

# GRADE 8

## STUDENT PRACTICE TEST BOOKLET

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



# MEA

Maine Educational Assessment

## RELEASED 2012 SCIENCE ITEMS

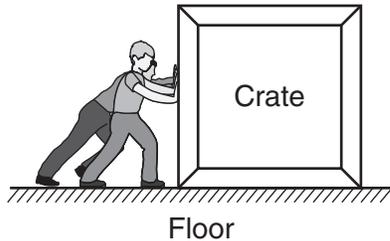
Maine Department of Education

# 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 The diagram below shows two students pushing a heavy crate across a floor.



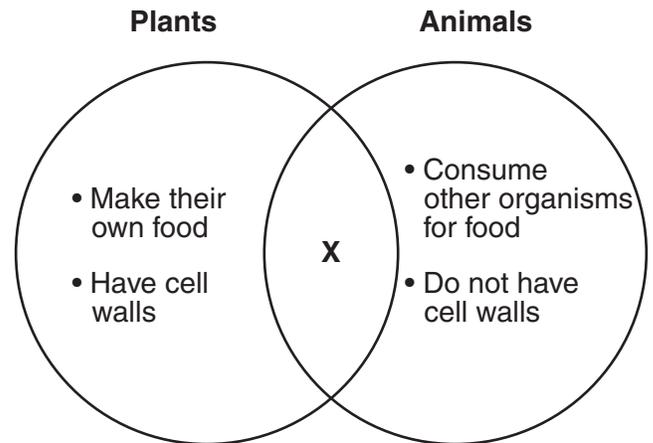
One student pushes with a force of 40 N and the other student pushes with a force of 100 N. What is the resulting force from the two students pushing the crate?

- A. 60 N
  - B. 100 N
  - C. 140 N
  - D. 4000 N
- 2 What causes a person to have blue eyes?
- A. eating foods high in protein at a young age
  - B. having a brother or sister with blue eyes
  - C. being overexposed to the Sun at a young age
  - D. receiving a gene for blue eyes from each parent

- 3 Which location on Earth has the **least** intense sunlight on December 22?

- A. Equator
- B. Florida
- C. Maine
- D. North Pole

- 4 The Venn diagram below shows plant and animal characteristics.

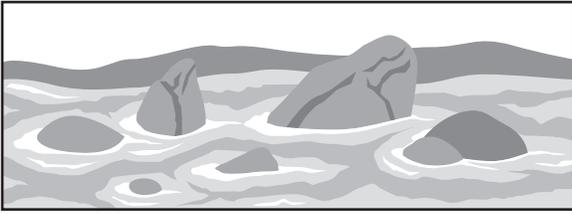


Which characteristic shared by plants and animals belongs in the space marked X?

- A. Locomotion
- B. Multicellular
- C. Photosynthetic
- D. Producer

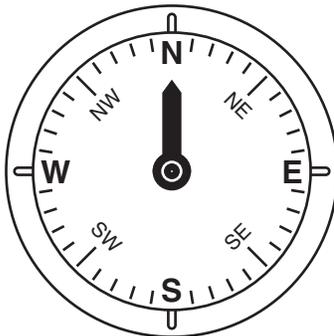
PLEASE GO ON →

- 5 The picture below shows a stream flowing over rocks.



How do the water and rocks interact?

- A. The water evaporates into the air because of the position of the rocks.
  - B. The water soaks into the ground beneath the rocks.
  - C. The water changes the shape of the rocks.
  - D. The water floods over its banks because of the mass of the rocks.
- 6 The picture below shows a compass.



Compass

The needle of the compass is pointing toward the magnetic north pole of Earth. What would cause the needle of the compass to point toward the east?

- A. light waves
  - B. heat energy
  - C. an electrical current near the compass
  - D. a gravitational force near the compass
- 7 When electricity passes through water, hydrogen and oxygen are produced. Which table correctly labels the compounds and elements involved in the process?
- A. 

Water—Compound
Hydrogen—Compound
Oxygen—Element
  - B. 

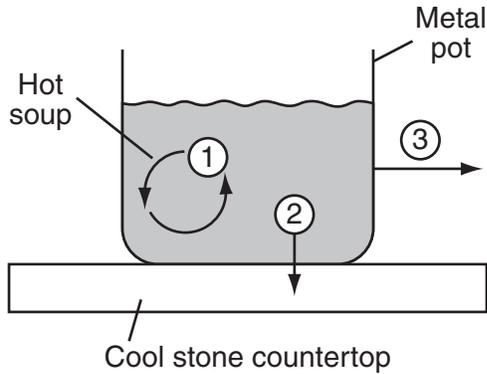
Water—Compound
Hydrogen—Element
Oxygen—Compound
  - C. 

