



- 17 The chart below shows the recorded temperatures in a city for several days at the same time.

Four-Day Temperature Recordings at 3:00 p.m.

Day	Temperature (°F)
Thursday	59
Friday	63
Saturday	72
Sunday	64

On which day could the air have held the **greatest** amount of water vapor at 3:00 p.m.?

- A Thursday
 - B Friday
 - C Saturday
 - D Sunday
- 18 How does the convection of air produce thunderstorms?
- A by causing warm air to sink and cold air to rise
 - B by causing warm air to rise and cold air to sink
 - C by causing both warm air and cold air to rise
 - D by causing both warm air and cold air to sink
- 19 Which **best** explains how the Coriolis effect influences weather conditions?
- A It causes winds to rotate, forming tornadoes on Earth.
 - B It causes winds to move to the right in the southern hemisphere.
 - C It causes winds to turn to the right in the northern hemisphere.
 - D It causes winds to follow a straight-line path around Earth.

GRADE 7 SCIENCE — RELEASED ITEMS



- 5 Which explains why most of the rain that falls comes from the ocean?
- A The majority of evaporation takes place over the ocean.
 - B The majority of precipitation takes place over the ocean.
 - C Most rivers deposit freshwater into the ocean.
 - D Most clouds form near or over the ocean.
- 6 Barometric pressure has been dropping all day. What weather conditions will **most likely** occur?
- A sunny weather
 - B stormy weather
 - C calm weather
 - D hot weather
- 7 A sea breeze blows from the ocean toward the shore. Why does this occur?
- A High pressure over the land causes a downdraft to occur.
 - B The tide carries the wind to the shore as it moves back and forth.
 - C Conduction of heat from the warm water produces wind from the ocean.
 - D Air over land heats faster than air over water, which causes convection.

GRADE 7 SCIENCE — RELEASED FORM



- 15 Which occurs within a high-pressure system?
- A the formation of tornadoes
 - B the formation of hurricanes
 - C large clouds, as air rises
 - D calm weather, as air sinks
- 16 The data table below shows the weather conditions for City X over the course of one day.

Weather Conditions for City X

Day and Time	Tuesday at 8:00 a.m.	Tuesday at 2:00 p.m.
Temperature	60°F	40°F
Pressure	30.28 in.	29.97 in.
winds	Southwest	Northwest
skies	Partly Cloudy	Cloudy; Rain and Thunder

What has **most likely** occurred in this area?

- A A warm front has passed.
- B A cold front has passed.
- C A blizzard has taken place.
- D A high-pressure system has stalled.

GRADE 7 SCIENCE — RELEASED FORM



- 12 Which simple machine would be the **most** efficient for lifting an object 30 m off the ground?
- A pulley
 - B screw
 - C wedge
 - D lever
- 13 Why does air pressure decrease from the troposphere to the exosphere?
- A because there are fewer air molecules as altitude increases
 - B because there are more air molecules as altitude increases
 - C because there are higher temperatures as altitude increases
 - D because there are lower temperatures as altitude increases
- 14 How does the temperature of the stratosphere compare to the mesosphere?
- A It is colder than the mesosphere because the stratosphere contains the ozone layer.
 - B It is warmer than the mesosphere because the stratosphere contains the ozone layer.
 - C It is colder than the mesosphere because the stratosphere contains the ionosphere.
 - D It is warmer than the mesosphere because the stratosphere contains the ionosphere.

