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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, *View From the Earth*. 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: _____

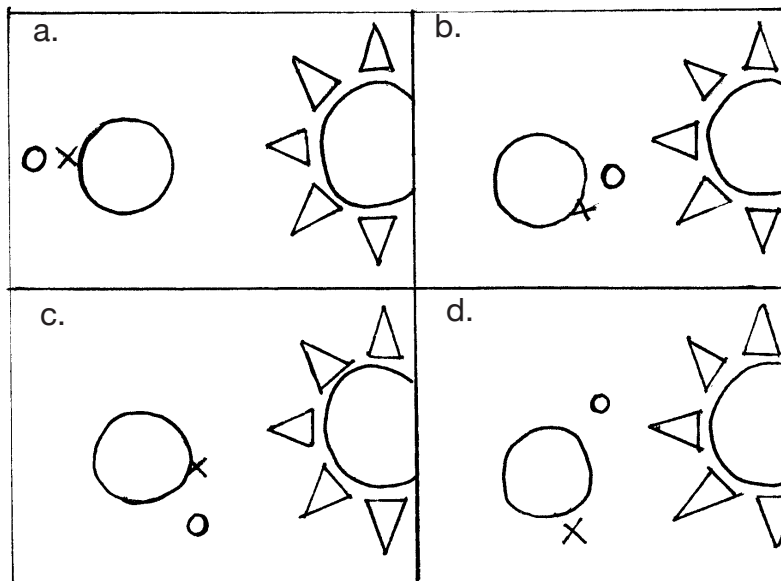


Date: _____

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1. Rank the sun, moon, and Earth from largest to smallest.

- a. sun, moon, Earth
- b. Earth, moon, sun
- c. sun, Earth, moon
- d. moon, Earth, sun

2. Which position marked with an X in the diagram below represents a location that is experiencing night?



3. During a full moon, the moon is visible in the sky all night. What pattern of movement does the moon appear to have during the full moon nights in Michigan?

- a. The full moon appears to move from north to south.
- b. The full moon appears to move from east to west.
- c. The full moon appears to move from the west to the southeast.
- c. The full moon does not have a pattern of movement in Michigan.



View From the Earth (cont.)



4. In Michigan, the sun appears to move across the sky. What is the direction of the motion of the sun across the sky?
 - a. The sun appears to move from north to south.
 - b. The sun appears to move from west to southwest.
 - c. The sun appears to move from east to west.
 - d. The sun remains in the southern skies in Michigan.

5. The sun appears to move across the sky because of the:
 - a. rotation of the Earth.
 - b. orbit of the Earth around the sun.
 - c. orbit of the moon around the Earth.
 - d. orbit of the sun around the Earth.

6. If you wanted to learn more about the seasons in Michigan and why they occur, what topic would be a good place to start in your research?
 - a. The moon and its phases
 - b. The moon and how it affects the oceans' tides
 - c. Cloud cover and cloud formations
 - d. The Earth and its orbit around the sun

7. After the Earth completes one full rotation (spin) on its axis, how much time has passed?
 - a. one 24-hour day
 - b. one 7-day week
 - c. one full month
 - d. one full year



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8. Which of the following statements below explains why a year on Earth is about 365 days long?
- The Earth orbits the sun.
 - The Earth spins on its axis.
 - The moon orbits the Earth.
 - The sun orbits the Earth.
9. Mr. Taylor's class was comparing the size of the sun, moon, and Earth. They read that the diameter of the sun was 865,000 miles and the diameter of the moon was 2,160 miles. During their sun and moon observations, students observed that the sun and full moon appeared to be about the same size. Choose the BEST explanation for the difference in their information.
- The sun appears to travel around the Earth, making it appear smaller in size.
 - The sun is farther away from the Earth than the moon, making it appear smaller.
 - The full moon reflects the light from the sun, making it appear larger in size.
 - The sun appears during the daylight hours and the moon appears in the night-time.
10. The planets in our solar system, including Earth, are often referred to as satellites of the sun because they move around the sun. Which of the following is a satellite of Earth?
- Mars
 - the moon
 - Halley's comet
 - the Milky Way
11. Choose the BEST explanation for the different shapes of the moon.
- Clouds cover part of the moon.
 - Only part of the moon gives off light at different times of the month.
 - The Earth casts a shadow on the moon, causing a dark side and a light side.
 - The entire lit side of the moon does not always face the Earth.



