Student Name _____

SSID _____ **DOB** _____

P

School Name _____ **District Name** _____

Illinois Science Assessment

Grade 8
Science

Test Booklet

Practice Test

Section 1

Welcome! Today you will be taking the Illinois Science Assessment for Grade 8.

Read the information and question for each item carefully and then choose the best answer(s) for each question. You may look back at each item in this section as often as necessary. All answers requiring a written response must be written into the answer response box provided.

When you finish you may review any questions and your answers. If you have questions, raise your hand and a test administrator will help you.

Please turn the page to begin.

Practice_LS8_06_1

1. PTC is a chemical that tastes bitter to some people and is tasteless to others. Scientists determined that an inherited gene influences a person's ability to taste PTC. The ability to taste PTC is a dominant trait, while not being able to taste PTC is a recessive trait. Figure 1 shows an incomplete Punnett square with two parents. Each parent has a dominant allele (T) and a recessive allele (t).

Figure 1. Punnett Square for PTC Alleles

Parent Alleles	**T**	**t**
T		
t		

Which statement describes the parents' and offspring's ability to taste PTC?

A. Both parents can taste PTC, and most of the offspring will likely taste PTC.

B. Both parents can taste PTC, and most of the offspring will likely not taste PTC.

C. Both parents cannot taste PTC, and most of the offspring will likely taste PTC.

D. Both parents cannot taste PTC, and most of the offspring will likely not taste PTC.

GO ON TO NEXT PAGE

Practice_LS8_01_3

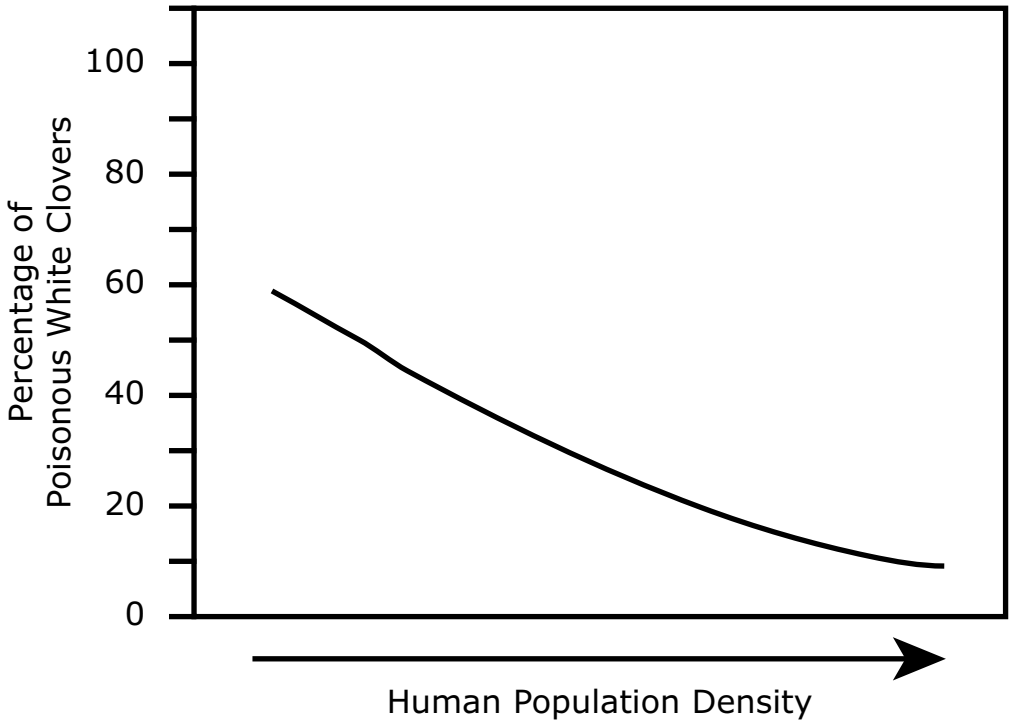
2. Students are researching the white clover plant. The students make this list of facts about white clovers:

- Plants can grow in areas with both low and high human population densities.
- Some variations of the plant have a mutation that causes the leaves to produce a poison.
- Plants that produce the poison are less likely to be eaten by herbivores.