GRADE 7 SCIENCE — RELEASED ITEMS

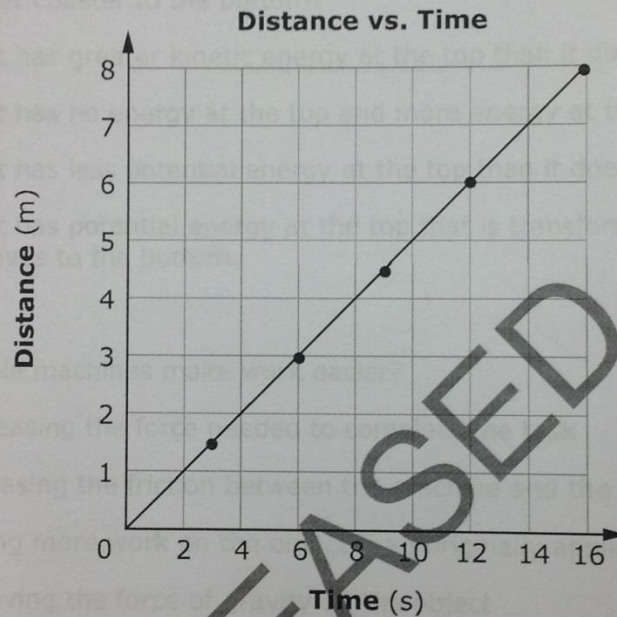


- 2 How does the energy of a roller-coaster cart change as the cart travels from the top of the roller coaster to the bottom?
- A The cart has greater kinetic energy at the top than it does at the bottom.
 - B The cart has no energy at the top and more energy at the bottom.
 - C The cart has less potential energy at the top than it does at the bottom.
 - D The cart has potential energy at the top that is transformed to kinetic energy as it moves to the bottom.
- 3 How can simple machines make work easier?
- A by decreasing the force needed to complete the task
 - B by increasing the friction between the machine and the object
 - C by adding more work on the object than originally applied
 - D by removing the force of gravity on the object
- 4 Why does the troposphere experience the greatest amount of atmospheric pressure compared to the other atmospheric layers?
- A It produces the ozone layer.
 - B It has the highest temperatures.
 - C It contains a high concentration of gas particles.
 - D It is the region in which weather occurs.

GRADE 7 SCIENCE — RELEASED ITEMS



- 1 Sally ran a distance of 8 m in 16 s. The graph below shows her motion.

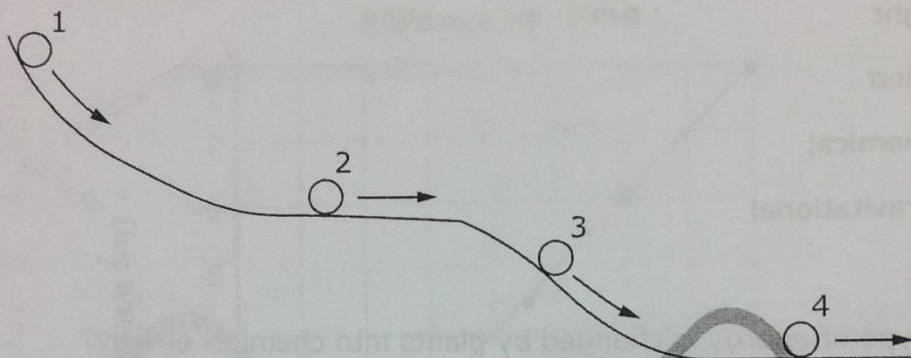


Which **best** describes her motion?

- A Her speed was constantly changing.
- B Her speed remained constant.
- C She stopped moving after four seconds.
- D She decreased her speed after four seconds.



- 7 This diagram shows the motion of a ball down a hill.

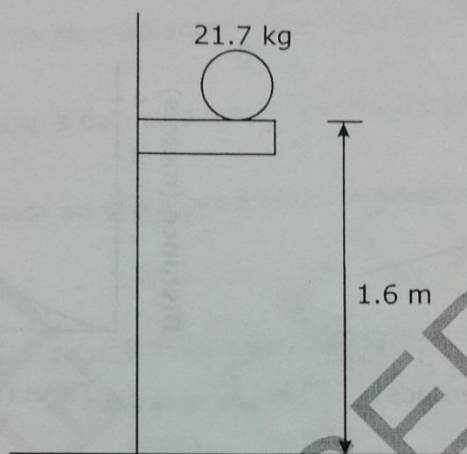


What happened to the ball's energy from Point 1 to Point 4?

