

STUDENT NAME _____
(please print)

Grade
8

New Jersey Student Learning Assessment—Science (NJSLA—S) Practice Test

FORM
A

Grade 8



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Sample Items

This test booklet contains several different types of test questions. See the samples below, which will help you understand how to respond to each question type.

Record/mark your answers by circling the answer in the test booklet. If you need to change an answer, be sure to erase your first answer completely. **Only the answers you write in your test booklet will be scored.**

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

Sample Item 1. Multiple-Choice (Select one answer.)

Which claim about the Sun is accurate?

- A. The Sun appears smaller and brighter than other stars because it is the closest star to Earth.
- B. The Sun appears larger and brighter than any other star because it is the closest star to Earth.
- C. The Sun appears larger and less bright than other stars because it is the farthest star from Earth.
- D. The Sun appears smaller and less bright than any other star because it is the farthest star from Earth.

Sample Item 2. Multi-Select (Select multiple answers.)

Select **two (2)** answers for this item. The risk of an earthquake happening is **higher**

- A. in the South than in Alaska.
- B. on the West Coast than in the Northeast.
- C. on the East Coast than on the West Coast.
- D. in Alaska than in the center of the country.
- E. in the center of the country than on the West Coast.

Sample Item 3. Multi-Select Box Item (Select one answer for each box.)

A student claims that a soccer ball has less energy after it hits a wall. Select the correct word from each box to complete the statement that explains why this claim is true.

When a soccer ball hits the wall, **Y** of the soccer ball's energy is transferred to the air in the form of **Z**.

Y

- A.** all
- B.** some
- C.** none

Z

- A.** light
- B.** sound

Sample Item 4. Constructed Response (Write out your answer.)

Many New Jersey towns have started programs to reduce the amount of traffic on roads as a means to help improve air quality. Give **two (2)** examples of programs that would help reduce traffic and improve air quality.

Answers to Sample Questions

1. A **(B)** C D
2. A **(B)** C **(D)** E
3. **Y**
A **(B)** C
Z
A **(B)**

4. Carpooling is one means to reduce the number of cars on the roads. Using public transit when available would also decrease the number of individual cars. Both of these measures would help improve air quality.



Unit 1 Practice Test

Directions:

Today you will take Unit 1 of the Grade 8 New Jersey Student Learning Assessment-Science (NJSLA-S) Practice Test. You will be able to use a calculator and a periodic table.

Read each question. Then, follow the directions to answer each question. Circle the answer or answers you have chosen in your test booklet. If you need to change an answer, be sure to erase your first answer completely.

If a question asks you to show or explain your work, you must do so to receive full credit. Only responses written within the provided space 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 unit **ONLY**. Do not go past the stop sign.



1. Students observe a worm creeping along the edge of a sidewalk at a very slow pace. One student claims that movement in multicellular organisms requires the interaction of body systems. Explain this claim.

Complete the sentences by choosing the correct answer from each box.

Nervous tissues **Y** different parts of the body. As a result, muscular tissues **Z**, causing the worm to move.

Box Y

- A. extend and contract
- B. remove wastes from
- C. send messages to
- D. pump blood to

Box Z

- A. extend and contract
- B. remove wastes
- C. send messages
- D. pump blood

GO ON TO NEXT PAGE

Use the information below to answer questions 2–4.

Some people are able to taste a certain bitter chemical, and others are not. Figure 1 shows the alleles that different individuals have for this dominantly inherited trait.

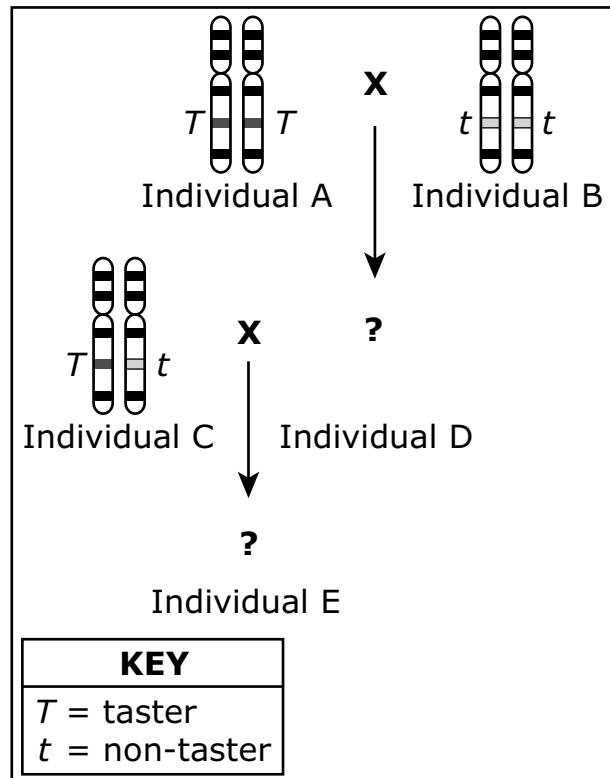


Figure 1. Bitter-Taste Alleles in One Family

Individuals A and B are the parents of Individual D. Individuals C and D are the parents of Individual E.

