benefits of having such a system?





**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** What happens to substances that undergo a chemical change?

- a** keep the same chemical properties
- b** form new substances with different chemical properties
- c** form new substances with the same chemical properties as before
- d** remain the same substance but lose mass

**2** Which is an example of a chemical change?

- a** bending a nail
- b** burning wood
- c** evaporation of water
- d** tearing a piece of paper

**3** Which is an example of a chemical change?

- a** A match lights when struck.
- b** Air is squeezed by a pump and forced into a tire.
- c** A piece of gold is pounded into a large, thin sheet.
- d** A pan of water boils on the stove.

**4** Which property of iron is a chemical change?

- a** magnetic
- b** shiny
- c** rusts
- d** gray

**OPEN-RESPONSE QUESTION**

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

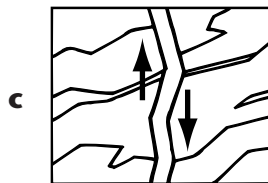
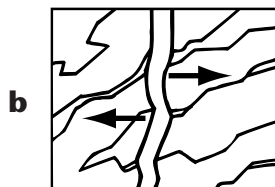
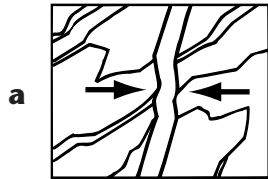
**5** Imagine a car being acted on by unbalanced forces. What do you know about the motion of the car?



**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** Some mountains are formed by the collision of two tectonic plates. Which diagram below shows a situation that would probably result in the formation of such mountains?



- 2** Which is **least** likely to result from seafloor spreading?
- a** magma flowing upward toward cracks
  - b** creation of mid-ocean ridges
  - c** a reversal in the magnetic fields of the north and south poles
  - d** magma cooling and forming solid, new seafloor
- 3** Magma is pushed upwards from the core of Earth and flows through openings called \_\_\_\_\_.
- a** craters
  - b** volcanic holes
  - c** vents
  - d** hot spot
- 4** Which is caused by plate tectonics?
- a** fossilization
  - b** tidal cycles
  - c** seasons
  - d** volcanoes

**OPEN-RESPONSE QUESTION**

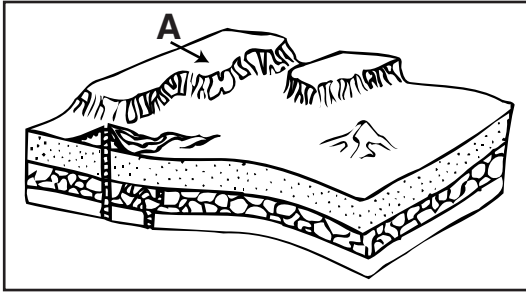
Write your answer to the following question on the lined answer sheet provided by your teacher.

- 5** Discuss the similarities and differences among the three different kinds of faults.



**MULTIPLE-CHOICE QUESTIONS**

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

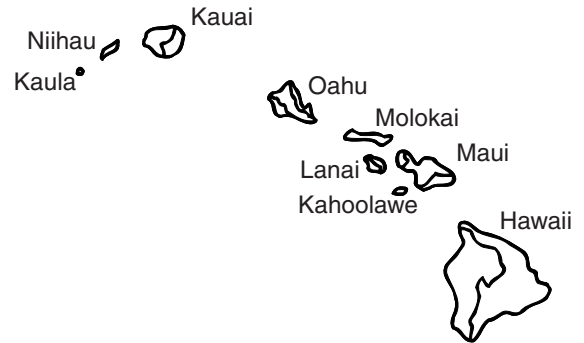


- 1** Structure A in the diagram above is a flat, raised area of land made up of nearly horizontal rocks that have been uplifted by forces within Earth. This structure is called a \_\_\_\_\_.

**a** plain  
**b** plateau  
**c** mountain  
**d** volcano

- 2** Which is an agent of chemical weathering?

**a** ice wedging  
**b** plant growth  
**c** burrowing animals  
**d** oxidation



- 3** The Hawaiian Islands were formed by volcanic activity. The **best** conclusion based on this information is that in the distant future \_\_\_\_\_.

**a** the islands will sink  
**b** the islands will become smaller  
**c** there will be no more volcanic activity  
**d** there will be more islands

**OPEN-RESPONSE QUESTION**

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

- 4** Continental and valley are the two different kinds of glaciers that exist on Earth's surface. Discuss the differences and similarities between them.

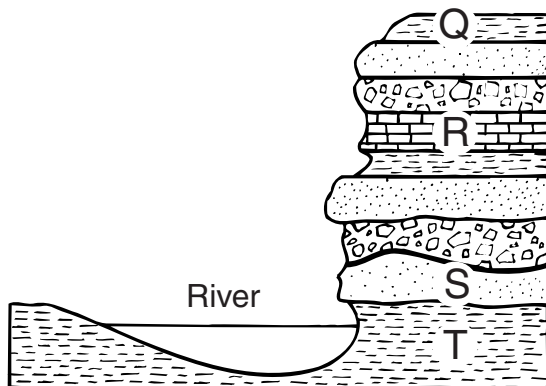


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** Maria observed large crystals in a sample of granite. The large crystals in the sample were **most** likely formed by the \_\_\_\_\_.

- a** compaction and cementation of sediments
- b** weathering and erosion of igneous rock
- c** slow cooling and solidification of magma
- d** application of heat and pressure from overlying rock layers



- 2** The diagram above is a geologic cross-section of an area where a river has exposed a cliff of undisturbed rock layers. According to the diagram, which rock layer is the oldest?

- a** Q
- b** R
- c** S
- d** T

- 3** Most of the minerals found in rocks belong to a group that contains silicon, oxygen, and one or more metals. This group is called the \_\_\_\_\_.

- a** carbonates
- b** ores
- c** oxides
- d** silicates

**Detrital Sedimentary Rocks**

Rock Name	Grain Size	Composition	Appearance
<b>Conglomerate</b>	larger than 0.2 cm	gravel, pebbles	rounded fragments
<b>Sandstone</b>	0.006 to 0.2 cm	sand	fine to coarse
<b>Siltstone</b>	0.004 to 0.006 cm	silt	very fine grain
<b>Shale</b>	smaller than 0.004 cm	clay	compact; splits easily

- 4** According to the table, a sedimentary rock with a grain size of 0.1 cm would have the name \_\_\_\_\_.

- a** conglomerate
- b** sandstone
- c** siltstone
- d** shale

**OPEN-RESPONSE QUESTION**

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

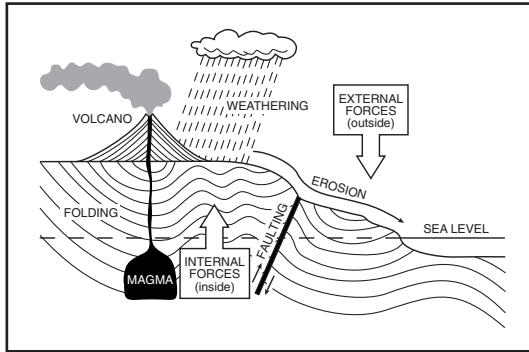
- 5** Max and Gladys are digging at an archeological site. As they dig down through different layers of sedimentary rock, they find all kinds of fossils. Explain how they can figure out which fossils are older and which are younger, using the term *superposition* in your answer. Draw a diagram as part of your explanation.