- A Stored energy was transformed into energy of motion.
 - B Energy of motion was transformed into chemical energy.
 - C Stored energy in the ball applied a force to get the ball to move.
 - D Internal energy caused the ball to move until the energy was gone.
- 8 As a roller coaster car travels down a hill, which type of change in energy allows it to speed up?
- A potential energy changing into heat energy
 - B potential energy changing into kinetic energy
 - C kinetic energy changing into heat energy
 - D kinetic energy changing into potential energy



- 6 The diagram shows a 21.7-kg ball located on a shelf 1.6 m above the ground.



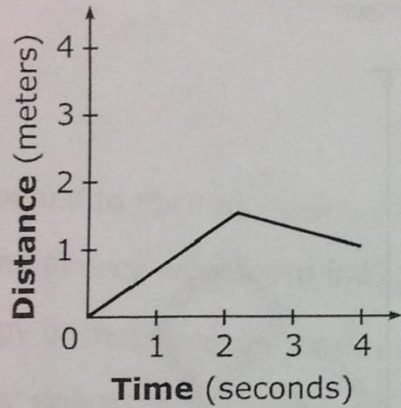
Which **best** describes the energy of the ball?

- A Its energy is lost once it falls off the shelf.
- B Its energy depends upon the speed the ball will travel.
- C It has mechanical energy in the form of potential energy.
- D It has mechanical energy in the form of kinetic energy.

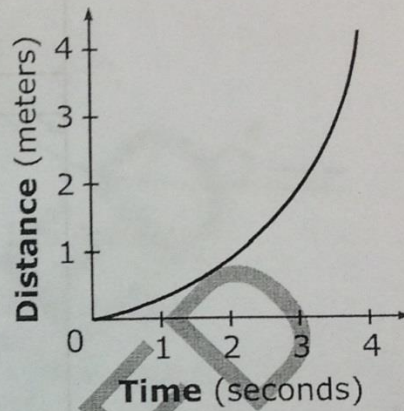


Which graph represents a moving object with a constant speed throughout its entire travel time?

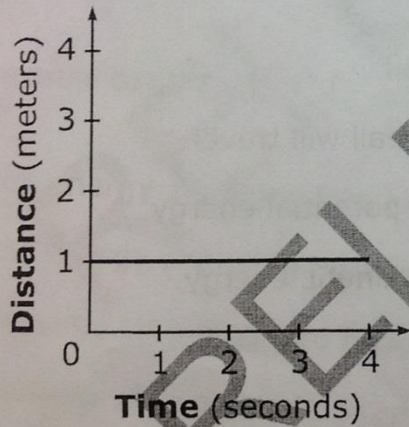
A



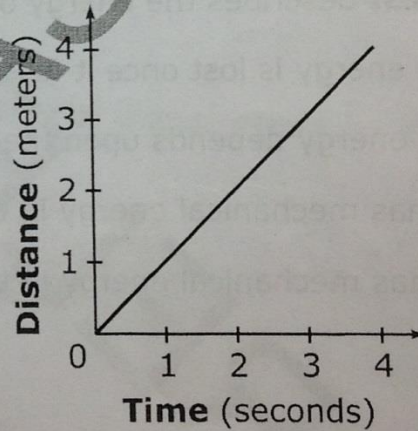
B



C



D



GRADE 7 SCIENCE — RELEASED FORM



- 1 Steven threw four balls into the air and recorded their heights. The chart below shows the maximum height for each ball.

Maximum Height Reached by Four Balls

Ball	Maximum Height (m)
M	2.0
N	1.5
O	4.2
P	3.0

Which describes their motion?

