STAAR® Modified

State of Texas Assessments of Academic Readiness — Modified —

GRADE 8

Science

Modified

Administered April 2014

RELEASED

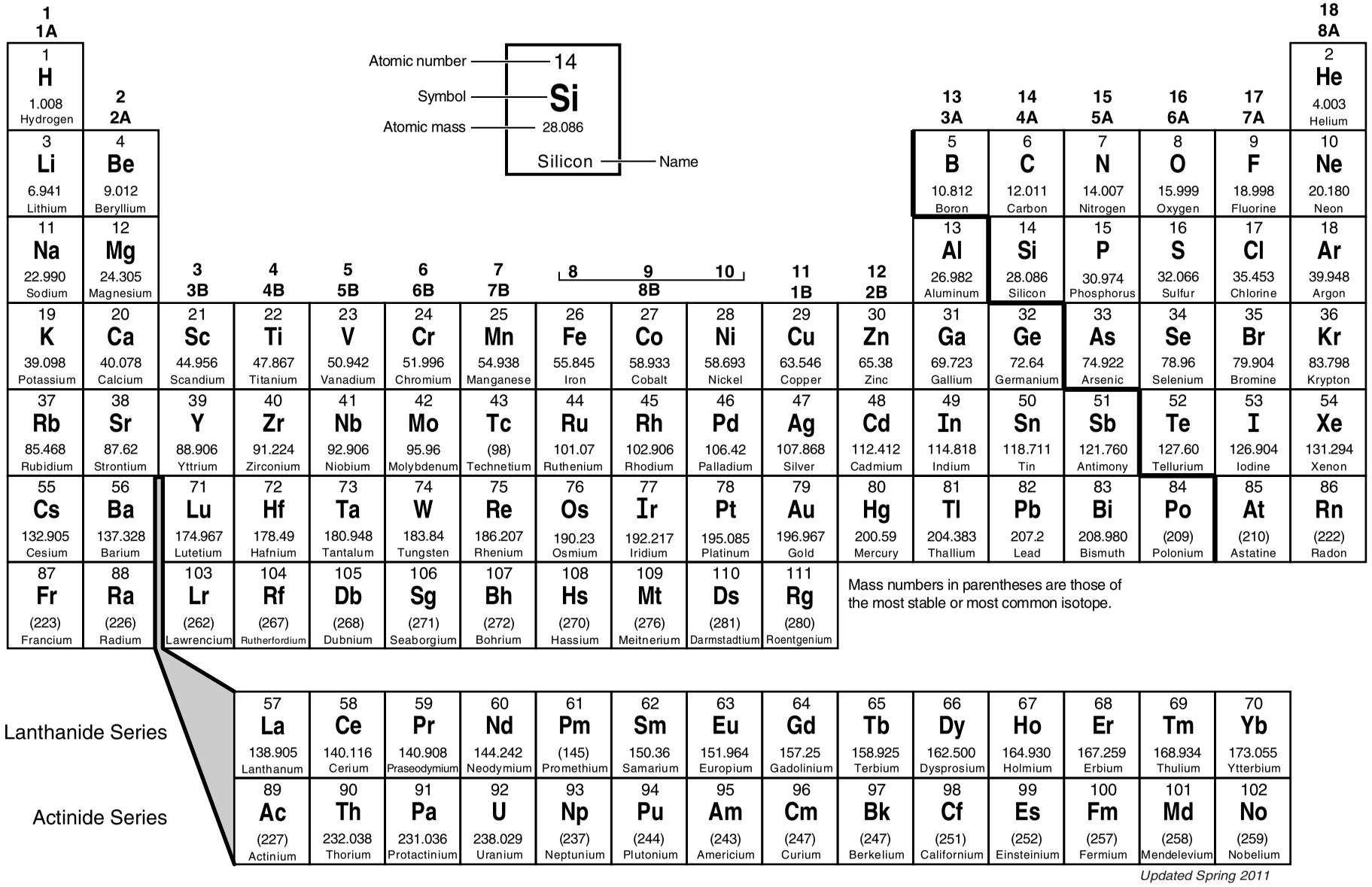
STAAR GRADE 8 SCIENCE REFERENCE MATERIALS

FORMULAS

Density = $\frac{\text{mass}}{\text{volume}}$	$D = \frac{m}{V}$
Average speed = $\frac{\text{total distance}}{\text{total time}}$	$s = \frac{d}{t}$
Net force = (mass)(acceleration)	$F = ma$
Work = (force)(distance)	$W = Fd$

STAAR GRADE 8 SCIENCE REFERENCE MATERIALS

PERIODIC TABLE OF THE ELEMENTS



Updated Spring 2011

SCIENCE

DIRECTIONS
Read each question and choose the best answer from the three choices provided. Then fill in the answer on your answer document.