Figure 1 shows the white clover plant. Figure 2 shows the percentage of white clover with the poison mutation in relation to human population density.

Figure 1. White Clover Plant

Figure 2. Percentage of Poisonous White Clovers vs. Human Population Density



Source: James S. Santangelo et al., *Science*, 2022

Which statement describes the **most likely** relationship between the abundance of poison-producing clover plants and human population density?

A. As the abundance of poison-producing clover plants increases, human population density increases.

B. As the abundance of poison-producing clover plants decreases, human population density decreases.

C. As human population density increases, the abundance of poison-producing clover plants decreases.

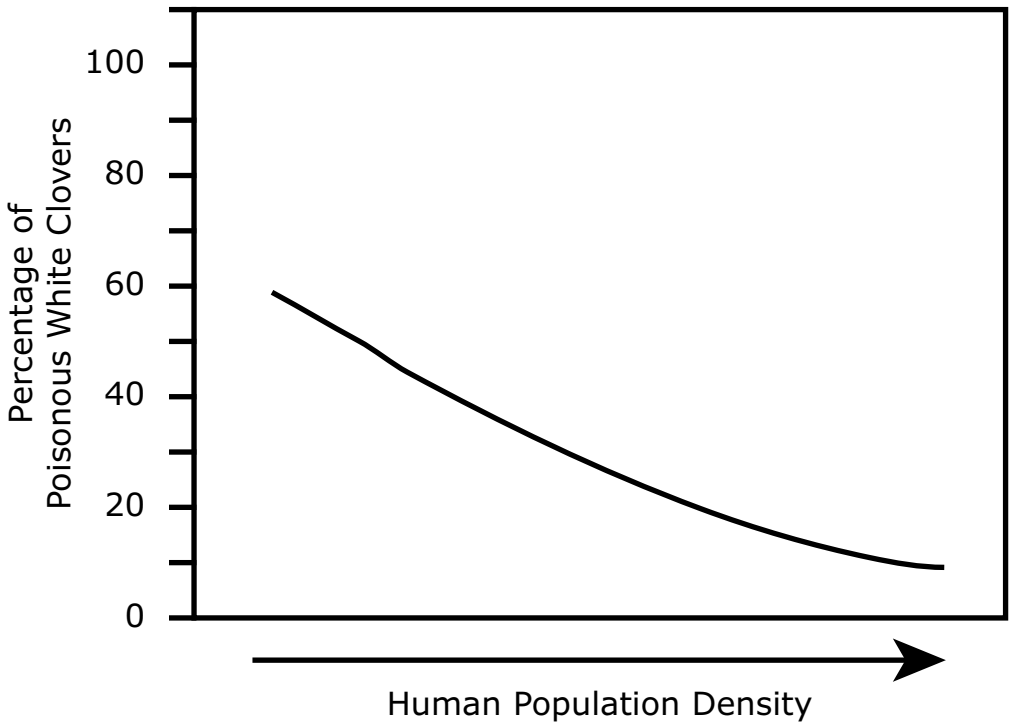
D. As human population density decreases, the abundance of poison-producing clover plants decreases.

Practice_LS8_02

3. A mutation in white clover plants causes the leaves to produce a poison. Herbivores avoid eating white clovers because the poison gives the plant a bitter taste. Scientists collected data on the number of poisonous and nonpoisonous white clovers in areas with low and high human population densities. Figure 1 shows the white clover plant. Figure 2 shows the percentage of poisonous white clover plants in relation to human population density.

