

Student Name: \_\_\_\_\_



**ALASKA**  
**SCIENCE**  
ASSESSMENT



**Science**  
**Test Booklet**  
**Grade 8**

**Paper-Based Item Sampler**

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**Alaska Department of Education & Early Development**



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## Science

Directions: Now you will be taking the Alaska Science Assessment. This test has one part that contains different types of questions.

The test will include questions that will ask you to provide your answer in a variety of ways.

- Most of the questions will have four answer choices and only one correct answer.
- Some questions will ask you to write your answer to provide your response.

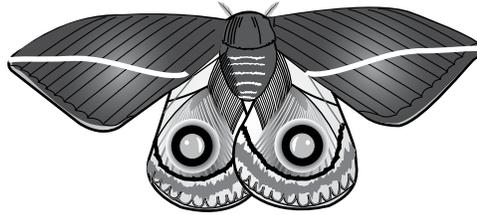
When you come to the word STOP, you have finished the assessment. Make sure you have marked all of your answers clearly and that you have completely erased any marks you do not want. When you are finished, close your test booklet.

1. A student observes two stars in the night sky. Star 1 appears to be much brighter than Star 2. Which of the following statements **best** explains the difference in star brightness?

- (A) Star 1 is moving toward Earth.
- (B) Star 1 is moving away from Earth.
- (C) Star 1 is closer and larger than Star 2.
- (D) Star 1 is closer and smaller than Star 2.

2. The drawing shows a moth with markings on its wings that look like owl eyes.

**Moth**



When the moth leaves its cocoon, it will often land on a tree and display these markings. Which statement **best** explains the moth's behavior?

- (A) It is a learned behavior to capture prey.
- (B) It is a learned behavior to scare away predators.
- (C) It is an inherited behavior to capture prey.
- (D) It is an inherited behavior to scare away predators.

3. Students follow the procedure shown below.

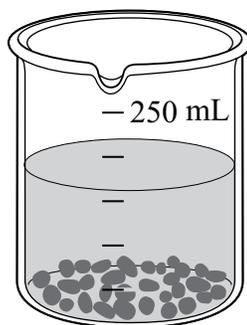
**Procedure**

1. Pour 200 mL of water into two identical glass beakers.
2. Add 5 g of salt to one beaker and stir.
3. Record the temperature of the liquid in each beaker.
4. Place both beakers on a hot plate set at the medium temperature setting.
5. Record the temperature every minute until each liquid starts to boil.

Which question are the students **most likely** investigating?

- (A) At what temperature does water boil?
  - (B) Will water boil faster on a hot plate than on a stove?
  - (C) How much salt should be added to water to make it boil?
  - (D) Does adding salt to water affect the temperature at which it boils?
4. A beaker filled with a substance that is made of liquid and solid particles is shown below.

**Beaker Filled with Substance**

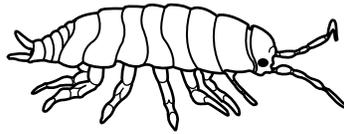


A teacher separates the substance in the beaker by draining off the liquid and leaving the solid particles on the bottom of the beaker. Which type of material **most likely** made up the original substance?

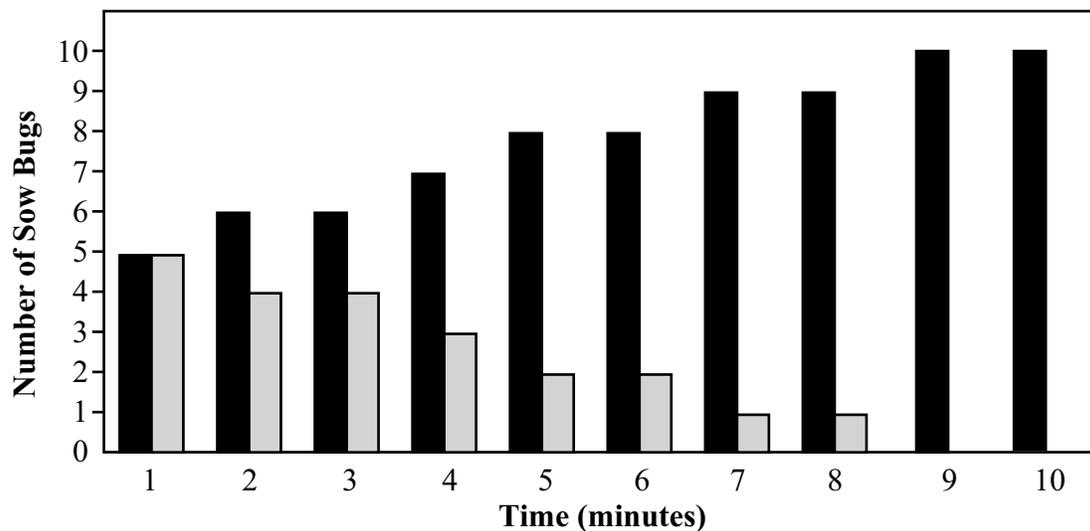
- (A) an atom
- (B) a mixture
- (C) an element
- (D) a compound