**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** The figure below shows several natural forces that affect Earth's surface.



Which statement is the best description of the result of these processes?

- a** Earth's surface changes very little over time.
- b** Earth's surface is worn away by external forces and built up by internal forces.
- c** Earth's surface is worn away by internal forces and built up by external forces.
- d** Earth's surface will eventually become flat.

- 2** What process deep within Earth do scientists suggest causes plate movement on Earth's surface?

- a** continental drift
- b** convection currents in the mantle
- c** divergence at plate boundaries
- d** volcanic eruptions

- 3** What causes most changes in local weather conditions?

- a** high-pressure systems
- b** occluded fronts
- c** the formation of cyclones
- d** the movement of air masses

- 4** A violent, whirling windstorm that crosses land in a narrow path is called

a \_\_\_\_\_

- a** hurricane
- b** thunderstorm
- c** tornado
- d** trade wind

**OPEN-RESPONSE QUESTION**

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

- 5** Describe the main factors that contribute to the uneven heating of Earth's surface.



**MULTIPLE-CHOICE QUESTIONS**

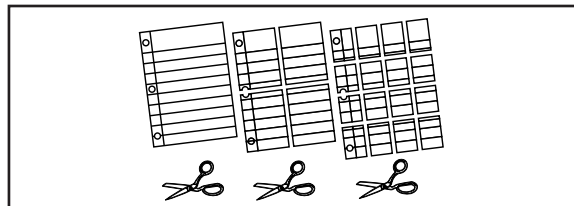
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

**1** How is sodium chloride, NaCl, defined?

- a** element
- b** heterogeneous mixture
- c** homogeneous mixture
- d** compound

**2** When an antacid is dissolved in water, it displays evidence of a chemical change. Which is evidence of a chemical change by dissolving an antacid?

- a** heat
- b** bubbles
- c** color
- d** odor



**3** A student is investigating the law of conservation of mass. Her experiment with paper is shown. What does the law of conservation of mass and the student's experiment suggest about the small pieces of paper?

- a** The pieces can serve as catalyst in most chemical reactions.
- b** The pieces have melting and boiling points that are lower than the full sheet.
- c** The pieces have the same amount of matter as the full sheet.
- d** The pieces have new chemical properties.

**4** Which property of metals make them suitable for cooking utensils?

- a** high melting point
- b** high density
- c** shiny surface
- d** reactivity with water

**OPEN-RESPONSE QUESTION**

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

**5** Chemical reactions are important to living organisms for many reasons. Discuss some examples of chemical reactions on which living organisms depend.

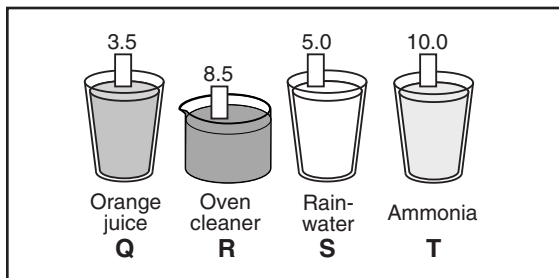


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** A chemist performs a test on an unidentified substance. She finds the substance is made up of only one kind of atom. What is this unidentified substance?

**a** precipitate  
**b** mixture  
**c** element  
**d** compound



- 2** This picture shows different substances being tested for pH. Which lists the substances from most acidic to most basic?

**a** Q, S, R, T  
**b** T, S, R, Q  
**c** Q, R, S, T  
**d** T, R, S, Q

- 3** Earth's atmosphere changed over time and eventually was able to support plant life. Which of these is the **most** likely cause of the change?

**a** Increased volcanic activity produced a lot of nitrogen and carbon dioxide gas.  
**b** Gases from outer space entered Earth's atmosphere.  
**c** Sunlight caused oxygen gas to form in the atmosphere.  
**d** The ozone layer formed, protecting plants from ultraviolet radiation.

- 4** Which causes cold air to move from the land to the water?

**a** sea breeze  
**b** Coriolis effect  
**c** land breeze  
**d** trade winds

**OPEN-RESPONSE QUESTION**

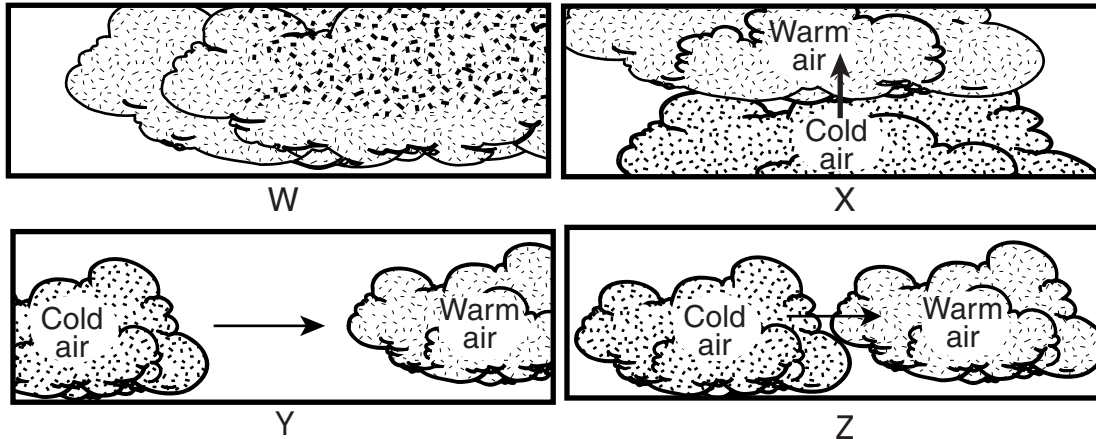
Write your answer to the following question on the lined answer sheet provided by your teacher.

- 5** Without the atmosphere, Earth would be freezing cold and unsuitable for life. Explain how the Sun, atmosphere, and Earth interact in the greenhouse effect to keep us warm. Draw a diagram to help explain your answer.



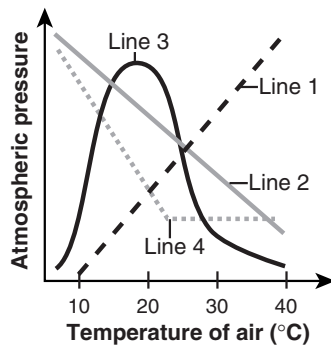
**MULTIPLE-CHOICE QUESTIONS**

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



**1** What is the correct sequence for the formation of a cold front?

- a** W, Y, X, Z      **b** Y, W, X, Z      **c** Y, Z, X, W      **d** Z, X, W, Y



**2** Which line above **best** represents the relationship of temperature to atmospheric pressure?

- a** 1      **c** 3  
**b** 2      **d** 4

**3** Which fact **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.

**OPEN-RESPONSE QUESTION**

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

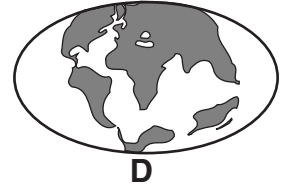
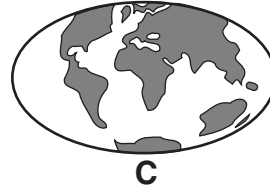
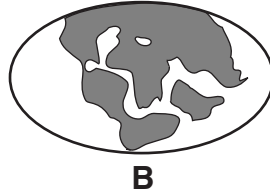
**4** Explain how acid precipitation forms. List the effects of acid precipitation on buildings, wildlife, and plant life.





