

2023



Grade 5 - Item Type Sampler
Science
Summative Assessment

Directions:

On the following pages of your booklet are questions for the Grade 5 *Nebraska Student-Centered Assessment System–Science (NSCAS–S)* Item Type Sampler.

Read these directions carefully before beginning this item type sampler.

This item type sampler will include several different types of questions. Multiple choice questions will ask you to select an answer from among several answer choices. Multiple select questions will ask you to select multiple correct answers from among several answer choices. For some questions, there may be two parts, Part A and Part B. Some questions will ask you to construct an answer by following the directions given.

For all questions:

- Read each question carefully and choose the best answer.
- You may use scratch paper to make notes.
- Be sure to answer ALL the questions in your booklet.

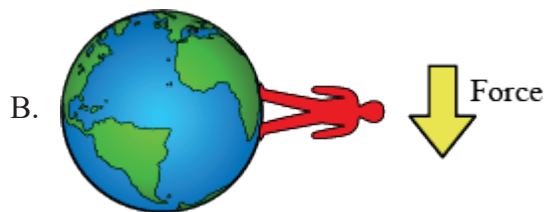
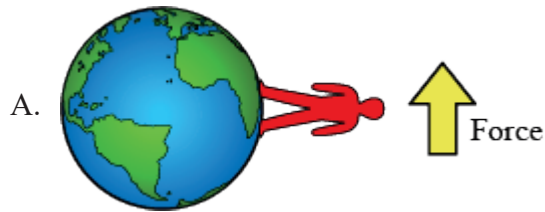
When you come to the word STOP at the end, you have finished the Grade 5 Science NSCAS–S Item Type Sampler.

Forces on Earth

1. Use the information to answer the question.

A student shows her younger brother a globe, which is a small model of Earth. The student explains to her brother how gravity works. She draws a picture of a person. She shows the person standing on Earth. Then, she shows how gravity acts on a person on Earth.

Which diagram shows how gravity acts on a person when the person is standing on Earth?



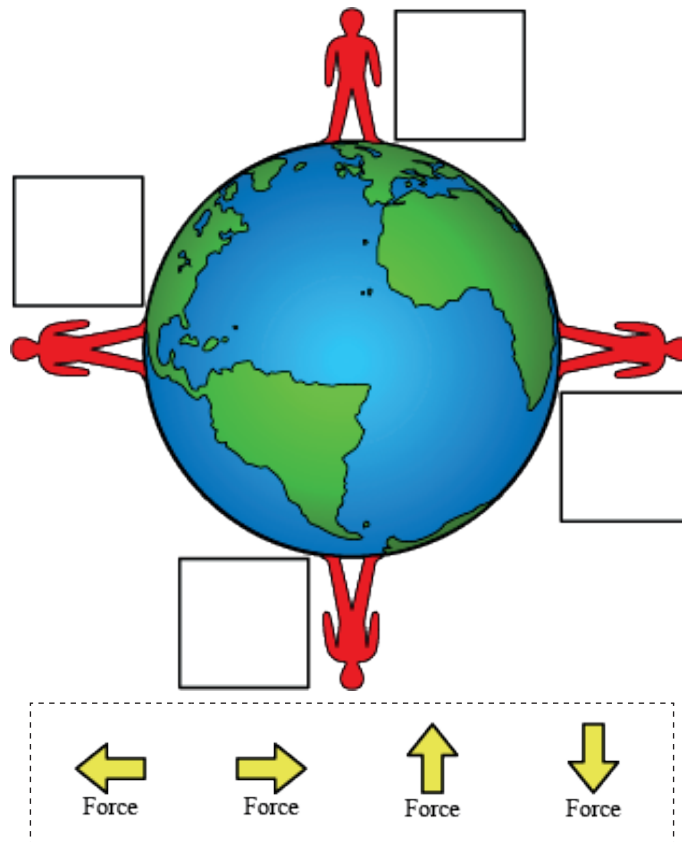
Forces on Earth

2. Use the information to complete the task.

A student shows her younger brother a globe, which is a small model of Earth. The student explains to her brother how gravity works. She draws a picture of a person. She shows the person standing on Earth. Then, she shows how gravity acts on a person on Earth.

The student shows her brother videos of people all over the world. For each video, they put a pin on the globe in the country where people made that video. Then, they look at all the pins and see a pattern of how gravity acts on Earth.

Show the direction in which gravity acts on each person in the model. Select and draw the arrows in the boxes.