2. Based on Figure 1, what is the probability of Individual E being able to taste the bitter chemical?
- A. 0%
B. 25%
C. 50%
D. 75%

3. Figure 2 shows whether the members of a second family are able to taste the bitter chemical. Which family members are definitely heterozygous¹ for the ability to taste the bitter chemical?

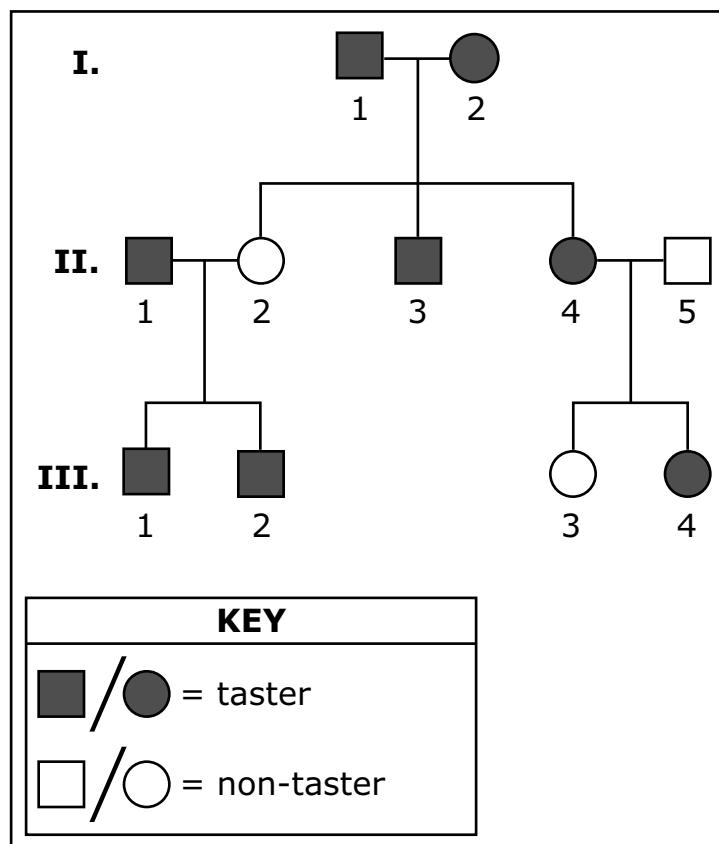


Figure 2. Inheritance of the Bitter-Taste Trait in a Second Family

¹heterozygous—having different alleles for a trait

(Item 3 continued)

Select **six** of the eight options.

- A.** Individual I-1
 - B.** Individual I-2
 - C.** Individual II-1
 - D.** Individual II-3
 - E.** Individual II-4
 - F.** Individual III-1
 - G.** Individual III-2
 - H.** Individual III-4
- 4.** A student writes an explanation about the bitter-taste alleles and proteins found in the individuals represented in Figure 1. However, the student makes a couple of mistakes. Which statements contain the student's mistakes?

Select **two** of the six statements.

- A.** Individual A and Individual B each have only one copy of the bitter-taste gene.
- B.** Individual A and Individual B each make only one form of the protein encoded by the bitter-taste gene.
- C.** Because Individual A and Individual B make different forms of the protein, one of them tastes the bitter chemical and the other does not.
- D.** However, Individual C has a different allele for the bitter-taste gene on each chromosome.
- E.** This causes Individual C's body to make two different forms of the bitter-taste protein.
- F.** The protein made from the *t* allele is what causes Individual C to taste the bitter chemical.

Use the information below to answer questions 5–7.

Figure 1 shows the rock layers and fossils found in a particular outcropping.¹

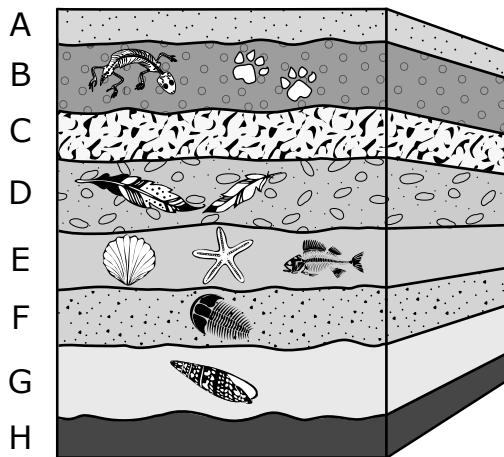


Figure 1. Outcropping 1

¹outcropping.—a rock formation that is visible from Earth's surface

5. Figure 2 shows the rock layers and fossils in a second outcropping.

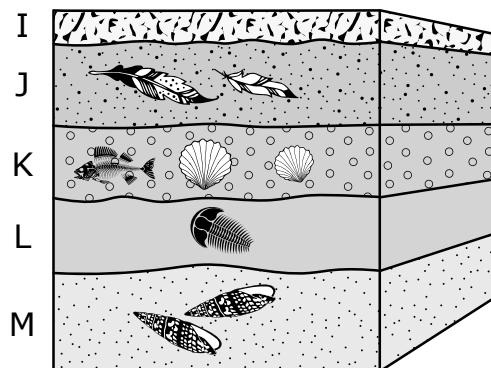


Figure 2. Outcropping 2

Explain the similarities and differences you see in the samples.