**MULTIPLE-CHOICE QUESTIONS**

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



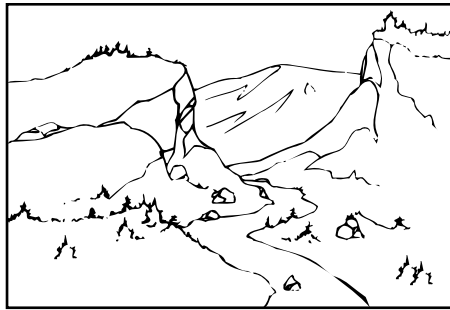
**1** Which lists the continents' positions from earliest to latest?

**a** A, B, C, D

**b** D, C, B, A

**c** C, A, B, D

**d** B, D, C, A



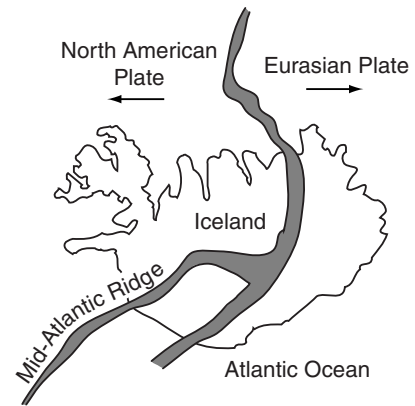
**2** The **most** likely reason that this valley formed was \_\_\_\_\_.

**a** earthquake activity

**b** erosion caused by the stream

**c** a low drainage basin

**d** the low amount of sediment in the stream water



**3** The **most** likely cause of volcanic activity on the island of Iceland is \_\_\_\_\_.

**a** the strength of the Atlantic Ocean's currents

**b** the pulling apart of the tectonic plates

**c** the colliding of the tectonic plates

**d** the pressure of surrounding saltwater

**OPEN-RESPONSE QUESTION**

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

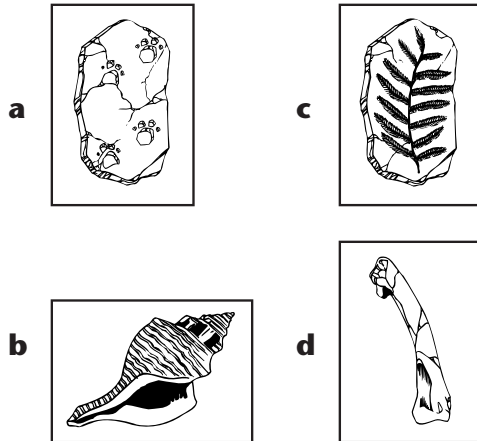
**4** Similar fossils and rock formations have been found in western Africa and eastern South America. Explain how this information can be used to support the theory of plate tectonics.



**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** Which illustration is an example of a trace fossil?



- 2** The horseshoe crab is a species that has lived for a long time without changing very much. What is a possible explanation for this lack of change?

- a** they have few predators
- b** their DNA mutates very rapidly
- c** there are too few horseshoe crabs to evolve
- d** they live in an environment without natural selection

- 3** If genes that coded for proteins in a cell's cilia were mutated, the most likely result would be a problem with the cell's \_\_\_\_\_.

- a** respiration
- b** locomotion
- c** digestion
- d** reproduction

**OPEN-RESPONSE QUESTION**

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

- 4** Over the course of Earth's history, many different organisms have existed, such as cyanobacteria, trilobites, and dinosaurs. Pick one organism, note the era(s) in which it existed, and describe its main characteristics.



**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** Which is believed to cause plate movement?

- a** compression
- b** convection
- c** isostasy
- d** hot-spot volcanims

**2** Which feature is evidence that many continents were at one time near Earth's south pole?

- a** glacial deposits
- b** earthquakes
- c** volcanoes
- d** mid-ocean ridges

**3** The planet Mars has seasons similar to those on Earth. The **most** likely reason for this is \_\_\_\_\_.

- a** Mars is the same distance from the Sun as the Earth
- b** Mars is tilted on its axis in the same way as Earth
- c** Mars is traveling at the same speed as Earth
- d** Mars is the same size as Earth

**4** The Moon is visible to us because the Moon \_\_\_\_\_.

- a** reflects light from the Sun
- b** reflects light from Earth
- c** produces light through fusion
- d** produces light through combustion

**OPEN-RESPONSE QUESTION**

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

**5** A year is defined as the time it takes for a planet to make one revolution around the Sun. Use what you know about the positions of the planets to explain why a year on Mars is nearly twice as long as a year on Earth.



**MULTIPLE-CHOICE QUESTIONS**

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

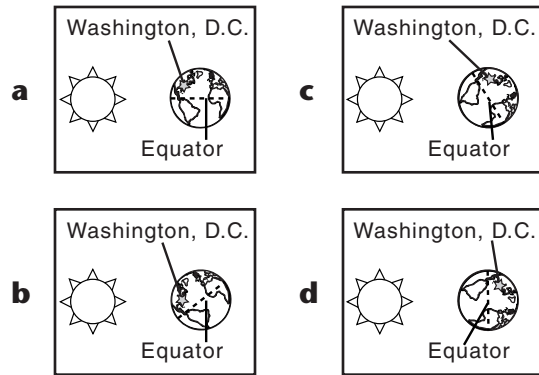
- 1** Which occurs when Earth is positioned directly between the Sun and the Moon, making the Moon invisible to observers on Earth?

**a** a lunar eclipse  
**b** a solar eclipse  
**c** a full moon  
**d** a waxing moon

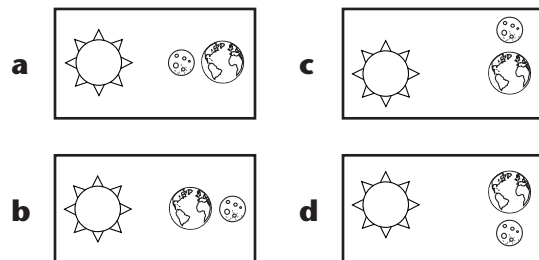
- 2** The gradual change in the length of your shadow over the course of the day is caused by \_\_\_\_\_.

**a** the revolution of Earth around the Sun  
**b** the rotation of Earth on its axis  
**c** the revolution of the Moon around Earth  
**d** the rotation of the Moon on its axis

- 3** Which diagram below depicts an equinox?



- 4** Which diagram below depicts a lunar eclipse?

