Do NOT Affix Student ID Label Here

A

Student Name _____

School Name _____

LEA Number _____

MCAP
Maryland Comprehensive Assessment Program

Grade 5

MISA

Practice Test

B

Last Name	First Name	MI

C

Place the Student ID Label Here

D Gender

○ Female ○ Male ○ Non-Binary

E Date of Birth

Day	Month	Year
0 0 1 1 2 2 3 3 4 5 6 7 8 9	○ Jan ○ Feb ○ Mar ○ Apr ○ May ○ Jun ○ Jul ○ Aug ○ Sep ○ Oct ○ Nov ○ Dec	0 1 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 9 9 9

School Use Only

F SASID

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SERIAL #

Section 1

Directions:

Today, you will take Section 1 of the MISA Practice Test.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your test book. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely.

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Read all of the information. Use the information to answer the questions.

After observing a flower garden outside the school, a science class discussed what plants need to grow and set up an investigation with the help of the teacher. The students added compost, organic matter used to help plants grow, to the soil. They then planted the seeds of five different plants. The students made sure the soil was watered each day. After a few weeks, the plants started to sprout, and the students observed the growth of each plant. A diagram of the school garden is shown.

THE SCHOOL GARDEN

Lettuce Radishes Carrots Cucumbers Flowers

Once a week, the students recorded their observations about the garden in their journals. When the plants were fully grown, the students took the plants out of the soil, rinsed them off with water, and had a garden day. During garden day, other students from the school were invited to view the fully grown plants.

GO ON ▶

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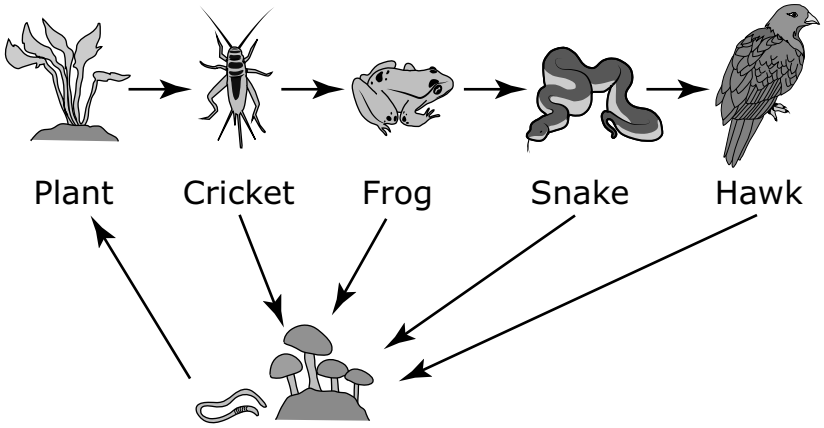
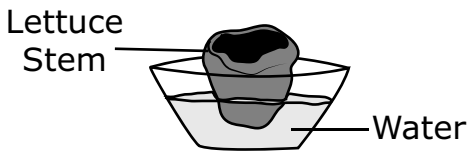
After the plants started to grow, the students noticed organisms that were not there before the garden was planted. The students learned that over time the garden had become a small ecosystem. To demonstrate the flow of energy in the garden ecosystem, the students drew a diagram and included decomposers found in the compost, producers, and consumers as shown.

ENERGY FLOW IN A GARDEN ECOSYSTEM

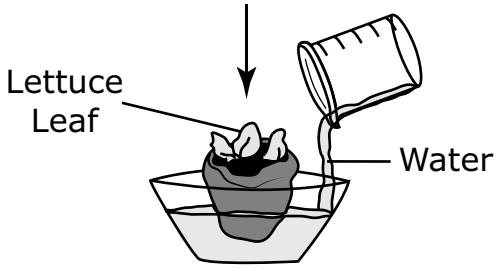


After the students rinsed off the fully grown lettuce, the teacher explained that some plants, such as lettuce, can be regrown from cuttings. The teacher then cut the lettuce, keeping the stem, and placed it in a bowl of water on a windowsill. The students added water to the bowl once a day for ten days. During that time, the lettuce started to sprout new leaves.

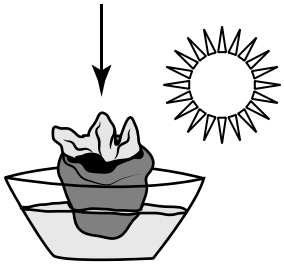
HOW TO REGROW LETTUCE



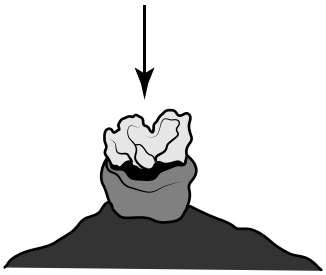
Place the stem of the lettuce in a bowl of water with the top exposed to air.



Add water every day.



Keep the bowl in a sunny area.



Once the lettuce sprouts, plant it in the school garden.

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After the lettuce sprouted, the teacher took the lettuce to the school garden and planted it so that the lettuce plant could continue to grow until it was ready to be picked. The students then recorded in their journals the materials needed to recycle lettuce plants and how the lettuce plants can be recycled.

1 The compost in the school garden contained pieces of nonliving plants.

The plant matter was <u>most likely</u> placed in the compost to be

Ⓐ eaten by the crickets.

Ⓑ used as shelter by the snakes.

Ⓒ used as nutrients for the hawk.

Ⓓ broken down by the decomposers.

2 A student observed a caterpillar eating a leaf in the garden.

If the student placed the caterpillar into the garden ecosystem diagram, the caterpillar would replace

Ⓐ the plant as a producer.

Ⓑ the cricket as a producer.

Ⓒ the plant as a consumer.

Ⓓ the cricket as a consumer.

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3 The students included decomposers in the garden ecosystem diagram to show that decomposers have important roles in the garden ecosystem.

Identify the roles of decomposers.

Select <u>two</u>.

Ⓐ eat plant roots

Ⓑ compete with plants for soil

Ⓒ remove nutrients from the soil

Ⓓ recycle material back into the soil

Ⓔ break down plant and animal remains

4 The lettuce plant grew new leaves after the teacher placed it in the bowl of water in the classroom.

The students claimed the plant grew new leaves because the plant

Ⓐ can survive and grow anywhere.

Ⓑ was away from insects and other animals in the garden.

Ⓒ needed a different temperature than the outside garden.

Ⓓ received the materials it needed from water, air, and sunlight.

5 One of the students claimed that the lettuce did not have to be planted in the garden to survive.

Which statement provides evidence that supports this claim?

Ⓐ The lettuce grew in the garden.

Ⓑ The lettuce in the classroom sprouted new leaves.

Ⓒ The students watered the lettuce in the classroom.

Ⓓ The students saw insects and other animals in the garden.

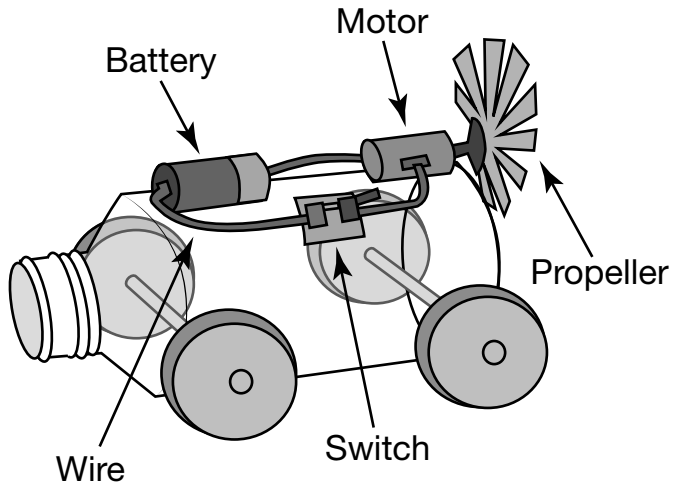
6 **Use evidence from the energy flow diagram to describe how matter is cycled through the garden ecosystem. In your description, be sure to include the roles of the organisms.**

Write your response on the lines provided.

Read all of the information. Use the information to answer the questions.

While investigating the different forms of energy during science class, a group of students constructed a circuit using a battery, switch, and wires connected to a light bulb in order to cause the light bulb to light up. This led the students to pose questions as to whether a similar design could be used to produce different forms of energy to move objects, make sound, or give off heat.

