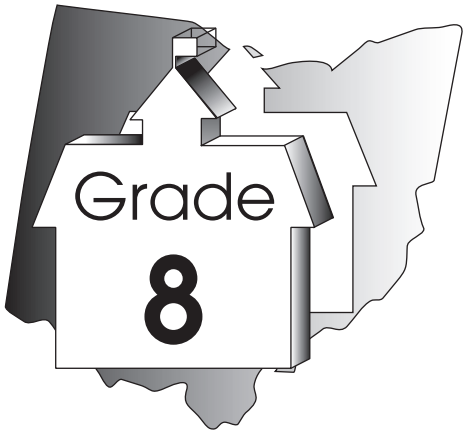
Student Name: _____

Ohio Achievement Tests



Science

Student Test Booklet

Half-Length Practice Test
Large Print

Directions:

Today you will be taking the Ohio Grade 8 Science Practice Test. 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.

2. For short-answer and extended-response questions, use a pencil to write your answers neatly and clearly in the space provided in the Student Test Booklet.

3. 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 two- and four-point questions.

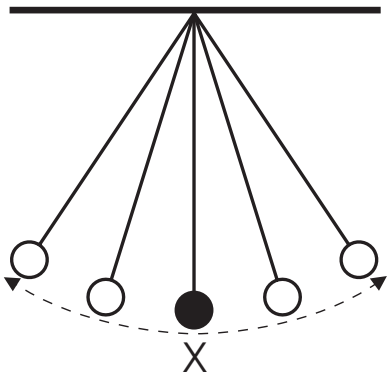
4. For multiple-choice questions, circle your choice in the Student Test Booklet for the test question. Mark only one choice for each question. If you change an answer, make sure that you erase your old answer completely.

5. Do not spend too much time on one question. Go on to the next question and return to the question skipped after answering the remaining questions.

6. Check over your work when you are finished.

Use the following diagram to answer question 1.

1. The diagram below shows a pendulum in motion.



Which describes the potential and kinetic energy of the pendulum at position X?

A. Potential energy is at its lowest and kinetic energy is at its lowest.

B. Potential energy is at its highest and kinetic energy is at its lowest.

C. Kinetic energy is at its highest and potential energy is at its lowest.

D. Kinetic energy is at its highest and potential energy is at its highest.

2. In a multicellular organism, such as a fish, which of these items is composed of all the others?

A. tissues

B. organs

C. cell structures

D. organ systems

3. Guppies are small fish that live in fresh water. Most guppy species reproduce sexually, but some reproduce asexually. There are two lakes in a particular region. One lake contains a species of guppy that reproduces asexually. The other lake contains a species of guppy that reproduces sexually.

A scientist studying these lakes predicts that the sexually reproducing guppies would survive better than the asexually reproducing guppies if a fungus was introduced to both lakes.

Which statement supports this hypothesis?

A. The sexually reproducing guppies are identical to one another.

B. The sexually reproducing guppies have a variation of inherited characteristics.

C. The sexually reproducing guppies require only one individual for reproduction.

D. The sexually reproducing guppies are carriers of harmful characteristics.

4. Students want to pound a stake into the ground to hold a sign announcing a bake sale at school.

   Which of these tips on a wooden stake would take the least force to pound into the ground with a hammer?

A. 

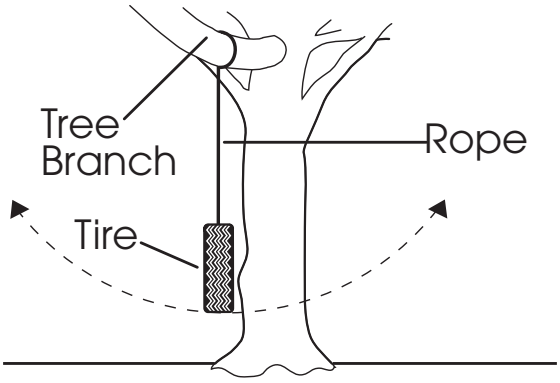
B. 

C. 

D. 

Use the information below to answer question 5.