**OPEN-RESPONSE QUESTION**

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

- 5** Use what you know about the positions of Earth, the Moon, and the Sun to explain why we see different phases of the Moon.



**MULTIPLE-CHOICE QUESTIONS**

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

- |  |   |
|--|---|
| <p><b>1</b> The gravitational pull of the Moon has a greater effect than the pull of the Sun on the tidal changes in Earth's oceans. The <b>most</b> likely reason for this is _____.</p> <ul style="list-style-type: none"><li><b>a</b> the Sun is closer to Earth</li><li><b>b</b> the Moon is closer to Earth</li><li><b>c</b> the Sun is larger than the Moon</li><li><b>d</b> Earth is larger than the Moon</li></ul> <p><b>2</b> Astronauts are much lighter when they walk on the Moon than when they walk on Earth. This is because of _____.</p> <ul style="list-style-type: none"><li><b>a</b> the depth of the Moon's craters</li><li><b>b</b> the light coming from the Sun</li><li><b>c</b> the strength of the Moon's gravity</li><li><b>d</b> the solar winds</li></ul> | <p><b>3</b> During spring tides, high tides are higher than normal and low tides are lower than normal. What is the <b>most</b> likely cause of spring tides?</p> <ul style="list-style-type: none"><li><b>a</b> the Sun, Earth, and Moon forming a right angle</li><li><b>b</b> an increase in wind speed</li><li><b>c</b> the Sun, Earth, and Moon lining up</li><li><b>d</b> an increase in the ocean's salinity</li></ul> <p><b>4</b> Which contributes <b>most</b> to creating low tides?</p> <ul style="list-style-type: none"><li><b>a</b> water density</li><li><b>b</b> gravity</li><li><b>c</b> weak winds</li><li><b>d</b> water evaporation</li></ul> |
|--|---|

**OPEN-RESPONSE QUESTION**

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

- 5** Explain how weightlessness happens in a space shuttle orbiting Earth.



**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** Sodium is a bright, silvery metal. It is soft and highly reactive, and it floats and can ignite spontaneously in water. Chlorine gas is a greenish yellow. The gas acts as an irritant on respiratory and other mucous membranes, and the liquid form will burn the skin. Sodium chloride is a clear, crystalline solid when pure. It is soluble in water and somewhat soluble in other solvents. It is odorless, and it has a characteristic taste.

How do the properties of the elements compare to those of the compound?

- a** The compound is more reactive and dangerous than the elements.
- b** The reactivity of the elements is the same as the compound.
- c** The elements cannot be combined to form the compound.
- d** The elements are more reactive and dangerous than the compound.

- 2** What is a material made up of two or more substances that can be separated by physical means?

- a** compound                      **c** mixture
- b** element                        **d** substance

- 3** The speed of a soccer ball is decreasing as it rolls along on the ground. Which best describes the net force on the soccer ball?

- a** The net force is zero.
- b** The net force is at a right angle to the ball's motion.
- c** The net force is in the same direction as the ball's motion.
- d** The net force is the direction opposite to the ball's motion.

- 4** Which substance can be classified as an element?

- a** carbon dioxide              **c** sulfur
- b** table salt                      **d** ammonia

**OPEN-RESPONSE QUESTION**

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

- 5** Design an experiment to compare properties of sodium chloride and sand.



**MULTIPLE-CHOICE QUESTIONS**

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

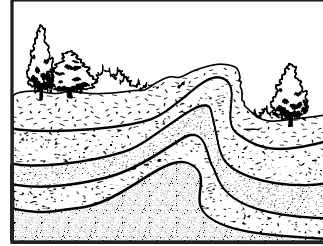
Earth's Tilt (Northern Hemisphere)	Toward Sun    Away from Sun    Toward Sun				
Season	Summer	Fall	Winter	Spring	Summer

**1** According to the chart, when the northern hemisphere of Earth is tilted away from the Sun, the season will be \_\_\_\_\_.

- a** spring
- b** summer
- c** fall
- d** winter

**2** What evidence in rocks support the seafloor spreading hypothesis?

- a** plate movement
- b** magnetic reversals
- c** subduction
- d** convergence



**3** These rock layers are shaped in this manner in response to \_\_\_\_\_

- a** erosion by moving water
- b** nearby volcanoes
- c** compression forces
- d** erosion by glaciers

**4** What is the name of the solid, metallic portion of Earth's interior?

- a** crust
- b** mantle
- c** inner core
- d** outer core

**OPEN-RESPONSE QUESTION**

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

**5** Glaciers are important factors in the erosion of mountain ranges, giving many mountain peaks around the world, especially the Alps, sharp ridges. Describe how glaciers contribute to mountain shaping.



**MULTIPLE-CHOICE QUESTIONS**

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

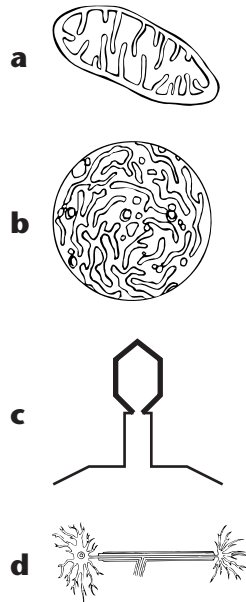
**1** Which two-part organelle is **most** responsible for making the cell's proteins?

- a** mitochondrion
- b** ribosome
- c** recycling organelle
- d** chloroplast

**2** Which structure supplies energy through aerobic respiration?

- a** nucleus
- b** ribosome
- c** endoplasmic reticulum
- d** mitochondrion

**3** Which of these illustrations is an example of a mitochondrion?



**4** During a storm, several butterfly-eating birds were blown to a distant island. The island, which previously had no birds, was filled with butterflies of all colors. One year later, all of the butterflies are dark green and brown. Which will most likely be true in another year?

- a** Mutations will cause different colors of butterflies.
- b** All of the butterflies will be descended from dark green and brown ones.
- c** The birds will evolve to eat the dark green and brown butterflies.
- d** The dark green and brown butterflies will be stronger than before.

**OPEN-RESPONSE QUESTION**

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

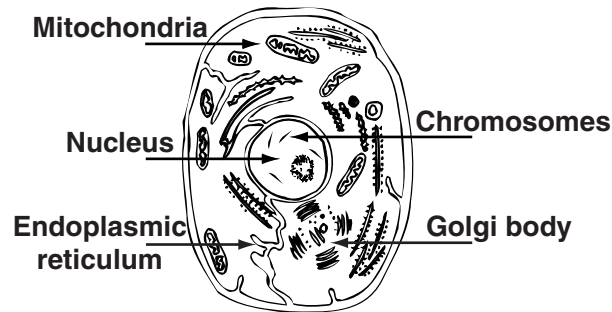
**5** The cells in our bodies can perform many tasks independently. Discuss some of the things that our cells can do alone and some of the things that cells can do that require the entire body.