After researching the different forms of energy, the students decided to build a motorized toy car. For the investigation, the students constructed the toy car using a recycled water bottle, wheels from another toy, a battery, switch, wires, and a motor attached to a propeller. During the investigation, the students constructed the car by attaching the wheels to the water bottle and securing the battery and wires, motorized propeller, and switch on the top, as shown in the following diagram.



The students predicted that if they completed the circuit correctly, the propeller would spin and the toy car would be propelled forward.

GO ON ▶

7 In their journals, the students described the transfer of energy needed to cause the propeller to spin.

The best description of the transfer of energy needed to make the toy car move is

Ⓐ heat energy is converted to sound energy.

Ⓑ electrical energy is converted to light energy.

Ⓒ heat energy is converted to the energy of motion.

Ⓓ electrical energy is converted to the energy of motion.

8 Select the three statements that best identify the role of the battery, motor, and switch in the circuit.

Ⓐ The battery provides the energy of motion to the propeller.

Ⓑ The battery provides the energy to the circuit.

Ⓒ The motor provides the energy to the circuit.

Ⓓ The motor provides the energy of motion to the propeller.

Ⓔ The switch provides the energy to the circuit.

Ⓕ The switch opens and closes the circuit.

9 Which observation about the final designed toy car provides evidence that the switch controls the flow of the electrical current?

Ⓐ The car does not move when the switch is open.

Ⓑ The car does not move when the switch is closed.

Ⓒ The shape of the switch handle does not affect how far the car moves.

Ⓓ The length of the switch handle does not affect how far the car moves.

10 The data collected on the results of this investigation and the pictures of the toy car will be posted on the school Web site.

The results will <u>most likely</u> show that the toy car moved as a result of

Ⓐ the motor charging the battery.

Ⓑ the battery providing energy to the motor.

Ⓒ the motor providing chemical energy to the propeller.

Ⓓ the battery changing electrical energy into chemical energy.

11 Which statement provides the <u>best</u> evidence that energy is being transferred in the toy car investigation?

Ⓐ The propeller did not move.

Ⓑ The students saw light.

Ⓒ The switch was open.

Ⓓ The car moved.

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12 Use evidence from the investigation to explain why the provided materials were used to construct the toy car.

Write your response on the lines provided.

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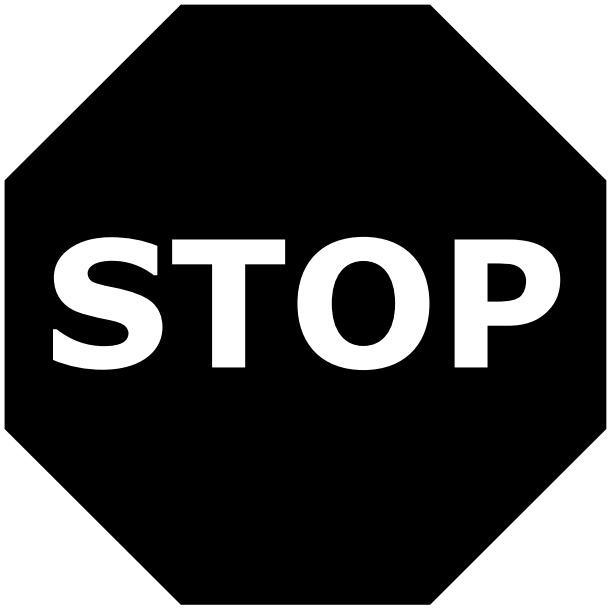

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STOP

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SERIAL #

Section 2

Directions:

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GO ON ▶

Read all of the information. Use the information to answer the questions.

While completing research for the school science fair, a student found the following information on Earth's four major systems. These systems, the hydrosphere, geosphere, atmosphere, and biosphere, are so closely connected that a change in one sphere often results in a change in one or more of the other spheres. The student started the research by looking at a table on the amount of fresh water on Earth, shown as follows.

FRESH WATER ON EARTH

Glaciers and Ice Caps	Groundwater	Rivers, Lakes, and Other
69%	30%	1%

Fresh water is only 3% of the water found on Earth. The remaining 97% of water on Earth is salt water. The salt water on Earth contains varying concentrations of salt.

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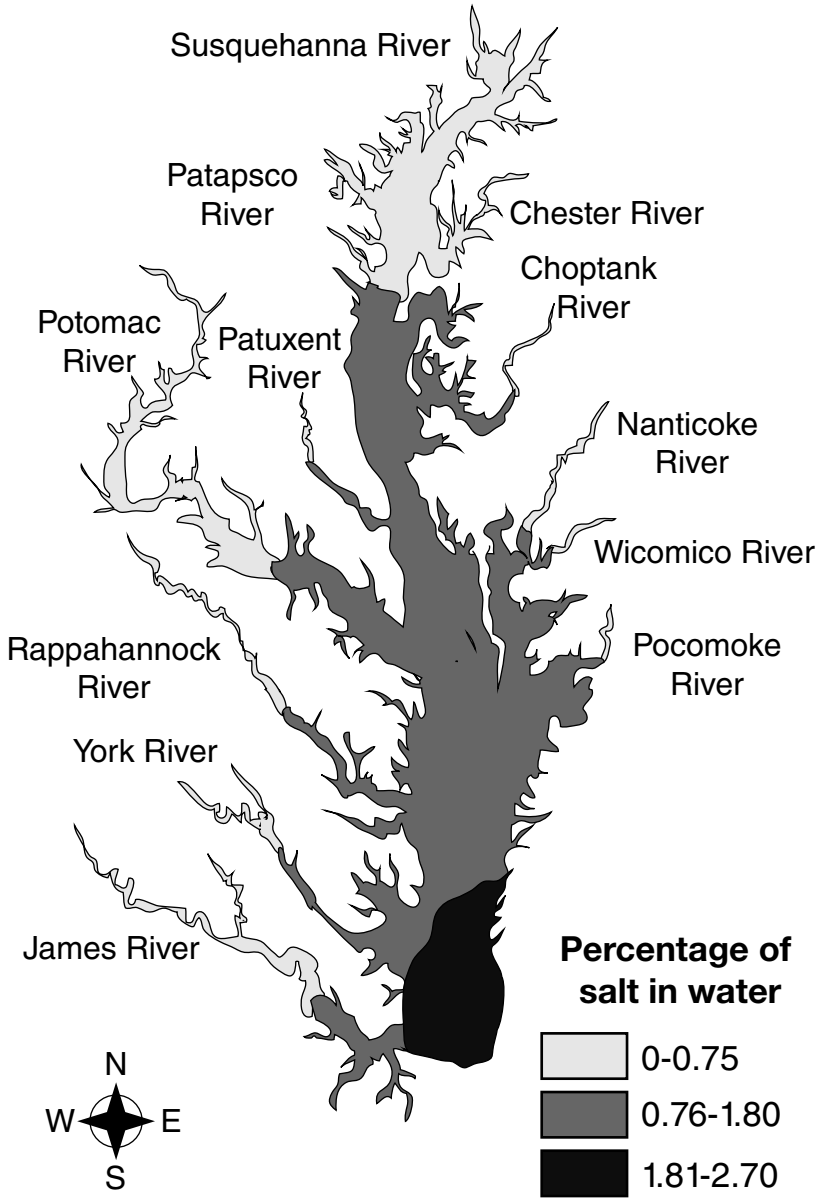
The student decided to continue to research and develop a model of how these systems interact in the Chesapeake Bay watershed. The student discovered that the percentage of salt is the greatest at the mouth of the bay, where the salty ocean waters enter the bay. The student's model of the percentage of salt in the Chesapeake Bay watershed is shown.

CHESAPEAKE BAY WATERSHED



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There are also hundreds of thousands of creeks, streams, and rivers in the Chesapeake Bay watershed. These tributaries send fresh water into the bay. They send about 51 billion gallons of fresh water into the bay each day. Therefore, the majority of the water in the middle of the bay is a mixture of salt and fresh water. The water at the northernmost area of the bay is fresh water. This makes the average amount of salt in the water in the Chesapeake Bay vary from 0% to 2.7% compared to ocean water, which is about 3.5% salt.