1 Which of these statements about a proton is true?

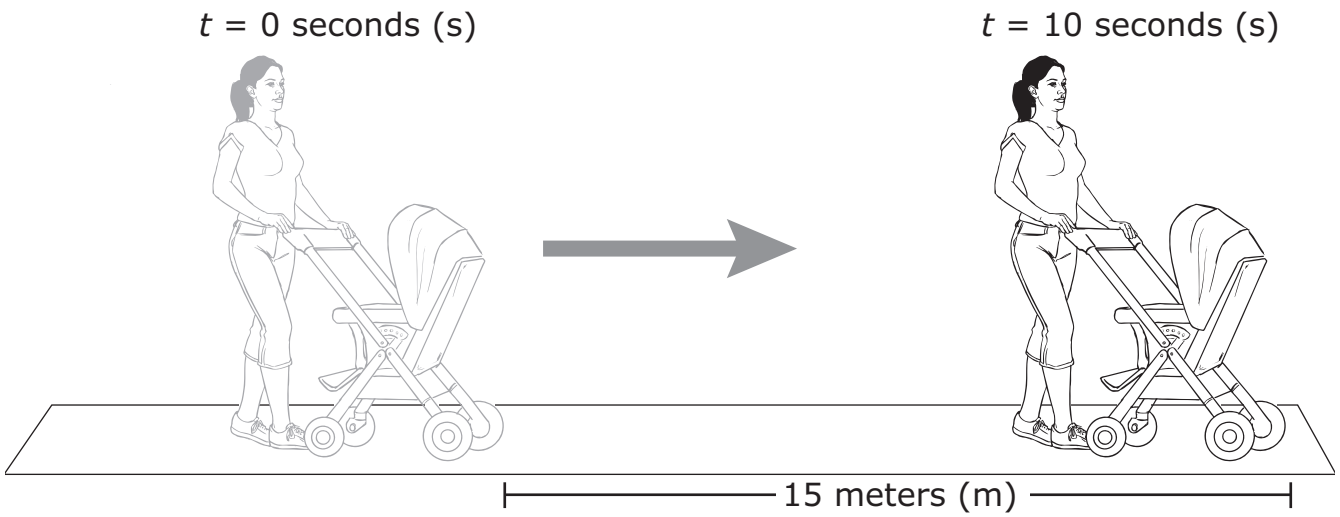
A It has a positive charge.

B It has no charge.

C It has a negative charge.

GO ON

2 Look at the diagram below. It shows a person pushing a baby stroller.



$$s = \frac{d}{t}$$

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

What is the average speed of this baby stroller?

F 0.7 m/s

G 1.5 m/s

H 25 m/s

GO ON

3 Millions of butterflies migrate every year from the United States to Mexico, where they live in trees. Farming, construction, and other activities in Mexico are reducing the number of these trees. These activities will cause the butterflies to —

A increase in population as they start to live in buildings

B decrease in population because of a loss of habitat

C adapt to cold weather and no longer migrate

GO ON

4 Which of the following best represents a chemical change?

F Bubbles forming in boiling water

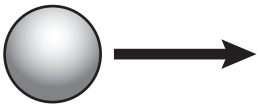
G Cracks forming in a rock as it is crushed

H Rust forming on the surface of a bicycle

---

5 The diagram below shows a sphere accelerating.

Mass = 56.0 kilograms (kg)



Acceleration = 20.0 meters per second squared (m/s^2)

$F = ma$
Net force = (mass)(acceleration)

What is the net force in Newtons (N) that causes the sphere to accelerate?

A 0.357 N to the left

B 1,120 N to the right

C 22,400 N to the left

GO ON

6 Neon (Ne), argon (Ar), and krypton (Kr) have similar chemical properties. Use the periodic table to answer the following question. Which statement about these elements is correct?

F They are in the same group in the periodic table.

G They have the same number of protons.

H They are in the same row in the periodic table.