Complete the sentences by choosing the correct answer from each box.

Layer **W** and Layer **X** are the same age. Each layer contains the same type of **Y** because they formed during **Z** time periods.

Box W

- A.** B
- B.** D

Box X

- A.** J
- B.** L

Box Y

- A.** fossils
- B.** rocks

Box Z

- A.** different
- B.** similar

6. For each of the rock layers from Figure 1 that are listed, determine whether the evidence shows that the land was covered by water during its formation, whether the evidence shows that the land was exposed to air during its formation, or whether there is not enough evidence to support either claim.

Choose the correct answer for each layer.

Layer B

- A.** Supports that the land was covered by water
- B.** Supports that the land was exposed to air
- C.** Not enough evidence to support either claim

Layer C

- A.** Supports that the land was covered by water
- B.** Supports that the land was exposed to air
- C.** Not enough evidence to support either claim

Layer D

- A.** Supports that the land was covered by water
- B.** Supports that the land was exposed to air
- C.** Not enough evidence to support either claim

Layer E

- A.** Supports that the land was covered by water
- B.** Supports that the land was exposed to air
- C.** Not enough evidence to support either claim

7. Which list correctly arranges the given rock layers from the oldest layer to the youngest layer?
- A. Layer B (oldest) → Layer D → Layer E → Layer G (youngest)
 - B. Layer G (oldest) → Layer D → Layer E → Layer B (youngest)
 - C. Layer B (oldest) → Layer E → Layer D → Layer G (youngest)
 - D. Layer G (oldest) → Layer E → Layer D → Layer B (youngest)

8. A student claims that onions are not living things. The student places a small section of onion root on a microscope slide to view it at a larger magnification. Using the microscope, the student is able to see details of the onion root that are not visible to the naked eye as shown in Figure 1.

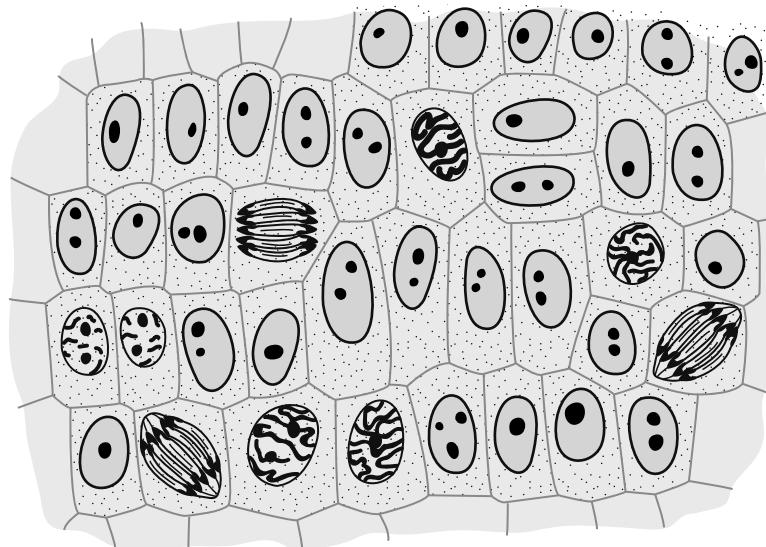


Figure 1. Onion Root Cells

Based on the microscope slide, which statements disprove the student's claim?

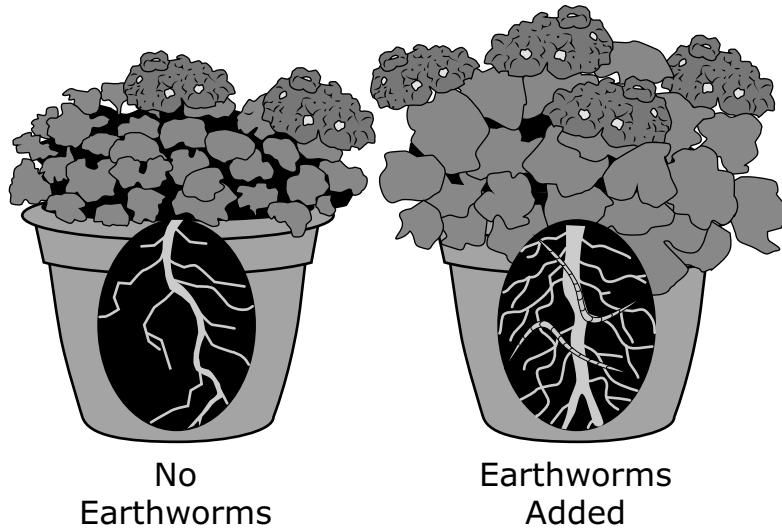
Select **two** of the five statements.

- A.** Onion cells use energy.
- B.** Onions respond to stimuli.
- C.** Onion roots are made up of cells.
- D.** Onions engage in movement.
- E.** Onion cells are able to reproduce.

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Use the information below to answer questions 9 and 10.