Water—Compound
Hydrogen—Element
Oxygen—Element
  - D. 

Water—Element
Hydrogen—Element
Oxygen—Compound
- 8 How many times does Earth rotate on its axis in one day?
- A. once
  - B. twice
  - C. 24 times
  - D. 365 times

PLEASE GO ON →

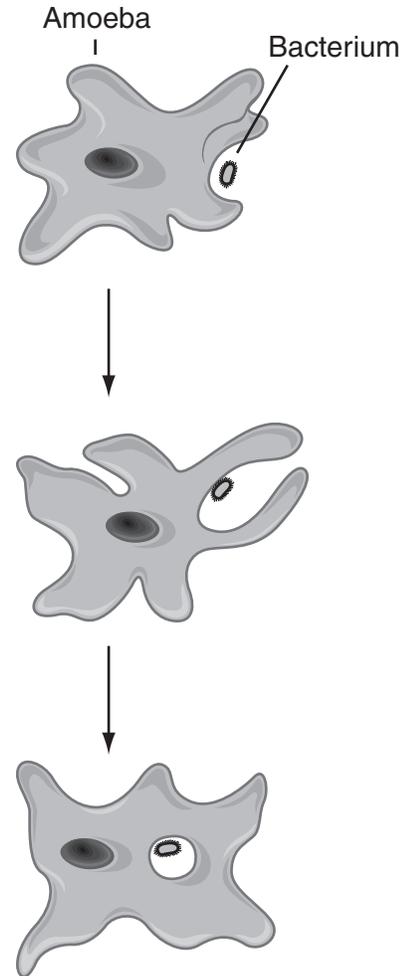
- 9 A metal pot with hot soup in it is placed on a cool stone countertop, as shown in the diagram below.



The numbered arrows show the transfer of heat from the pot of soup to the surrounding environment. Which list identifies each method of heat transfer?

- A. 1 — conduction; 2 — convection;  
3 — radiation
- B. 1 — convection; 2 — conduction;  
3 — radiation
- C. 1 — radiation; 2 — radiation;  
3 — convection
- D. 1 — convection; 2 — conduction;  
3 — conduction
- 10 Which gravitational pull has the greatest influence on Earth's tides?
- A. the gravitational pull between Earth and the Moon
- B. the gravitational pull between Earth and the Sun
- C. the gravitational pull between Earth and Jupiter
- D. the gravitational pull between Earth and Mars

- 11 The diagram below shows an amoeba performing a function necessary for life.

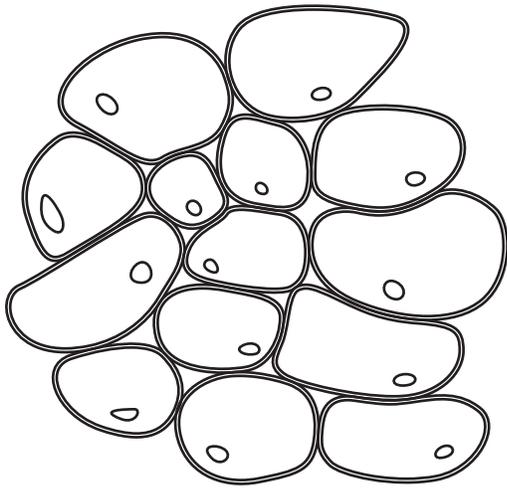


Which function is shown in the diagram?

- A. collecting food
- B. excreting wastes
- C. making food
- D. destroying wastes

PLEASE GO ON ➡

- 12 The diagram below shows a plant structure.



Which levels of organization are included in the diagram?

- A. cell and organ
  - B. cell and tissue
  - C. organ and organism
  - D. organ and organ system
- 13 In a population of spiders there are three different sizes: small, medium, and large. The large spiders are easily seen by predators. Small spiders have a difficult time finding food. What will **most likely** happen to the population after many generations?
- A. Medium spiders will be the most plentiful.
  - B. Large spiders will learn to hide from predators.
  - C. Small and medium spiders will be the least plentiful.
  - D. Small and large spiders will mutate.

- 14 The map of the United States below shows the locations of Missoula, MT, and Cape Elizabeth, ME.