View From the Earth (cont.)

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12. The park guide shows the class a living fern plant and tells the students that fossils of the same type of fern have been found in the park. What can scientists conclude based on the fern fossil found in the park?

- a. The living fern is now extinct.
- b. The fossil fern is extinct.
- c. The type of fern has grown in the area for a long period of time.
- d. That type of fern has grown in the area for less than 50 years.

13. Scientists found frozen remains of mammoths with green grass, meadow plants, and twigs still in their stomachs. Some scientists concluded that the mammoths died quickly. What other conclusion can scientists make based on what they found in the mammoths' stomachs? The woolly mammoths:

- a. were predators.
- b. were plant eaters.
- c. died of starvation.
- d. ate walrus and seals.

14. What information does the discovery of the woolly mammoths and the contents of their stomachs tell the scientists about the environment of the region during the time the woolly mammoths roamed the Earth?

- a. It was a cold, frozen tundra of snow and ice.
- b. It was a hot, tropical climate with dense plant growth and rainfall.
- c. There was sufficient sun, water, and nutrients for plants to grow.
- d. No information can be gathered regarding the environment.



**View From the Earth
Answer Key (cont.)**

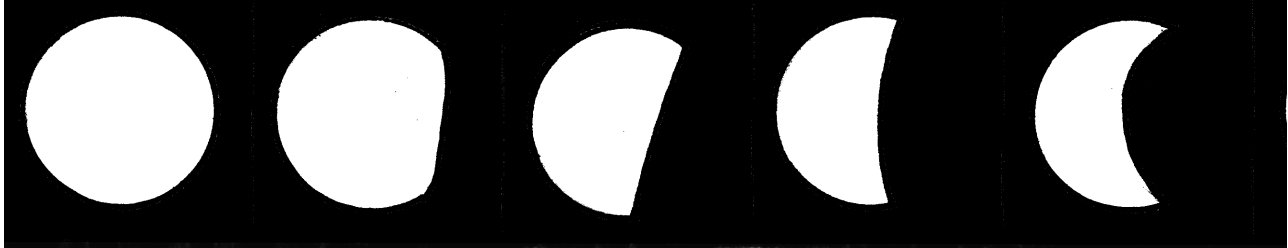
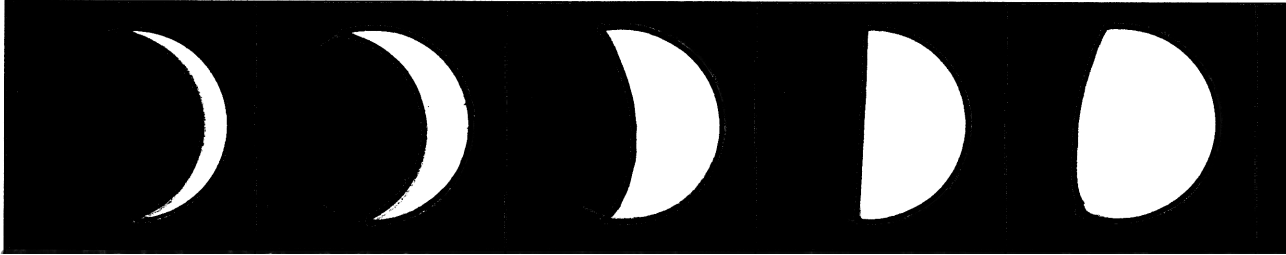


17. Draw and label a diagram that shows how the Earth moves to give us day and night. Write a caption for your diagram that explains how we get day and night on Earth.

18. If you are 5 years old, how many times has the Earth orbited around the sun during your lifetime? How do you know that?