5. A class investigating the motion of a tire swing collected the data in the table below. The students were able to draw conclusions about the factors that affect the motion of a swing. Two students from the class decide to use the class data to build a different-size tire swing in their backyard. They build the tire swing shown in the diagram.



Tire Swing

Tire Swing Investigation Data			
Swing	**Length of Rope (meters)**	**Mass of Tire (kilograms)**	**Time it Takes for the Tire Swing to Move Back and Forth Once (seconds)**
1	2	10	2.8
2	2	20	2.8
3	4	10	4.0
4	4	20	4.0

After testing the swing, they decide that they want to make it swing faster.

Based on the data from the class investigation, what could the students do to make their tire swing move back and forth faster?

A. use a shorter rope

B. use a longer rope

C. use a less massive tire

D. use a more massive tire

6. A group of students is given the procedures for an experiment and data collected by another class that previously did the experiment. The group of students is asked to check the accuracy of the other class's data.

   How could the students check the other class's data for accuracy?

   A. by graphing data that the other class collected
   B. by drawing conclusions from the other class's data
   C. by repeating the experiment with the same procedures and comparing data
   D. by adding another variable and repeating the experiment with modified procedures

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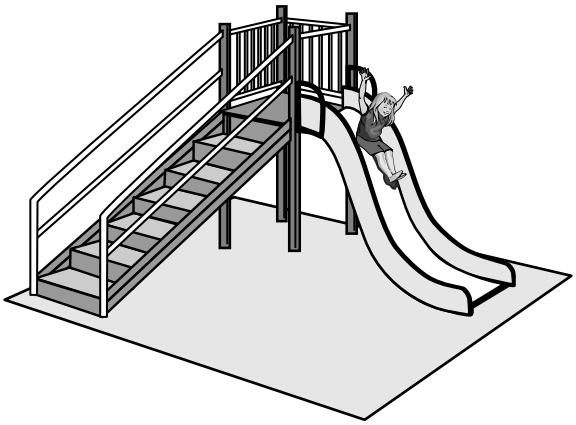
Use the following picture and information to answer question 7.

7. A child at a playground slides down a slide on a windless day.



In the space provided, describe two forces that affect the motion of the child as she moves down the slide.
(2 points)

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8. By what process is energy transferred when sound waves travel through air?

A. absorption of sound waves by surfaces

B. vibrations of perpendicular electric and magnetic fields

C. flow of air currents away from the sound source to the listener

D. consecutive, repeating collisions or interactions of air particles

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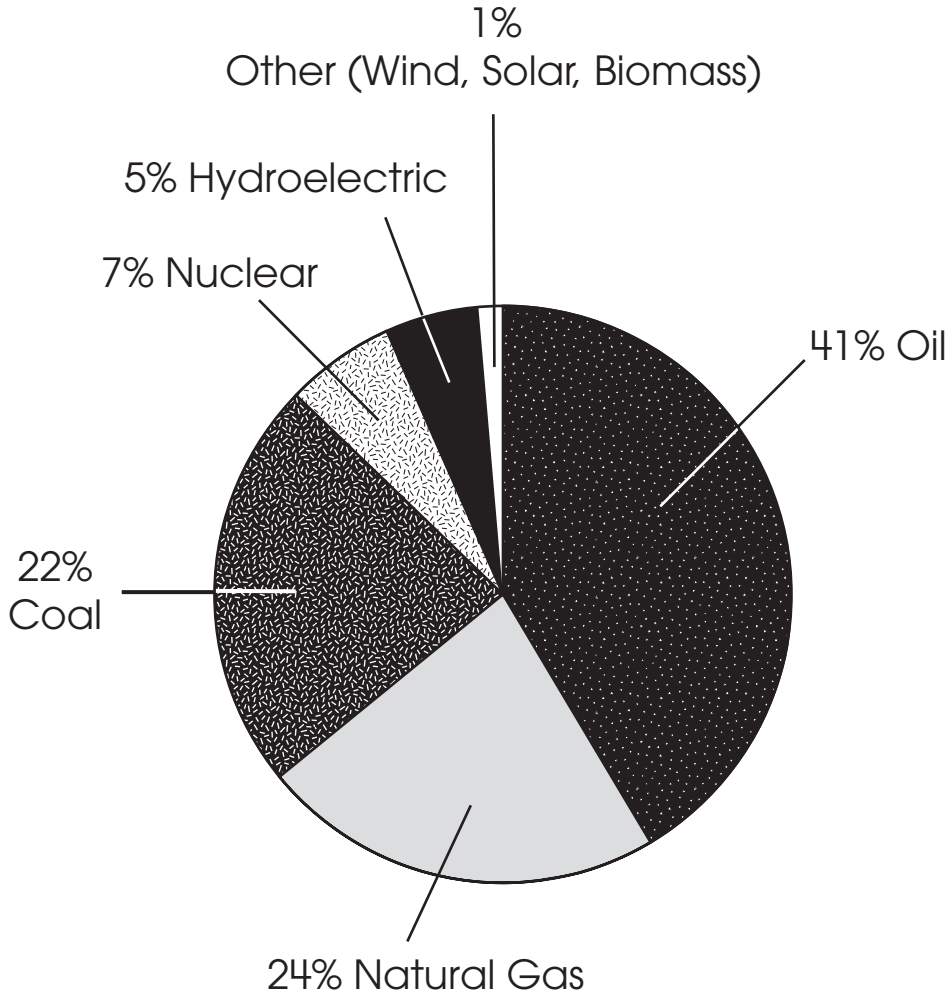
Use the following pie chart to answer question 9.