5. Ten sow bugs were placed in a closed container where they had a choice to move to a moist, dark environment or a dry, light environment. Five sow bugs were initially placed in each environment. Every minute, for 10 minutes, the number of sow bugs in each location was recorded.

Sow Bug



Sow Bug Data



Key

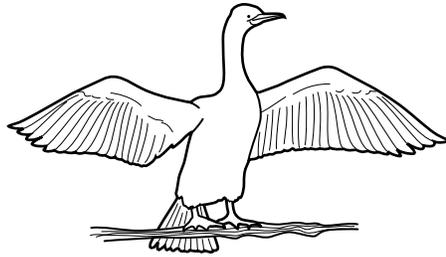
- moist, dark environment
- dry, light environment

Which explanation is **best** supported by the sow bug data?

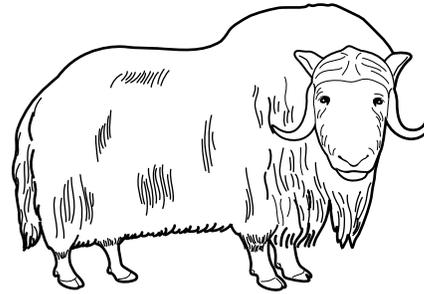
- Ⓐ Sow bugs prefer a moist, dark environment because they need moisture to breathe.
- Ⓑ Sow bugs prefer a dry, light environment because they do not need water to survive.
- Ⓒ Sow bugs prefer a moist, dark environment because they use their eyes to locate food.
- Ⓓ Sow bugs prefer a dry, light environment because they use the Sun's energy to produce food.

This question is worth 4 points.

6. Use the pictures and classification chart to answer the question.



cormorant



muskox

**Classification Chart**

Animal	Group	Classifying Characteristic
cormorant	?	feathers
muskox	mammals	?

The classification chart is missing information for each animal.

**A.** Write the missing information for the classification chart below.

cormorant group: \_\_\_\_\_

muskox classifying characteristic: \_\_\_\_\_

**B.** Identify two other characteristics that do **not** help place the cormorant or the muskox into a specific group.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