As some students are planting flowers, they notice several earthworms in the soil. One student wonders if earthworms are beneficial to the growth of plants. The student decides to test this by performing an investigation. The student plants identical flowering plants in two containers with potting soil. The treatment for the plants is the same, except that six earthworms are added to one container. Figure 1 shows the plants after 65 days of growth.

**Figure 1. Plants after 65 Days**

The plant in the pot with earthworms appears to be healthier. The student describes it as having larger leaves, a thicker stem, a more upright stem, more root hairs, and longer roots than the plant in the container without the earthworms.

9. Based on the investigation, the student group decides to add a large number of earthworms to their flower garden. Which statement **best** explains whether these data are being applied correctly?
- A. The garden is a less stable system, and the results can be easily duplicated.
 - B. The garden is a more stable system, and the results cannot be easily duplicated.
 - C. The variables are similar, and you can expect the same results in the potted plant and the flower garden without collecting more data.
 - D. The variables are different, so you cannot expect the same results in the potted plant and the flower garden without collecting more data.
10. Based on the observations regarding matter and energy flow in the containers, the student describes the role of the earthworm in the ecosystem created in the investigation. Which description **best** explains the role of earthworms in the ecosystem?
- A. consumers, because they eat organisms that would compete with plants for beneficial nutrients
 - B. producers, because they use energy from the Sun to produce nutrients that are needed by plants
 - C. decomposers, because they break down substances in the soil that provide nutrients for plants
 - D. scavengers, because they can survive in soils that have very few nutrients and still remain healthy

Use the information below to answer questions 11 and 12.

Figure 1 shows embryo development for four organisms.

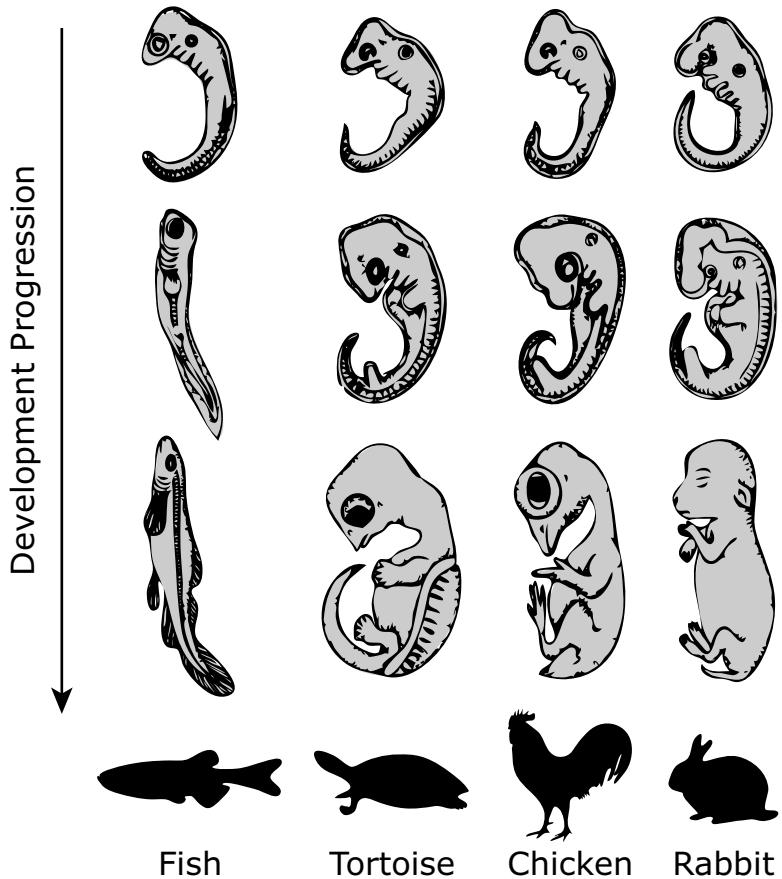


Figure 1. Embryo Development

- 11.** Which statement can **best** be supported by Figure 1?
- A.** Chickens are more closely related to tortoises than rabbits are.
 - B.** Rabbits, chickens, tortoises, and fish are equally related to each other.
 - C.** Fish do not share a common ancestor with other vertebrates.
 - D.** Fish and chickens are the least closely related.
- 12.** Which question can **best** be answered by the data in Figure 1?
- A.** How long does it take different organisms to develop into adults?
 - B.** Do diverse organisms follow a similar progression of development?
 - C.** Do modern organisms follow the same development progression as ancient organisms?
 - D.** Which characteristics at each developmental stage increase an organism's chance of survival?