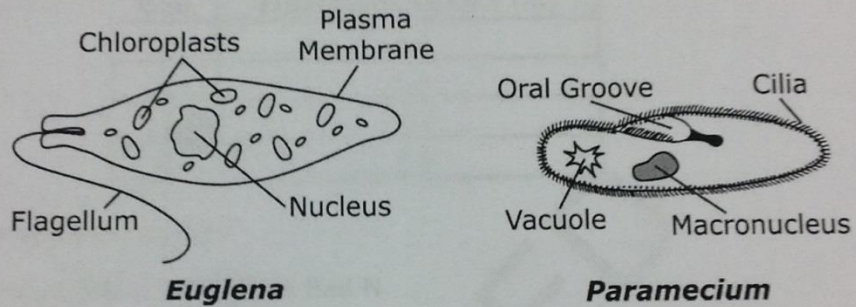
- A Ball P went twice as high as Ball N.
 - B Ball M went twice as high as Ball N.
 - C Ball P went two meters higher than Ball O.
 - D Ball N went two meters higher than Ball O.
- 2 John wants to build a racetrack that will allow his toy cars to travel fast when force is applied. Which material should he use?
- A carpet, because friction will be high
 - B gravel, because friction will be high
 - C plastic, because friction will be low
 - D sandpaper, because friction will be low

MSL SAMPLE ITEMS

Grade 7 Science Sample Items

MC—

This diagram shows a *Euglena* and *Paramecium*.



How are *Euglena* and *Paramecium* similar?

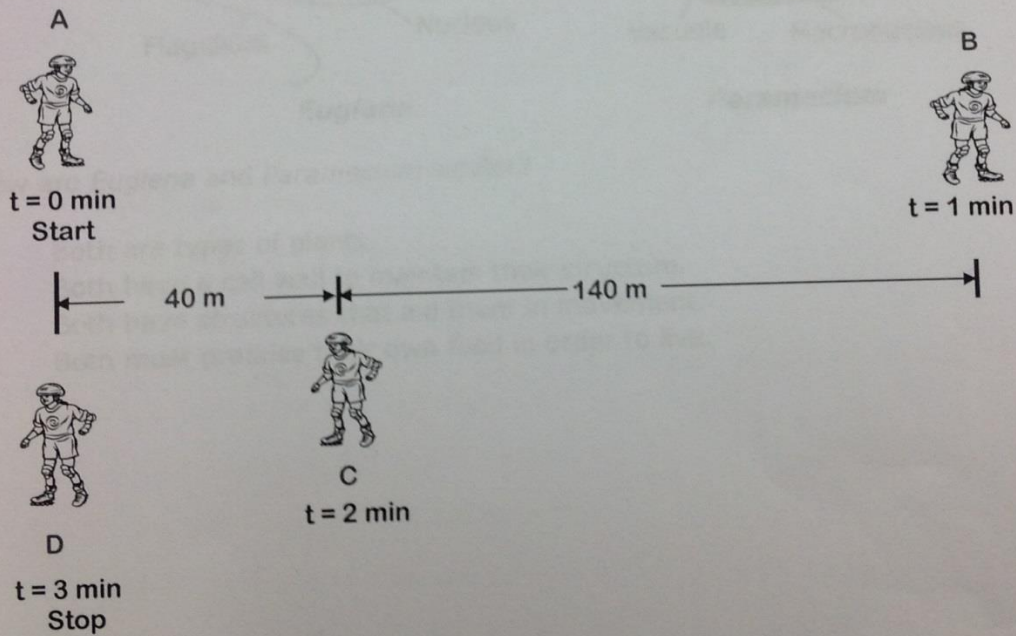
- A. Both are types of plants.
- B. Both have a cell wall to maintain their structure.
- C. Both have structures that aid them in movement.
- D. Both must produce their own food in order to live.