Figure 1. White Clover Plant

Figure 2. Percentage of Poisonous White Clovers vs. Human Population Density



Source: James S. Santangelo et al., *Science*, 2022

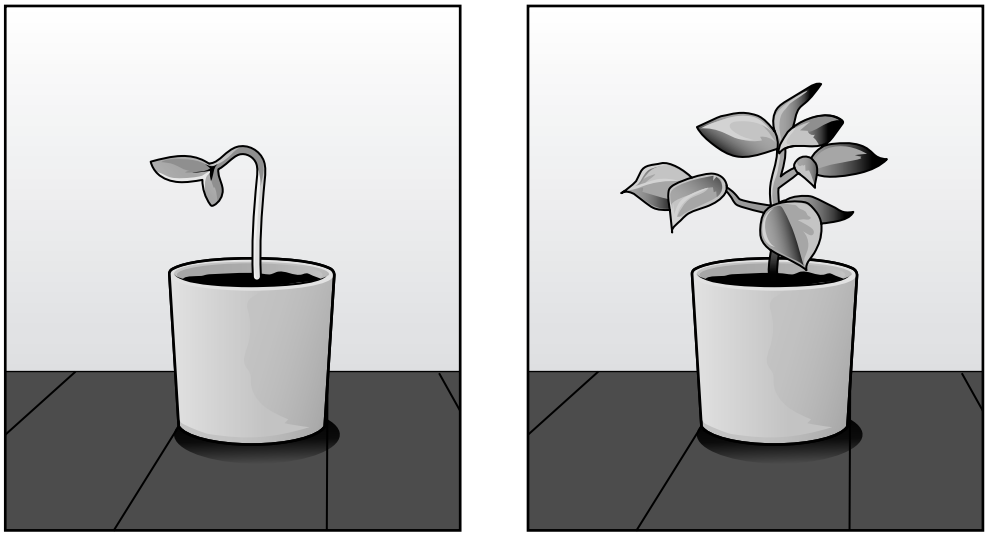
Write your response to the following in the space provided.

- How does producing poison affect the survival of white clovers in areas with large populations of herbivores? (1 point)
- Describe **one** piece of evidence that supports your answer. (1 point)
- Predict the percentage of **nonpoisonous** white clovers in areas with a high human population density. (1 point)

Practice_LS8_08_3

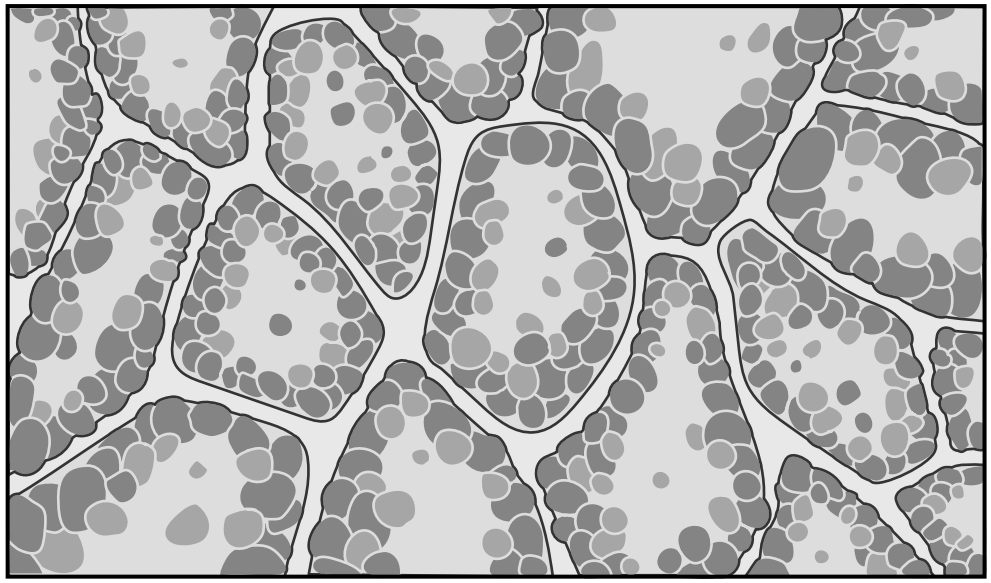
4. Students are investigating living and nonliving things. They planted a seed in a pot of soil and made observations after 10 days and after 30 days. The students then viewed one of the plant leaves using a microscope that magnified the leaf 400 times. Figure 1 shows the plant they observed. Figure 2 shows what they observed using the microscope.

Figure 1. Plant on Day 10 and Day 30



Day 10 Day 30

Figure 2. Plant Leaf Viewed Under a Microscope



Which observations are the **best** evidence that the plant is a living thing?