13. Figure 1 shows the relationship between the discovery of new oil reserves and human consumption of oil.

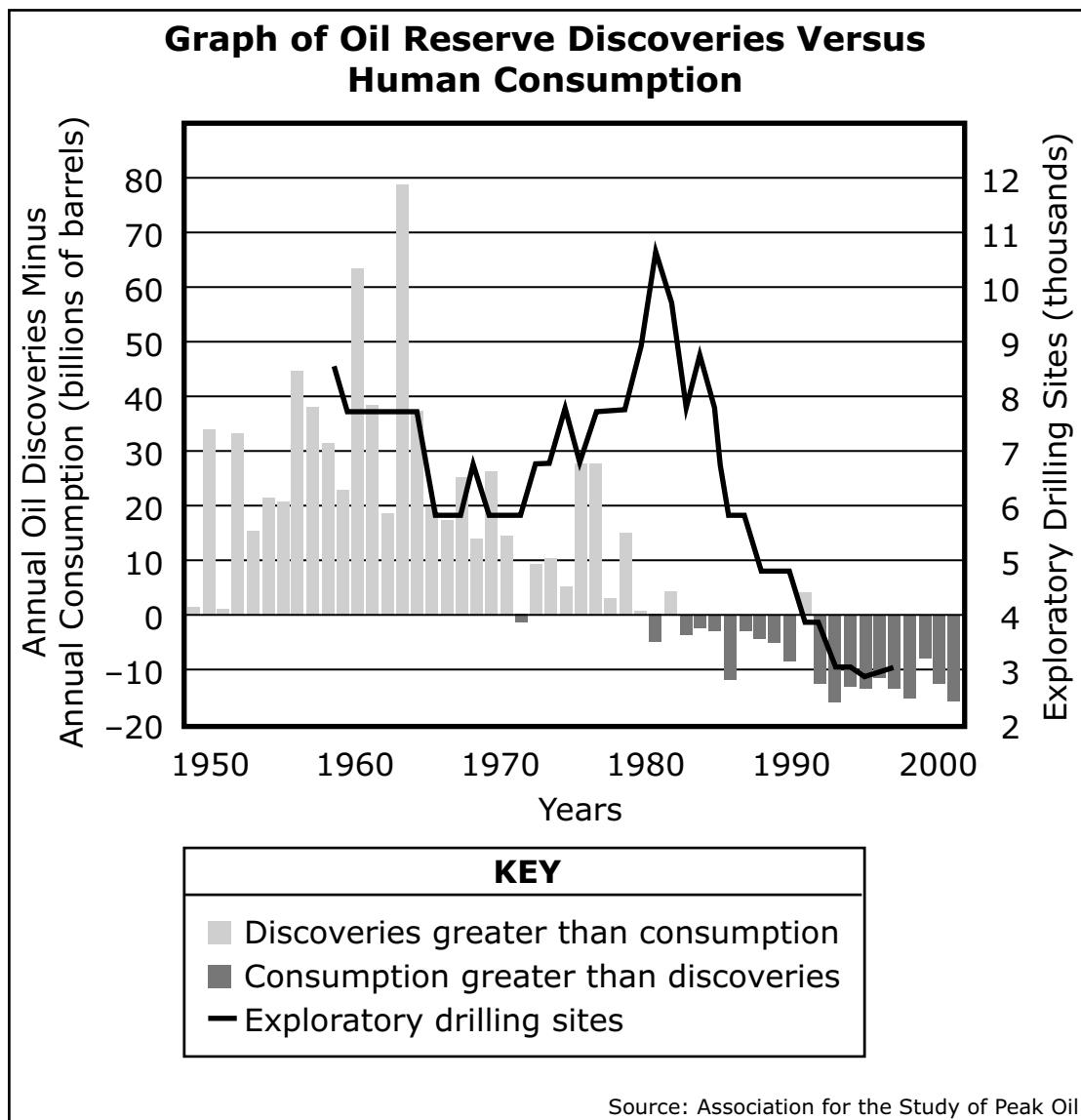


Figure 1.

Construct an explanation of the change in oil reserves beyond the year 2000 using the data in Figure 1.

Complete the sentences by choosing the correct answer from each box.

(Item 13 continued)

Based on the data in the graph, discoveries of new oil reserves beyond the year 2000 **X**. Oil is a **Y** resource, which means the supply replenishes **Z** than human demand.

Box X

- A.** decrease
- B.** increase

Box Y

- A.** renewable
- B.** nonrenewable

Box Z

- A.** more quickly
- B.** more slowly

Use the information below to answer questions 14–16.

Figure 1 shows a model of the Sun, Earth, and Moon system.