**MULTIPLE-CHOICE QUESTIONS**

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

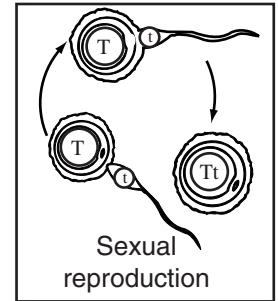
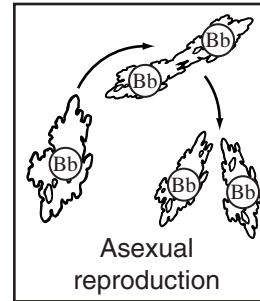


**1** Where in the cell does respiration occur?

- a** endoplasmic reticulum
- b** nucleus
- c** Golgi body
- d** mitochondria

**2** Which lists the stages of mitosis in the correct order?

- a** metaphase, anaphase, prophase, telophase
- b** anaphase, telophase, prophase, metaphase
- c** telophase, anaphase, metaphase, prophase
- d** prophase, metaphase, anaphase, telophase



**3** According to the diagrams, asexual reproduction results in new bacteria whose genetic material is \_\_\_\_\_.

- a** identical to that of the parent
- b** not identical to that of the parent
- c** half-identical to both parents
- d** identical to another parent

**4** Which lists the stages of protein production in the correct order?

- a** mRNA → DNA → rRNA → tRNA
- b** RNA → mRNA → DNA → rRNA
- c** mRNA → DNA → tRNA → rRNA
- d** DNA → mRNA → rRNA → tRNA

**OPEN-RESPONSE QUESTION**

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

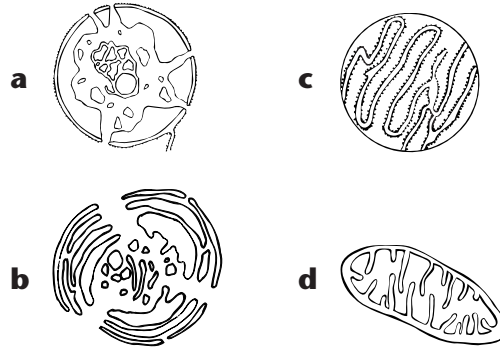
**5** Periodic algal blooms are caused by rapid reproduction of microorganisms in seawater. These microorganisms can produce toxins, which build up in the tissues of other organisms. What are some of the possible effects of algal blooms on the ecosystem, including human beings?



**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** Which illustration below shows an organelle involved in the manufacture of proteins?



- 2** The liver, which is made of a variety of different cell types, helps digest food. The liver is a type of \_\_\_\_\_.  
**a** organelle                      **c** cell theory  
**b** species                        **d** organ
- 3** Plants utilize chlorophyll containing chloroplasts and mitochondria. What is the purpose of mitochondria when a cell already has chloroplasts?  
**a** to store vitamins  
**b** to turn sugars into energy  
**c** to help plants store water  
**d** to fight off infection and disease

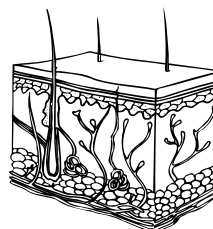
- 4** A group of conservation biologists captures the last few members of an endangered species of turtle. What is the purpose of capturing the last few members of an endangered species?  
**a** to one day reintroduce the species into a restored habitat  
**b** to study the turtles in detail in an isolated research lab  
**c** to move the species out of the way of human activities  
**d** to more easily replace the endangered species with another species.

- 5** All are parts of the lymphatic system EXCEPT the \_\_\_\_\_.  
**a** tonsils                        **c** thymus  
**b** spleen                        **d** kidneys

**OPEN-RESPONSE QUESTION**

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

- 6** The picture illustrates the three layers of skin. Explain the differences among the three layers of skin.

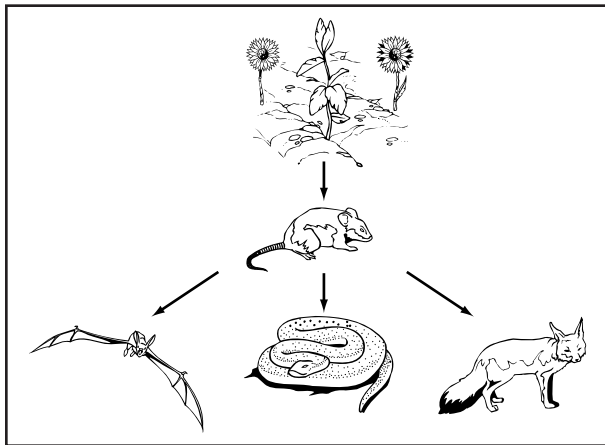
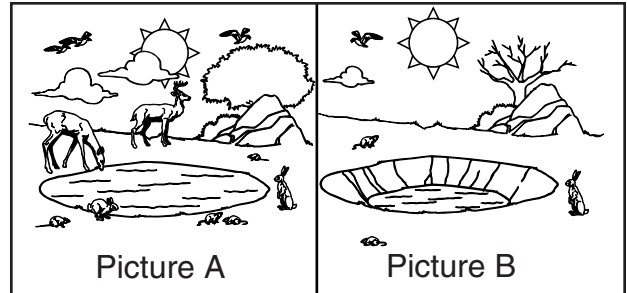


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** The ecosystem in Picture A is healthy while the ecosystem in Picture B is not. What seems to be needed to help the organisms in Picture B survive?

- a** more sunny days
- b** more plants
- c** fewer predators
- d** more wind



- 2** If more mice were added to a region, there would be more food for each of the following EXCEPT \_\_\_\_\_.

- a** plants
- b** snakes
- c** bats
- d** foxes

- 3** Which is the **best** definition of a pioneer species?

- a** Pioneer species are the last organisms to move into an ecosystem.
- b** Pioneer species are usually carnivores.
- c** Pioneer species are the first organisms to move into an ecosystem.
- d** Pioneer species are species found only in the western United States.

**OPEN-RESPONSE QUESTION**

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

- 4** In an ecosystem, there are plants, herbivores (plant eaters), and carnivores (meat eaters). Explain how all of these organisms are dependent on plants for food, even if they don't eat plants themselves. Draw a food chain as part of your explanation.



**MULTIPLE-CHOICE QUESTIONS**

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

- |   |   |
|---|---|
| <p><b>1</b> In general, stamens are important parts of a plant because they _____.<br/><b>a</b> provide food for the seed<br/><b>b</b> attract insects<br/><b>c</b> aid in reproductions<br/><b>d</b> absorb water from the ground for the plant</p> <p><b>2</b> Reptiles have scales that cover their skin. These scales help reptiles by _____.<br/><b>a</b> increasing water absorption<br/><b>b</b> maintaining internal body temperature<br/><b>c</b> reducing water loss<br/><b>d</b> increasing oxygen exchange</p> <p><b>3</b> If the blood contains too little or too much glucose, the endocrine system will respond by increasing or decreasing the glucose level. The endocrine system is a (an) _____.<br/><b>a</b> positive feedback system<br/><b>b</b> equilibrium feedback system<br/><b>c</b> negative feedback system<br/><b>d</b> neutral feedback system</p> | <p><b>4</b> When the temperature becomes too hot, many amphibians become inactive and hide in the ground. What is the purpose of this behavior?<br/><b>a</b> to seek food<br/><b>b</b> to raise their body temperature<br/><b>c</b> to protect their skin from the Sun's rays<br/><b>d</b> to lower their body temperatures</p> <p><b>5</b> During the winter when temperatures drop, many animals' body temperatures and breathing rates greatly reduce. This behavior is _____.<br/><b>a</b> migration                      <b>c</b> hibernation<br/><b>b</b> courtship                      <b>d</b> submission</p> <p><b>6</b> Which <b>best</b> explains why many birds and mammals migrate during the winter?<br/><b>a</b> to escape predators<br/><b>b</b> to reproduce in a more favorable environment<br/><b>c</b> to find a better environment in which to settle permanently<br/><b>d</b> to find a more favorable environment in which to hibernate</p> |
|---|---|

**OPEN-RESPONSE QUESTION**

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

- 7** Animal behavior is either innate or learned. Discuss the similarities and differences between innate and learned behavior. Provide some examples of each type of behavior. How does each benefit animals?