---

7 Which process of the human digestive system involves only a physical change?

A Teeth grinding a stick of celery into small pieces

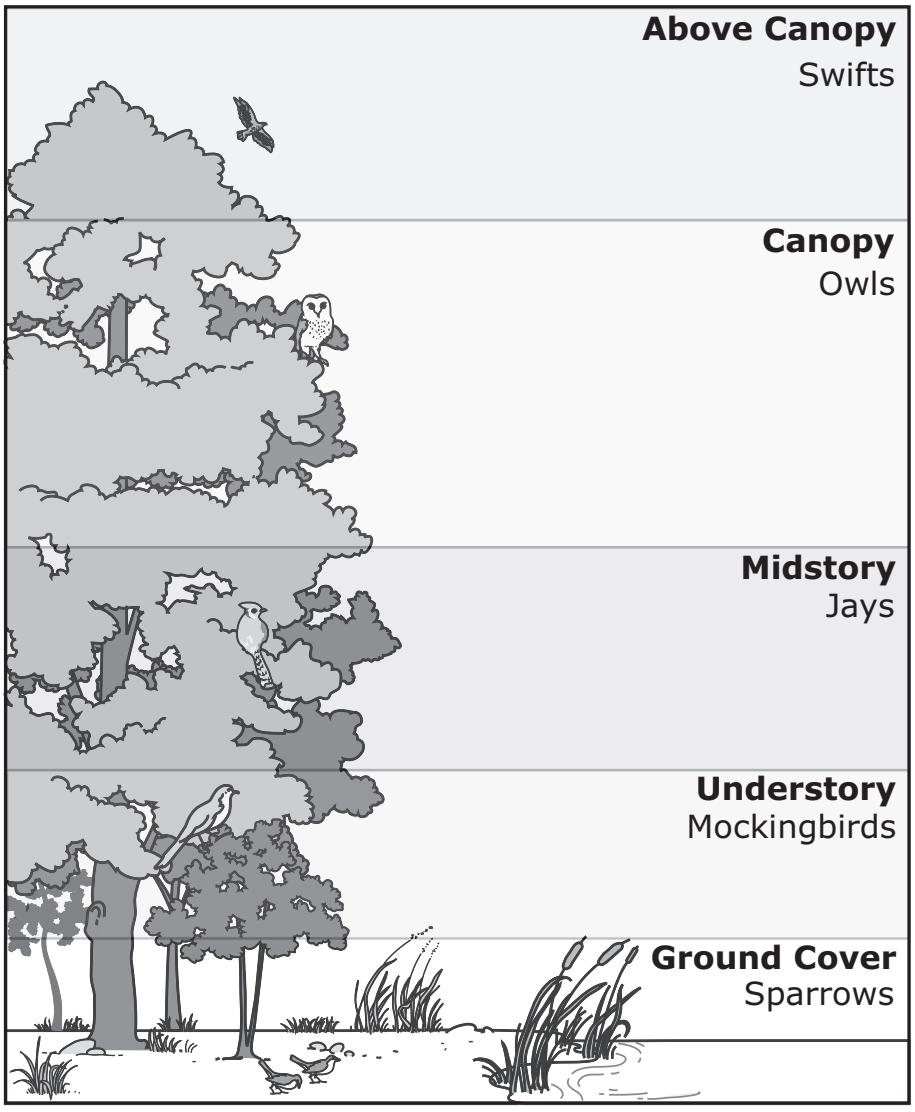
B Saliva converting starch molecules to sugar molecules

C Enzymes releasing nutrients from proteins

GO ON

8 The diagram below shows where some Texas birds live within their environment.

Some Texas Birds and Their Habitats



Source: Texas Parks and Wildlife Department

Which of these bird species would be harmed the most if a wildfire burned all the grass but not the trees?

F Swifts

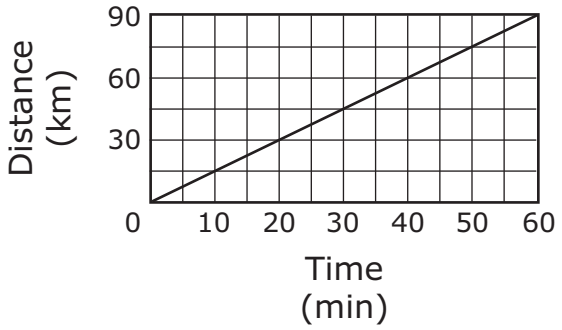
G Jays

H Sparrows

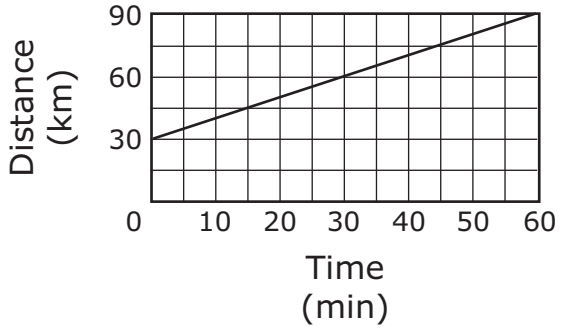
GO ON

9 A car moves on a highway at a constant speed of 90 kilometers per hour (km/h). Which graph best represents the motion of the car?

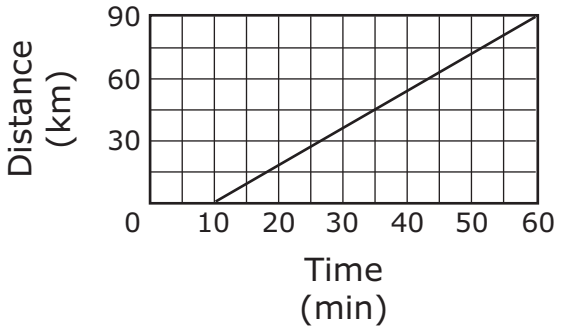
A



B



C



GO ON

10 In 1915, Alfred Wegener proposed that the continents were originally joined and then drifted apart over many years. Which piece of evidence best supports this theory?