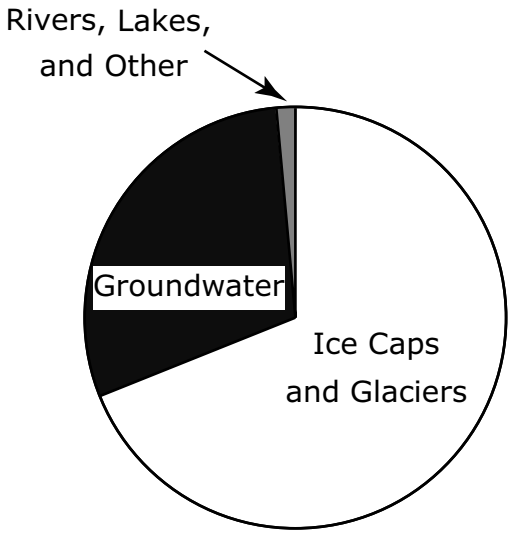
Another contributing factor the student discovered is that the salt content in the Chesapeake Bay watershed is affected by rocks eroded by rain. The salts from these rocks wash into the watershed. Volcanoes and vents in the ocean floor also contribute salt content to Earth's water supply. During certain seasons and weather events when there is less precipitation and more evaporation, the amount of salt in the water on Earth can be greater.

Some organisms have adapted to living in salt water, and some in fresh water. For example, blue crabs can survive in a wide range of salt concentrations; however, during times when there is a greater amount of salt entering the bay, female crabs tend to migrate toward the higher-salinity waters near the mouth of the watershed. Other bay organisms such as water stargrass grow best in fresh water, while eelgrass grows in saltier areas.

GO ON ▶

1 The student used the data to construct a circle graph on the amount of fresh water on Earth, shown below.

FRESH WATER ON EARTH



The student would <u>most likely</u> use the graph as evidence to support an argument that the greatest amount of Earth's fresh water is

Ⓐ found in lakes.

Ⓑ found in rivers.

Ⓒ trapped in glaciers.

Ⓓ buried underground.

2 While doing research over several months, students recorded the changes in the Chesapeake Bay watershed salt concentrations that were most likely caused by rockslides.

A rockslide would <u>most likely</u> affect the Chesapeake Bay watershed when

Ⓐ the geosphere decreases the amount of salt found in the hydrosphere.

Ⓑ the geosphere increases the amount of salt found in the hydrosphere.

Ⓒ the atmosphere increases the amount of salt found in the biosphere.

Ⓓ the atmosphere decreases the amount of salt found in the biosphere.

3 The student's model of the Chesapeake Bay watershed would most likely show changing amounts of salt in the water over time.

During this time, the atmosphere will interact with the bay, making it necessary to change the amount of salt in the student's model by

Ⓐ increasing the amount of fish in the bay, which increases the amount of salt.

Ⓑ indicating that rockslides add minerals to the bay, increasing the amount of salt.

Ⓒ indicating that summer heat increases evaporation in the bay, which increases the amount of salt.

Ⓓ increasing the amount of freshwater snowmelt reaching the bay in winter, which decreases the amount of salt.

GO ON ▶

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4 Part A

The student's research provides evidence that the primary sources of salt in the Chesapeake Bay watershed are from a combination of the following two systems:

Ⓐ biosphere and geosphere

Ⓑ atmosphere and biosphere

Ⓒ geosphere and hydrosphere

Ⓓ hydrosphere and atmosphere

Part B

The statement that <u>best</u> describes an interaction between these two systems is that:

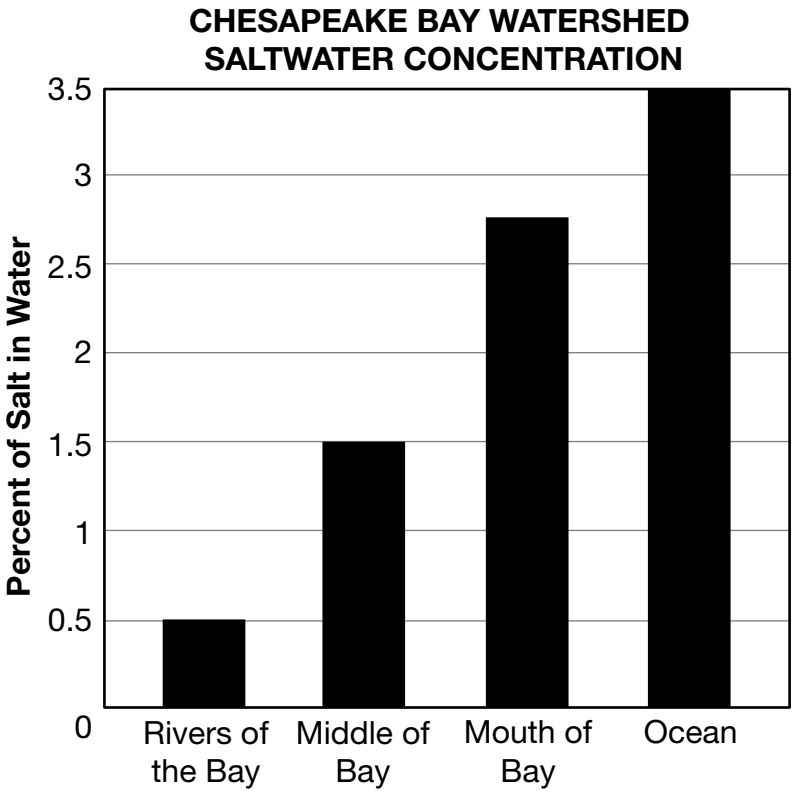
Ⓐ Water vapor in the atmosphere produces salt in the hydrosphere.

Ⓑ Evaporation from the hydrosphere causes increased salt in the atmosphere.

Ⓒ Volcanoes in the geosphere cause a decrease of salt for organisms in the biosphere.

Ⓓ Salt in runoff from the geosphere increases the salt concentration in the hydrosphere.

5 The student graphed the data from the Chesapeake Bay watershed model, shown below.



The student's graph is evidence that the saltwater concentration of the Chesapeake Bay watershed is <u>most</u> affected by

Ⓐ rockslides

Ⓑ ocean water

Ⓒ runoff into the rivers

Ⓓ underwater plants in the middle of the bay

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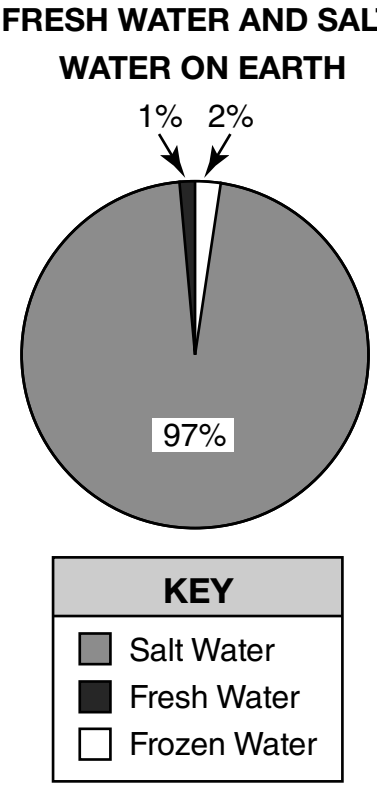
6 The student used the data from the research to construct a graph of all of the water on Earth, shown below.



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Use evidence from the graph to describe the amounts and locations of the different types of water on Earth.

Write your response on the lines provided.

Read all of the information. Use the information to answer the questions.

An after-school science club planned to hold a competition that required the use of certain materials to design a small plastic toy van that would travel the farthest after being launched from a starting point. During the competition, club members would launch the vans using a large wooden block on which a magnet was attached. After a van was launched, it could not be touched until it came to a stop.

To prepare for the competition, investigations using the following materials were performed to determine the most effective final investigation design.

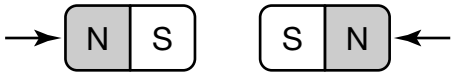
- **1 small plastic toy van**
- **1 launcher magnet**
- **4 labeled bar magnets (W, X, Y, Z)**
- **1 meterstick**
- **1 wooden block**

The launcher magnet could be secured to the wooden block to make a launcher.

Investigation 1:

Two magnets were oriented such that their south poles faced each other. Then the magnets were pushed together, as shown in the "Magnet Push" diagram. The club members tested other orientations in which different poles faced each other. All orientations were tested, and the observations were recorded in the following table.