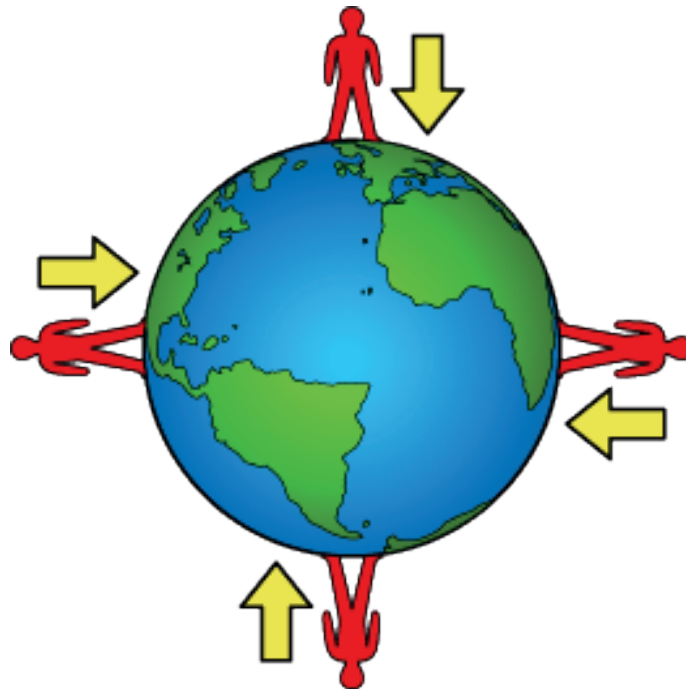
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Forces on Earth

3. Use the information to answer the question.

The student shows her brother videos of people all over the world. For each video, they put a pin on the globe in the country where people made that video. Then, they look at all the pins and see a pattern in how gravity acts on Earth.

The student and her brother show the results of their research.



What is the pattern in this evidence?

- A. The gravitational force is always toward the smallest object.
- B. The gravitational force is always toward the center of Earth.
- C. The gravitational force is always away from the tallest object.
- D. The gravitational force is always away from areas covered by water.

Forces on Earth

4. Use the information to answer the question.

Next, the student puts a small toy on top of the globe. The toy stays in place. Her brother asks her to put the toy on the bottom of the globe. The toy falls off.

Based on this observation, her brother gets scared that he could fall off Earth's surface.

Why does the toy fall off the globe?

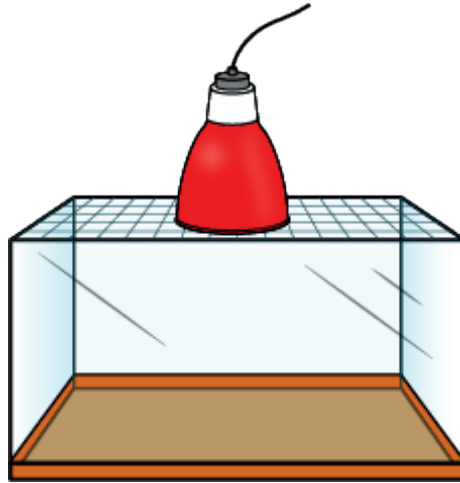
- A. The toy is plastic instead of metal. If the toy were metal, it would stay on the globe.
- B. The toy is too large compared to the globe. If the toy were the same size as the globe, it would stay in place.
- C. The globe is hollow. Without material in the center, the globe does not have enough gravitational force to hold on to the toy.
- D. The globe is a model of Earth and shows some Earth features. The globe does not have the same gravitational force on objects that Earth has.

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Designing a Lizard Habitat

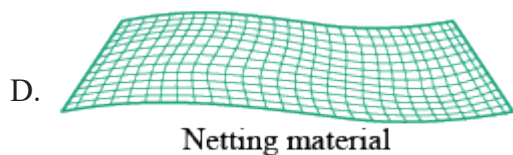
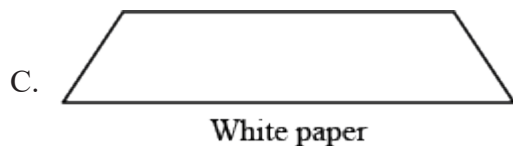
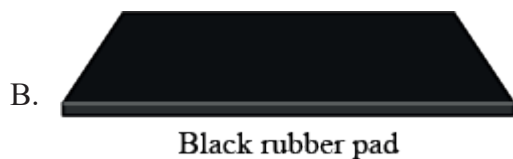
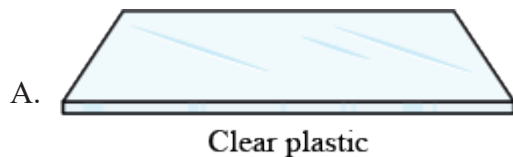
5. Use the information to answer the question.