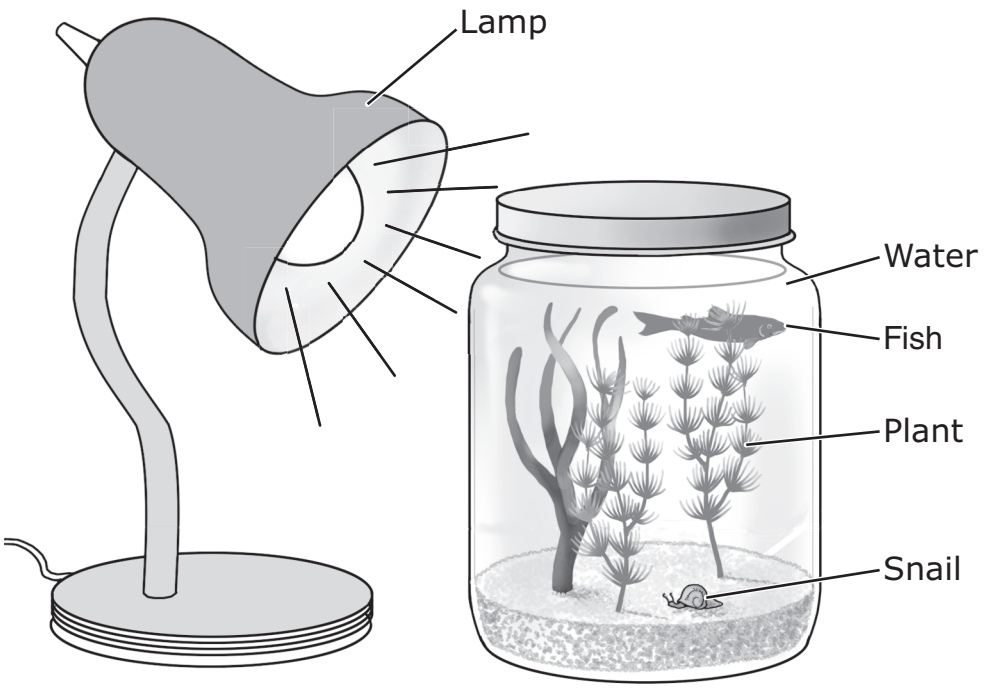
F Tides cause most of the movement of the water in Earth's oceans.

G Many Earth features result from heating and cooling cycles.

H The coastlines of South America and Africa appear to fit together like puzzle pieces.

GO ON

11 Some students put together an ecosystem in the jar shown below.



Which part of this ecosystem produces the oxygen needed by the fish?

A Plant

B Snail

C Water

GO ON

12 The information in the box below describes one atom of an element.

Number of protons: 16
Number of neutrons: 16
Number of electrons: 16

Use the periodic table to answer the following question. What is the name of the element described in the box?

F Oxygen

G Sulfur

H Palladium

---

13 Two dogs pulled on opposite ends of a rope. The dogs did not move. Then one dog released the rope, and the rope moved quickly toward the other dog. Which of the following best explains why the rope moved?

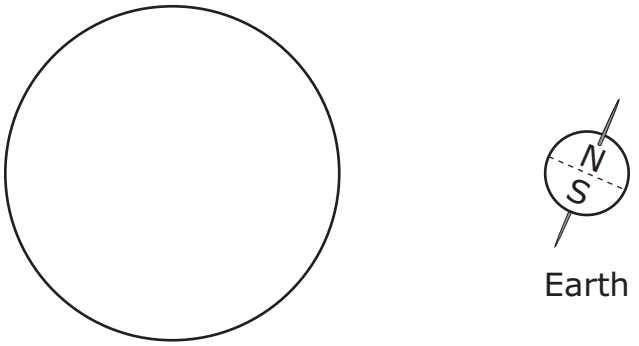
A Balanced forces became unbalanced.

B Unbalanced forces became balanced.

C The dogs had the same mass.

GO ON

14 A student makes the model below with foam balls and a toothpick.



The toothpick helps the student demonstrate the cause of seasonal changes by showing the Earth's —

F speed

G tilt

H shape

GO ON

15 Read the information in the box below about pigeons, a type of bird.

Characteristics of Pigeons

- Pigeons eat seeds, fruits, grain, and corn.
- Pigeons live near farms or in cities.
- Pigeons often make nests on a building ledge.

Which of these changes to the environment will most likely cause the population of pigeons in an area to decrease?

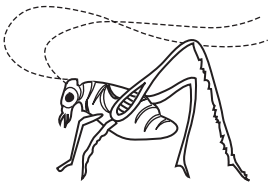
A Building small parks in urban areas

B Replacing grain fields with parking lots

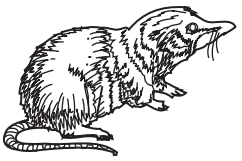
C Introducing nectar-eating birds to cities

GO ON

16 The organisms below live in a woodland ecosystem.



Crickets



Shrews

Owls

Maple trees

What is the correct flow of energy in a food chain in this ecosystem?