MAGNET PUSH



OBSERVATIONS

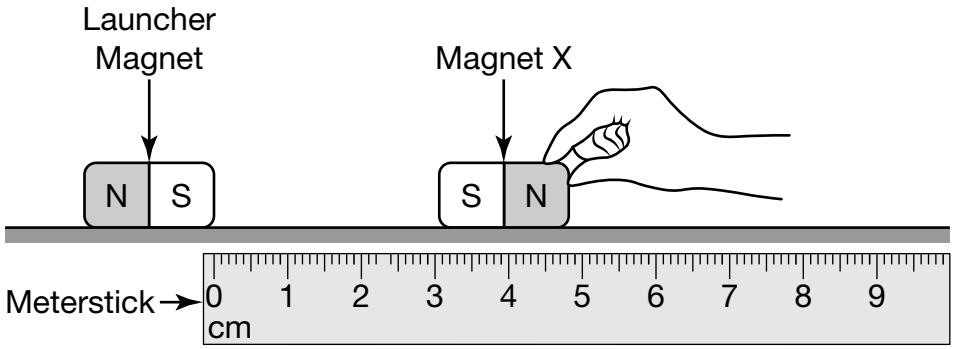
Magnet Orientations	Observation
N S S N	Repelled
S N N S	Repelled
N S N S	Attracted
S N S N	Attracted

GO ON ▶

Investigation 2:

The launcher magnet was placed at the 0 centimeter (cm) mark of a meterstick. Each of the labeled magnets was slowly moved from the opposite end of the meterstick toward the launcher magnet, as shown in the diagram.

INVESTIGATION 2



A club member recorded the distance between the two magnets as soon as the launcher magnet began to move. This procedure was repeated with each magnet, and the results were recorded in the following table.

LAUNCHER MAGNET MOVEMENT

Labeled Magnet Tested	Distance Between Magnets (cm)
W	4
X	5
Y	8
Z	7

GO ON ▶

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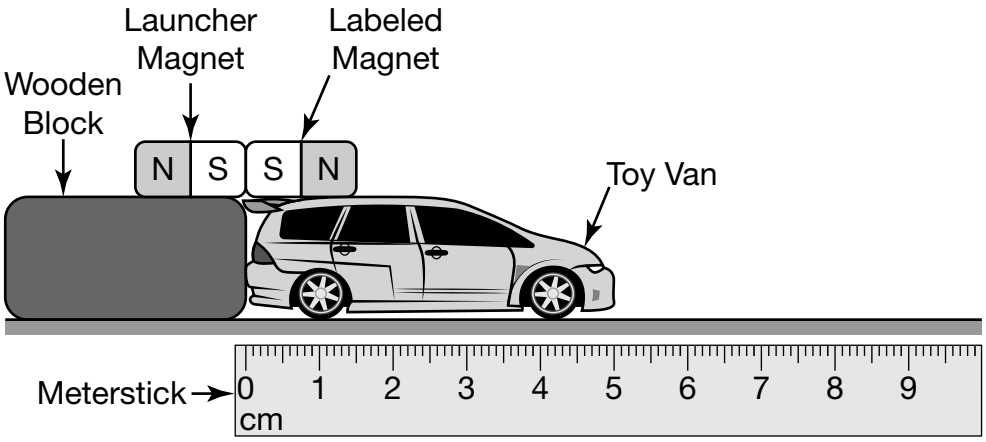
Investigation 3:

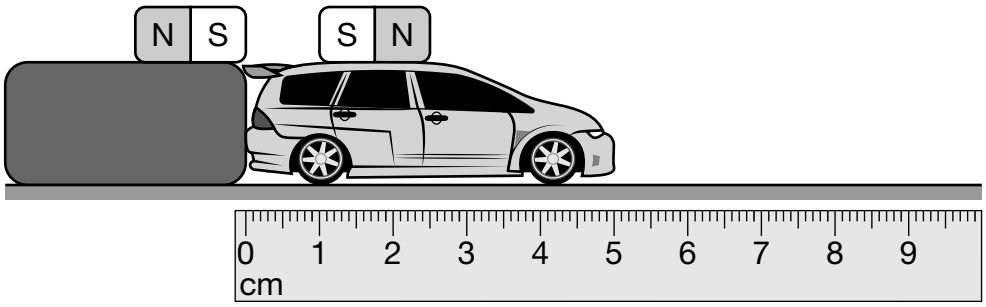
After identifying the strongest labeled magnet to attach to the van and the best orientations of the launcher magnet and labeled magnet, the club members attached the labeled magnet to different positions on top of the van. The rear of the van was held at the 0 cm mark of a meterstick. The club members then released the van and recorded how far it traveled for each labeled magnet position. The investigation setup and results for each trial were recorded in the following diagrams.

GO ON ▶

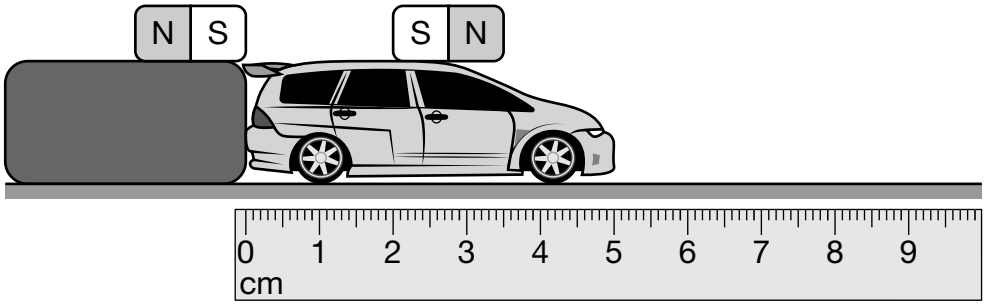
The Van in Diagram 1 Traveled 80 cm



The Van in Diagram 2 Traveled 20 cm



The Van in Diagram 3 Traveled 8.9 cm



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7 The club members were planning an investigation to collect data that would help them win the competition.

Which <u>two</u> steps should the club members use to collect the most accurate data?

Ⓐ Make sure the launcher does not move.

Ⓑ Replace the meterstick with two shorter rulers.

Ⓒ Use the same van for all trials of the investigation.

Ⓓ Change two variables after each trial of the investigation.

Ⓔ Place the van so that the front of the van faces the wooden block.

8 Which question was <u>most likely</u> answered in Investigation 2?

Ⓐ Which magnet slid most easily across the table?

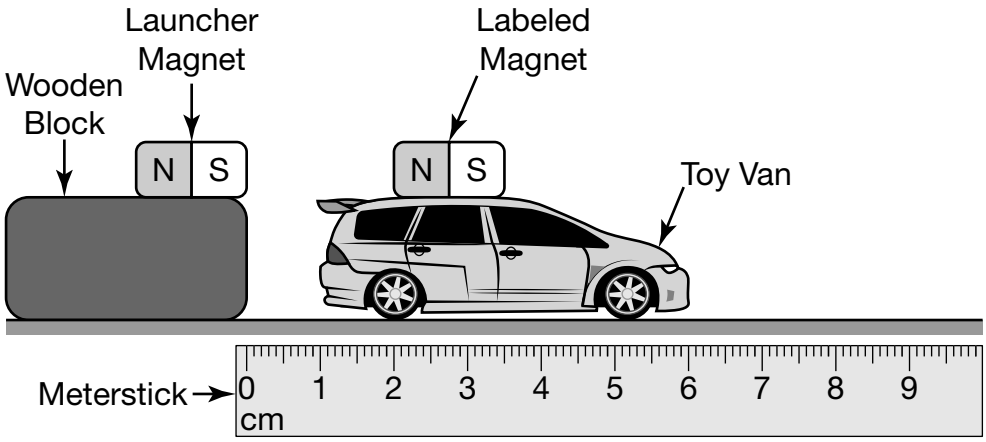
Ⓑ Which magnet had the strongest magnetic force?

Ⓒ How far apart did the magnets need to be held to keep them from attracting each other?

Ⓓ How was the distance between the magnets affected by the orientations of the magnets?

Section 2

9 The van, launcher magnet, and a labeled magnet were placed as follows.



Which statement <u>best</u> describes the movement of the van?

Ⓐ The van would move forward because like poles repel.

Ⓑ The van would move forward because opposite poles attract.

Ⓒ The van would move backward because opposite poles repel.

Ⓓ The van would move backward because opposite poles attract.

10 Which question could the club members test to <u>most likely</u> provide additional evidence to improve the final investigation design?

Ⓐ Would a metal toy van without a magnet travel farther?

Ⓑ How does the color of the magnet affect the magnetic force strength?

Ⓒ Would a larger launcher magnet increase the magnetic force strength?

Ⓓ What effect does the wooden block's weight have on the magnetic force strength?

