

# GRADE 8

## STUDENT PRACTICE TEST BOOKLET

Student Name: \_\_\_\_\_



# MEA

Maine Educational Assessment

## RELEASED 2014 SCIENCE ITEMS

Maine Department of Education

# SCIENCE PRACTICE TEST

This practice session has twenty multiple-choice and two constructed-response questions.

Choose the best answer for each multiple-choice question and mark your answer choices for questions 1 through 20 in the spaces provided on page 2 of your practice test answer booklet.

- 1 There is a limited supply of copper on Earth. How does this affect the way copper is used?
- A. Copper should be recycled.
  - B. Copper costs less than other materials.
  - C. Copper is in low demand.
  - D. Copper does not make up commercial products.

- 2 What is the primary reason for breaking down food molecules?
- A. to absorb water into a cell
  - B. to provide energy for a cell
  - C. to remove wastes from a cell
  - D. to store materials in a cell

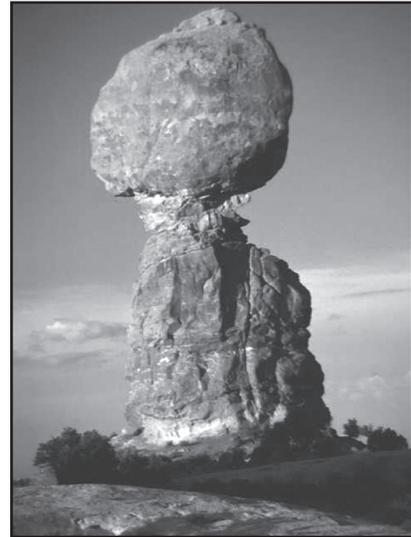
- 3 The table below shows characteristics of organisms in three kingdoms.

Kingdom	W	X	Y
Chloroplasts	Yes	No	No
Cell wall	Yes	Yes	No
Nucleus	Yes	Yes	Yes
Multicellular	Yes	Yes	Yes

To which classification does Kingdom Y **most likely** belong?

- A. Animal
- B. Fungi
- C. Plant
- D. Protists

- 4 The picture below shows a natural rock formation in the American Southwest.



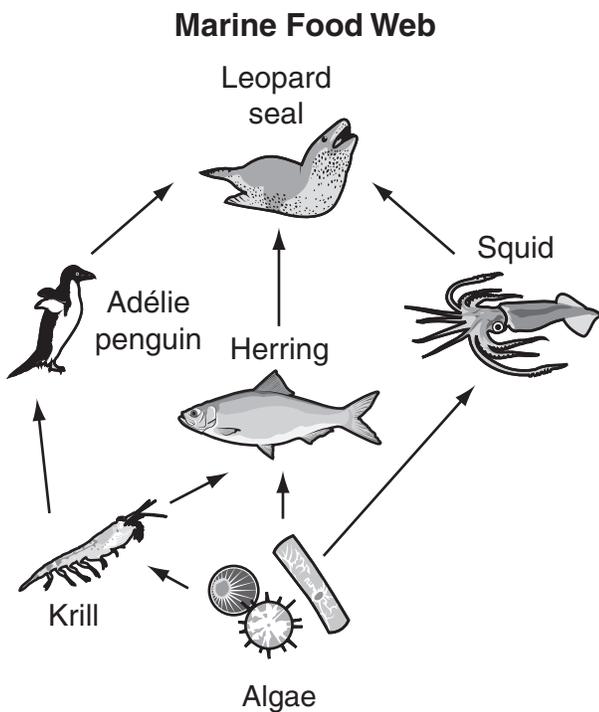
Which statement **best** predicts how this rock formation will look in 500 years?

- A. The rock formation will be exactly the same.
- B. The rock formation will completely turn into sand.
- C. The top section of the rock may fall due to erosion.
- D. The top section of the rock may widen due to uplift.

PLEASE GO ON ➡

- 5 Which sentence describes a characteristic of offspring produced by sexual reproduction?
- The offspring have half the amount of genetic material as the parents.
  - The offspring contain genetic material from both parents.
  - The female offspring contain only genes from the mother.
  - The male offspring contain only genes from the father.

6 The diagram below shows a marine food web.



Which organism captures energy for the food web?

- herring
- krill
- algae
- leopard seal

7 The chart below lists various characteristics of the eight planets of our solar system. The chart compares each planet's characteristics to Earth's.