F Maple trees → owls → crickets → shrews

G Crickets → owls → maple trees → shrews

H Maple trees → crickets → shrews → owls

GO ON

17 Which of the following will most likely be affected by acid rain?

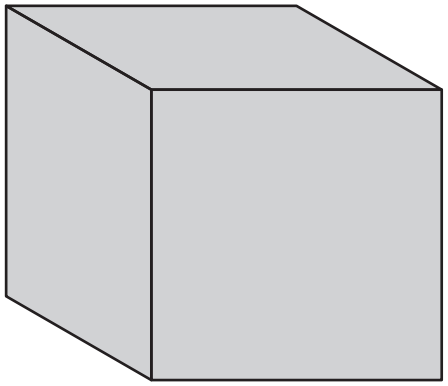
A Earth’s ocean systems

B Earth’s tectonic plates

C Earth’s magnetic field

GO ON

18 Look at the block of metal and the density table of selected metals below.



Densities of Selected Metals

Metal	Density (g/cm^3)
Tin	7.3
Nickel	8.8
Lead	11.3

Mass = 220 grams (g)
Volume = 25 cubic centimeters (cm^3)

$$D = \frac{m}{V}$$

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

Based on this information, the block of metal is most likely —

F tin

G nickel

H lead

GO ON

19 A fusion reaction is a nuclear reaction that releases large amounts of heat and light. This reaction happens in —

A comets

B stars

C moons

GO ON

20 Look at the table below. It shows information about types of plants found in an ecosystem.

Plants in an Ecosystem

Type of Plant	Sunlight Needed for Seeds to Sprout
Grasses	Full sunlight
Elm trees	Medium sunlight
Oak trees	Low sunlight

Based on this table, which type of plant would most likely grow back first after a fire in this ecosystem?

F Grasses

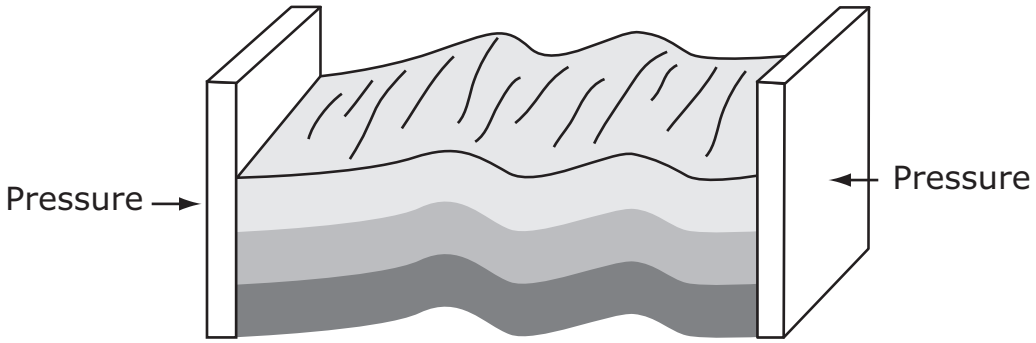
G Elm trees

H Oak trees

GO ON

21 A student made the model below of rock layers in Earth's crust using colored clay.

Model of Rock Layers



The clay has been squeezed together from both ends to show how pressure from two sides can affect rock layers. What type of geologic process does this model represent?

A Diverging plates

B Sinking land

C Mountain building

---

22 What do all the planets in our solar system have in common?

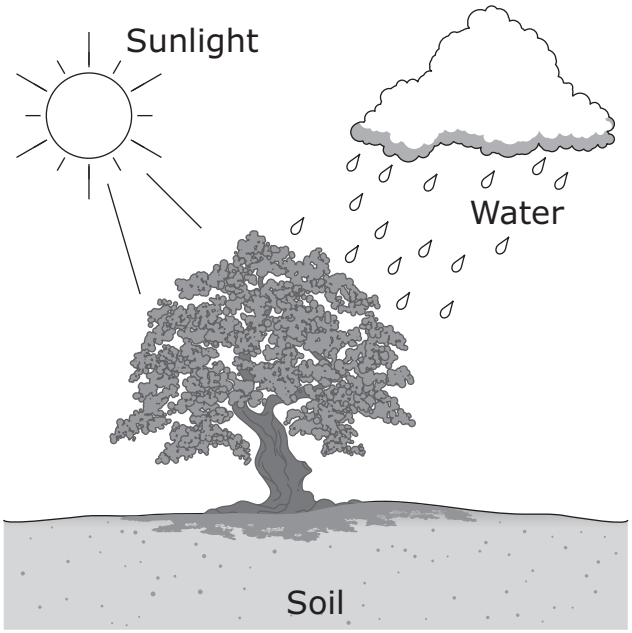
F They all orbit the sun.

G They all produce light.

H They all have atmospheres with the same gases.

GO ON

23 Look at the diagram of the ecosystem below.



Which abiotic (nonliving) part of this ecosystem provides the energy that the tree needs to live?

A Sunlight

B Water

C Soil

GO ON

24 A cheetah with a mass of 50 kilograms (kg) accelerates at a constant rate of 8 meters per second squared (m/s^2). What is the amount of net force that produces this acceleration?

$$F = ma$$
Net force = (mass)(acceleration)

F 58 Newtons

G 400 Newtons

H 450 Newtons

---

25 Look at the compound below.

Na_2O

What elements are found in this compound?

