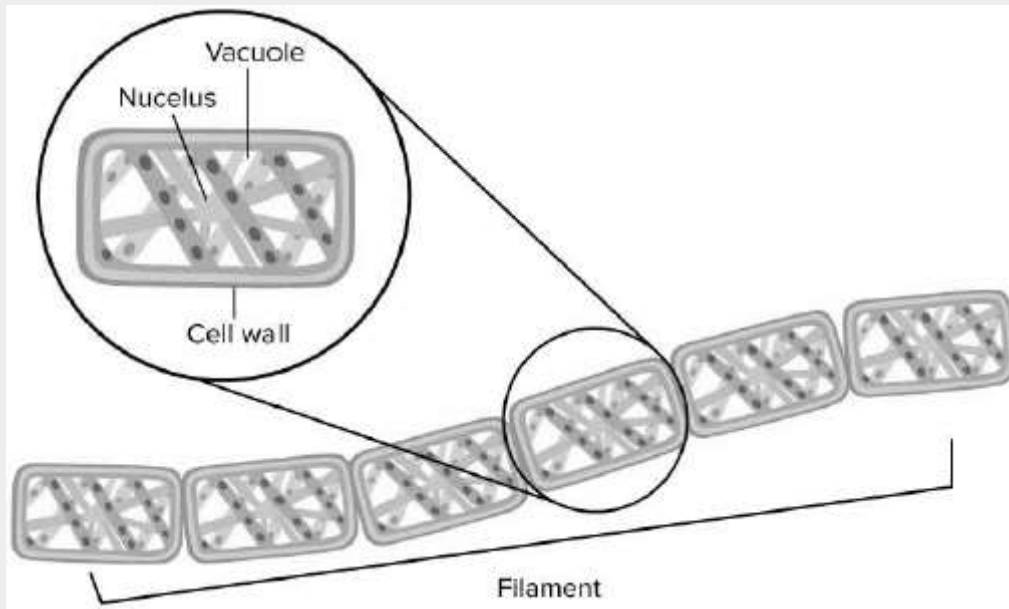


2023–2024 Gr7 Science Benchmark Unit 2

Students carried out an investigation in which they examined pond water under a light microscope. When they look at some green objects found in the pond water, they see detailed structures like the diagram.



Question 1.

Did this investigation produce evidence that this object is a living thing?

- A. No; living things are large enough to be seen without a microscope.
- B. No; there is no mouth or digestive system.
- C. Yes; it is composed of cells.
- D. Yes; it contains organized body systems.

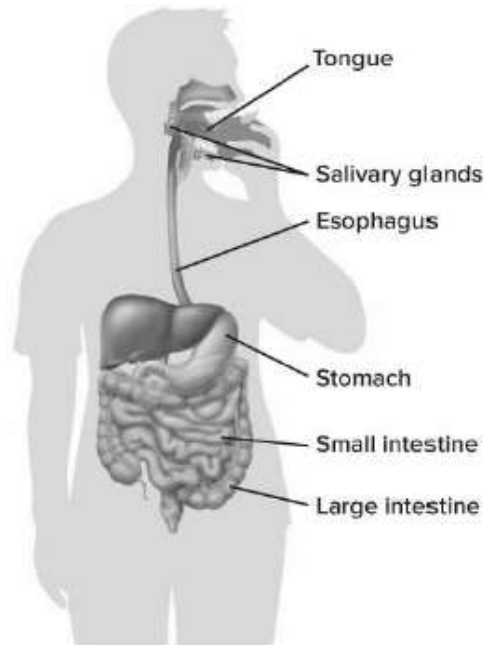
Question 2.

Two students working on a model of a cell disagree about cell walls. One student says all cells have cell walls, and they help control the movement of substances into and out of the cell. The other student says that animals don't have cell walls, and that cell walls are stiff, with the function of helping the cell hold its shape. Which of the following statements could be used by the students to develop an accurate model? Select all that apply.

- A. Cell walls are found only in plants, fungi, bacteria, and some protists.
- B. Cell walls line the cell on the inside of the cell membrane.
- C. Cell walls manage the movement of all substances into and out of the cell.
- D. Cell walls often help the cell keep a rigid shape, especially in plants.
- E. Cell walls prevent viruses and harmful organisms from entering the cell.