A. The plant needs soil to grow, and the plant grows taller over time.

B. The plant needs soil to grow, and the leaf contains internal structures.

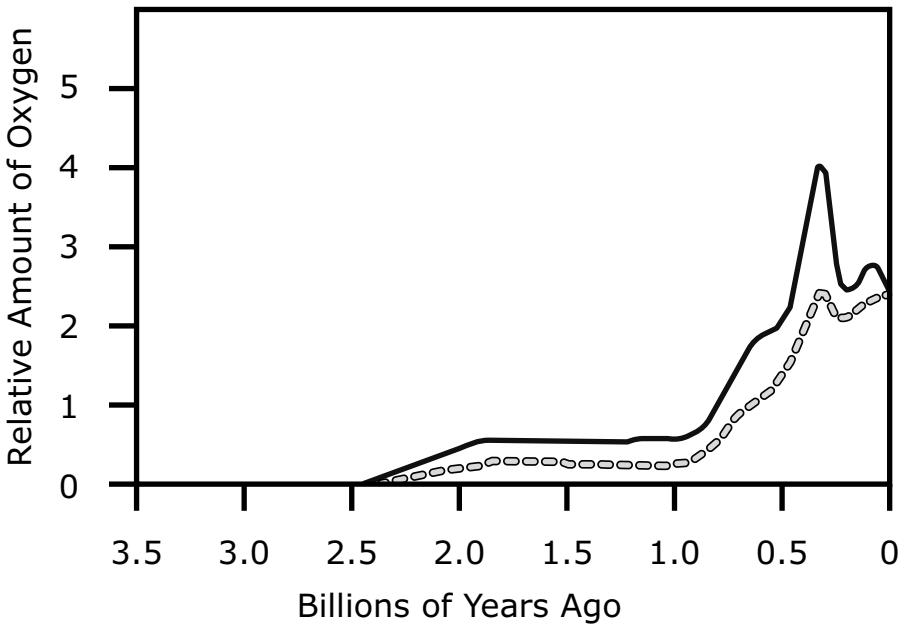
C. The plant grows taller over time, and the leaf contains internal structures.

D. The plant leaf contains internal structures, and the leaf has irregularly shaped particles.

Practice_LS8_07_2

5. Photosynthesizing cyanobacteria became plentiful about 2.5 billion years ago. Figure 1 shows the high and low estimates for oxygen levels for the last 3.5 billion years.

Figure 1. Atmospheric Oxygen vs. Billions of Years Ago



Source: Heinrich D. Holland, *Philosophical Transactions of the Royal Society B*, 2006

Which statement describes how cyanobacteria affected the atmosphere over the last 3.5 billion years?

A. Cyanobacteria caused the amount of carbon dioxide to increase and the amount of oxygen to increase.

B. Cyanobacteria caused the amount of carbon dioxide to decrease and the amount of oxygen to increase.

C. Cyanobacteria caused the amount of carbon dioxide to increase and the amount of oxygen to decrease.

D. Cyanobacteria caused the amount of carbon dioxide to decrease and the amount of oxygen to decrease.

Practice_LS8_05

6. Many pollinators eat nectar within flowers. Pollen can stick to a pollinator's body and be transferred from flower to flower as the pollinator feeds on nectar. Table 1 shows some characteristics of different pollinators. Table 2 shows some characteristics of flowers.

Table 1. Pollinator Characteristics

Type of Pollinator	Characteristics
Hummingbirds	• Have long, narrow bills to help access nectar • Most attracted to bright red and orange flowers • Consume nectar while flying next to or perched on the flower
Bees	• Have mouth parts that extend to help suck up nectar • Most attracted to bright blue and yellow flowers • Land directly on the flower to consume nectar
Bats	• Have a good sense of smell • Most attracted to pale or white flowers • Are most active at night

Table 2. Flower Characteristics

Flower Type	Picture	Characteristics
1		• Bowl-shaped • Somewhat hidden nectar • Closed petals during the day • White-colored
2		• Wide, shallow shape • Visible nectar • Large area containing pollen and nectar • Yellow-colored
3		• Funnel-shaped • Deeply hidden nectar • Strong stems • Red-colored

Write your response to the following in the space provided.

