

Student Name: _____

Ohio Achievement Assessments



Science Student Test Booklet

Large Print
Spring 2011

This test was originally administered to students in Spring 2011.

Not all items from the Spring 2011 administration will be released in this document. According to Ohio Revised Code (ORC) 3301.07.11:4(b) . . . not less than forty percent of the questions on the test that are used to compute a student's score shall be a public record. The department (of education) shall determine which questions will be needed for reuse on a future test and those questions shall not be public records and shall be redacted from the test prior to its release as public record.

This publicly released material is appropriate for use by Ohio teachers in instructional settings. This test is aligned with Ohio's Academic Content Standards for Science.

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Directions:

Today you will be taking the Ohio Grade 8 Science Achievement Assessment. Three different types of questions appear on this test: multiple choice, short answer and extended response.

There are several important things to remember:

1. Read each question carefully. Think about what is being asked. Look carefully at graphs or diagrams because they will help you understand the question. Then, choose or write the answer you think is best.
2. Use only a #2 pencil to answer questions on this test.
3. For multiple-choice questions, fill in the circle next to your answer choice. Mark only one answer for each question. If you change your answer, make sure you erase your old answer completely. Do not cross out or make any marks on the other choices.
4. For constructed-response questions, write your answer neatly, clearly and only in the space provided in your Answer Document. Any responses written in your Student Test Booklet will not be scored.

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5. Short-answer questions are worth two points. Extended-response questions are worth four points. Point values are printed near each question in your Student Test Booklet. The amount of space provided for your answers is the same for all two- and four-point questions.
6. If you do not know the answer to a question, skip it and go on to the next question. If you have time, go back to the questions you skipped and try to answer them before turning in your Student Test Booklet and Answer Document.
7. Check over your work when you are finished.

Item 1 has not been slated for public release in 2011.

2. Which kind of rock is produced by deposition and cementation?
- A. marble, a metamorphic rock
 - B. sandstone, a sedimentary rock
 - C. granite, an intrusive igneous rock
 - D. pumice, an extrusive igneous rock



3. Which action demonstrates a chemical change?
- A. Long hair is cut and dried.
 - B. A wooden pencil is sharpened and breaks.
 - C. An ice cube melts and becomes a clear liquid.
 - D. An iron nail becomes orange and flaky on the surface.



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4. Aphids are a common plant-pest insect. They alternate between asexual and sexual reproduction. During the summer, aphid populations grow quickly by asexual reproduction. As winter approaches, aphids switch to sexual reproduction.

What advantage does the switch to sexual reproduction give the aphids?

- A. Sexual reproduction maintains a constant level of variation in the population and requires less energy.
- B. Sexual reproduction decreases variation in the population and prevents the spread of harmful mutations.
- C. Sexual reproduction increases variation in the population and provides for adaptability in a changing environment.
- D. Sexual reproduction produces individuals that are clones and allows rapid population growth under stable environmental conditions.

Item 5 has not been slated for public release in 2011.



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6. Aphids, ants and plants interact with one another through symbiotic relationships. Aphids are small insects that poke holes in plants and suck out sap. Aphids may cause the plant's leaves to wilt and curl. Ants protect aphids and eat the sugary liquid that aphids produce.