GO ON ▶

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SERIAL #

11 Which variable in Investigation 3 can be changed for each trial in order for the procedure to remain a fair test?

Ⓐ the labeled magnet used on the van

Ⓑ the surface used in the investigation

Ⓒ the position of the magnet on the van

Ⓓ the magnet used on the wooden block

12 Use evidence to describe how the design of the investigation can be improved in order to win the competition.

Write your response on the lines provided.

STOP

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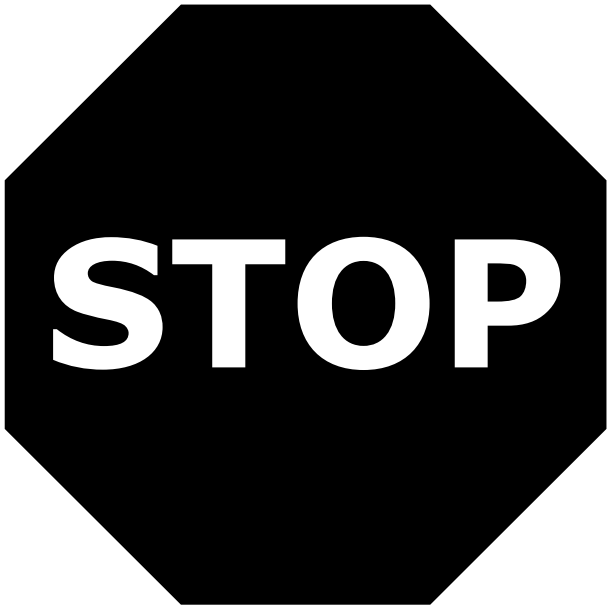

You have come to the end of Section 2 of the test. Review your answers from Section 2 only.

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SERIAL #

Section 3

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SERIAL #

Read all of the information. Use the information to answer the questions.

Simple Cardboard Invention May Help Billions

Not every useful invention has to be developed over many years and cost a lot of money to make. Sometimes the simplest of ideas can improve our lives profoundly. All it takes is a little imagination and a desire to make a difference!

Ask John Bohmer, whose weekend project with his two daughters may end up not only make a significant difference in helping our environment but also improving the lives of 3 billion people worldwide.

John's invention is a solar-powered oven made from cardboard. Dubbed[1] Kyoto Box, it is composed of two cardboard boxes, one inside the other, covered with a sheet of acrylic glass—to help trap the heat from the sun. The inner box is painted with black paint, which absorbs the heat, while the box on the outside is lined with silver foil that reflects any energy that escapes toward the black box. This helps to create a concentrated source of energy that can be used for cooking.

The simple oven costs only $7 USD to manufacture[2] and can easily be put together in any cardboard factory. With the capability of reaching high temperatures, it can be used to boil water, cook rice and casserole—and even bake bread.

It is estimated that over 3 billion people living in developing countries use chopped firewood for their main fuel, generating an estimated 2 tons of dangerous carbon dioxide emissions a year.

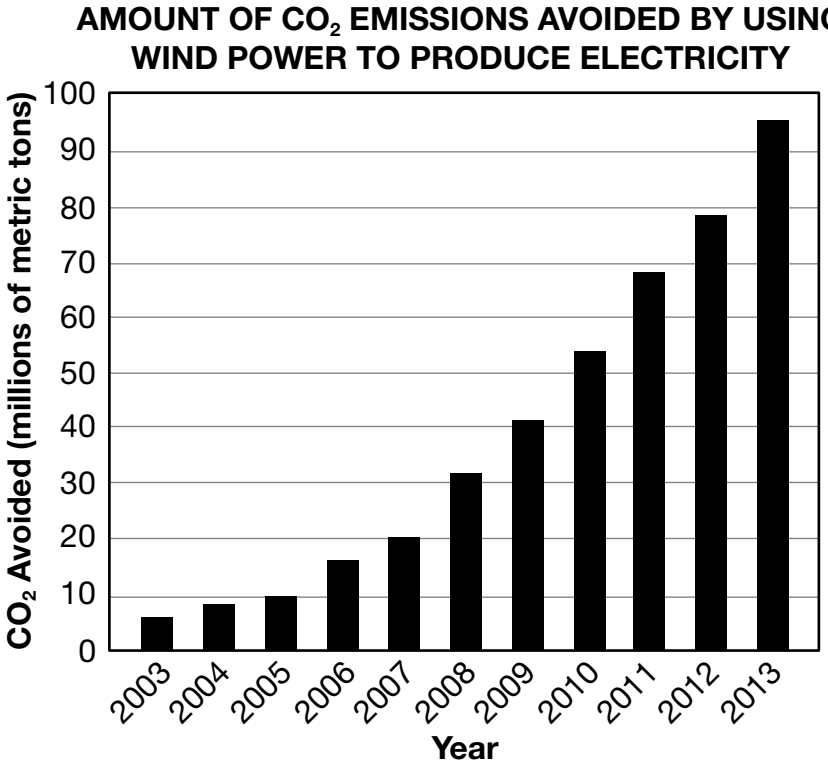
While solar cookers are not a new idea, this is the first time someone has come up with one that works and is cheap enough to be adapted on a large scale.

"Simple Cardboard Invention May Help Billions" – Meera Dolasia, DOGO News,

[1]**Dubbed:** named

[2]**manufacture:** make

After reading about the solar-powered ovens, a student was curious about other technologies that help reduce carbon dioxide CO_2 emissions. The student found a credible website that stated that power plants that produce electricity from fossil fuels are a major source of carbon dioxide emissions. Using wind turbines to produce electricity lessens the amount of electricity needed from plants powered by fossil fuels. The use of an average-sized wind turbine to produce electricity can avoid the production of over 3,300 metric tons of carbon dioxide each year. That is equal to the amount of carbon dioxide emitted from 500 cars in one year. The graph shows that from 2003 through 2013 the increasing use of electricity produced by wind power has reduced carbon dioxide emissions by an amount equal to taking 16.9 million cars off of the road.



Producing electricity from wind turbines instead of at plants powered by fossil fuels seems likely to help reduce the amount of carbon dioxide in the air. However, while wind turbines do not produce carbon dioxide, they do require the use of large areas of land.

GO ON ▶

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SERIAL #

1 John Bohmer's invention is inexpensive technology that uses

Ⓐ renewable resources to allow food to last longer.

Ⓑ renewable resources to heat food before it is eaten.

Ⓒ nonrenewable resources to protect food from germs.

Ⓓ nonrenewable resources to make appliances more affordable.

2 Which environmental impacts would occur if John Bohmer's invention were used more often?

Select <u>three</u>.

Ⓐ an increased use of fossil fuels

Ⓑ a decreased use of fossil fuels

Ⓒ more use of renewable resources as energy sources

Ⓓ more use of nonrenewable resources as energy sources

Ⓔ an increased amount of carbon dioxide in the atmosphere

Ⓕ a decreased amount of carbon dioxide in the atmosphere

3 The increased use of the invention would <u>most likely</u> increase

Ⓐ the need to chop down trees.

Ⓑ the need to dig for fossil fuels.

Ⓒ the use of nonrenewable resources.

Ⓓ the quality of the air in the atmosphere.

4 A conclusion that can be made based on the evidence from the article is that John Bohmer's invention would <u>most likely</u>

Ⓐ increase the use of nonrenewable resources to produce electricity.

Ⓑ decrease the use of nonrenewable resources to heat food sources.

Ⓒ decrease the air quality in order to obtain nonrenewable resources.

Ⓓ increase the use of renewable resources while absorbing heat from the atmosphere.

5 Use the evidence to determine the amount by which emissions of carbon dioxide would be reduced if 5 wind turbines were used to generate electricity for one year.

The effect of using 5 wind turbines to generate electricity for one year is equal to reducing how many metric tons of carbon dioxide emitted by how many cars?

Ⓐ 6,600 metric tons of carbon dioxide from 1,000 cars

Ⓑ 9,900 metric tons of carbon dioxide from 1,500 cars

Ⓒ 13,200 metric tons of carbon dioxide from 2,000 cars

Ⓓ 16,500 metric tons of carbon dioxide from 2,500 cars

6 **Use evidence to explain the effects that using John Bohmer's invention would have on the environment in developing countries compared to the current method of cooking food in those countries.**

Write your response on the lines provided.