MSL SAMPLE ITEMS

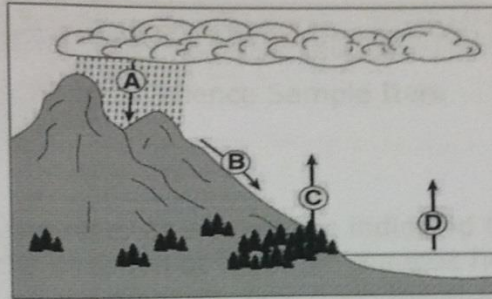
Physical Science Sample Item

CR—

A student is practicing for a big race. At each of the indicated times, she turns around and reverses the direction of travel or changes her speed until she stops at point D. Based on the diagram, how does the student's displacement at point D compare to the total distance travelled? Explain your answer using the terms frame of reference, distance, and displacement. Also, support your answer with mathematical reasoning.



3. The diagram represents the water cycle.



Which labeled process represents transpiration?

- A process A
 - B process B
 - C process C
 - D process D
4. Short tails (T) are dominant to long tails (t) in mice. In a cross between a long-tailed mouse and a short-tailed mouse (Tt), what is the probability of having offspring with long tails?
- A 25%
 - B 50%
 - C 75%
 - D 100%

Sample Constructed Response with Rubric

Plant and animal cells are similar and different. Name and describe a structural difference between plant and animal cells. Provide one example of an organelle plant and animal cells have in common.

Score 0: No response or the response does not address the prompt.

Score 1: Fulfills only 1 of 2 requirements of a level 2 performance.

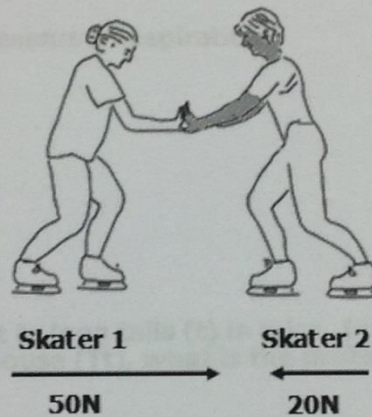
Score 2: Names and describes a structural difference between plant and animal cells; provides one example of an organelle plant and animal cells have in common.

Possible Responses:

Structural differences between plant and animal cells could include: presence of a cell wall for structure in plant cells, chloroplasts in plant cells that contain chlorophyll and allow plants to make food, and one large vacuole in plant cells compared to many small vacuoles in animal cells, which are both used as storage areas. Plant and animal cells have several organelles in common. These include cell membrane, cytoplasm, nucleus, nuclear membrane, and mitochondria.

Sample Multiple Choice

Use the diagram of two ice skaters pushing against each other to answer questions 1 and 2.



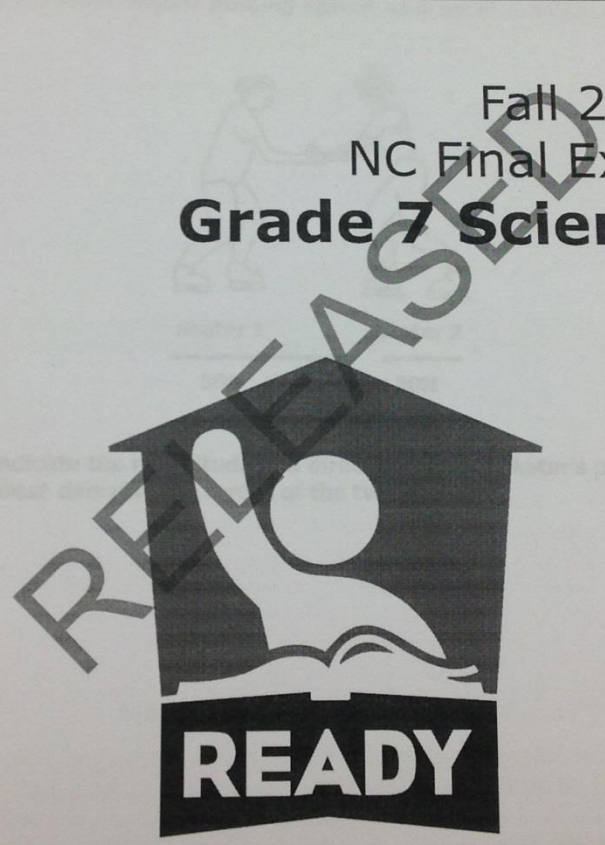
1. The arrows indicate the magnitude and direction of each skater's push force. Which word would *best* describe the forces of the two skaters?
 - A balanced
 - B net
 - C steady
 - D unbalanced
2. Which statement *most accurately* describes the result of the forces shown?
 - A The skaters will move toward Skater 1.
 - B The skaters will move toward Skater 2.
 - C The skaters will not move.
 - D The skaters will move apart.