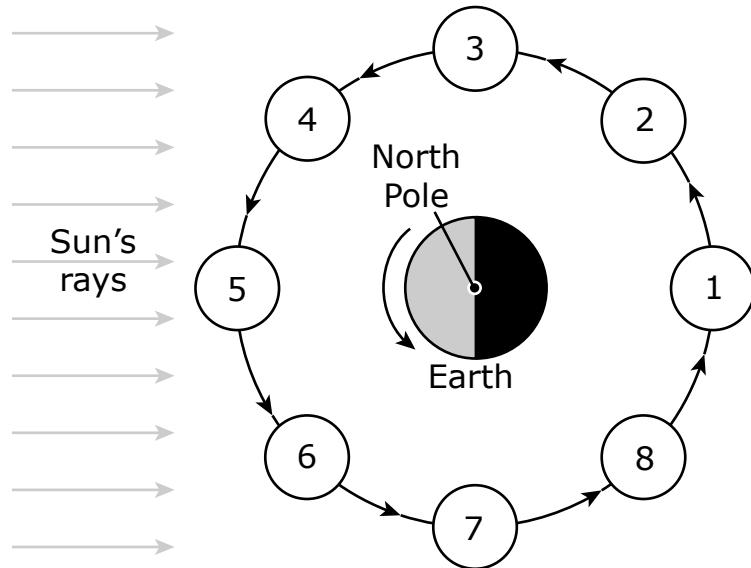


Figure 1. Sun, Earth, and Moon System

14. Students observed the phases of the Moon on two nights during a month. Their observations are shown in Figure 2.

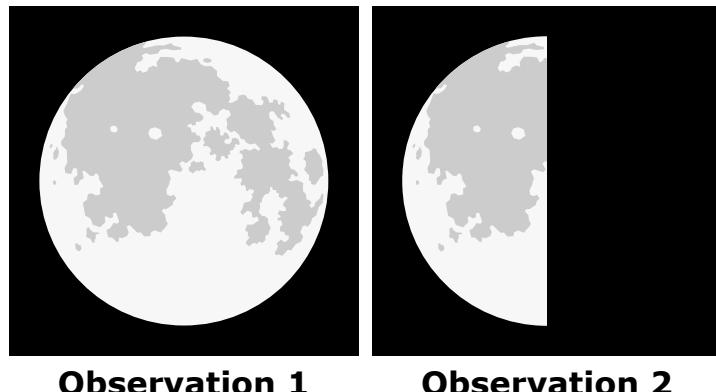


Figure 2. Observations of the Moon on Different Nights in the Same Month

Which statement uses the model in Figure 1 to correctly explain the change that occurred between Observation 1 and Observation 2 in Figure 2?

- A. Earth rotated, so the dark side of the planet was facing Position 3 rather than Position 1.
- B. Earth rotated, so the dark side of the planet was facing Position 7 rather than Position 1.
- C. The Moon moved from Position 1 to Position 3, which caused the Sun to shine on parts of the Moon that people on Earth cannot see.
- D. The Moon moved from Position 1 to Position 7, which caused Earth to block the sunlight and make the Moon appear dark.

15. Based on the position of the Sun and Earth in Figure 1, determine where the full, new, first-quarter, and third-quarter moons are located in Figure 3.

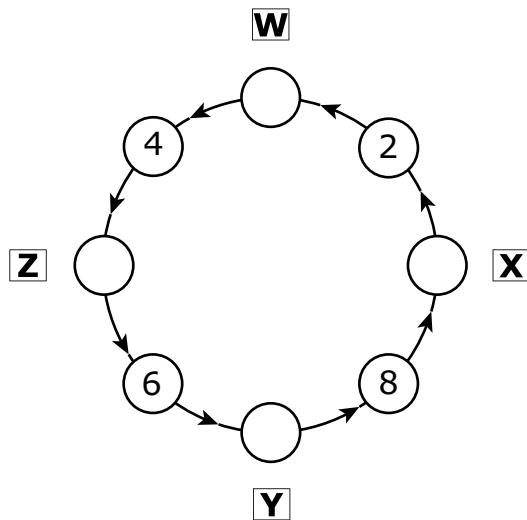


Figure 3. Moon Phases

Complete the diagram by choosing the correct answer from each box.

Box W

- A. new moon
- B. full moon
- C. first-quarter moon
- D. third-quarter moon

Box X

- A. new moon
- B. full moon
- C. first-quarter moon
- D. third-quarter moon

(Item 15 continued)

Box Y

- A.** new moon
- B.** full moon
- C.** first-quarter moon
- D.** third-quarter moon

Box Z

- A.** new moon
- B.** full moon
- C.** first-quarter moon
- D.** third-quarter moon

16. A student observes the Moon when it is in Position 2 of Figure 1. Help the student create a table that shows the position the Moon will be in after the specified number of days have passed.

Number of Days Passed	Moon's Position
8	X
22	Y
36	Z

Complete the table by choosing the correct answer from each box.

Box X

- A. Position 3
- B. Position 4
- C. Position 5
- D. Position 6

Box Y

- A. Position 6
- B. Position 7
- C. Position 8
- D. Position 1

Box Z

- A. Position 1
- B. Position 2
- C. Position 3
- D. Position 4

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Use the information below to answer questions 17–20.

A student observed that the outside of a cup got warmer when it was filled with a hot beverage. The student then performed an investigation to observe the effect a hot object would have on room-temperature water.

- The student started by placing a thermometer and 30 milliliters (mL) of water inside a cup.
- The student also boiled 150 mL of water in a beaker and then removed the beaker from the heat source.
- The student then tied metal washers to a string and took their temperature to ensure they were at room temperature by placing a thermometer on the metal washers.
- The student then lowered the washers into the beaker of water as shown in Figure 1.

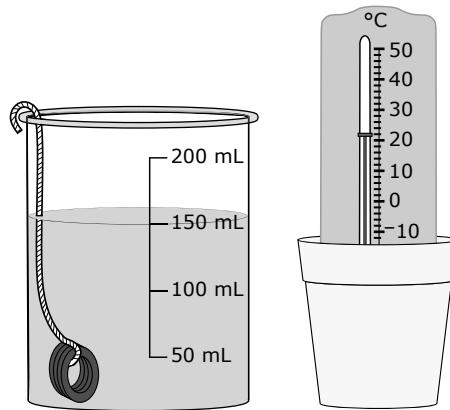


Figure 1. Investigation Setup

The student left the washers in the beaker of water for 15 minutes and then carefully removed them. The student placed a thermometer on the metal to take the temperature before adding them to the cup of water. The student lowered the washers into the water in the cup.