GO ON TO NEXT PAGE

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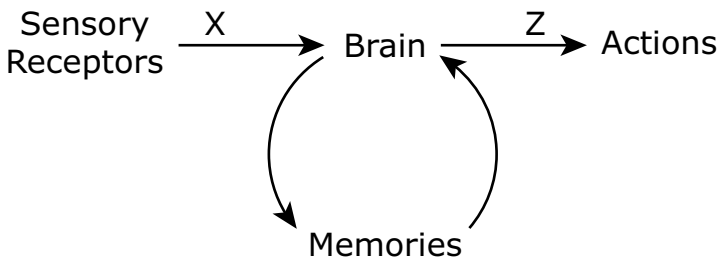
SERIAL #

Read all of the information. Use the information to answer the questions.

Students at recess kicked a ball that hit a tree. The students saw a swarm of bees fly out of the tree. After school, the teacher asked a beekeeper to move the bees to a safe place. After moving the bees, the beekeeper talked to the students. The students learned how honeybees sense their environment.

The beekeeper drew a model. The model shows how the bees' sensory receptors are connected to the bees' actions.

Beekeeper's Model



Next, the beekeeper showed a table about some of the bees' sensory receptors.

Receptor Location	Detects
Antenna	Smell, Taste, Touch, Sound (vibrations)
Tongue	Taste
Eye	Light
Body Hair	Vibrations, Touch

GO ON ▶

The beekeeper also discussed the types of bees in Maryland. A few species are social and live in groups. However, most species are solitary and live alone.

Beekeeper's Chart of Bee Facts

Bee Facts	Social Bees	Solitary Bees
Examples	Honeybee	Carpenter bee
How do they live?	Live in a hive as a group of 20,000 to 60,000 bees	Live alone in individual nests in the ground or wood
Roles	Queens are females that only lay eggs. Drones are males that only mate with the queen. Workers are females that collect food for the hive, care for the young, and defend the hive.	No separate roles
Information transfer	Worker bees use movement, vibrations, odors, and tastes (waggle dance) to let other worker bees know where flowers can be found.	No transfer of information about flower location to other bees. Each bee finds its own food.
How do bees react to predators?	Worker bees use smells to alert other worker bees that a predator is attacking. This alert causes a response from many worker bees.	Each bee reacts to predators by itself.
Role in ecosystem	Pollination and food source	Pollination and food source

GO ON ▶

7 In the Beekeeper's Model, what does arrow "X" represent?

Ⓐ energy sent from the environment to the brain

Ⓑ information sent from a receptor to the brain

Ⓒ information sent to a muscle from the brain

Ⓓ matter sent to a receptor from the brain

8 Which statement <u>best</u> describes the Beekeeper's Model?

Ⓐ It represents actions that bees can take without using memories.

Ⓑ It represents the body parts that interact with the environment.

Ⓒ It represents a system that allows bees to react as a group.

Ⓓ It represents a system that allows the bees to take actions.

9 Which <u>two</u> statements describe the information that is transmitted through the waggle dance?

Ⓐ It causes bees to react without forming a memory.

Ⓑ It communicates the distance and direction of the flowers.

Ⓒ It is stored as memories by the bees that found the flowers.

Ⓓ It causes bees to immediately leave the hive to attack a predator.

Ⓔ It is stored in the sensory receptors activated by the waggle dance.

GO ON ▶

10 Which claim about how worker bees affect the ability of the hive to survive is supported by the information in the Beekeeper's Chart of Bee Facts?

Ⓐ Worker bees decrease the ability of the hive to survive by laying eggs.

Ⓑ Worker bees increase the ability of the hive to survive by finding food.

Ⓒ Worker bees decrease the ability of the hive to survive by attacking predators.

Ⓓ Worker bees increase the ability of the hive to survive by mating with the queen.

11 A student argues that social bees are better able to defend against large predators.

Part A

Which evidence <u>best</u> supports the student's argument?

Ⓐ Carpenter bees do not have separate roles.

Ⓑ Honeybees live with thousands of other bees.

Ⓒ Carpenter bees react independently of other bees.

Ⓓ Honeybees can gather nectar from many different plants.

Part B

Which statement <u>best</u> explains how social bees attack a large predator?

Ⓐ They use different roles to attack at different times.

Ⓑ They use different roles to attack at the same time.

Ⓒ They use communication to attack at different times.

Ⓓ They use communication to attack at the same time.

GO ON ▶

12 Describe how sensory information is related to bee behavior.

Write your response on the lines provided.

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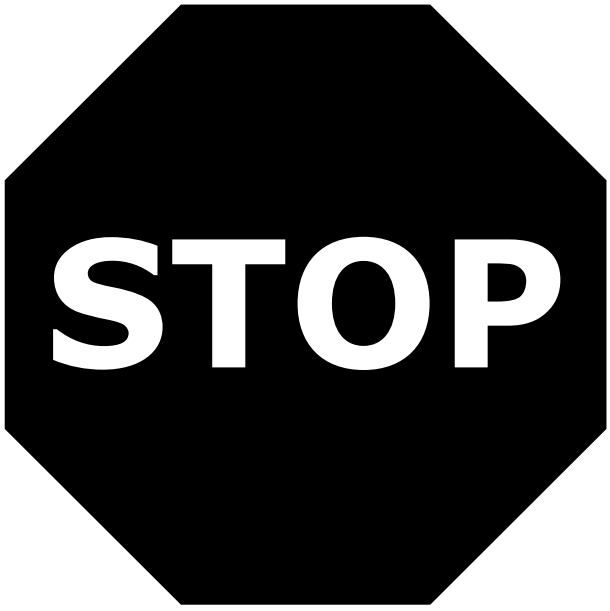

You have come to the end of Section 3 of the test. Review your answers from Section 3 only.

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SERIAL #

GO ON TO NEXT PAGE

GO ON ▶

Section 4

Directions:

Today, you will take Section 4 of the MISA Practice Test.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your test book. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely.

Some of the questions will ask you to write a response. Write your response in the lined space provided in your test book. Be sure to keep your response within the provided space. Only responses written within the lined box provided will be scored.

If you do not know the answer to a question, you may go on to the next question. If you finish early, you may review your answers and any questions you did not answer in this Section ONLY. Do not go past the stop sign.

GO ON ▶

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SERIAL #

Read all of the information. Use the information to answer the questions.

Two students are working together to observe a local ecosystem as part of a school project. The students decide to use their backyards because one has a sunflower garden and the other has a small pond.

The students made observations during the spring, summer, and early fall. In their first observation, the students found that green frogs were living in the pond. They also found that swallowtail butterflies were living in the garden.

The students focused their observations on the green frogs, the swallowtail, and the sunflower. They created the following tables to summarize what they observed.

Green Frog Observations

When	Observation
May 1	Found adult frogs near the pond
May 15	Pond now has several large groups of eggs
May 20	Pond has small tadpoles that have only a head and tail
August 10	Tadpoles now have legs and shorter tails
September 30	Young frogs with four legs and no tails are found outside of the pond

Swallowtail Observations

When	Observation
June 16	Found eggs on leaves
June 25	Plants now have small black caterpillars living on them
July 15	The caterpillars have become larger
July 20	Caterpillars have attached to leaves and are hanging upside down
July 21	Chrysalis forms around the hanging caterpillar
August 2	New adult butterfly breaks out of the chrysalis and flies away

GO ON ▶

Sunflower Plant Observations

When	Observation
May 15	Planted sunflower seeds
May 19	Found a seed on top of the soil that was split open with a small root growing
May 23	A tiny stem with small leaves appears above soil
June 30	Stem grows taller and many leaves develop
August 7	Flower bud develops at the tip of the stem
August 31	The bud opens into a flower
September 15	Seeds develop in the flower
October 1	Seeds drop to the soil

GO ON ▶

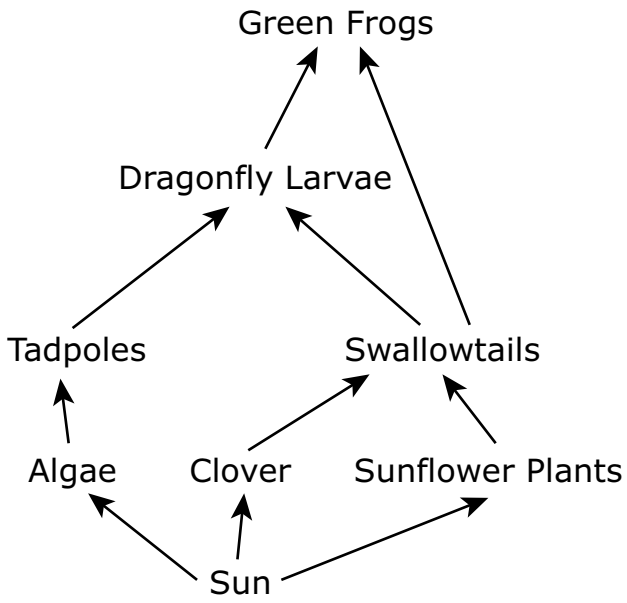
SERIAL #

The students also recorded the following general observations.