**MULTIPLE-CHOICE QUESTIONS**

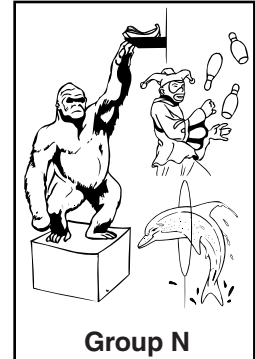
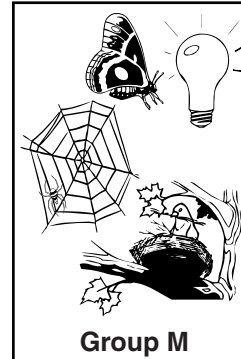
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 1** Awinita wanted to see if she could condition her dog to wag his tail upon hearing the doorbell. First, she pet her dog affectionately for two minutes without ringing the doorbell. She then started ringing the doorbell constantly but didn't touch her dog at all. Awinita's conditioning could be improved by \_\_\_\_\_.

- a** measuring the duration of time for each bell ring
- b** ringing the doorbell while petting the dog
- c** only petting the dog for intervals of ten seconds
- d** ringing the doorbell and then petting the dog consistently for ten minutes

- 2** In general, learning benefits animals **most** by \_\_\_\_\_.

- a** increasing their innate behavior
- b** decreasing their conditioned behavior
- c** increasing their chances of survival
- d** decreasing their insightful behavior

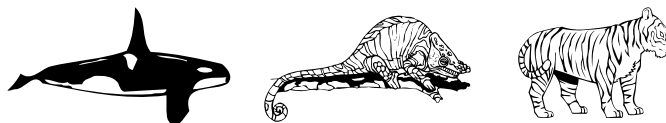


- 3** The pictures in Group M are different from the pictures in Group N because only the pictures in Group M are all of animals exhibiting \_\_\_\_\_.

- a** learned behavior
- b** insightful behavior
- c** instinctual behavior
- d** conditioned behavior

**OPEN-RESPONSE QUESTION**

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



- 4** Animals have different kinds of adaptations for escaping predators and for hiding themselves as predators. Discuss some of the different adaptations that the animals pictured above have in order to protect themselves.



**MULTIPLE-CHOICE QUESTIONS**

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

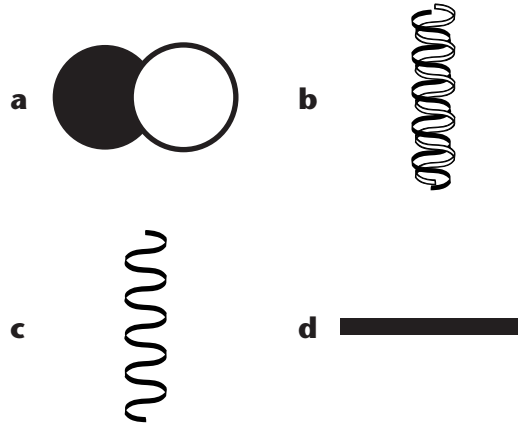
**1** Which does not result in offspring that are identical to the parent?

- a** budding
- b** asexual reproduction
- c** sexual reproduction
- d** fission

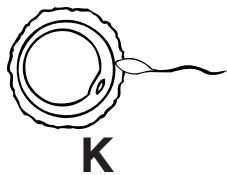
**2** Which is responsible for reproduction in seedless plants?

- a** flowers
- b** roots
- c** spores
- d** beans

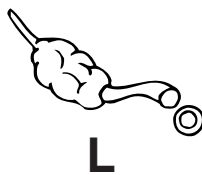
**3** In 1953, scientists Watson and Crick made an accurate model of a DNA molecule. Which represents this shape?



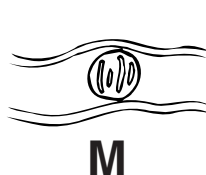
Fertilization



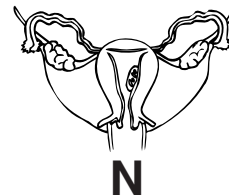
Ovulation



Zygote Formation



Embryo Development



**4** Which is the order of stages of the human reproduction cycle?

- a** L, K, M, N
- b** K, L, M, N
- c** K, M, L, N
- d** L, N, M, K

**OPEN-RESPONSE QUESTION**

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

**5** The human eye detects light using specialized cells that look like rods and cones. What is the difference between the function of a rod and the function of a cone?



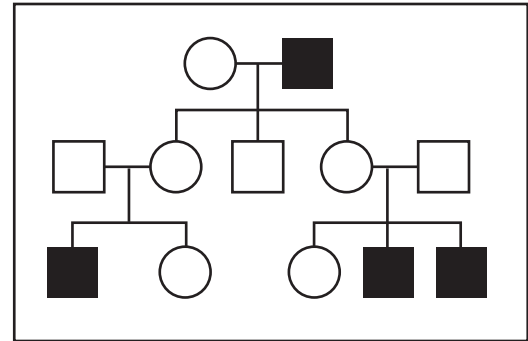
**MULTIPLE-CHOICE QUESTIONS**

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

**Record of Fruit Fly Experiment**

Male Eye Color	Female Eye Color	Number of Offspring	
		Red Eyes	White Eyes
red	red		
white	red		
red	white		
white	white		

- 1** The chart above was made to record data from an experiment investigating inherited traits in fruit flies. This experiment probably tests which hypothesis?
- a** Females with white eyes lay eggs sooner than females with red eyes.
  - b** Eye color is controlled by a sex-linked gene.
  - c** Females with red eyes do not lay eggs.
  - d** White-eyed females only breed with white-eyed males.



- 2** What can you conclude about the trait followed in the pedigree above?
- a** It is incompletely dominant in every other generation.
  - b** It is coded for a sex-linked gene.
  - c** It only affects females.
  - d** The trait shows polygenic inheritance.