- Which flower type has structures specialized to be pollinated **most often** by bees? (1 point)
- Identify **one** piece of evidence that supports your answer. (1 point)
- Explain how flowers benefit from structures that help attract pollinators. (1 point)

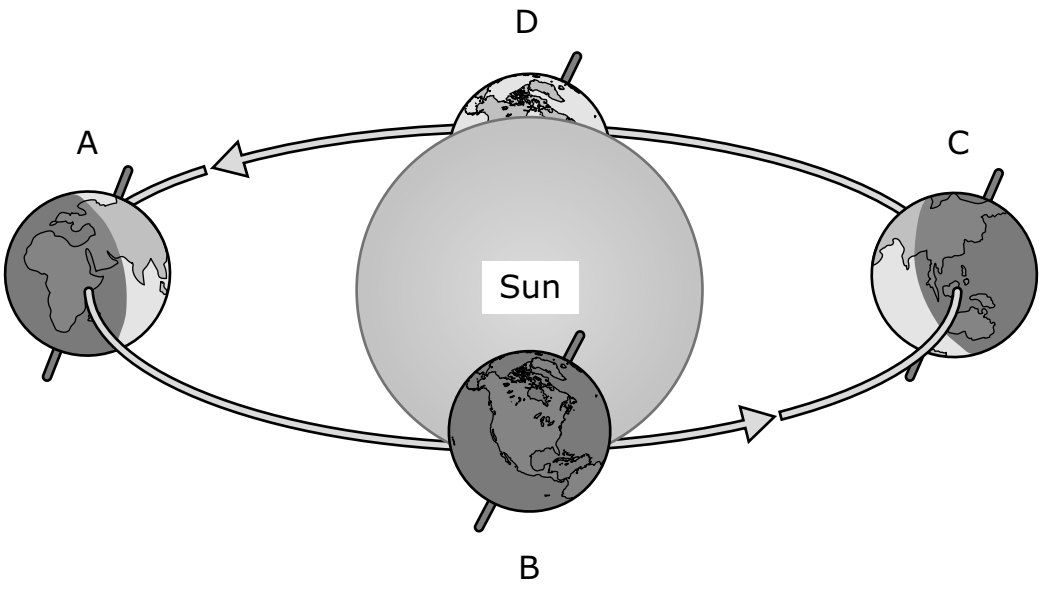
GO ON ▶

GO ON ▶

Practice_ES8_07_2

7. Students create a model to show Earth's position in relation to the Sun during different seasons. Figure 1 shows Earth in four different positions in its orbit.

Figure 1. Positions of Earth's Orbit



In which two positions is Earth's Northern Hemisphere experiencing either summer or winter?

A. Position A and Position B

B. Position A and Position C

C. Position B and Position C

D. Position B and Position D

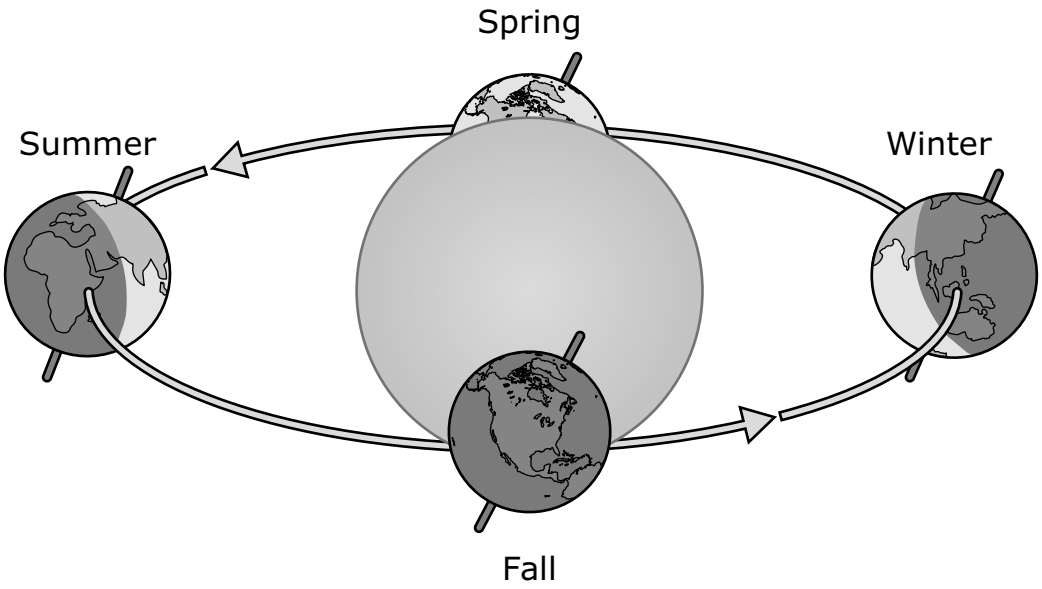
Practice_ES8_05_2

8. Table 1 lists the six constellations that are visible throughout the entire year in some parts of different hemispheres. Figure 1 shows Earth orbiting the Sun with the Northern Hemisphere seasons labeled.