- 17.** Based on the experiment in the passage, select the statement that accurately describes the increase or decrease of the kinetic energy of the particles.
- A.** The kinetic energy of the particles will increase in the washers after being placed in the cup of water.
 - B.** The kinetic energy of the particles will increase in the water that is in the beaker as it is being heated.
 - C.** The kinetic energy of the particles will decrease in the washers after being placed in the beaker of water.
 - D.** The kinetic energy of the particles will remain the same in the water that is in the beaker as it is being heated.

- 18.** The molecules that make up the different materials in the passage have different kinetic energies.

Select the answer that provides the correct order of the samples from greatest kinetic energy of the molecules at the top of the list to least kinetic energy at the bottom.

- A.** water in the beaker after it comes to a boil
water in the cup after the washer is added
water in the cup before the washer is added
- B.** water in the cup after the washer is added
water in the beaker after it comes to a boil
water in the cup before the washer is added
- C.** water in the cup before the washer is added
water in the beaker after it comes to a boil
water in the cup after the washer is added
- D.** water in the cup after the washer is added
water in the cup before the washer is added
water in the beaker after it comes to a boil

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19. This item has two parts. First, answer Part A. Then answer Part B.

The student used Table 1 to record the temperatures of the washers and of the water in the cup after the washers were placed in the cup. However, the student forgot to label the table.

Part A

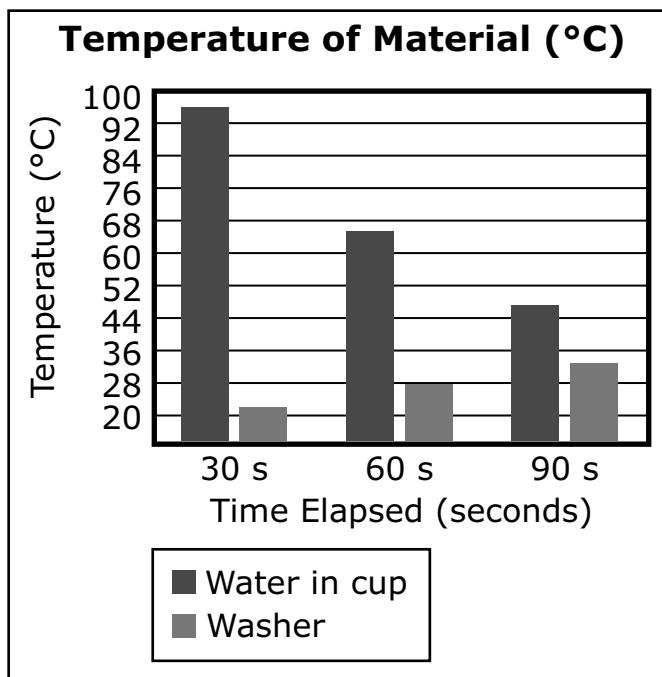
Select the bar graph that correctly shows the temperatures that represent each material in Table 1.

Table 1. Temperature Data

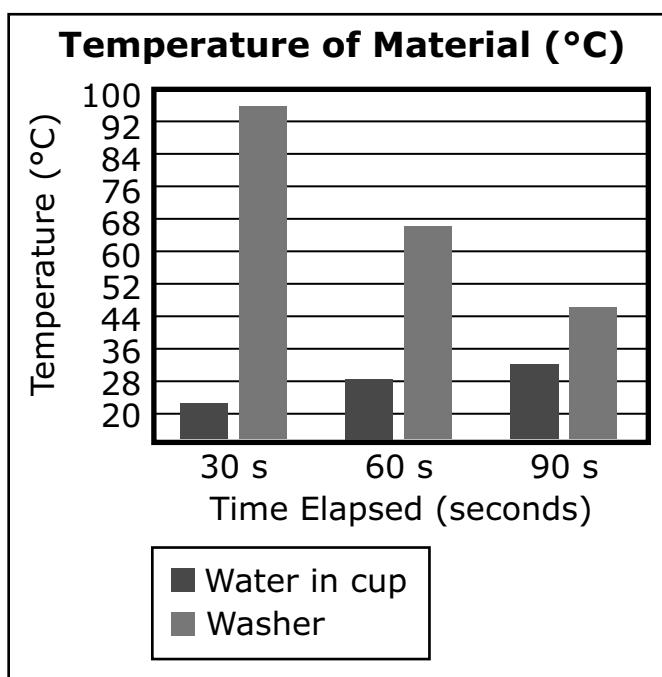
Material	Temperature (°C)		
	30 s	60 s	90 s
?	96	66	46
?	22	28	32

(Item 19 continued)

A.