	Gravity	Density	Length of Day	Number of Moons
<b>Mercury</b>	0.378	0.984	175.9	0
<b>Venus</b>	0.907	0.951	116.8	0
<b>Earth</b>	1	1	1	1
<b>Mars</b>	0.377	0.713	1.03	2
<b>Jupiter</b>	2.36	0.240	0.414	63
<b>Saturn</b>	0.916	0.125	0.444	62
<b>Uranus</b>	0.889	0.230	0.718	27
<b>Neptune</b>	1.12	0.297	0.671	13

The eight planets are divided into two categories: inner planets and outer planets. The inner planets are known as "rocky planets." The outer planets are known as "gas planets."

Which characteristic listed in the chart **most likely** determines which category a planet is placed in?

- gravity
- density
- length of day
- number of moons

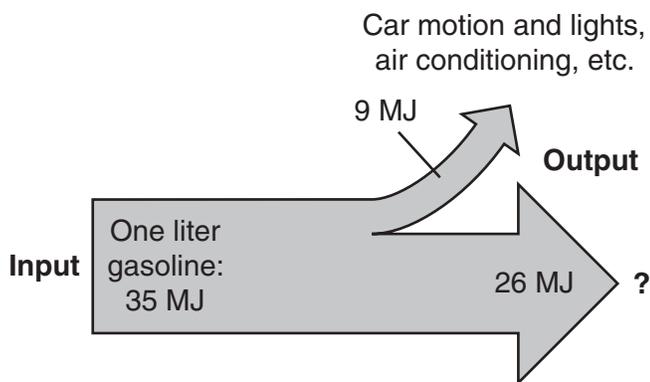
PLEASE GO ON ➔

- 8 Hydrogen has an atomic mass of 1, and oxygen has an atomic mass of 16. When a water molecule forms, two hydrogen atoms combine with one oxygen atom.

What is the mass of a water molecule?

- A. 14
- B. 16
- C. 17
- D. 18

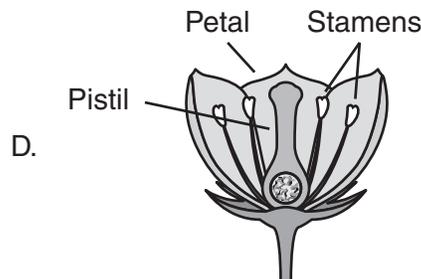
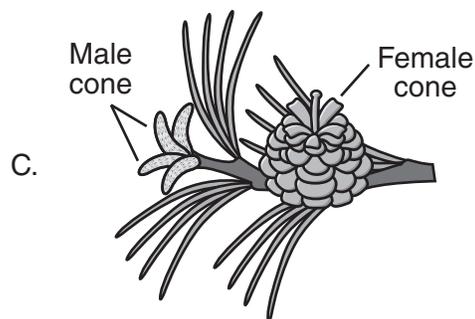
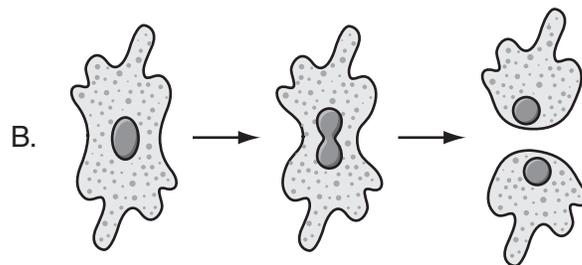
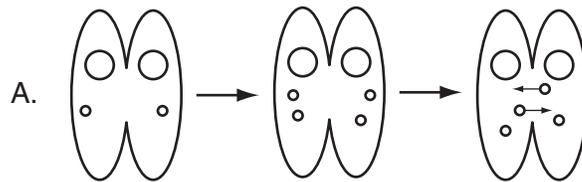
- 9 The diagram below shows the energy transformation of one liter of gasoline in a car.



Which statement describes the energy transformation that one liter of gasoline undergoes?

- A. Chemical energy is converted to 9 MJ of kinetic and electric energy and 26 MJ of wasted heat energy.
- B. Heat energy is converted to 9 MJ of kinetic and chemical energy and 26 MJ of wasted electrical energy.
- C. Chemical energy is converted to 9 MJ of potential and electric energy and 26 MJ of wasted heat energy.
- D. Heat energy is converted to 9 MJ of potential and chemical energy and 26 MJ of wasted heat energy.

- 10 Which diagram **best** shows asexual reproduction?

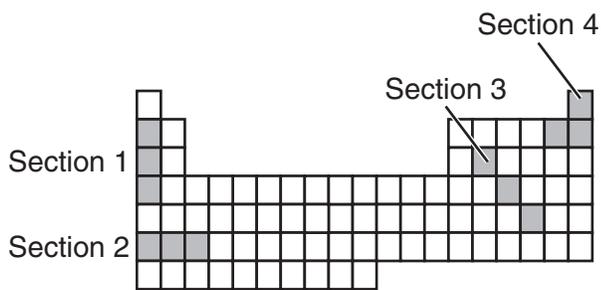


PLEASE GO ON →

11 Lori owns a house next to the lake. She uses lots of fertilizer to keep her lawn green. Which impact could fertilizing her lawn have on the lake?