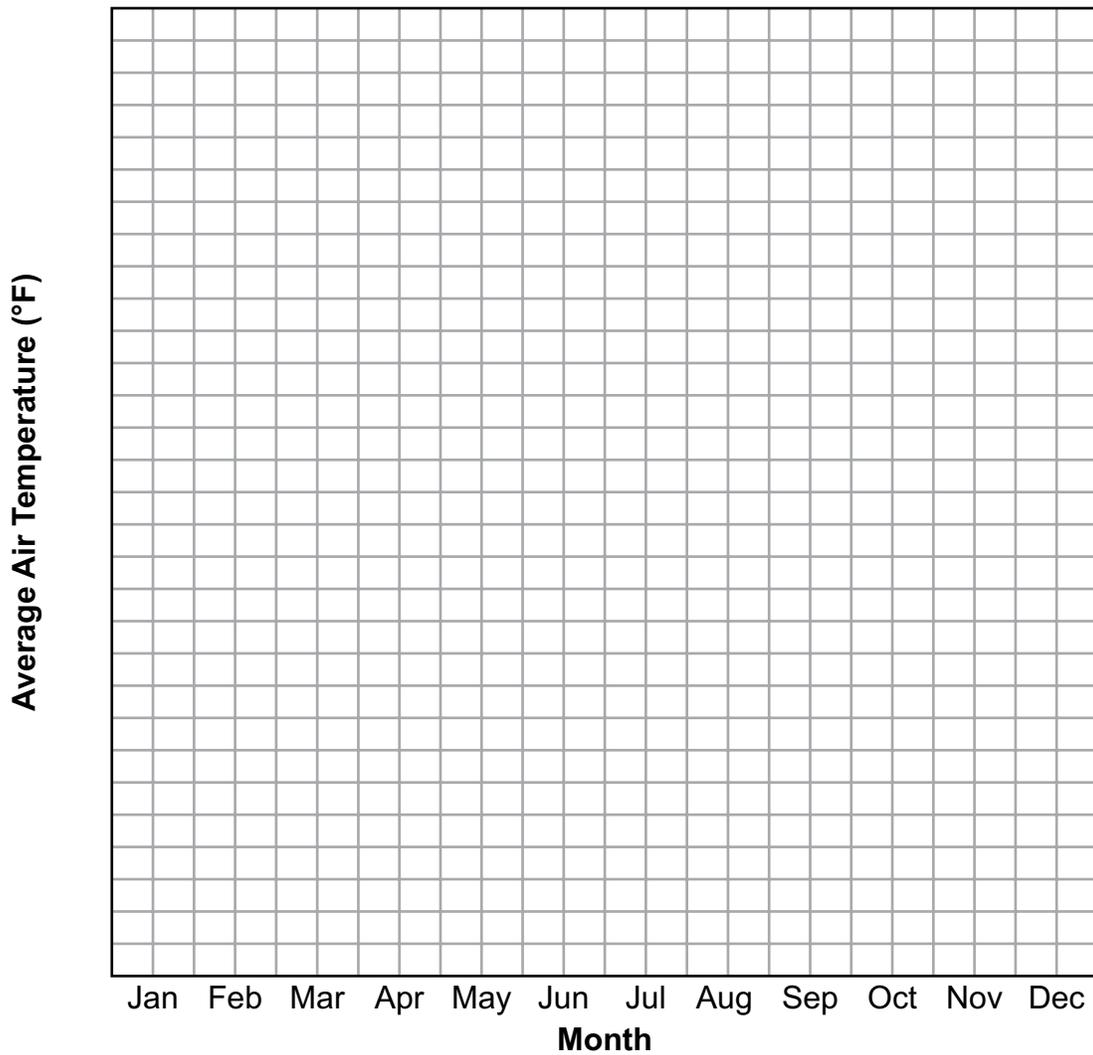
This question is worth 2 points.

7. The data table shows the average air temperature each month for Juneau, Alaska.

Month		Average Air Temperature (°F)
Name	Abbreviation	
January	Jan	29
February	Feb	30
March	Mar	34
April	Apr	41
May	May	49
June	Jun	55
July	Jul	57
August	Aug	56
September	Sep	50
October	Oct	43
November	Nov	34
December	Dec	30

- A. Complete the graph to show the average air temperature each month for Juneau, Alaska.

**Average Air Temperature**



- B. Identify the three months in which Juneau receives the **most** direct sunlight due to Earth's tilt.

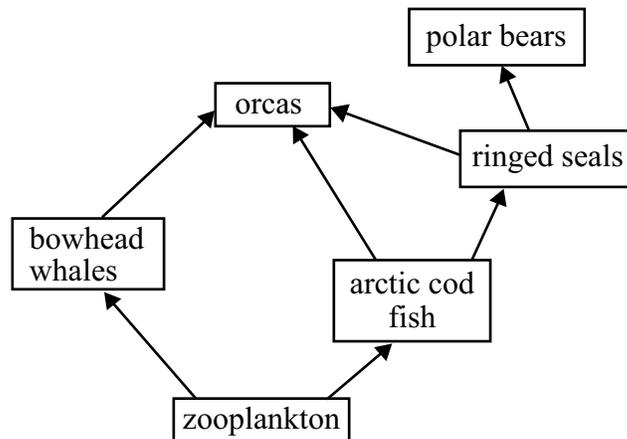
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8. A marine food web is shown below.