A science class has a lizard as a class pet. The lizard is not staying warm enough in its habitat.



The students want to design a better habitat to maintain the proper temperature for the lizard. The students want to change the material at the bottom of the habitat to collect more heat from the heat lamp.

Which material should the students select for the bottom of the habitat to BEST help keep the lizard warm?



Designing a Lizard Habitat

6. Use the information to answer Part A and then answer Part B.

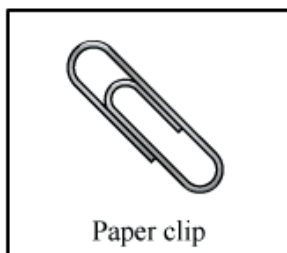
A science class has a lizard as a class pet. The lizard is not staying warm enough in its habitat. The students want to design a better habitat to maintain the proper temperature for the lizard.

The students want to add a second heat lamp to the habitat. Their teacher shows the students how to make a circuit to light the bulb in the heat lamp.

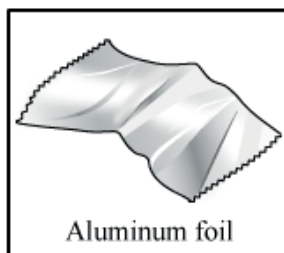
Complete Circuit



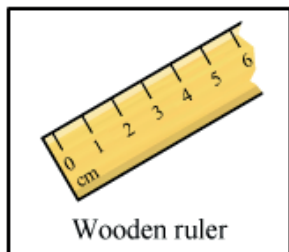
Next, the teacher shows the students several materials. The teacher states that two of these materials can be used instead of wire in a circuit.



Paper clip



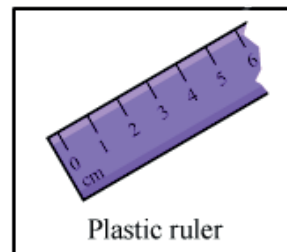
Aluminum foil



Wooden ruler



Rubber band



Plastic ruler

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Part A

Which materials will turn on the lightbulb in the circuit? Select **two** materials.

- A. paper clip
- B. aluminum foil
- C. wooden ruler
- D. rubber band
- E. plastic ruler

Part B

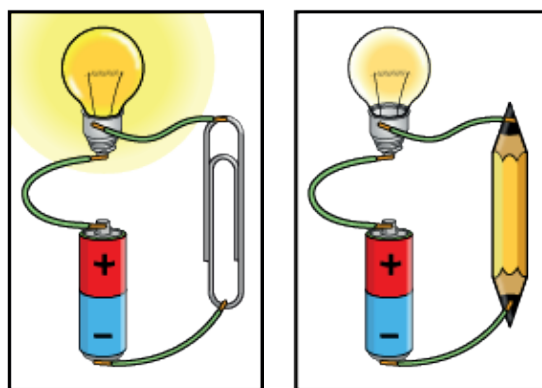
How can the students BEST classify the correct materials from Part A?

- A. as magnetic
- B. as insulators
- C. as conductors
- D. as nonmagnetic

Designing a Lizard Habitat**7. Use the information to answer Part A and then answer Part B.**

The students notice that the heat lamps are not very bright. The students wonder if using a different material in the circuit will make the lamps brighter.

The students decide to test their idea using lightbulbs. The teacher gets some wire, and the students set up two wired circuits with a lightbulb. They test two different materials: a paper clip and a graphite pencil. The drawings show their results.

**Part A**

What is the BEST conclusion the students can make based on the results of their investigation?

- A. A paper clip is a better conductor than a graphite pencil.
- B. A graphite pencil is a better conductor than a paper clip.
- C. A paper clip and a graphite pencil are both conductors with the same conductive strength.
- D. A paper clip and a graphite pencil are not conductors, so they have no conductive strength.

Part B

Which evidence supports the correct answer from Part A?

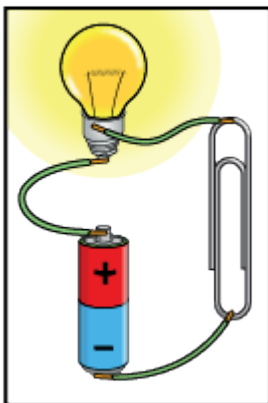
- A. Both lightbulbs in the circuits do not produce light.
- B. The lightbulb in the circuit with the paper clip is brighter.
- C. The lightbulb in the circuit with the graphite pencil is brighter.
- D. Both lightbulbs in the circuits produce the same brightness of light.