9. **Energy Sources**



According to the pie chart, what percentage of the U.S. energy resources is generated by fossil fuels?

A. 22%

B. 41%

C. 87%

D. 100%

Use the following chart to answer questions 10–14.

The chart below shows selected properties of some minerals.

Properties of Common Minerals

Mineral Properties Chart						
Mineral	**Common Colors**	**Luster**	**Hardness**	**Streak**	**Cleavage**	**Special Properties**
Albite	Colorless to Gray	Pearly	6 - 6.5	White	1 Direction	
Biotite	Greenish to Brown, Black	Glassy	2.5 - 3	No Streak	1 Direction	
Calcite	Colorless or White to Tan or Gray	Glassy	3	White	3 Directions Not at 90°	Fizzes in Acid to Form Carbon Dioxide Gas
Diamond	Colorless to Black	Glassy	10	No Streak	4 Directions	
Gold	Golden-Yellow	Metallic	2.5 - 3	Yellow	None	Malleable
Halite	Colorless to Yellow	Glassy	2	White	3 Directions at 90°	Salty Taste
Orthoclase	Colorless to Tan or Pink	Glassy	6 - 6.5	White	2 Directions at 90°	
Pyrite	Brass-Yellow	Metallic	6 - 6.5	Greenish-Black	None	
Quartz	Colorless; Any Color if Impure	Glassy	7	No Streak	None	

Information modified from the Mineral Identification Key, Mineralogical Society of America: http://www.minsocam.org/

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10. Which mineral property can be used to distinguish between gold and pyrite?

A. color

B. luster

C. hardness

D. cleavage

11. Many drill bits are coated to make them hard enough to cut through hard materials, such as ceramic tile and rocks.

A coating of which mineral would allow a drill bit to drill through a substance harder than quartz?

A. calcite

B. diamond

C. orthoclase

D. quartz

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12. A sample of granite contains albite, biotite, orthoclase, and quartz.

    Which mineral is the softest?

    A. albite
    B. biotite
    C. orthoclase
    D. quartz

13. According to the mineral properties chart, which mineral can be identified by using a chemical property?

    A. calcite
    B. diamond
    C. gold
    D. quartz

14. A geologist has discovered a large deposit of a mineral and has determined that it is either calcite or quartz. She hypothesizes that the deposit is quartz because she can see broken crystals that appear to have fractured without a definite cleavage.

    In the space provided, describe two ways she can collect evidence to test her hypothesis. (2 points)

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15. The Appalachian mountain range is made of folded rock layers.

The presence of this folded range is evidence of which process of mountain formation?