19. Look at the drawing of the shapes of the moon. Write how the shapes of the moon follow a predictable cycle.





**View From the Earth
Answer Key (cont.)**

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Rubric for Summative Assessment

(Total Possible Points - 24)

Question #1: *Rank the sun, moon, and Earth from largest to smallest.* (E.ST.04.12)

Answer: c (1 point)

Question #2: *Which position marked with an in the diagram below represents a location that is experiencing night?* (E.ST.04.22)

Answer: a (1 point)

Question #3: *During a full moon, the moon is visible in the sky all night. What pattern of movement does the moon appear to have during the full moon nights in Michigan?* (E.ST.04.23)

Answer: b (1 point)

Question #4: *In Michigan the sun appears to move across the sky. What is the direction of the motion of the sun across the sky?* (E.ST.04.25)

Answer: c (1 point)

Question #5: *The sun appears to move across the sky because of the:* (E.ST.04.25)

Answer: a (1 point)

Question #6: *If you wanted to learn more about the seasons in Michigan and why they occur, what topic would be a good place to start in your research?* (E.ST.04.25)

Answer: d (1 point)

Question #7: *After the Earth completes one full rotation (spin) on its axis, how much time has passed?* (E.ST.04.22)

Answer: a (1 point)

Question #8: *Which of the following statements below explains why a year on Earth is about 365 days long?* (E.ST.04.21)

Answer: a (1 point)



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Question #9: *Mr. Taylor's class was comparing the size of the sun, moon, and Earth...Choose the explanation for the difference in their information. (E.ST.04.12)*

Answer: b (1 point)

Question #10: *Which of the following is a satellite of Earth? (E.ST.04.11)*

Answer: b (1 point)

Question #11: *Choose the explanation for the different shapes of the moon. (E.ST.04.24)*

Answer: d (1 point)

Question #12: *What can scientists conclude based on the fern fossil found in the park? (E.ST.04.31, E.ST.04.32)*

Answer: c (1 point)

Question #13: *What other conclusions can scientists make based on what they found in the mammoths' stomachs? (E.ST.04.31, E.ST.04.32)*

Answer: b (1 point)

Question #14: *What information does the discovery of the woolly mammoths and the contents of their stomachs tell the scientists about the environment of the region during the time the woolly mammoths roamed the Earth? (E.ST.04.31, E.ST.04.32)*

Answer: c (1 point)

Question #15: *Fossils of Deinonychus, a dinosaur that lived 100 million years ago, have been found only in Montana and Wyoming. Suppose a Deinonychus fossil is discovered in Texas. What question could a scientist investigate to better understand the dinosaur's habitat preference? (E.ST.04.31)*

Answer: c (1 point)



Question #16: *The Earth and sun are different from each other in many ways. They also have some similarities. Describe two ways that the Earth is different from the sun and one way the Earth is similar to the sun.* (E.ST.04.12)

Elements

- a. The sun is larger than Earth.
- b. The sun is gaseous and Earth is solid.
- c. The sun is always extremely hot and Earth has a temperature range from cold to warm.
- d. No life on the sun; life exists on Earth.
- e. The sun is a star; the Earth is a planet.
- f. The Earth has water; there is no water on the sun.
- g. The sun and Earth are spheres.
- h. The sun and Earth are in the same galaxy.
- i. The sun and Earth have mass and volume.

Scoring (3 points)

- 3 - Response includes two elements from a-f and one element from g-i.
- 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 #17 - Activity #3, Journal Entry: *Draw and label a diagram that shows how the Earth moves to give us day and night. Write a caption for your diagram that explains how we get day and night on Earth.* (E.ST.04.22)

Elements

- a. Drawing includes correct representation of the Earth and sun that demonstrates the rotation of the Earth to give us day and night.
- b. Caption includes reference to the rotation of the Earth as the reason for day and night.

Scoring (2 points)

- 2 - Response includes both elements
- 1 - Response includes one element
- 0 - No response, no elements, can't read the answer



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Question #18 - Activity #8, Journal Entry #1: *If you are 5 years old, how many times has the Earth orbited around the sun during your lifetime? How do you know that?* (E.ST.04.21)

Elements

- a. The Earth takes one year or 365 days to orbit the sun.
- b. The Earth would have traveled around the sun 5 times.

Scoring (2 points)

- 2 - Response includes both elements
- 1 - Response includes one element
- 0 - No response, no elements, can't read the answer

Question #19 - Activity #13, Journal Entry: *Look at the drawing of the shapes of the moon. Write how the shapes of the moon follow a predictable cycle.* (E.ST.04.24)

Elements

- a. The shapes of the moon repeat every 28 days.
- b. Response refers to the phases as a cycle or pattern.

Scoring (2 points)

- 2 - Response includes both elements
- 1 - Response include one element
- 0 - No response, no elements, can't read the answer