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Designing a Lizard Habitat

8. Use the information to answer the question.

The students notice that the heat lamps are not very bright. The students wonder if using a different material in the circuit will make them brighter.



The students can use metal wires and a paper clip to complete the circuit with a lightbulb.

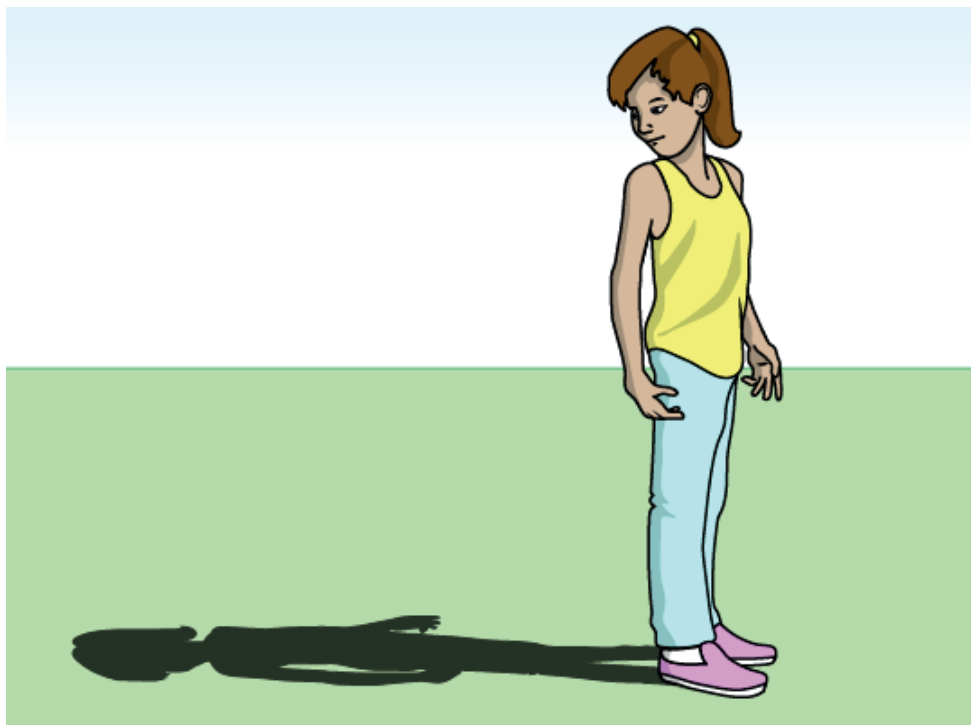
How do these materials complete a circuit so a lightbulb turns on?

- A. The paper clip reduces energy flow between the battery and the lightbulb.
- B. The metal in the wires allows energy to flow between the battery and the lightbulb.
- C. The metal in the wires stops energy from flowing between the battery and the lightbulb.
- D. The paper clip changes state, which causes energy to flow between the battery and the lightbulb.

Shadow Movement

9. Use the information to answer the question.

Two students were playing outside. One student looked behind her and saw her shadow.



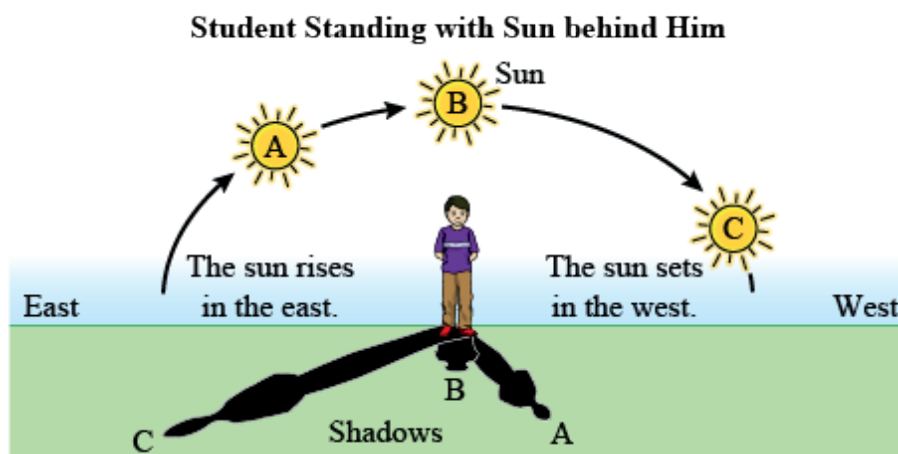
How is a shadow made?

- A. A shadow is made when there is no light source.
- B. A shadow is made when an object blocks a light source.
- C. A shadow is made when an object is transparent (clear).
- D. A shadow is made when an object blocks another object.