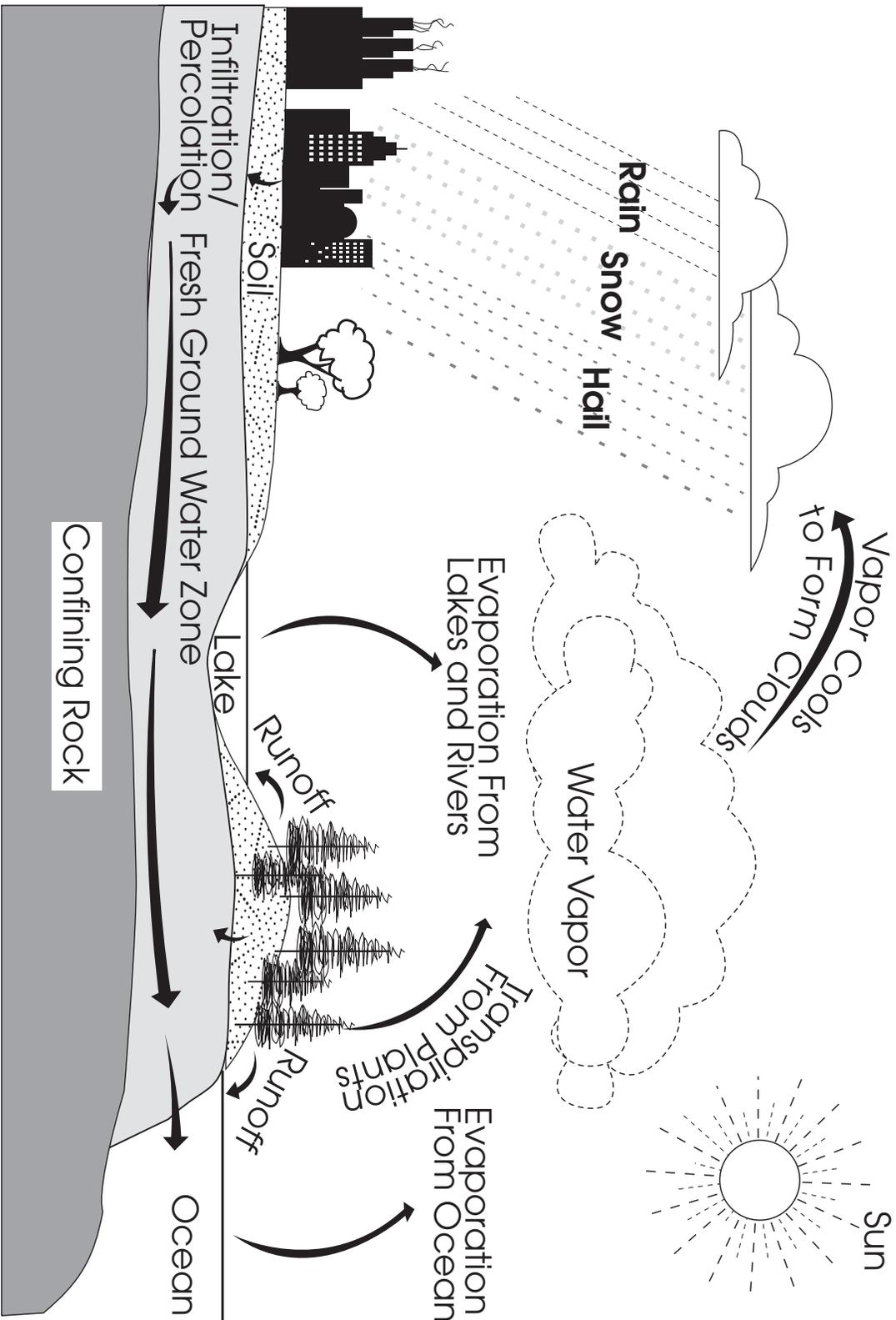
In your **Answer Document**, choose two of the organisms in this symbiosis. Describe the relationship between the two organisms in terms of the benefit or harm to each organism. (2 points)

Items 7–9 have not been slated for public release in 2011.



Use the water cycle diagram to answer questions 10-13.

Water Cycle



Source: Ohio Department of Natural Resources, Division of Water

10. What evidence suggests that water goes through a physical change when it evaporates in the water cycle?
- A. The density of the water remains the same.
 - B. The volume of the water remains the same.
 - C. The physical properties of the water remain the same.
 - D. The chemical properties of the water remain the same.
11. The diagram includes an ocean in the water cycle. How does salt water from the ocean end up as fresh water in precipitation?
- A. Runoff leaves salt in the soil.
 - B. Precipitation leaves salt in the clouds.
 - C. Evaporation leaves salt in the ocean.
 - D. Condensation leaves salt in the water vapor.



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12. What is the primary energy source that drives Earth's water cycle between the atmosphere, oceans and land?
- A. wind
 - B. sunlight
 - C. ocean currents
 - D. rotation of Earth
13. Water gains energy during evaporation. During what process in the water cycle is this energy released?
- A. percolation through soil
 - B. transpiration from plants
 - C. runoff into the lake and ocean
 - D. condensation that forms clouds

Items 14–16 have not been slated for public release in 2011.

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17. A student has four microscope slides of cells from four different organisms. He must match the slides of cells with the correct organism tissue listed in the table.

Slide	Cell
P	Fish Skin
Q	Alligator Hide
R	Plant Leaf
S	Tadpole Skin

He observes chloroplasts in the cells on one of the slides.

Which slide is he observing?

- A. Slide P
- B. Slide Q
- C. Slide R
- D. Slide S

Items 18–20 have not been slated for public release
in 2011.