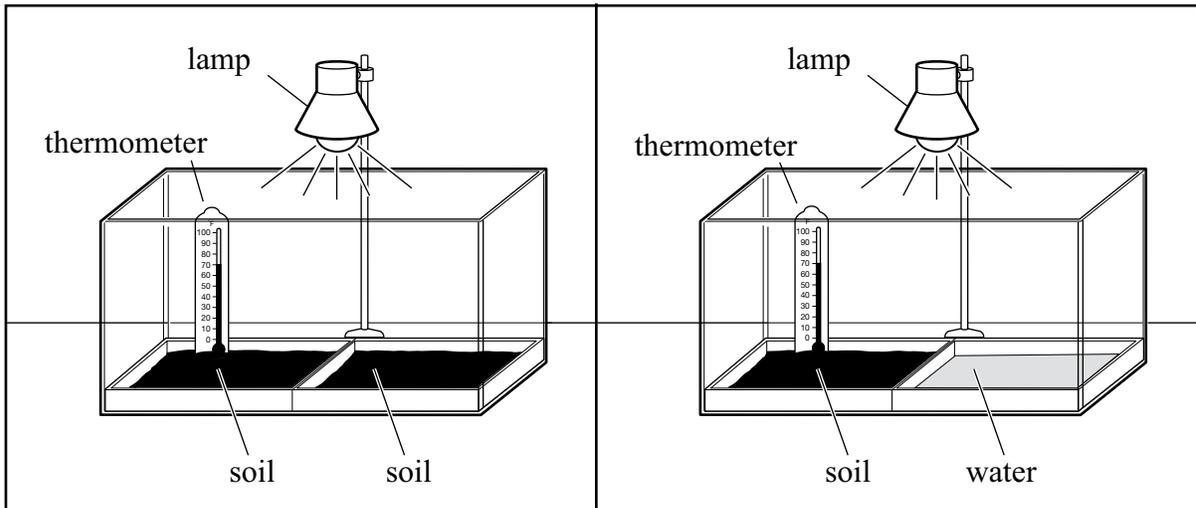
**Marine Food Web**



Which series describes a correct flow of matter in this marine food web?

- Ⓐ Zooplankton are eaten by bowhead whales. Orcas are eaten by bowhead whales.
- Ⓑ Arctic cod fish are eaten by orcas and ringed seals. Orcas are eaten by polar bears.
- Ⓒ Zooplankton eat arctic cod fish. Arctic cod fish eat orcas. Bowhead whales eat zooplankton.
- Ⓓ Arctic cod fish eat zooplankton. Ringed seals eat arctic cod fish. Polar bears eat ringed seals.

9. A student makes two models of different regions on Earth.



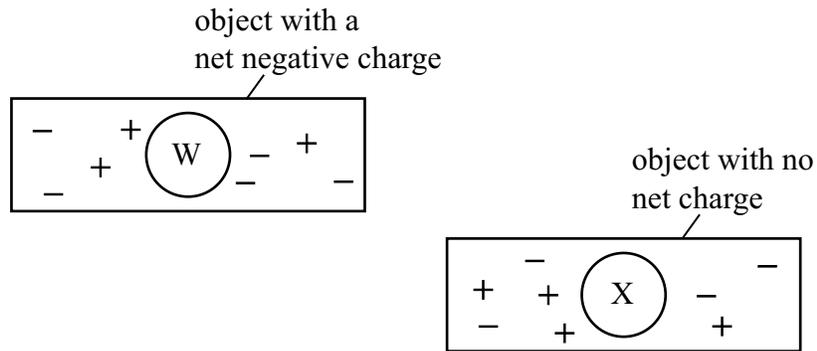
Which statement describes how these models are **most likely** being used by the student?

- (A) to study the accuracy of thermometers for measuring temperature
- (B) to study the amount of condensation that collects in open glass containers
- (C) to study the rate of water evaporation underneath different sources of light
- (D) to study soil temperature differences between coastal and inland soil surfaces