1. There were more seeds or eggs than young plants or animals.
2. There were more young plants or animals than there were adult plants or animals.
3. Sunflower plants bend so that leaves face the sun during the day.
4. Some caterpillars and other insects eat the sunflower leaves.
5. Some butterflies land on the flowers of the sunflower.

The students created a diagram to show some of the energy transfers observed in their backyard.

Backyard Energy Transfers



1 Based on the students' observations, what is common among the three organisms?

Ⓐ Organisms start small and become larger over time but keep the same shapes.

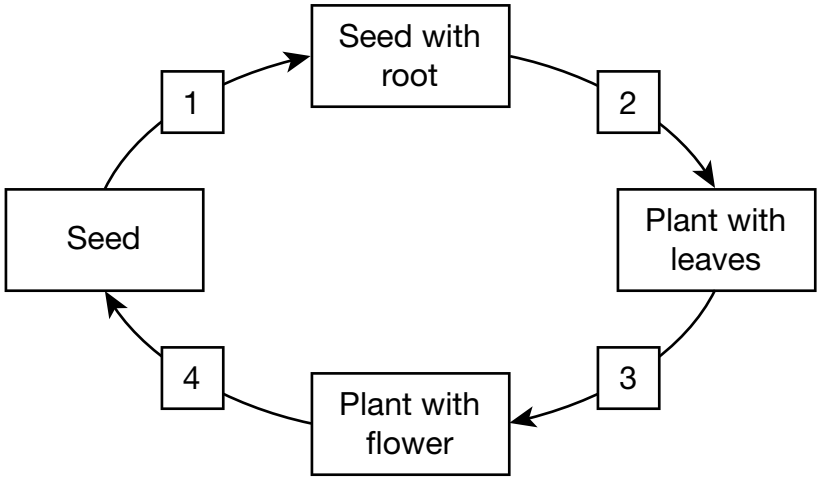
Ⓑ Organisms remain in the same environment where they were born.

Ⓒ Organisms have the same food requirements during their life cycles.

Ⓓ Organisms are born, grow, reproduce, and die.

2 A model shows the life cycle of a sunflower.

Sunflower Life Cycle



Which arrow <u>best</u> represents the process of reproduction?

Ⓐ 1

Ⓑ 2

Ⓒ 3

Ⓓ 4

3 Which statement best explains why sunflower stems bend so that the leaves face the sun during the day?

Ⓐ to absorb heat to stay warm during the cool day

Ⓑ to receive the most light energy for growth

Ⓒ to prevent caterpillars from feeding on the warm leaves

Ⓓ to attract pollinators to the light reflected by the flower

4 Based on the observations, which statement best identifies how the tadpole uses the energy it gets from eating?

Ⓐ to hunt insects

Ⓑ for reproduction

Ⓒ to hatch from eggs

Ⓓ for growing into an adult frog

5 Which statement best describes the energy shown in the Backyard Energy Transfers diagram?

Ⓐ The producers make energy using air and water.

Ⓑ Consumers use all the available energy for movement.

Ⓒ The energy in the food of dragonflies was once from the sun.

Ⓓ Green frogs receive more energy from the sun than other organisms do.

6 Use the Backyard Energy Transfers diagram to describe how tadpoles receive the energy required to grow into adult frogs.

Write your response on the lines provided.

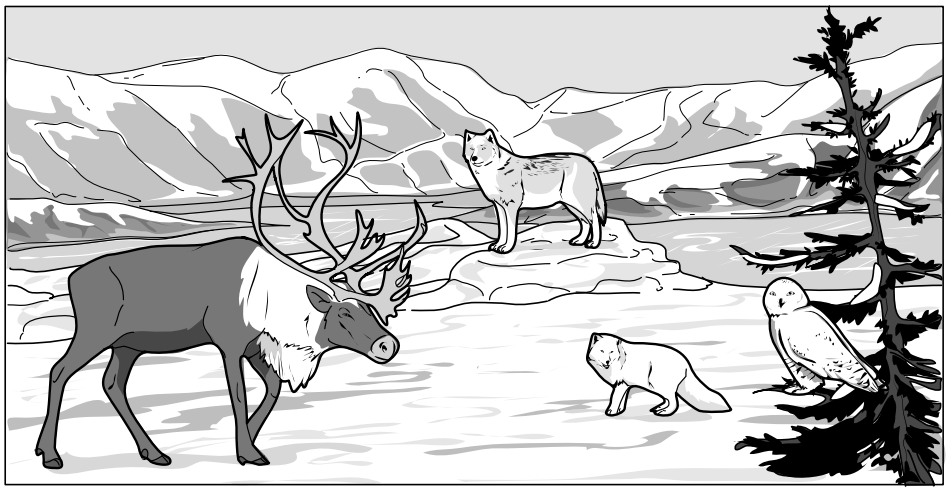
GO ON ▶

SERIAL #

Read all of the information. Use the information to answer the questions.

During a unit on the environment, students researched ecosystems such as rain forests, deserts, and tundras. A group of students researched tundras and the many animals that live in a tundra. The students questioned which characteristics of the animals in the tundra help them to survive.

The students chose four animals that are found in a tundra environment and researched information about each, shown in the table.



Name	Observations
Caribou	• herbivores • migrate north in summer • migrate south in winter • large hooves • male and females have antlers • coats are white in winter • coats are brown in summer
Arctic Wolf	• carnivores • live alone or in packs of six • ears are smaller than the gray wolf's • legs are shorter than the gray wolf's • coats are thick and white
Arctic Fox	• omnivores • live in burrows • white coat in winter • brown or gray coat in summer
Snowy Owl	• carnivores • feathers turn whiter as they get older • hunt at night and day • excellent hearing and eyesight

GO ON ▶

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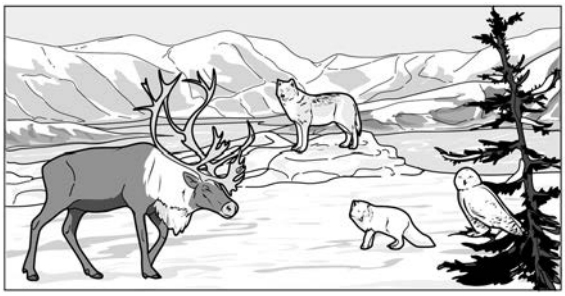
SERIAL #

While researching tundra animals, the students found that the animals' environment changes. Higher temperatures have reduced the amount of snow present in the tundra, leading to more springlike and summerlike days. The students investigated how changes to the environment may affect the animals that live in a tundra.

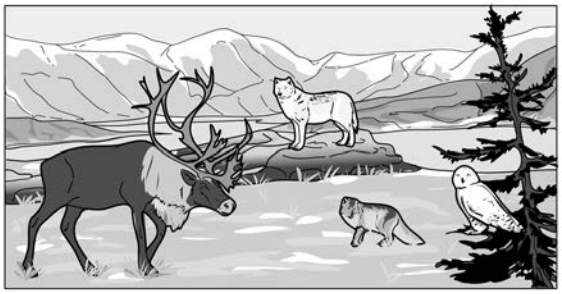
To observe the changes to the environment and how the animals would appear during each season, the students constructed four diagrams, as shown.