Table 1. Constellations Visible throughout the Year

Northern Hemisphere	Southern Hemisphere
Big Dipper	Carina
Cassiopeia	Centaurus
Draco	Crux

Figure 1. Earth Orbiting the Sun



Which statement **best** describes why the constellations in Table 1 are visible throughout the year?

A. The constellations move with Earth as it orbits the Sun.

B. They are located above and below the plane of Earth's orbit.

C. The constellations are brighter and closer to Earth than the Sun.

D. They are located between the Sun and Earth during Earth's orbit.

Practice_ES8_06_3

9. Students are researching information about different seasons on the planets in the solar system. Earth's axis is tilted 23.4 degrees. Figure 1 shows Earth orbiting the Sun. Table 1 lists the axial tilt of other planets in the solar system.

Figure 1. Earth Orbiting the Sun

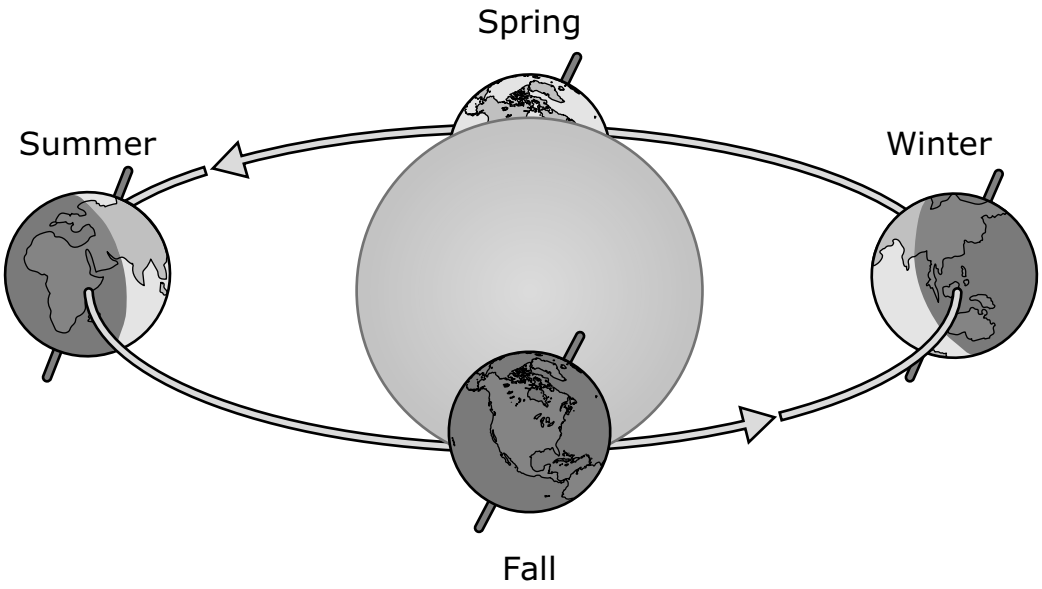


Table 1. Planetary Axial Tilt

Planet	Axial Tilt (degrees)
Jupiter	3.1
Mars	25.2
Neptune	28.3
Uranus	97.8

Which statement **best** predicts how Earth's surface temperature will change if Earth's axial tilt changes to be like Jupiter's tilt?

