



Battle Creek Area Mathematics and Science Center Summative Assessment - End of Unit Exam

Attached is the Summative Assessment for the Battle Creek Area Mathematics and Science Center Science Unit, *Organisms in Their Environment*. This assessment includes a number of multiple-choice questions, one constructed response question, and several items from the unit's Student Journal. Summative assessment of targeted concepts and skills provides feedback to the individual student and the teacher on conceptual understanding, demonstration of achievement of selected content, and determination of readiness for refinement and application of new knowledge and skills. The inclusion of the Student Journal items provides the opportunity to determine the level of understanding and ability of key knowledge and skills targeted in this unit. The Student Journal items evaluate individual student learning and the effectiveness of instruction. Rubrics are included in the Summative Assessment to ensure consistent scoring of the items. All components of this assessment provide multiple opportunities to assess student understanding of each science content expectation addressed in the unit.

The BCAMSC Summative Assessments are in draft form and may change based on student performance and teacher feedback. The BCAMSC Outreach Staff will use data collected from participating districts to make adjustments for the following school year.

If you have any questions or suggestions regarding the Summative Assessment, please direct your calls to Nancy Karre at (269) 965-9584 or email: nancy@bcamsc.org.



A S S E S S M E N T



Name: _____



Date: _____

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1. Choose the list that BEST describes what plants and animals need to survive.
 - a. soil, water, sunlight, food, and air
 - b. air, water, sunlight, and a source of food or energy
 - c. food, air, oxygen, space, and water
 - d. environment, habitat, space, and sunlight

2. Kay, Shawn, and Brad were observing dwarf African frogs in the classroom aquarium. They observed that one of the frogs had back legs that were longer with larger webbed feet than the other frogs in the habitat. Choose the answer that describes how the difference in the size of one frog's back legs gives it an advantage over the other frogs.
 - a. The frog will be able to live longer than the other frogs.
 - b. The other frogs of the same kind will not accept the larger frog.
 - c. The frog will soon get too big and have to move to a new habitat.
 - d. The frog will be able to move faster to get food and escape danger.

3. Your teacher asked you to design an earthworm habitat for the classroom. Which of the following should be included in the habitat?
 - a. leaves, soil, water, air
 - b. lettuce, sand, air, light
 - c. plants, rocks, newspaper, air
 - d. water, rocks, clay, bright light

4. What is the role of different plants in the food web?
 - a. predator
 - b. consumers
 - c. producers
 - d. decomposers