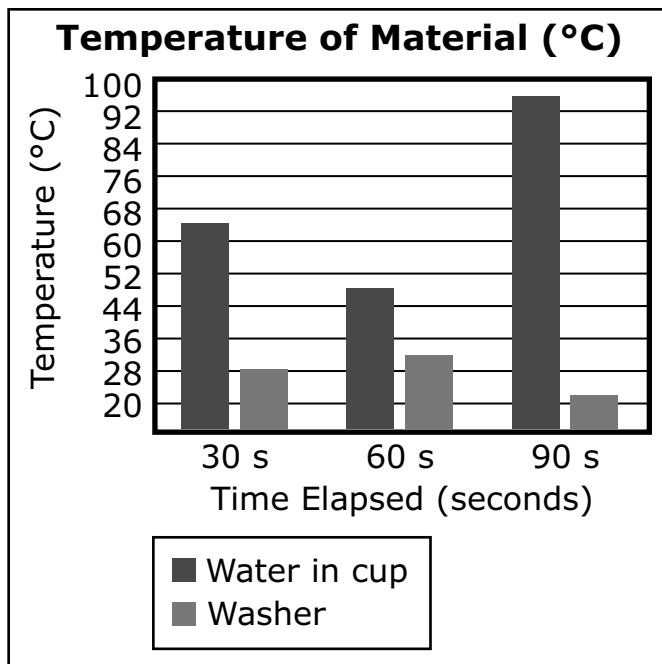


B.

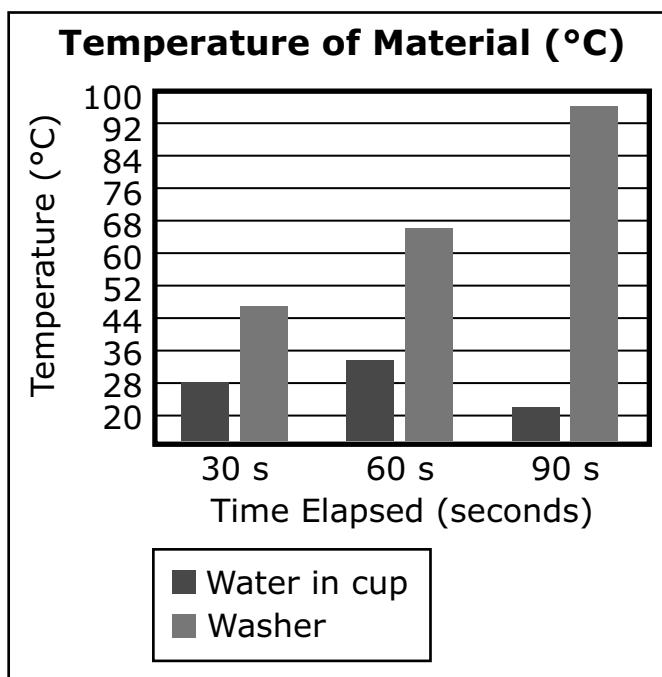


(Item 19 continued)

C.



D.



(Item 19 continued)

Part B

Using the information provided, determine what will happen as the experiment goes longer than 90 seconds.

Complete the sentences by choosing the correct answer from each box.

As the experiment goes longer than 90 seconds, the temperature of the water in the cup will **X**, and the temperature of the washers will **Y**. This will continue **Z**.

Box X

- A. increase
- B. decrease
- C. stay the same

Box Y

- A. increase
- B. decrease
- C. stay the same

Box Z

- A. until the temperatures are the same
- B. but the temperatures will never be equal

20. The student repeats the experiment but fills the cup with 60 mL of water instead of 30 mL.

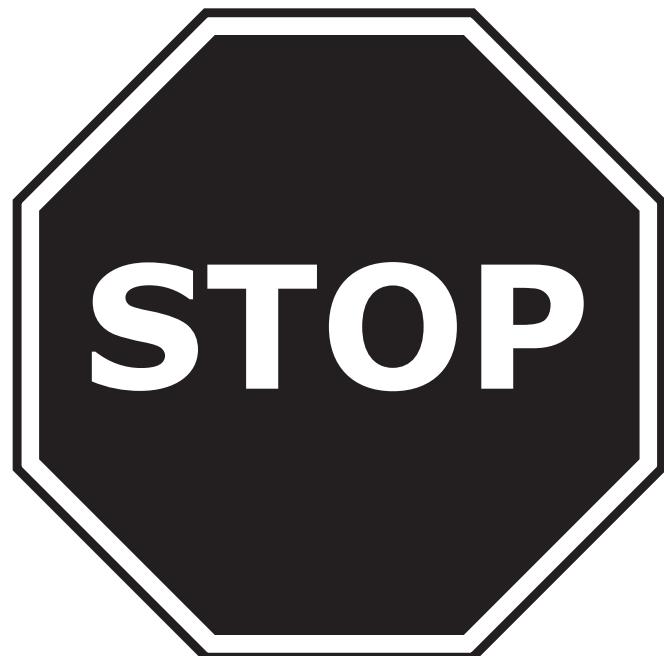
- Predict what will happen in the experiment.
- Explain why the predicted result would likely occur.

Be sure to discuss the motion of molecules and the transfer of energy.

Enter your response in your answer document. Support your answer with evidence from the data.



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You have reached the end of Unit 1 of the test.

- **Review your answers from Unit 1.**