Question 3.

How could the model be modified to show an interaction of the digestive system and muscular system?

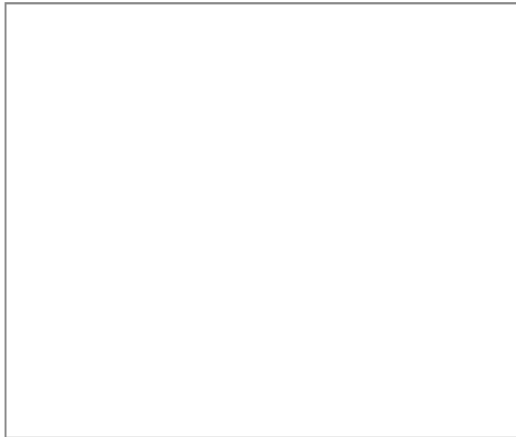


- A. show nutrients entering the bloodstream from the small intestine
- B. show saliva acting on the food in the mouth
- C. show food being moved by peristalsis through the esophagus
- D. show digestive enzymes being released into the stomach

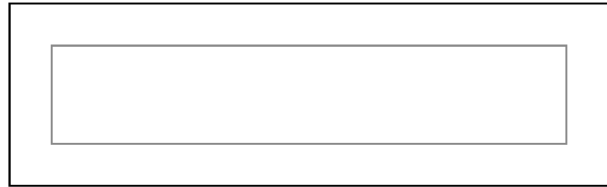
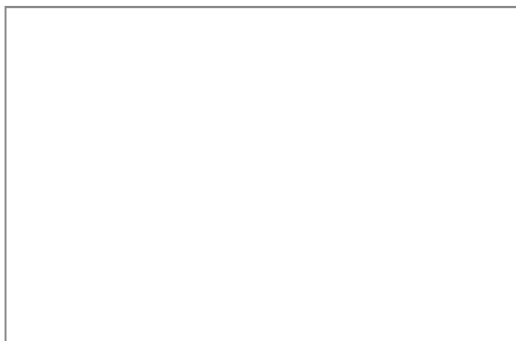
Question 4.

A class has been studying quietly in their seats when the fire alarm suddenly sounds, causing them to respond by immediately leaving their seats and forming a line at the door.

Sequence what happens in the students' bodies from the moment the alarm sounds until the students line up at the door. Use the terms behavior, brain, nerve cell, sense receptor, and signal in your response.



What evidence would support the claim that students who had previously heard the alarm stored information about the alarm as a memory?



Passage 1

Performance Task: Senses and Temperature

In this performance task, you will apply your knowledge of body systems.

A student conducts an experiment to demonstrate their ability to detect temperature. For two minutes, the student submerges one hand in ice water and the other hand in very warm water. Afterward, both hands are placed in a bowl of room-temperature water. To the hand that had been in very warm water, the room-temperature water feels cool. But to the hand that had been in the ice water, the room-temperature water feels warm.

Question 5.

What evidence does this experiment provide that supports the idea that our nervous system adjusts to environmental conditions?

- A. The experiment does not provide any evidence of adjustment to environmental conditions.
- B. The room-temperature water felt the same to both hands.
- C. The room-temperature water felt warm or cold depending on exposure to previous temperatures.
- D. The student did not pull their hand away from ice water.

Question 6.

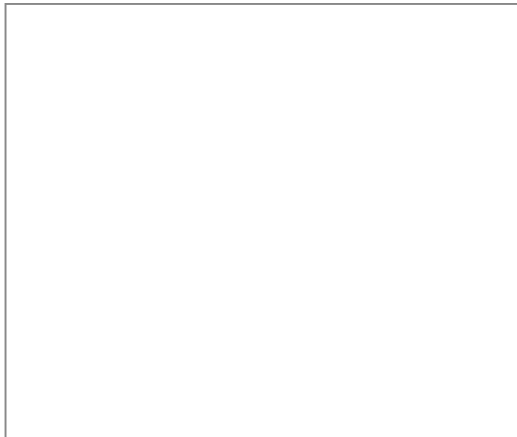
A group of students design a model to explain how the different parts of a cell function. They choose a grocery store as a model for a cell. They place a map of a grocery store and a cell diagram side by side to compare the parts of each.