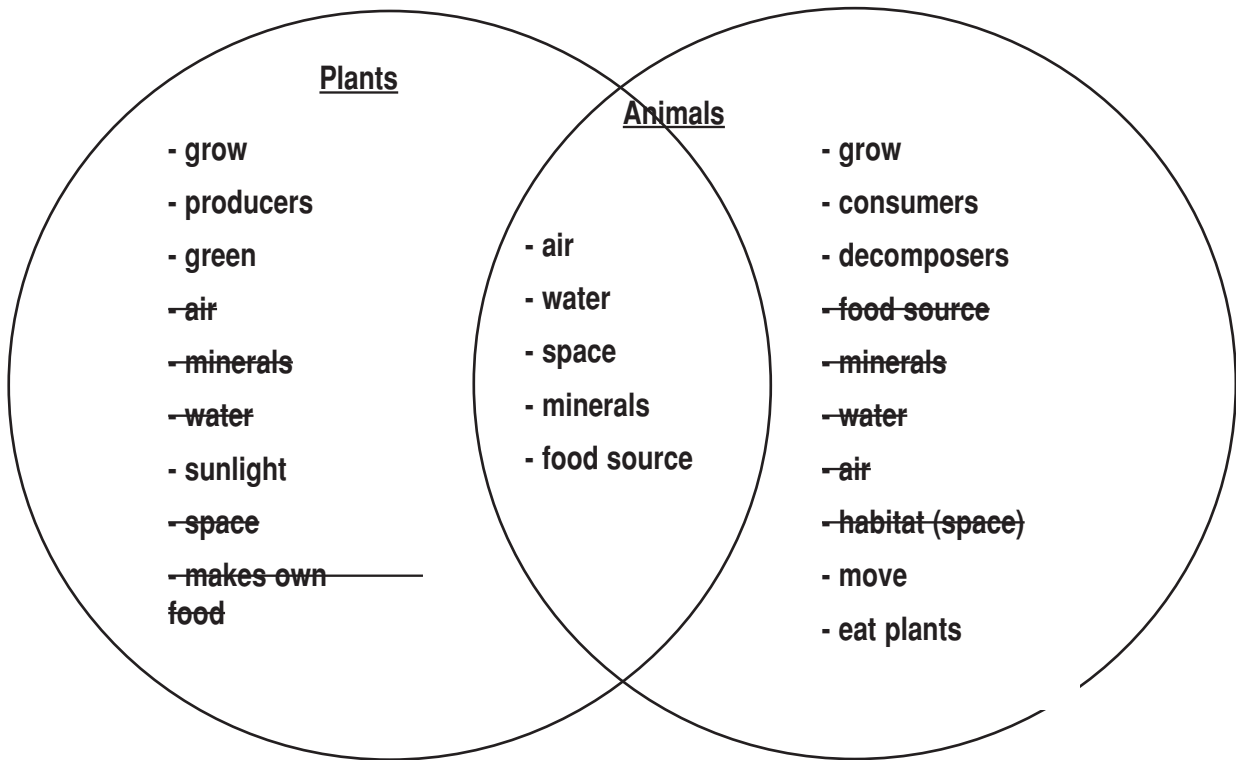
**Organisms in Their Environment
(cont.)**

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5. Josh went on a camping trip with his family. He kept a log of the different plants and animals that he observed in the campgrounds. Choose the answer that shows a food chain from Josh's camping trip.
- a. plant -> rabbit -> eagle
 - b. deer -> squirrel -> plant
 - c. eagle -> squirrel -> rabbit -> plant
 - d. deer -> plant -> eagle
6. How do animals depend on plants for survival?
- a. Animals help to spread the seeds of plants for new growth.
 - b. Animals are producers within a food web.
 - c. Plants and animals need sunlight to survive.
 - d. Animals eat plants and other animals that eat plants for food.
7. Joshua and Pam wanted to investigate the effect of sunlight on ferns and geraniums. Which of the following is the BEST way to investigate the effect of sunlight on the two types of plants?
- a. Put two ferns outdoors and two geranium plants indoors and water them equally. Record the number of sunny days and rainy days.
 - b. Place one of each plant in an area with sunlight and one of each plant in an area without sunlight. Keep all other conditions the same.
 - c. Grow several plants under the same conditions, but change the air temperature for each plant by adjusting the amount of light.
 - d. Grow several plants under various sunlight conditions. Keep the amount of fertilizer used the same for each plant.

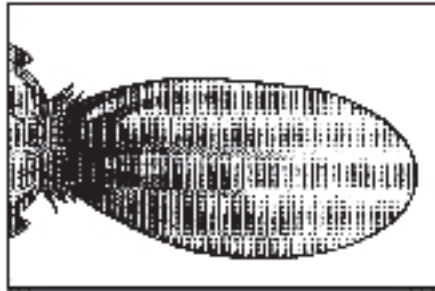


8. Mrs. Clark's fourth grade class has been studying plants and animals. They created the chart below to compare what plants and animals need to survive in their habitats.



Choose the BEST statement that compares the needs for plants and animals to survive.

- Plants and animals do not have the same needs to survive because they do not eat the same thing.
- Plants and animals need sunlight to make their own food to survive on Earth.
- Plants and animals need air, a source of food, water, minerals, and space to survive.
- Plants and animals differ because animals can move around and plants are rooted in the ground.