Released Items

Student Name: _____

Fall 2014
NC Final Exam
Grade 7 Science



Student Booklet



Public Schools of North Carolina
State Board of Education
Department of Public Instruction
Raleigh, North Carolina 27699-6314

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Handwritten notes on sticky notes: 'Croatan', 'Cell M', 'Job!', 'Flight', 'Osmosis', 'diffusion', 'Osmosis diffex!', '16', '3'

GRADE 7 SCIENCE — RELEASED FORM



- 29 Sarah's family has a long history of people who developed diabetes. Which lifestyle change should she make to try to prevent becoming diabetic?
- A watch television and drink water
 - B exercise frequently and watch her diet
 - C play video games and sit on the couch
 - D drink sodas daily and eat fried foods
- 30 How does smoking cigarettes affect the body?
- A It causes damage to various cells.
 - B It improves the function of the lungs.
 - C It lowers carbon dioxide amounts.
 - D It reduces the chance of cancer.

This is the end of the multiple-choice portion of the test.

RELEASED

828
2574200
Crocker

OSMOSS
diffusion

OSMOSS
diffusion

GRADE 7 SCIENCE — RELEASED FORM



- 27 A scientist noticed that all of the offspring of the yeast fungus are identical to the parent. However, the offspring of a cat all look different. What **most likely** caused this to occur?
- A Yeast produced offspring through asexual reproduction, while the cat produced offspring through sexual reproduction.
 - B Yeast produced offspring through sexual reproduction, while the cat produced offspring through asexual reproduction.
 - C Both yeast and the cat produced offspring through asexual reproduction.
 - D Both yeast and the cat produced offspring through sexual reproduction.
- 28 How does mitosis compare to meiosis?
- A Mitosis produces two identical daughter cells, while meiosis produces sex cells with half the genetic information.
 - B Mitosis produces sex cells with half the genetic information, while meiosis produces two identical daughter cells.
 - C Mitosis only occurs in single-celled organisms, while meiosis only occurs in animals.
 - D Mitosis only occurs in animals, while meiosis only occurs in single-celled organisms.