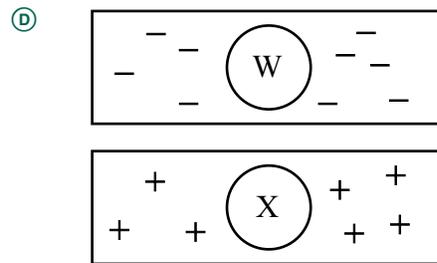
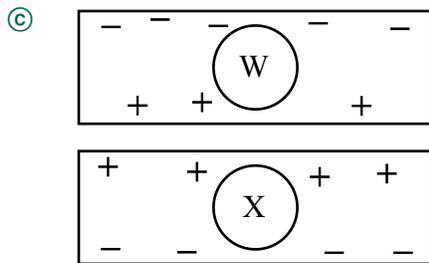
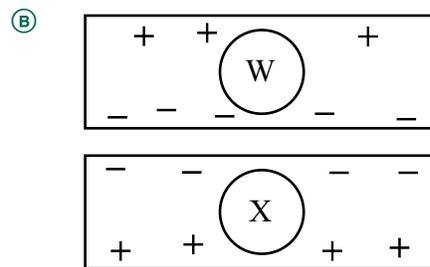
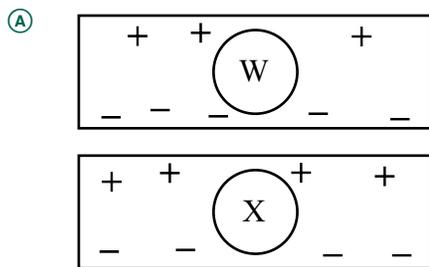
10. Which statement **best** explains why it is possible for two Alaskan malamute dogs to have offspring with similar fur patterns as their parents?

- (A) Parents pass genes to their offspring.
- (B) Parents pick offspring that look like them.
- (C) The offspring go to live with parents that look like them.
- (D) The offspring change their features to match their parents.

11. Two objects labeled W and X are shown below with their net charges.

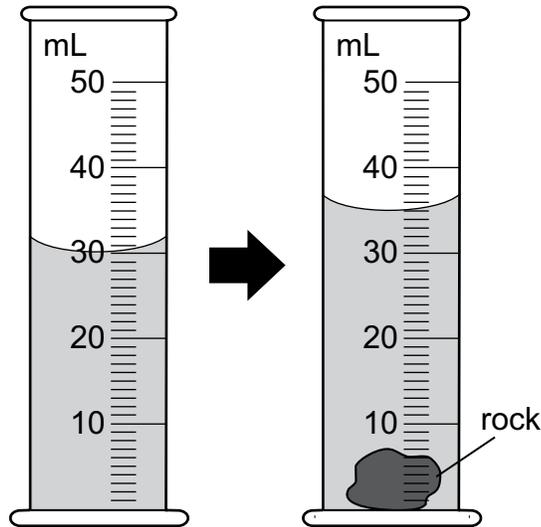


Which diagram **best** shows the movement of the charges in the two objects when they are brought near each other?



12. A student is measuring the volume of a rock by using the setup shown below.

Investigation Setup



What is the volume of the rock?

- (A) 5 mL
- (B) 7 mL
- (C) 35 mL
- (D) 38 mL

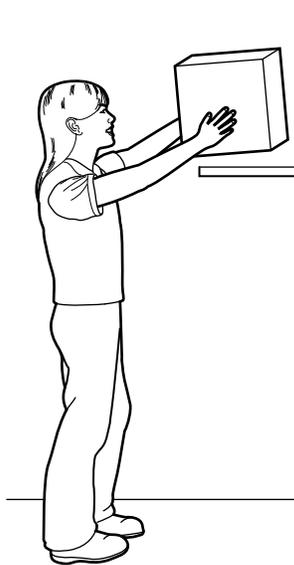
13. Which statement **best** describes how two human body systems work together?

- (A) The respiratory system distributes oxygen brought into the body by the circulatory system.
- (B) The circulatory system distributes oxygen brought into the body by the respiratory system.
- (C) The respiratory system breaks down food into nutrients, which are distributed throughout the body by the digestive system.
- (D) The digestive system breaks down food into nutrients, which are distributed throughout the body by the respiratory system.

14. Which statement **best** describes a relationship between the energy transferred from the Sun and weather on Earth?

- Ⓐ Energy from the Sun is transferred through radiation, which directly causes winds on Earth.
- Ⓑ Energy from the Sun is transferred through radiation, which directly causes precipitation on Earth.
- Ⓒ Energy from the Sun is transferred through conduction, which directly causes winds on Earth.
- Ⓓ Energy from the Sun is transferred through conduction, which directly causes precipitation on Earth.

15. A student lifts a box from the floor and puts it onto a shelf.



Which type of energy has been transferred to the box as a result of the student placing the box on the shelf?

- Ⓐ heat energy
- Ⓑ kinetic energy
- Ⓒ potential energy
- Ⓓ electrical energy



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