9. Look at the beaver tail in the picture above. This tail is adapted to help the beaver move swiftly through the water when swimming. Which of the following foot structures most likely belongs to the beaver?



10. What advantage might a beaver have over other beavers if its tail and feet were larger than other beavers?

- a. It could make a louder noise when thumping its tail.
- b. It would be able to attract a mate more quickly with a larger tail.
- c. It would be able to swim faster to avoid predators and make its dam.
- d. It would be able to cut down more trees for food and to make its dam.



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11. At the end of a neighborhood street was a large vacant lot with a field and a group of large trees. A restaurant and parking lot were built on the lot. All of the trees but two were cut down. The end of the street now floods after it rains. Which statement BEST explains why?

- a. The area around the restaurant can no longer absorb all of the water.
- b. There is more surface area for the rain to fall on.
- c. The lack of shade from trees causes the flooding problems.
- d. The increase in traffic to the restaurant causes the flooding problems.

12. Cutting down trees will:

- a. have very little effect on the living things in the ecosystem.
- b. affect most of the plants and animals in the ecosystem.
- c. only affect animals that live in trees of the ecosystem.
- d. only affect animals that live in the ecosystem.

13. What environmental concerns should be raised from cutting trees to build a restaurant and parking lot?

- a. Effects on the balance in nature and populations of species that live there.
- b. How much the traffic on the street would increase and how many cars could be parked.
- c. The quality of the food served in the restaurant and how often it was inspected.
- d. The size of the neighborhood and value of the homes on the street.

14. After the trees in the vacant lot were cut down, the people in the neighborhood noticed more squirrels in the trees in their yards. Choose the answer that BEST describes the reason for the increase in the squirrel population.

- a. The squirrels reproduce rapidly in city neighborhoods.
- b. The neighbors fed the squirrels after the trees were cut down.
- c. The squirrels moved to a new location after the trees were cut down.
- d. The predators moved away when the trees were cut down and the squirrel population increased.



**Organisms in Their Environment
(cont.)**



15. Jimmy's science class went on a field trip to hike a nature trail through the woods. The class was to make observations of plant growth. Jimmy noticed that there was very little plant growth under the larger trees along the trail. Describe what environmental conditions might cause the lack of plant growth under the trees.

Plants and animals have differences in their physical characteristics that help them to survive in their environment. Many frogs may live in the same pond habitat, yet some frogs may have characteristics that help them to survive better than others.

16. Write about one individual difference in a physical characteristic one frog might have that may help it to survive.

17. Write what might happen if the frog did not have that characteristic.



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One chilly fall afternoon, Janice was watching a squirrel gather acorns underneath an old oak tree in her backyard. The squirrel buried some acorns for food during the coming winter months. When the squirrel had enough acorns stored for winter, he put another acorn in his mouth and scurried up the tree, and out of sight.

18. Write what the plants and animals need to survive in the backyard habitat.

19. Write what would happen if someone chopped down the old oak tree in Janice's backyard.



A S S E S S M E N T

**Organisms in Their Environment
Answer Key (cont.)**





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Rubric for Summative Assessment

(Total Possible Points - 29)

Question #1: Choose the list that describes what plants and animals need to survive. (L.OL.04.15, L.OL.04.16)

Answer: b (1 point)

Question #2: Choose the answer that describes how the difference in the size of one frog's back legs gives it an advantage over the other frogs. (L.EV.04.21, L.EV.04.22)

Answer: d (1 point)

Question #3: Your teacher asked you to design an earthworm habitat for the classroom. Which of the following should be included in the habitat? (L.OL.04.16)

Answer: a (1 point)

Question #4: What is the role of different plants in the food web? (L.EC.04.11)

Answer: c (1 point)

Question #5: Choose the answer that shows a food chain from Josh's camping trip. (L.EC.04.11)

Answer: a (1 point)