- A. an increase in the algae population
- B. an increase in the fish population
- C. an increase in the mosquito population
- D. an increase in the lake's depth

12 An outline of the periodic table is shown below with four different sections shaded.



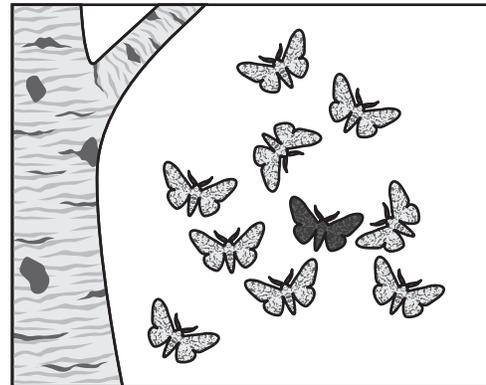
Three unknown elements all react with oxygen in similar ways.

Which section of the periodic table contains these three elements?

- A. Section 1
- B. Section 2
- C. Section 3
- D. Section 4

13 The diagrams below depict an original population of peppered moths and the population many generations later. Lightly colored trees in this area were gradually replaced by darker-colored ones.

Original Population



Many Generations Later

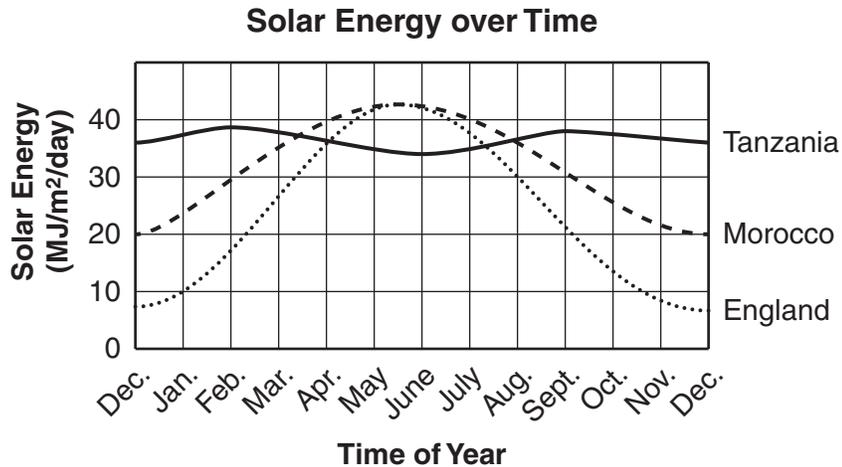


Which concept is **best** shown by the diagrams?

- A. Genetic changes lead to the extinction of many species.
- B. All genetic information comes from one parent in asexual reproduction.
- C. Variations in traits help offspring survive a changing environment.
- D. New varieties of plants and animals are developed through genetic engineering.

PLEASE GO ON ➔

- 14 The graph below shows the average daily solar energy for three different countries throughout the year. Tanzania is just south of the equator, Morocco is about 30° north of the equator, and England is about 50° north of the equator, as shown on the map.



Which conclusion can be reached based on the graph?

- A. The average daily solar energy increases throughout the year.
- B. The total solar energy in a year is the same for all three locations.
- C. Areas near the equator receive the most total solar energy each year.
- D. Areas near the equator have the greatest monthly variation in solar energy.
- 
- 15 A ball is thrown downward onto a concrete floor and bounces upward. What supplies the upward force that makes the ball bounce?
- A. the floor
- B. the pull of gravity
- C. the air friction on the ball
- D. the person that throws the ball
- 
- 16 What is a galaxy?
- A. a moon that orbits a planet
- B. a planet that orbits the Sun
- C. a very large system of stars that is held together by gravity
- D. a very large system of planets that is held together by the Sun

PLEASE GO ON ➔

17 A geologist found fossils of horse bones in different rock layers of a canyon. The fossils in the lower levels show shorter bones than those in the upper-level fossils. Which conclusion is based on the geologist's observations?

- A. Horses reproduce using two parents.
- B. Horses became larger over time.
- C. Smaller horses went extinct, and then larger horses formed.
- D. Smaller horses are better suited to the environment than larger horses.