Shadow Movement

10. Use the information to complete the task.

The students read more information about shadows in books and on the Internet. They wonder if shadows move during the day and if the shadows are always the same length. In one article, the students find information about shadow position and length. They read that as the sun moves from east to west, a person's shadow moves around too. They also learn that shadows vary in length.



When the sun appears low in the sky, about 10° above the horizon (sun position C), a person's shadow is long (shadow position C). It may be 5.67 times as long as the person's height. When the sun is 45° above the horizon (sun position A), a person's shadow is about the same length as the person's height (shadow position A). At midday (sun position B), the sun is 90° above the horizon, and a person's shadow is at its shortest (shadow position B).

Explain how shadows move throughout the day. Select and circle the correct choices to complete the sentences.

When the sun is rising, the shadow is pointing: or .

When the sun is setting, the shadow is pointing: or .

During the day, the shadow moves (,) to: or .

Shadow Movement

11. Use the table to complete the task.

One student found a table that shows how a shadow changes during the day.

Length of a Shadow during the Day in August

Time of Day	Length of Stick's Shadow (centimeters)
6:00 a.m. (Sunrise is at 6:49 a.m.)	0
8:00 a.m.	310
10:00 a.m.	110
12:00 p.m.	50
1:00 p.m. (The sun is at its highest point in the sky at 1:23 p.m.)	30
2:00 p.m.	50
4:00 p.m.	110
6:00 p.m.	230
8:00 p.m. (Sunset is at 7:57 p.m.)	0

Complete the sentences to provide evidence that supports how shadow movement shows patterns during the day. Select and write the correct choice into each blank. Choices may be used more than once.

Between 8:00 a.m. and _____,
the length of the shadow decreases.

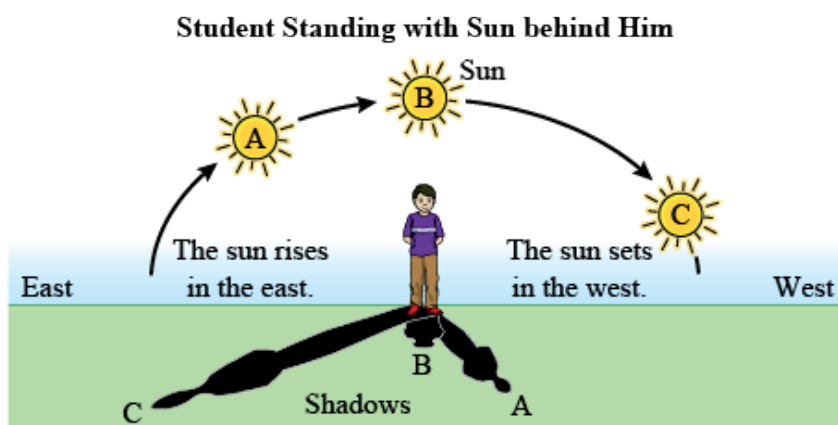
Then, between _____ and _____,
the length of the shadow increases.

6:49 a.m. 1:23 p.m. 7:57 p.m.

Shadow Movement

12. Use the information to answer the question.

The students read more information about shadows in books and on the Internet. They wonder if shadows move during the day and if the shadows are always the same length. In one article, the students find information about shadow position and length. They read that as the sun moves from east to west, a person's shadow moves around too. They also learn that shadows vary in length.



When the sun appears low in the sky, about 10° above the horizon (sun position C), a person's shadow is long (shadow position C). It may be 5.67 times as long as the person's height. When the sun is 45° above the horizon (sun position A), a person's shadow is about the same length as the person's height (shadow position A). At midday (sun position B), the sun is 90° above the horizon, and a person's shadow is at its shortest (shadow position B).

Which statement BEST describes a pattern in shadow movement throughout a day?

- A. A shadow is shortest in the early morning.
- B. A shadow is longest in the late afternoon.
- C. A shadow is shortest when the sun is closest to the horizon and longest when the sun is farthest from the horizon.
- D. A shadow is longest when the sun is closest to the horizon and shortest when the sun is farthest from the horizon.

**2023 NSCAS Science Grade 5
Item Type Sampler Answer Key**



Sequence	Key	Points
1.	C	1
2.	Clockwise: arrow pointing down, arrow pointing left, arrow pointing up, arrow pointing right	1
3.	B	1
4.	D	1
5.	B	1
6.	Part A: A, B Part B: C	2
7.	Part A: A Part B: B	1
8.	B	1
9.	B	1
10.	west east west east	1
11.	1:23 p.m. 1:23 p.m., 7:57 p.m.	1
12.	D	1