Question #6: How do animals depend on plants for survival? (L.EC.04.11)

Answer: d (1 point)

Question #7: Which of the following is the way to investigate the effect of sunlight on the two types of plants? (L.OL.04.15, S.IP.04.13)

Answer: b (1 point)

Question #8: Choose the statement that compares the needs for plants and animals to survive. (L.OL.04.15, L.OL.04.16)

Answer: c (1 point)

Question #9: Which of the following foot structures belongs to the beaver? (L.EV.04.21, L.EV.04.22)

Answer: d (1 point)



**Organisms in Their Environment
Answer Key (cont.)**



Question #10: What advantage might a beaver have over other beavers if its tail and feet were larger than other beavers? (L.EV.04.22)

Answer: c (1 point)

Question #11: A restaurant and parking lot were built on the lot. All of the trees but two were cut down. The end of the street now floods after it rains. Which statement explains why? (L.EC.04.21)

Answer: a (1 point)

Question #12: Cutting down trees will: (L.EC.04.21)

Answer: b (1 point)

Question #13: What environmental concerns should be raised from cutting trees to build a restaurant and parking lot? (L.EC.04.21)

Answer: a (1 point)

Question #14: After the trees in the vacant lot were cut down, the people in the neighborhood noticed more squirrels in the trees in their yards. Choose the answer that describes the reason for the increase in the squirrel population. (L.EC.04.21)

Answer: c (1 point)

Question #15: Jimmy noticed that there was very little plant growth under the larger trees along the trail. Describe what environmental conditions might cause the lack of plant growth under the trees. (L.EC.04.21, L.OL.04.15)

Elements

- a. Plants require sunlight to make and store their own food.
- b. Plants require water.
- c. Tree branches and leaves block sufficient sunlight for plants to grow.
- d. Tree branches and leaves block sufficient water (rain) to support plant growth.

Scoring (4 points)

- 4 - Response includes all four elements
- 3 - Response includes three elements
- 2 - Response includes two elements
- 1 - Response includes one element
- 0 - No response, no elements, can't read the answer



Summative Assessment: Student Journal

Question #16 - Activity #4, Journal Entry, Question #1: Write about one individual difference in a physical characteristic one frog has that might help it to survive. (L.EV.04.21)

Elements

a. Physical characteristic includes one of the following:

- webbed feet
- claws on back feet
- long hind legs
- camouflaged skin
- eyes on side of head

b. Response includes appropriate and accurate advantage of physical characteristic for survival.

Scoring (2 points)

2 - Response includes both elements

1 - Response includes one element

0 - No response, no elements, can't read the answer

Question #17 - Activity #4, Journal Entry, Question #2: Write what might happen if the frog did not have that characteristic. (L.EV.04.22)

Element

a. Response includes appropriate and accurate relationship between physical characteristic and ability to survive (food getting, motion, protection).

Scoring (1 point)

1 - Response includes the element

0 - No response, no element, can't read the answer

Question #18 - Activity #3, Journal Entry, Question #2: Write what the plants and animals need to survive in the backyard habitat. (L.OL.04.15, L.OL.04.16)

Elements

- a. air
- b. water
- c. food
- d. space
- e. Plants require sunlight.



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Scoring (5 points)

- 5 - Response includes all five elements
- 4 - Response includes four elements
- 3 - Response includes three elements
- 2 - Response includes two elements
- 1 - Response includes one element
- 0 - No response, no elements, can't read the answer

Question #19 - Activity #3, Journal Entry, Question #3: Write what would happen if someone chopped down the old oak tree in Janice's backyard. (L.EC.04.21)

Elements

- a. There would be a decrease in food supply for squirrels.
- b. The squirrel population in the yard would decrease.
- c. The squirrels would move to a new location.

Scoring (3 points)

- 3 - Response includes all three elements
- 2 - Response includes two elements
- 1 - Response includes one element
- 0 - No response, no elements, can't read the answer