- 3** Maria Rosa crossbreeds two plants, one with dark blue flowers and one with white flowers. Weeks later she discovers that the offspring plants have light blue flowers. Maria Rosa determines that the \_\_\_\_\_.
- a** dark blue flower allele is dominant
  - b** light blue flower allele is dominant
  - c** dark blue flower allele is incompletely dominant
  - d** light blue flower allele is completely recessive

**OPEN-RESPONSE QUESTION**

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

- 4** A gardener crossbreeds his red rosebush with his white rosebush and gets new rosebushes with ten different shades of red, white, and pink. Explain how this happened.



**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** Which is the **best** way to determine whether snakes evolved from fish?

- a** Analyze their tissues with radioactive dating.
- b** Apply Lamarck's theory of acquired characteristics.
- c** Compare their skeletons.
- d** Compare each organism's DNA.

**2** During a storm, several butterfly-eating birds were blown to a distant island. The island, which previously had no birds, was filled with butterflies of all colors. One year later, all the butterflies are dark green and brown. Which is the **most** likely explanation for the change in the butterfly population?

- a** Gradualism is selecting against red, yellow, and blue butterflies.
- b** Natural selection favored the dark green and brown butterflies.
- c** Primates likes to eat all the other butterflies.
- d** A genetic mutation led to punctuated equilibrium.

**3** Which statement **best** explains how natural selection occurs?

- a** Natural selection occurs when adaptations help an organism reproduce and survive.
- b** Natural selection occurs when organisms are geographically isolated.
- c** Natural selection occurs when an organism's offspring grow vestigial structures.
- d** Natural selection occurs when characteristics from the parent organisms are inherited.

**OPEN-RESPONSE QUESTION**

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

**4** Natural selection favors organisms with helpful adaptations. Discuss how one well-adapted organism can give rise to a new species.





**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** The breakdown of carbohydrates into carbon, hydrogen, and oxygen during digestion is sped up by proteins called

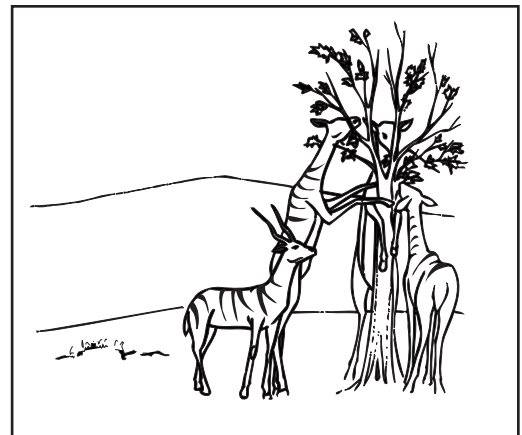
**a** enzymes.  
**b** lipids.  
**c** peristalsis.  
**d** vitamins.

- 2** Which **best** describes the order of events and actions sometimes involved in wildlife management?

**a** threatened species → captive species → endangered species → reintroduction  
**b** captive species → threatened species → endangered species → reintroduction  
**c** environmental change (forest fire) → endangered species → captive species → reintroduction  
**d** threatened species → reintroduction → endangered species → captive species

- 3** What characteristic will help the deer be successful in the habitat pictured?

**a** their stripes  
**b** their long necks  
**c** their dark color  
**d** their small tails

**OPEN-RESPONSE QUESTION**

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

- 4** 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?



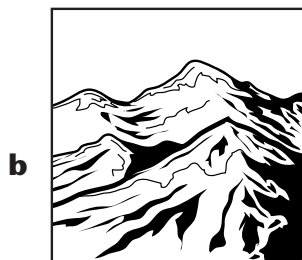
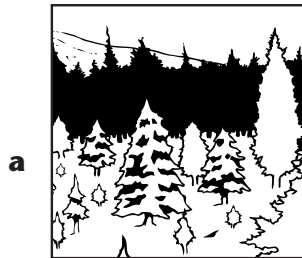
**MULTIPLE-CHOICE QUESTIONS**

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

- 1** Which statement **best** explains what a population is?
- a** A population is all of the animals in a habitat.
  - b** A population is all of the carnivores in an ecosystem.
  - c** A population is all of the animals of one specific species in an ecosystem.
  - d** A population is all of the animals that an ecologist can count in a habitat.

- 2** Which is the major characteristic of climax communities?
- a** a place that has animals and plants that have reached a stable stage
  - b** succession that begins in a place that does not have any soil and did not ever support living organisms
  - c** a place that contains multiple varieties of lichens
  - d** succession that begins in a place that already has soil and was once the home of living organisms

- 3** Which illustrates an ecosystem with the greatest amount of biodiversity?

**OPEN-RESPONSE QUESTION**

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

- 4** A family of rabbits finds a new field of grass to live in. At first they live, eat, and reproduce easily. Explain what will happen to this rabbit population's size and growth rate after some time in the new habitat. Draw a graph of the population over time as part of your answer.

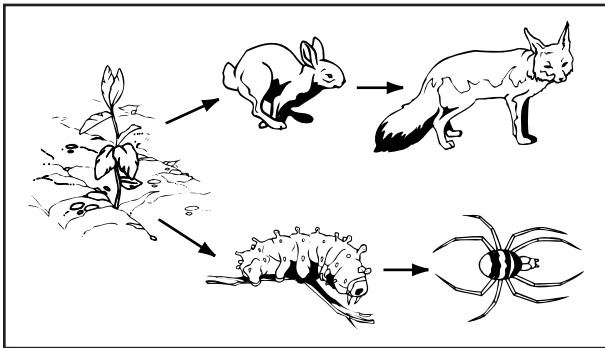


**MULTIPLE-CHOICE QUESTIONS**

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

**1** Which is a decomposer?

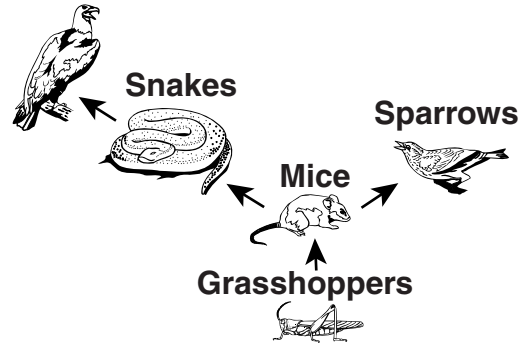
- a mushroom
- b grass
- c cricket
- d fish



**2** Which organism in the food web shown above is a herbivore?

- a plant
- b caterpillar
- c spider
- d fox

**Eagles**



**3** Based on the diagram above, which statement is true?

- a Energy transfers from sparrows to grasshoppers.
- b Energy transfers from eagles to snakes.
- c Energy transfers from grasshoppers to mice.
- d Energy transfers from snakes to mice.

**4** Which sentence gives the **best** definition of a parasite?

- a Parasites live in or on another organism.
- b Parasites live in the wild in groups of two.
- c Protists with flagella are called parasites.
- d All parasites cause diseases.