RELEASED

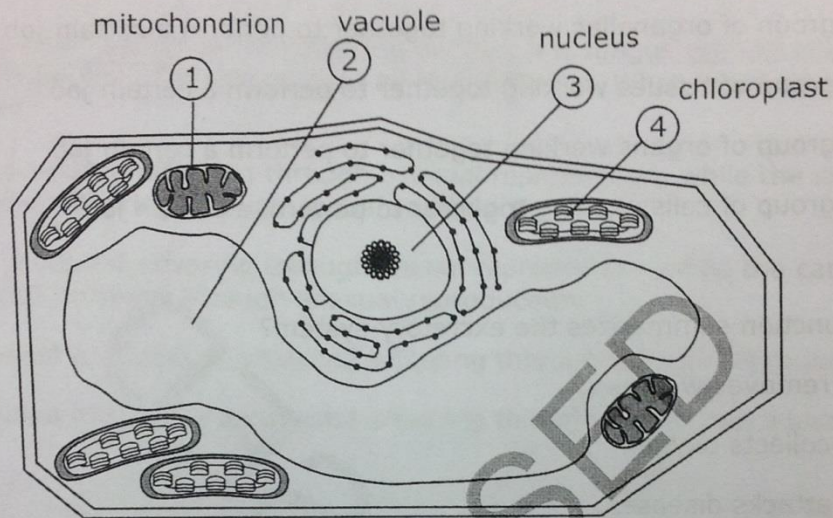
GRADE 7 SCIENCE — RELEASED FORM



- 24 Which **best** summarizes organ systems?
- A a group of organelles working together to perform a certain job
 - B a group of tissues working together to perform a certain job
 - C a group of organs working together to perform a certain job
 - D a group of cells working together to perform a certain job
- 25 Which function summarizes the excretory system?
- A It removes waste.
 - B It collects oxygen.
 - C It attacks diseases.
 - D It delivers nutrients.
- 26 How do the respiratory and circulatory systems work together?
- A The respiratory system takes in carbon dioxide, while the circulatory system delivers carbon dioxide to the cells.
 - B The circulatory system takes in carbon dioxide, while the respiratory system delivers carbon dioxide to the cells.
 - C The respiratory system takes in oxygen, while the circulatory system delivers oxygen to the cells.
 - D The circulatory system takes in oxygen, while the respiratory system delivers oxygen to the cells.



22 This is a diagram of a plant cell.



Which organelle is used to transfer energy and can also be found in an animal cell?

- A (1)
- B (2)
- C (3)
- D (4)

23 The cell membrane is unable to work properly. How could this affect plant and animal cells?

- A It could affect their ability to absorb sunlight.
- B It could affect their ability to make proteins.
- C It could affect their ability to store water.
- D It could affect their ability to remove waste.

28 4200
OSK...
diffusion
Osteo DR...

GRADE 7 SCIENCE — RELEASED ITEMS

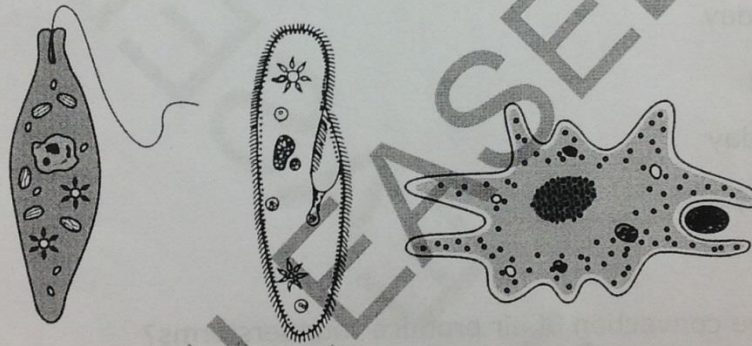


- 8 Which two organisms contain chloroplasts and eyespots?
- A amoeba and paramecium
 - B paramecium and volvox
 - C volvox and euglena
 - D euglena and amoeba
- 9 How do a paramecium and an amoeba obtain food to live?
- A A paramecium and an amoeba both use contractile vacuoles to capture food.
 - B A paramecium and an amoeba both make their own food through photosynthesis.
 - C A paramecium collects food into an oral groove, while an amoeba uses pseudopods to surround food.
 - D A paramecium uses pseudopods to capture food, while an amoeba uses chloroplasts to make its food.
- 10 Tina observed a cell under a microscope. She concluded that it was a plant cell instead of an animal cell. Which structure helped her come to this conclusion?
- A She saw a vacuole, which animal cells lack.
 - B She saw a nucleus, which animal cells lack.
 - C She saw a chloroplast, which animal cells lack.
 - D She saw a cell membrane, which animal cells lack.



- 20 Why is it important for the United States to monitor air pollution levels in other countries?
- A Air pollution can improve the ozone layer amounts in the atmosphere.
 - B Air pollution can travel to the United States and affect people's health.
 - C The United States is the only country able to monitor the air quality.
 - D The United States has clean air and is able to help other countries.

- 21 The illustrations below are of a euglena, a paramecium, and an amoeba.



How do these organisms compare?

- A They use different structures for movement.
- B They use different structures to control cell activity.
- C They all make their own food by photosynthesis.
- D They all have eyespots to sense sunlight.