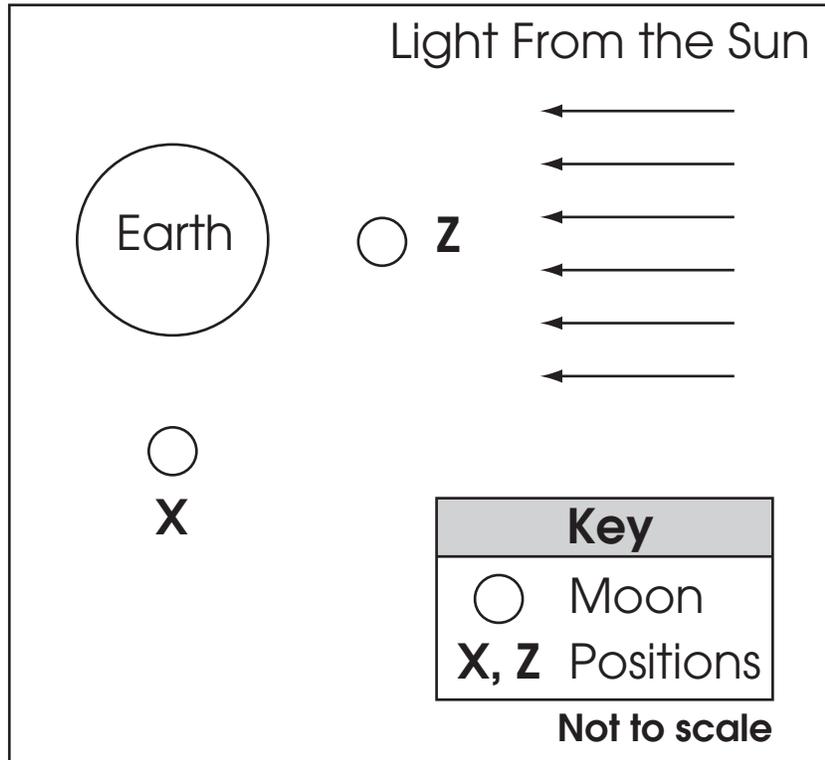


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21. The diagram models Earth and the moon in two positions of its orbit. The arrows indicate the direction of light from the sun.

Two Lunar Positions



In your **Answer Document**, identify what phase of the moon will be seen from Earth when the moon is in position X. Describe or draw what that phase looks like from Earth. Indicate in your description or drawing what portion of the moon is lit or is not lit.

Then, identify what phase of the moon will be seen from Earth when the moon is in position Z. Describe or draw what that phase looks like from Earth. Indicate in your description or drawing what portion of the moon is lit or is not lit. (4 points)

Item 22 has not been slated for public release in 2011.

On the Spring 2011 Grade 8 Science Achievement Assessment, items 23–28 are field-test items, which are not released.

Items 29–31 have not been slated for public release in 2011.

32. Which sequence correctly shows the order from simplest to most complex in multicellular organisms?

- A. cell → organ system → tissue → organ
- B. cell → tissue → organ → organ system
- C. organ system → organ → cell → tissue
- D. organ system → organ → tissue → cell

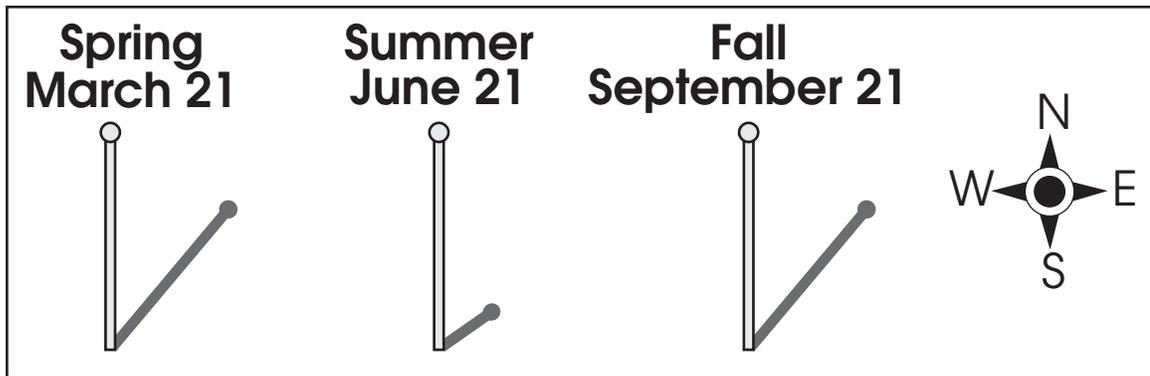


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33. Students observe that the length of the shadow of a flagpole varies throughout the year. They measure and diagram the flagpole's shadow in spring, summer and fall at mid-afternoon. The students' diagrams are shown.