**OPEN-RESPONSE QUESTION**

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

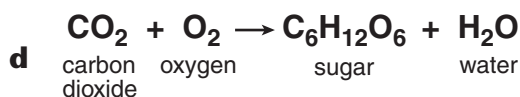
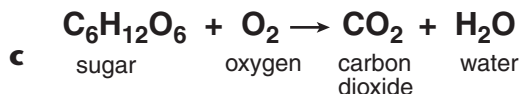
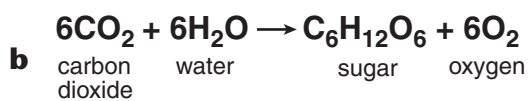
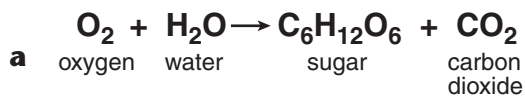
**5** Animals rely on their habitats for food and shelter. Sometimes habitats are lost or divided. Discuss the impact of both habitat loss and of habitat division on animals.



## MULTIPLE-CHOICE QUESTIONS

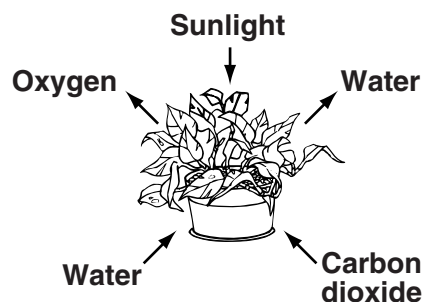
Choose the best answer for each of the following questions. Mark your answers on the answer sheet provided by your teacher.

- 1** Margareta has learned that plants take in water ( $\text{H}_2\text{O}$ ) and carbon dioxide ( $\text{CO}_2$ ) to produce sugar ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) and give off oxygen ( $\text{O}_2$ ). Which chemical equation represents photosynthesis?



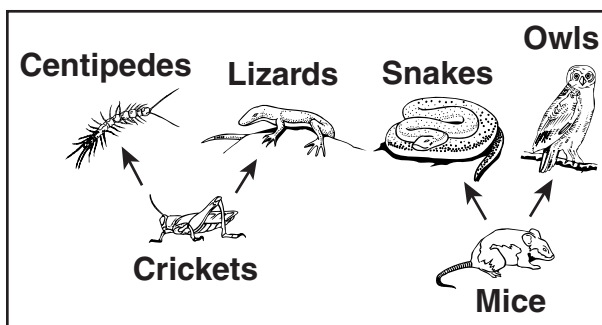
- 2** Plants consist of many structures. Which structure is **most** involved during photosynthesis?

- a** xylem  
**b** cambium  
**c** chloroplasts  
**d** roots



- 3** Which statement **best** describes the diagram above?

- a** Plants absorb oxygen.  
**b** Plants release carbon dioxide.  
**c** Plants take in but do not release water.  
**d** Plants release oxygen.



- 4** Based on the diagram above, if all of the centipedes disappeared, which species would benefit **most**?

- a** snakes                    **c** lizards  
**b** mice                    **d** owls

## OPEN-RESPONSE QUESTION

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

- 5** Many people are concerned that Earth's rain forests are being cut down more quickly than they can be replaced. Based on your knowledge of the role that plants play in the global oxygen-carbon dioxide cycle, what effect might this loss of plants have?

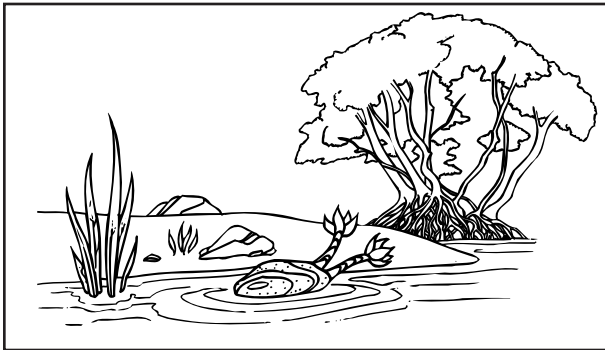
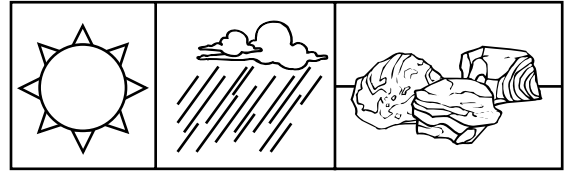


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** Which is a major characteristic of abiotic features?

- a** They are all nonliving.
- b** They are in all ecosystems.
- c** They are necessary for life.
- d** They are impossible to measure.

**Abiotic Features of Ecosystems**

- 2** The picture shows a sprouted mangrove seed floating away from a mangrove swamp in an ocean current. Ocean currents benefit the mangrove species **most** by \_\_\_\_\_.

- a** drowning its sprouted seeds
- b** providing fresh water for the seeds to grow
- c** spreading its sprouted seeds to new coastal areas
- d** making it easier for seagulls to eat its sprouted seeds



- 3** Which would **most** likely grow first in the habitat above?

- a** green algae
- b** red maple trees
- c** orchids
- d** mosses

**OPEN-RESPONSE QUESTION**

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

- 4** Food webs are composed of predators and prey. In a food web, are there more predators or prey? Give a short explanation for your answer.

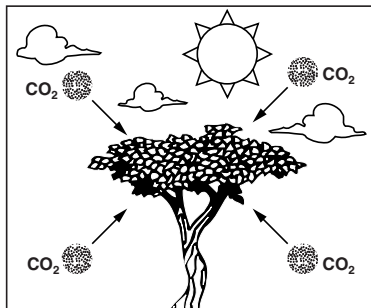
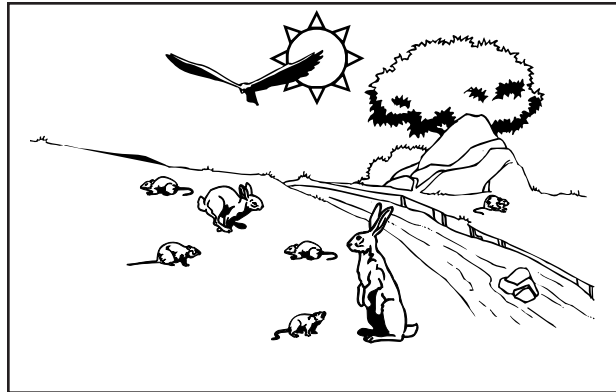


**MULTIPLE-CHOICE QUESTIONS**

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

- 1** A limiting factor is something that limits the size of a population in an ecosystem. Which could be a limiting factor for the rabbits in the picture?

- a** number of edible plants
- b** human homes and buildings
- c** lack of water
- d** cloudy weather



- 2** According to the diagram above, which statement about trees is the **most** accurate?
- a** They release carbon dioxide into the atmosphere.
  - b** They use sunlight to clean the air.
  - c** They do not play a role in the carbon dioxide cycle.
  - d** They help reduce the amount of carbon dioxide in the air.

- 3** Most of the electrical energy used by a toaster is converted to \_\_\_\_\_.

- a** heat energy
- b** light energy
- c** mechanical energy
- d** chemical energy

- 4** A local network of plants, animals, and the surrounding environment is called

- a** a biosphere.
- b** an ecosystem.
- c** a symbiosis.
- d** nature.

**OPEN-RESPONSE QUESTION**

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

- 5** What is the source of energy in the water cycle?











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