A Sulfur and oxygen

B Nickel and oxygen

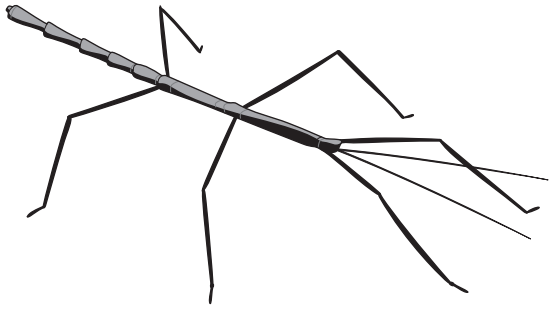
C Sodium and oxygen

GO ON

26 A student uses part of an insect identification key to identify the insect shown below.

Insect Identification Key

Step	Characteristic	Order
1a	Has no wings	Go to 2
1b	Has wings	Go to 3
2a	Has a long, slender body	Phasmida
2b	Has a small, flat, oval body	Siphonaptera
3a	Has one pair of wings	Diptera
3b	Has two pairs of wings	Lepidoptera



Based on the identification key, this insect is a member of the order —

F Phasmida

G Siphonaptera

H Diptera

GO ON

27 Three students each chose a different way to try to move a large box. Each student measured the force exerted and the distance the box moved. The students' measurements are shown below.

Force and Distance Measurements

Student	Force (Newtons)	Distance (meters)
1	300	1.0
2	150	2.0
3	200	0.0

$$W = Fd$$
Work = (force)(distance)

Which student did no work on the box?

A Student 1

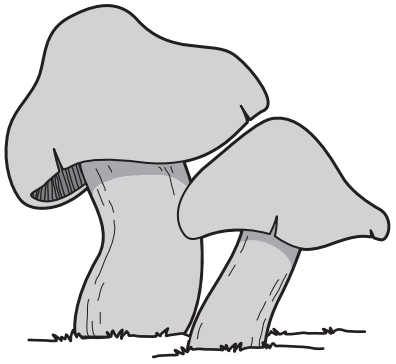
B Student 2

C Student 3

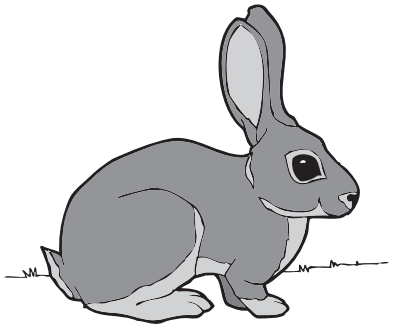
GO ON

28 Which of the following organisms is classified in the kingdom Fungi?

F



G



H

GO ON

29 Some people have dimples, or indentations, in their cheeks. The appearance of dimples runs in families. What is the most likely reason for dimples running in some families?

A Shrinking of the skin

B The inheritance of genes

C Destruction of muscle tissue

---

30 Look at the information below. A student records the appearance of the moon, beginning with the full moon on July 1.

Date	Appearance of Moon
July 1	
July 8	
July 15	
July 22	
?	

Based on this information, when will the moon be full again?

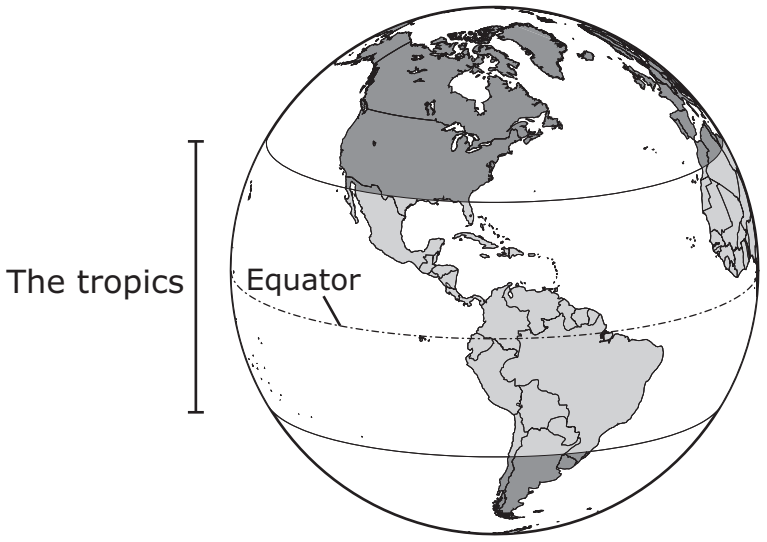
F July 25

G July 29

H August 4

GO ON

31 Look at the diagram of Earth below. It shows an area known as the tropics.



More tropical storms form in the tropics than in other areas because the tropics receive more energy from —

A the sun

B volcanoes on the seafloor

C the moon's gravity

GO ON

32 A small amount of baking soda is added to vinegar in a beaker. Bubbles of carbon dioxide are produced. This process is an example of —