A. All regions will become colder and experience no seasonal changes.

B. All regions will become hotter and experience no seasonal changes.

C. Regions closer to the poles will experience smaller seasonal changes.

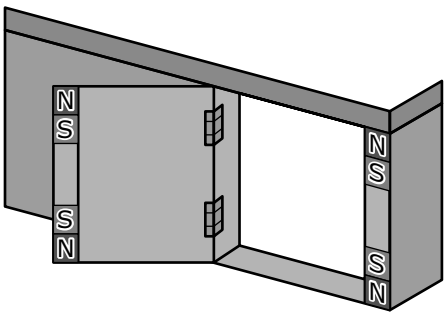
D. Regions closer to the equator will experience larger seasonal changes.

Practice_PS8_06_2

10. Students plan to use magnetic forces to hold their classroom cabinet doors closed. They attach thin magnetic strips to the edge of the cabinet door and the doorframe so that the magnets interact when the cabinet door is closed.

Which arrangement of the four magnets will hold the cabinet door shut **most** tightly when it is closed?

A.



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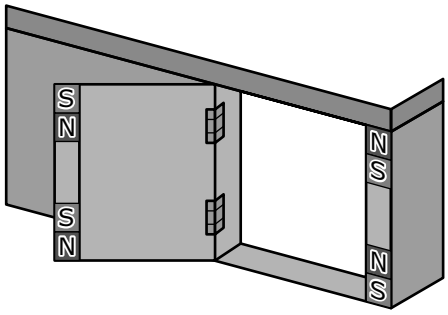

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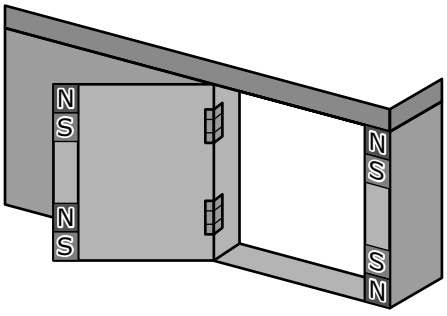
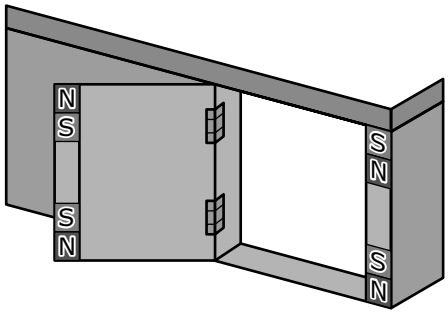


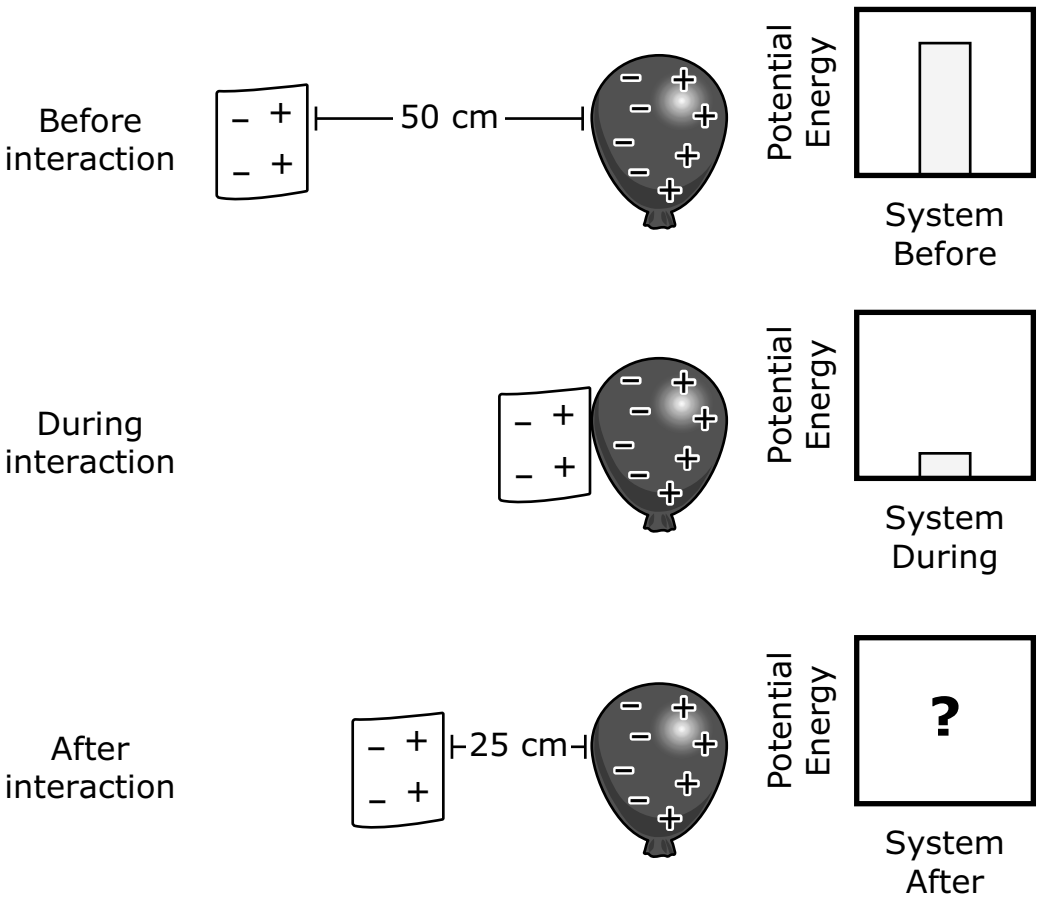
D.