Seasonal Shadows of a Flagpole



In your **Answer Document**, describe or draw what the flagpole's shadow will look like at mid-afternoon in the winter, December 21.

Then, explain why the flagpole's shadow length changes throughout the year. (2 points)

Item 34 has not been slated for public release in 2011.

Use the power-plant diagrams and information below to answer questions 35–37.

Power Plants

Figure 1: Coal-Fired Power Plant

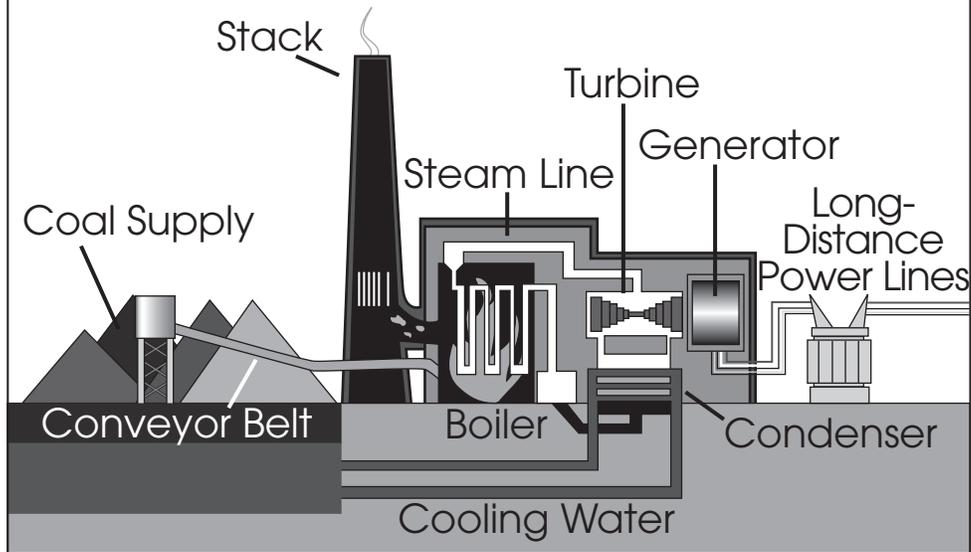
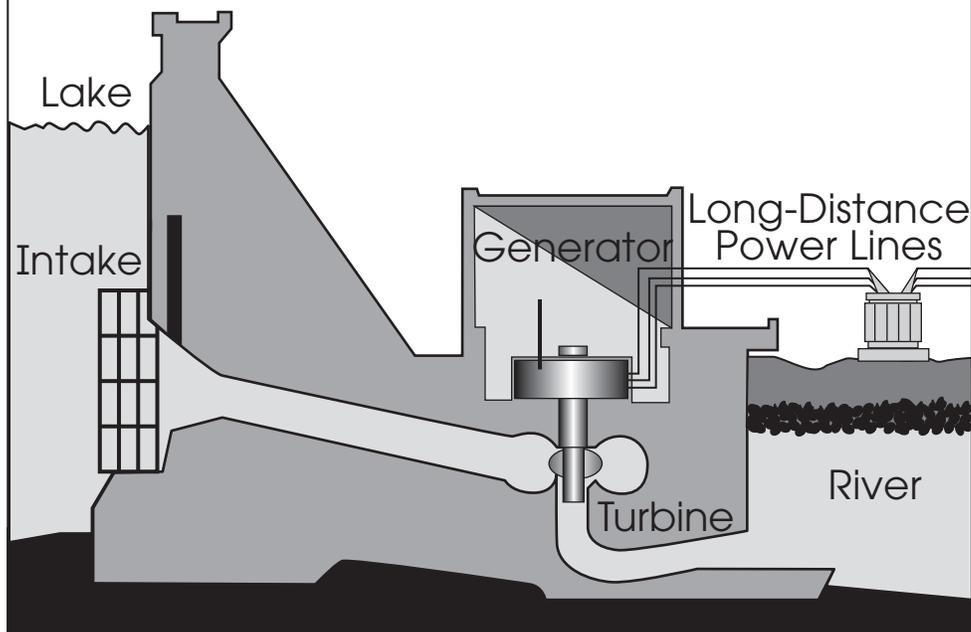


Figure 2: Hydroelectric Power Plant



Diagrams Courtesy of Tennessee Valley Authority

An electric power plant in Toledo, Ohio, is powered by coal (see Figure 1). The coal is burned to boil water and produce steam. The steam turns a turbine, which causes the generator to produce electricity.