F a chemical reaction

G melting

H a physical change

---

33 What would a student most likely observe when a duck is accelerating?

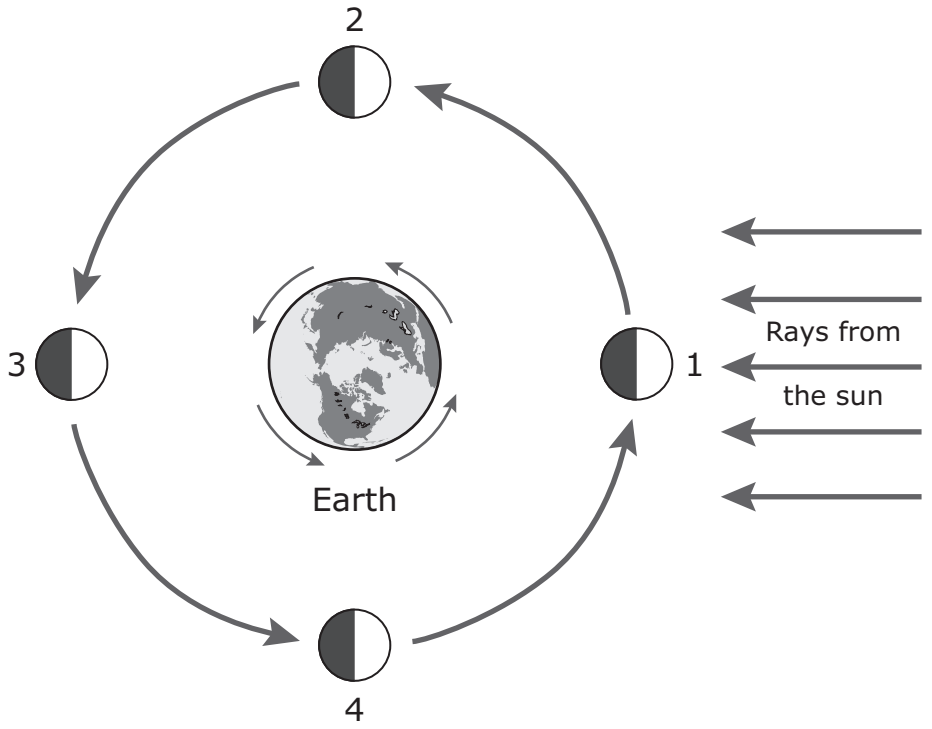
A The duck flies south at a constant velocity.

B The duck eats grass while sitting on a nest.

C The duck increases its speed as it swims.

GO ON

34 Look at the diagram below. It shows four different positions of the moon as it orbits Earth.



When viewed from Earth, in which position does the moon appear to be in its first quarter?

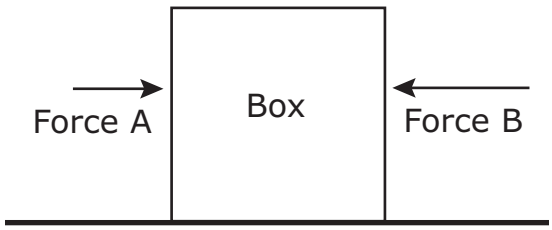
F 2

G 3

H 4

GO ON

35 Look at the diagram below.



Two opposing forces are applied to a box. The box is not moving. The box will move to the left when —