A. separation of two fault blocks

B. collision of two plates with each other

C. eruption of volcanoes near each other

D. deposition of sand and rocks from rivers

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16. A desert lake has evaporated to half its original size over the past 50 years. This caused a large increase in the lake's salt concentration. Over these 50 years, scientists have observed a decrease in the population of one fish species and an increase in the population of a shrimp species.

Which hypothesis about the organisms' ability to live with the salt concentration does the evidence support?

A. The fish are better able to live in areas of high salt concentration.

B. The shrimp are better able to live in areas of high salt concentration.

C. Neither the shrimp nor the fish are able to live in areas of high salt concentration.

D. Both the shrimp and the fish are equally able to live in areas of high salt concentration.

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17. Which cellular process converts light energy from the sun into chemical energy that organisms use for life functions?

A. digestion, in which starch is broken down into simple sugars

B. respiration, in which oxygen is used and carbon dioxide is given off

C. fermentation, in which sugar is broken down and alcohol is given off

D. photosynthesis, in which carbon dioxide is used and sugars are produced

18. A group of students decides to investigate whether adding crushed eggshells to soil will affect the pH level of the soil. The students add different amounts of eggshells to the soil. They test the pH level of each soil sample but then realize that they have forgotten to record the mass of the eggshells they added to each soil sample.

Why is it important for the students to repeat this experiment?

A. to record accurate data

B. to form a new hypothesis

C. to rewrite the procedures

D. to test a different question

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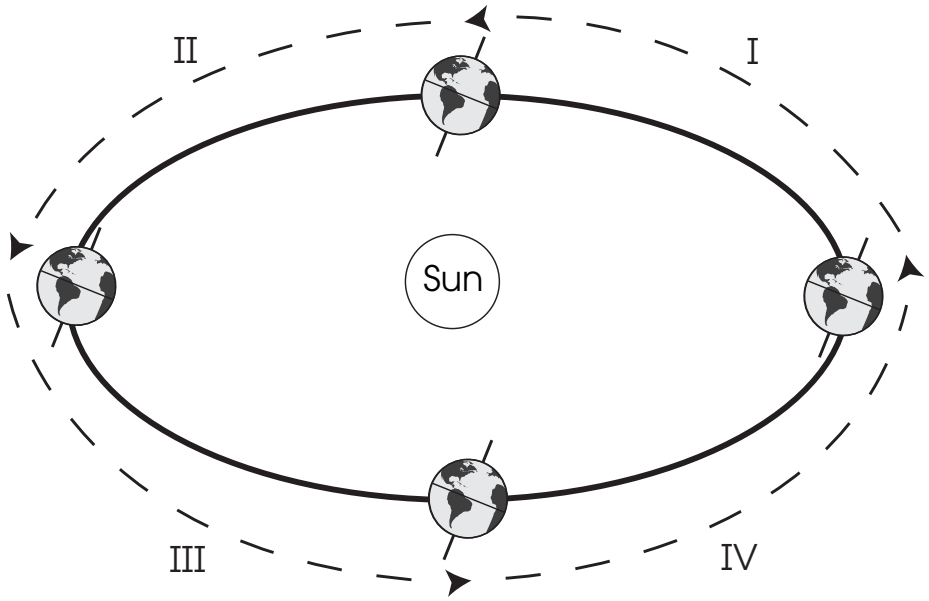
Use the following diagram and information to answer question 19.

19.



Earth's Orbit

Note: Diagram is not drawn to scale.

As shown in this diagram, Earth's axis is tilted. The diagram also shows four positions of Earth in its path around the sun. Ohio experiences four seasons that occur while Earth orbits the sun.

In the space provided, use the diagram to do the following:

- Explain one reason Ohio experiences a change in seasons.
- Identify the part of Earth's orbit (labeled I, II, III, or IV) during which Ohio experiences winter.
- Identify the part of Earth's orbit (labeled I, II, III, or IV) during which Ohio experiences summer.

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- In a way that supports your answers, explain how the position of Earth in its orbit is related to the timing of winter or summer. (4 points)

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