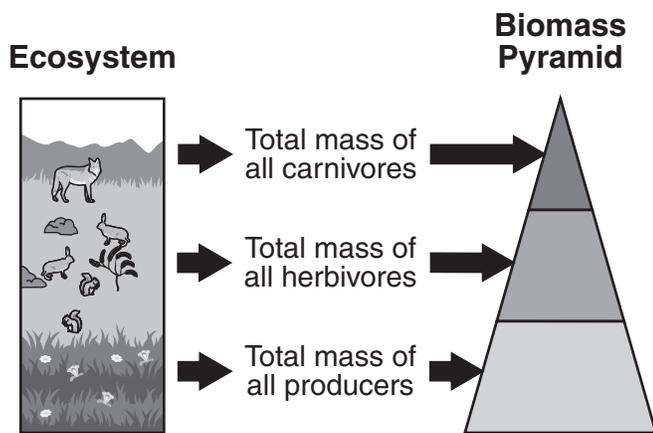
What factors make the climates different at these two locations?

- A. latitude and longitude
  - B. altitude and longitude
  - C. latitude and proximity to large bodies of water
  - D. altitude and proximity to large bodies of water
- 15 How would the Sun appear to an astronaut on Pluto compared with how it looks from Earth?
- A. The Sun would appear larger and brighter.
  - B. The Sun would appear smaller and brighter.
  - C. The Sun would appear larger and dimmer.
  - D. The Sun would appear smaller and dimmer.

PLEASE GO ON →

- 16 A donkey and a horse can be bred to produce a mule. Which observation is evidence that donkeys and horses are two different species?
- They have different body sizes.
  - A mule is not able to reproduce.
  - They are found in different environments.
  - A mule does not resemble either parent.

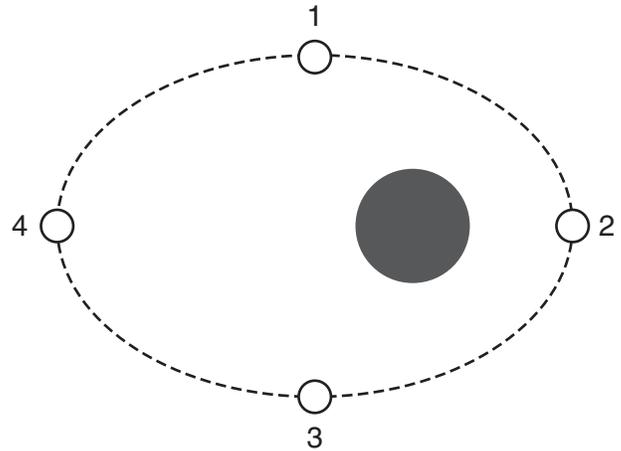
- 17 Biomass pyramids show the relative masses of producers, herbivores, and carnivores in an ecosystem. The diagram below shows the biomass pyramid of a typical ecosystem.



The mass of all herbivores is much less than the mass of all producers, and the mass of all carnivores is much less than the mass of all herbivores. Why is biomass less at higher levels of the pyramid than at lower levels?

- At higher levels, matter is leaving the ecosystem.
- At higher levels, less food is required for larger individual animals.
- At higher levels, organisms must perform photosynthesis.
- At higher levels, food is inefficiently broken down to provide energy for organisms to use.

- 18 The diagram below shows a moon revolving around a planet in an elliptical orbit.



At which location is the gravitational pull between the moon and the planet the **weakest**?

- location 1
  - location 2
  - location 3
  - location 4
- 19 Which of the following is made of atoms?

- gravity
- light
- heat
- air

PLEASE GO ON →

- 20 The table below shows some information about objects found in our solar system.

### Comparison of Objects Found in Our Solar System

Object	Diameter (km)	Composition	Atmosphere
1	142,700	Rocky core, liquid hydrogen ocean	Hydrogen, helium, methane, ammonia
2	12,800	Rocky core, liquid water ocean, supports life	Nitrogen, oxygen
3	1 to 1,000	Iron, nickel	None
4	3,400	Silica, iron	Very limited amounts of argon helium

Based on the information, which object is **most likely** an asteroid?

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

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 Changes that are observed in everyday living are listed below.

- Rusting iron
- Cooking an egg
- Melting ice
- Cutting paper
- Charging a battery
- Mowing grass
- Burning wood
- Making lemonade
- Eating food

- a. Choose **six** changes from the list and identify each change as a physical or a chemical change.
- b. Explain your reasoning for each of your identifications.

22 The honey badger is a mammal that eats a variety of foods, including honey. However, the badger cannot easily find beehives on its own. A bird called a honeyguide bird is good at finding beehives. When the bird finds a beehive, it sings loudly, attracting the badger. The badger comes and pulls apart the beehive, leaving some beeswax, larvae, and honey for the bird.

- a. Identify the type of relationship that exists between the badger and the bird.
- b. Describe the type of relationship identified in part a. Include how these two animals interact.
- c. Describe **one** positive consequence and **one** negative consequence that result from the interaction between the badger and the bird.