A Force B is equal to Force A

B Force B is greater than Force A

C Force A is less than the weight of the box

---

36 How many different elements are in calcium carbonate ($CaCO_3$)?

F 3

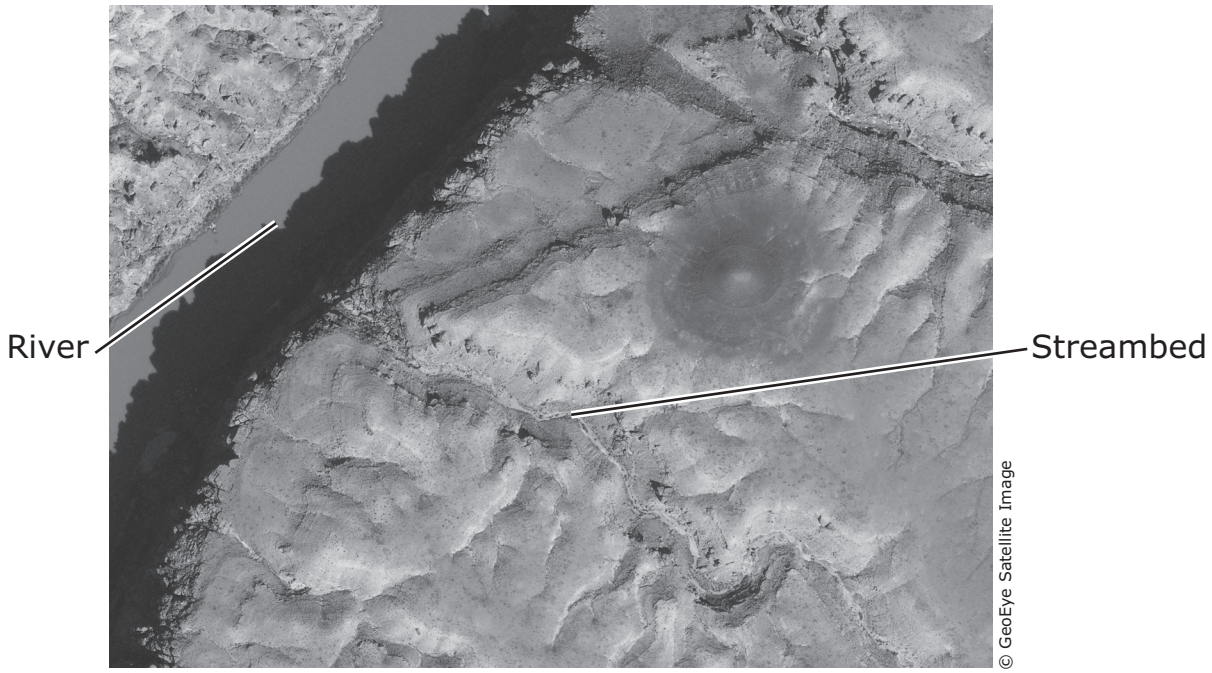
G 5

H 6

GO ON

37 The satellite photo below shows the path of a dry streambed that sometimes carries runoff water to a river.

Satellite Photo



As runoff water flows through the streambed over millions of years, what will most likely continue to form along the streambed?

A A plateau

B An island

C A canyon

GO ON

38 Which of these would most likely lead to the formation of a volcano?

F A change in sea level

G The convergence of two tectonic plates

H The deposition of sediments on Earth's surface

---

39 Look at the chemical formula for glucose below.

$$C_6H_{12}O_6$$

Plants produce this organic compound during photosynthesis. What elements does glucose contain?

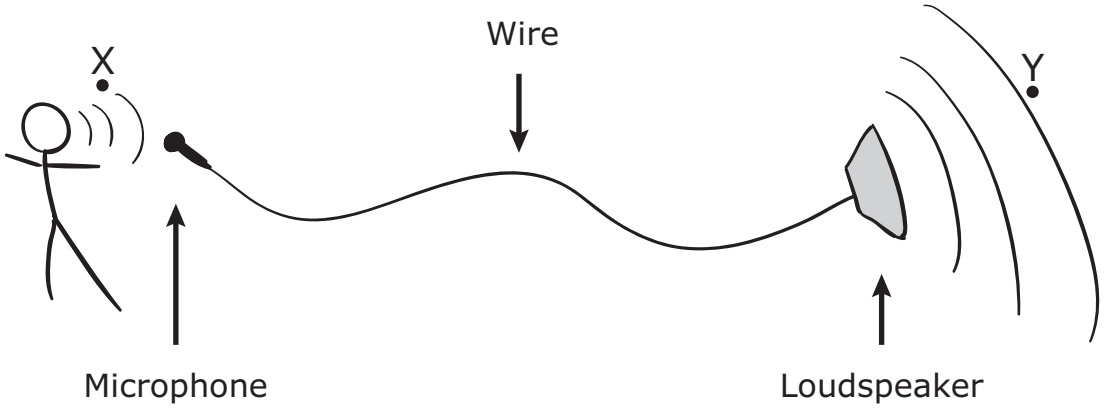
A Calcium, hydrogen, and oxygen

B Carbon, hydrogen, and oxygen

C Cobalt, hydrogen, and oxygen

GO ON

40 A student made the drawing below to show a person using a loudspeaker system.



What are the most likely energy transformations that happen between Point X and Point Y?

F Sound $\rightarrow$ thermal $\rightarrow$ electrical

G Sound $\rightarrow$ light $\rightarrow$ thermal

H Sound $\rightarrow$ electrical $\rightarrow$ sound

GO ON

41 Two equal forces are applied at the same time to a marble resting on a smooth, flat surface.

- One force pushes the marble to the north.
- The other force pushes the marble to the west.

In which direction will the marble move?

A Northwest

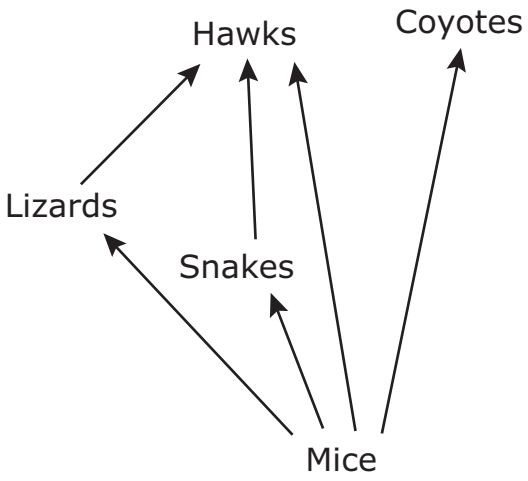
B Southeast

C First west and then north

GO ON

42 Look at the food web below. It shows the feeding relationships between some organisms.

Food Web



This food web is not complete. Which type of organisms are missing from this food web?

F Consumers

G Predators

H Producers

---

43 The planet Earth is located in the Milky Way. The Milky Way is a —

A bright star

B spiral galaxy

C black hole

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS ON THE ANSWER DOCUMENT.

STOP

STAAR MODIFIED
GRADE 8
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