Practice_PS8_05_2

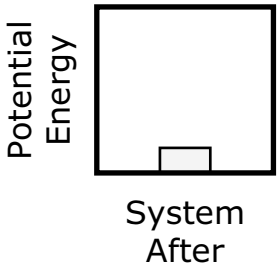
11. Students are learning about electric forces and energy. They observe how a piece of paper interacts with an electrically charged balloon. Figure 1 shows a model of the system the students observe and the potential energy before and during the interaction.

Figure 1. Model of Balloon and Paper System and Potential Energy

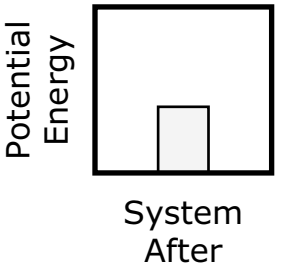


Which graph shows the potential energy of the system when the students pull the paper away after the interaction?

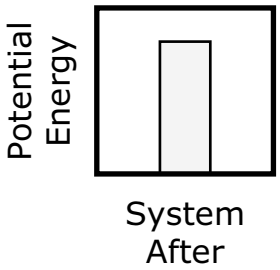
A.



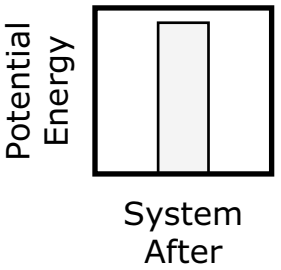
B.



C.



D.



Practice_PS8_07_1

12. Students observe the interactions caused by electric forces. They create a model to show how a negatively charged balloon interacts with a student's hair.

Which model **best** shows the interaction?

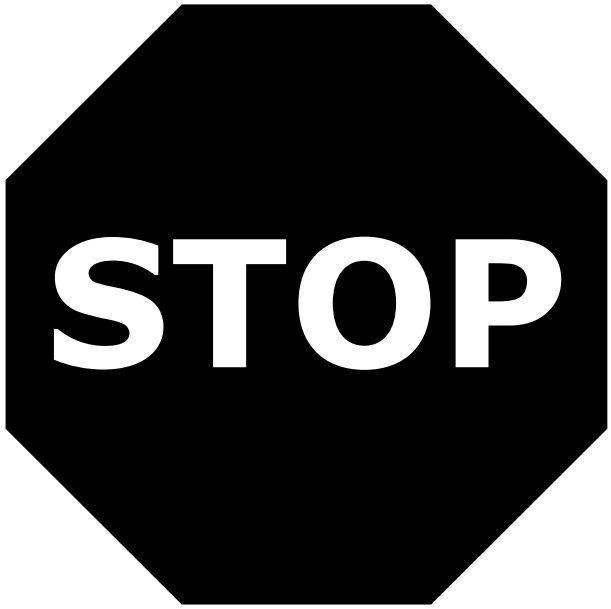
A.

B.

C.

D.

STOP



You have come to the end of the test.

- **Review your answers.**
- **Then, close your test booklet and raise your hand to turn in your test materials.**

P

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