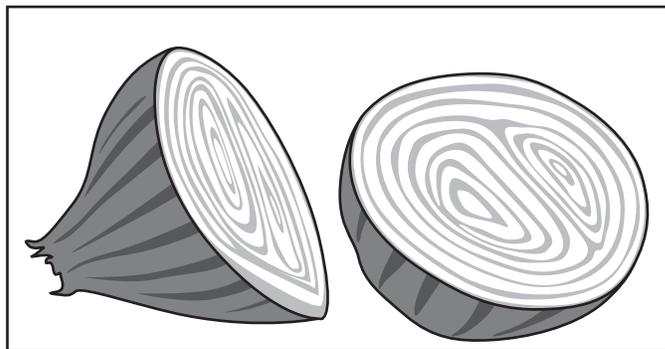
18 What is a similarity between sound waves and light waves?

- A. Both carry energy.
- B. Both travel in vacuums.
- C. Both are caused by vibrations.
- D. Both are traveling at the same speed.

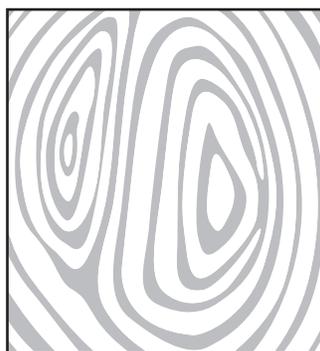
19 A species of wasp lays its eggs in the larva of another insect. The wasp is a parasite, and the larva is the host. What is the relationship between the parasite and the host?

- A. Both the parasite and the host benefit.
- B. Both the parasite and the host are harmed.
- C. The parasite benefits and the host is harmed.
- D. The parasite is harmed and the host benefits.

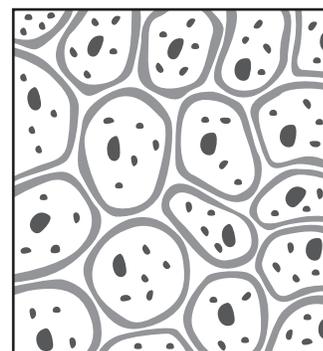
20 The diagrams below show an organism in its original size (1X), magnified three times (3X), and magnified 300 times (300X).



1X



3X



300X

Which concept is **best** illustrated by the set of diagrams?

- A. Cells are the building blocks of organisms.
- B. Organisms go through cyclical phases.
- C. Plants make food by photosynthesis.
- D. Reproduction is a microscopic process.

PLEASE GO ON →

Write your answers to constructed-response questions 21 and 22 in the boxes provided on pages 2 and 3 of your practice test answer booklet. Be sure to answer and label all parts (a, b, c, etc.) of the questions.

- 21 The map of the United States below shows the locations of San Francisco, CA, and Denver, CO. The table below shows the latitude, longitude, and yearly rainfall for San Francisco and Denver.

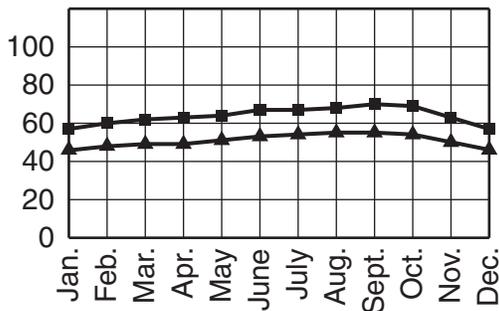


**Latitude, Longitude, and Rainfall for San Francisco and Denver**

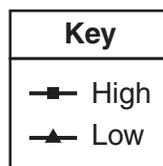
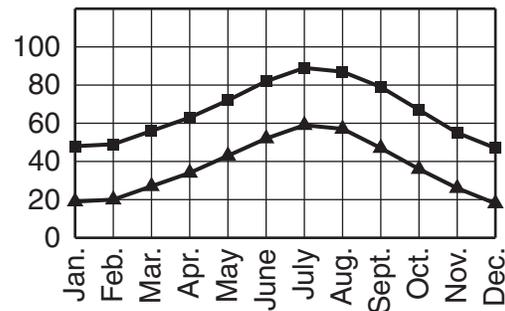
	San Francisco	Denver
<b>Latitude</b>	37°N	39°N
<b>Longitude</b>	122°W	105°W
<b>Yearly Rainfall</b>	20.7 in.	15.6 in.

The graphs below show temperature information for San Francisco and Denver.

**Average Monthly Temperatures (°F) for San Francisco**



**Average Monthly Temperatures (°F) for Denver**



- Describe three differences between the weather in San Francisco and the weather in Denver based on the information above.
- Describe the physical features that might cause the differences in weather between San Francisco and Denver. Explain your reasoning.

PLEASE GO ON ➡

- 22 During a human pregnancy there are many risks to the developing embryo.
- a. Identify **three** factors related to the mother's diet and/or lifestyle that may harm the embryo.
  - b. Explain why the embryo is affected by the mother's choices.