GO ON ▶

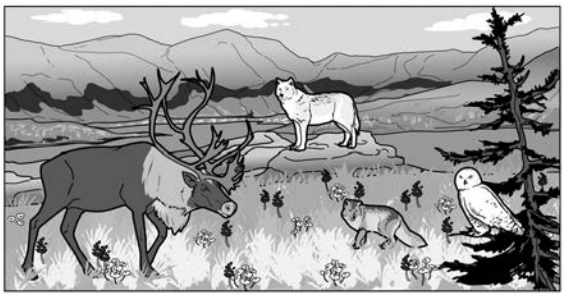
WINTER



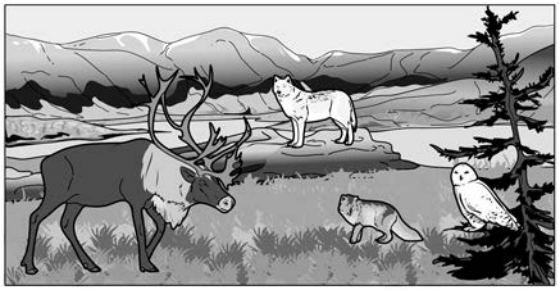
SPRING



SUMMER



FALL



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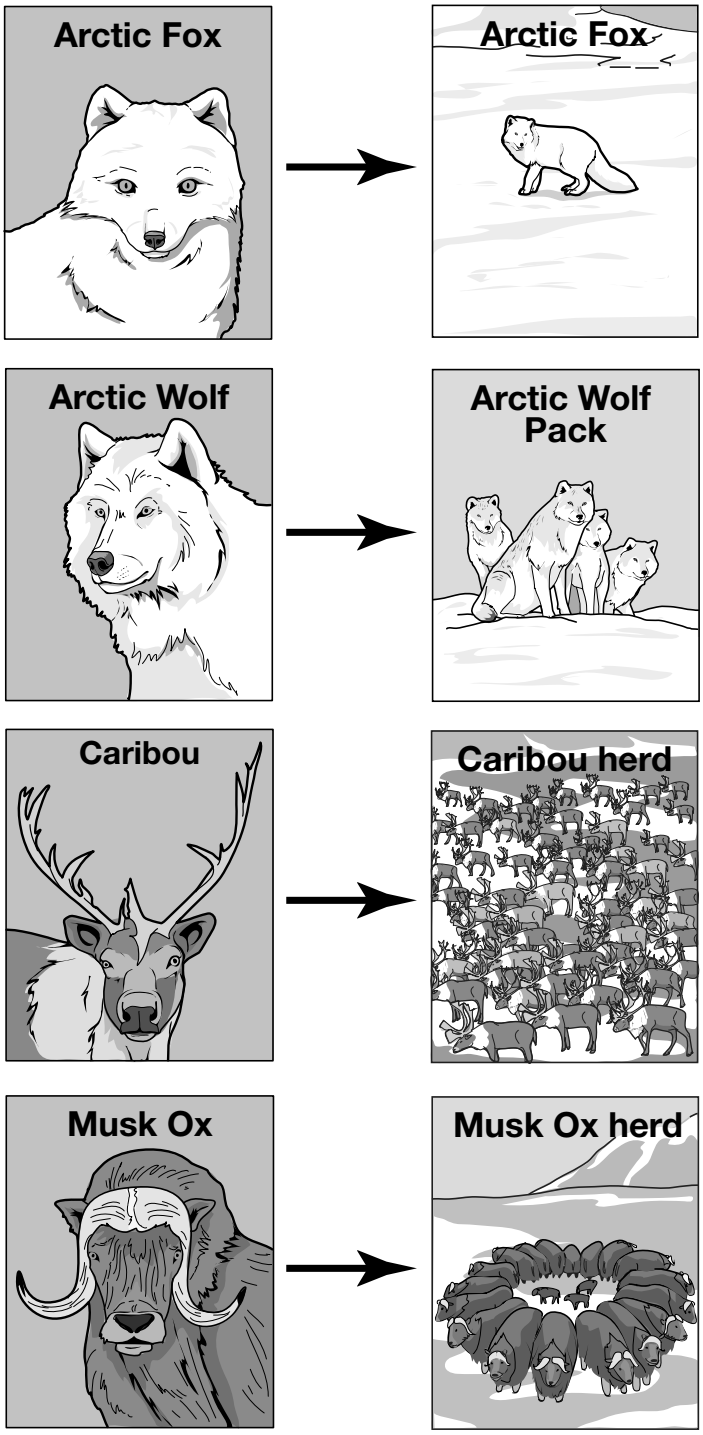
SERIAL #

The research indicated some tundra animals live in large groups while others live alone or in small groups. The research also indicated that prey animals tend to live in larger groups and predators live in smaller groups.

The students then constructed diagrams of the Arctic Fox, Arctic Wolf, Caribou, and Musk Oxen to observe whether the animals live alone, in small groups or in large groups, shown as follows.

GO ON ▶



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SERIAL #

7 The students stated that even though the organisms have different characteristics that enable them to survive in a tundra environment, all the organisms have basic needs.

Determine the basic needs that organisms require.

Select <u>three</u>.

Ⓐ feathers

Ⓑ food

Ⓒ fur

Ⓓ shelter

Ⓔ water

8 The students claimed that the arctic fox has a characteristic to help it survive from winter to summer.

The characteristic that <u>best</u> helps the arctic fox survive is the ability to

Ⓐ be more visible to prey.

Ⓑ find more water sources.

Ⓒ be less visible to predators.

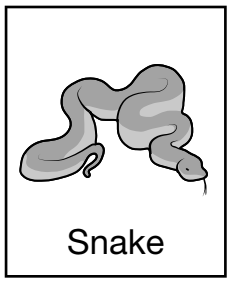
Ⓓ find fewer burrows for shelter.

GO ON ▶

9 Based on evidence, the students questioned whether other animals would be able to survive in a tundra environment.

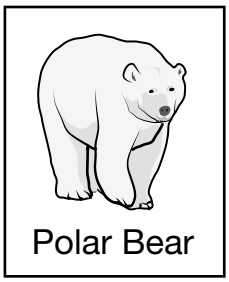
Select the <u>two</u> animals that would <u>most likely</u> be able to survive in a tundra environment.

Ⓐ



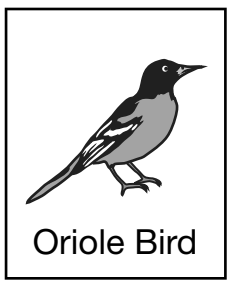
Snake

Ⓑ



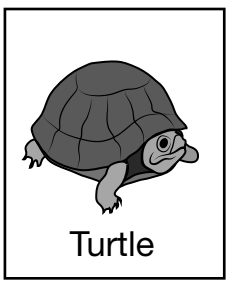
Polar Bear

Ⓒ



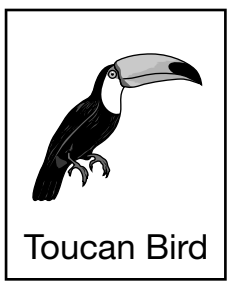
Oriole Bird

Ⓓ



Turtle

Ⓔ



Toucan Bird

Ⓕ

Husky Dog

GO ON ▶

10 The students claimed that animals that live in smaller groups need to develop other characteristics in order to survive in their environment.

The animals that use blending into the environment instead of living in large groups as a way of survival are

Ⓐ caribou and arctic fox.

Ⓑ snowy owl and caribou.

Ⓒ musk ox and arctic wolf.

Ⓓ arctic fox and arctic wolf.

11 The circling behavior of the musk oxen <u>most likely</u> benefits the herd by

Ⓐ providing more food for the herd.

Ⓑ finding better shelter for the herd.

Ⓒ reducing the number of young in the herd.

Ⓓ protecting the smaller animals in the herd.

GO ON TO NEXT PAGE

GO ON ▶

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SERIAL #

12 Use evidence from the research to support the claim that being part of a group helps the animals survive.

Write your response on the lines provided.

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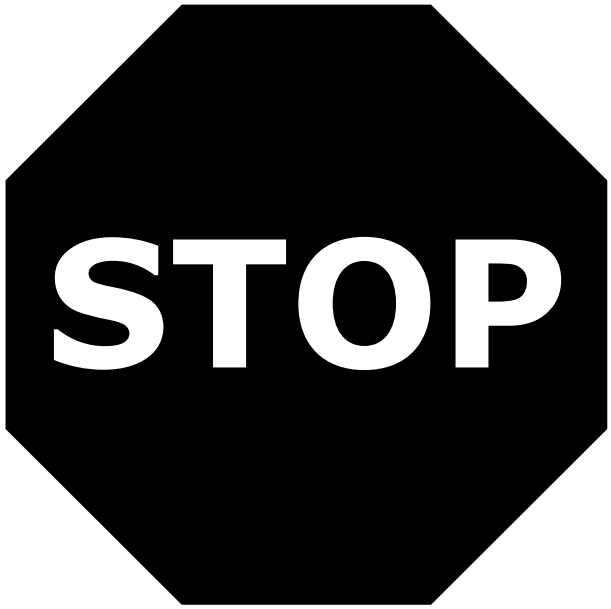

You have come to the end of Section 4 of the test. Review your answers from Section 4 only.

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SERIAL #

MCAP

Maryland Comprehensive Assessment Program

Grade 5 MISA Practice Test

Maryland
STATE DEPARTMENT OF EDUCATION

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