The power plant in Bellefonte, West Virginia, is hydroelectric (see Figure 2). Water from the lake behind the dam falls on the turbine blades. The turbine turns, which causes the generator to produce electricity.



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35. Which describes a chemical change and a physical change that take place during the production of electricity in the coal-fired power plant (Figure 1)?
- A. The coal moving along the conveyor belt is a chemical change.
The coal burning to give off heat and carbon dioxide gas is a physical change.
- B. The coal burning to give off heat and carbon dioxide gas is a chemical change.
The boiling water turning to steam is a physical change.
- C. The boiling water turning to steam is a chemical change.
The steam turning the turbine is a physical change.
- D. The steam turning the turbine is a chemical change.
The turbine running the generator to produce electricity is a physical change.

Item 36 has not been slated for public release in 2011.

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37. The hydroelectric plant (Figure 2) uses a renewable energy resource.

Which statement describes why this resource is considered renewable?

- A. Heated water turns the turbine. The used water flows upstream back directly into the lake and may be used again right away.
- B. Falling water turns the turbine. The used water flows upstream back directly into the lake and may be used again right away.
- C. Heated water turns the turbine. The water is returned to the river downstream, so it may continue in the water cycle.
- D. Falling water turns the turbine. The water is returned to the river downstream, so it may continue in the water cycle.

Item 38 has not been slated for public release in 2011.

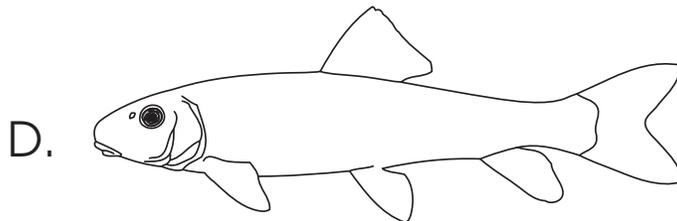
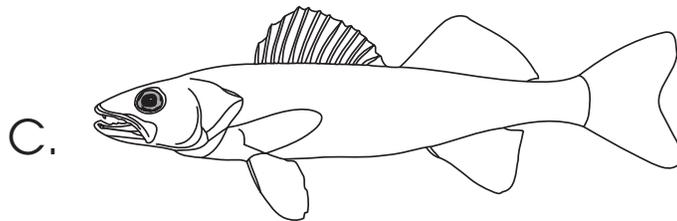
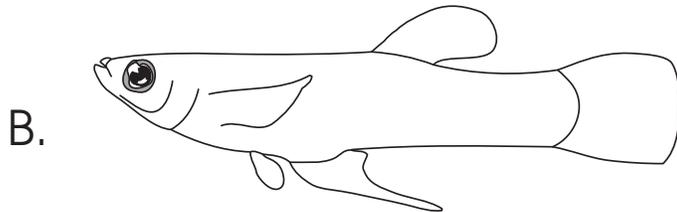
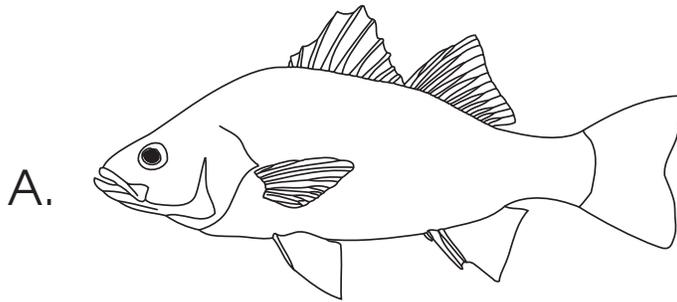


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39. The shape of an animal's body is related to where it lives and how it feeds.

Which fish has a body shape that is best suited for feeding at the bottom of a lake?



Item 40 has not been slated for public release in 2011.

41. In any physical or chemical process, what two quantities are always conserved?
- A. matter and total energy
 - B. light and acoustic energy
 - C. density and thermal energy
 - D. gravity and potential energy

Items 42–44 have not been slated for public release in 2011.



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