Which part of a grocery store functions similarly to a cell membrane?

- A. a time clock recording employee hours in the office
- B. a sliding glass door opening and closing at the entrance
- C. the bricks in the outer wall providing support for the roof
- D. the aisles allowing customers to move between shelves of products

Question 7.

Explain how the respiratory system and the skin play a role in in the excretory system. How does this information support the statement that the body is a group of interacting systems and subsystems?



Question 8.

Choose the correct order of events for the picture.



- A. Receptors in your hand detect the heat and send signals to the spinal cord. You feel pain. Nerve signals travel from your spinal cord to your arm muscles and you pull your hand away. Nerve signals travel from the spinal chord to the brain.
- B. Receptors in your hand detect the heat and send signals to the spinal cord. Nerve signals travel from your spinal cord to your arm muscles. Nerve signals travel from the spinal cord to the brain. You feel pain and you pull your hand away.
- C. Receptors in your hand detect the heat and send signals to the spinal cord. Nerve signals travel from

your spinal cord to your arm muscles and you pull your hand away.

Nerve signals travel from the spinal cord to the brain.
You feel pain.

- D. Receptors in your hand detect the heat and send signals to the spinal cord. Nerve signals travel from the spinal cord to the brain. Nerve signals travel from your spinal cord to your arm muscles.
You feel pain and you pull your hand away.

Question 11.

What is the difference between a cell wall and a cell membrane?

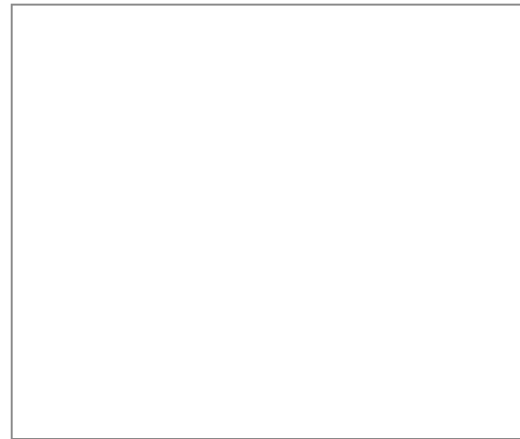
- A. The cell wall is just outside the cell membrane and is strong and rigid.
- B. The cell membrane is just outside the cell wall and is strong and rigid.
- C. The cell wall is just outside the cell membrane and is more flexible.
- D. The cell membrane is just outside the cell wall and is more flexible.

Question 9.

The _____ system and the _____ system work together to allow your body to move.

Question 12.

What is the function of the nucleus of the cell?



Question 10.

Which of the following is **NOT** a necessary characteristic of a living thing?

- A. It is made up of cells.
- B. It eats food to get energy.
- C. It grows and develops.
- D. It responds to stimuli.

Question 13.

What makes up tissue?

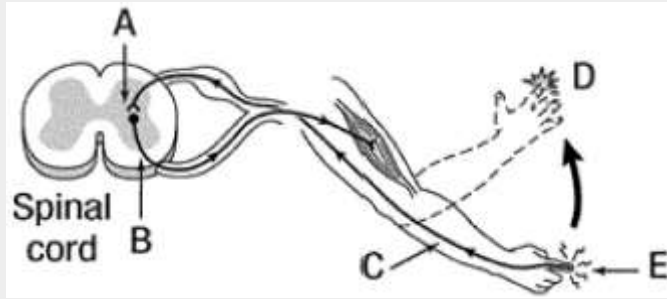
- A. a group of cells
- B. a group of muscles
- C. a group of organs
- D. a group of organ systems

Question 14.

What is an effect of the organization of tissues into groups?

- A. They can carry out more complex functions.
- B. They can form new organisms.
- C. They can develop more than one cell type.
- D. They can carry out all functions required for life.

Select a letter from the art that best answers the following sentences.



Question 15.

A finger picking up a message is identified by _____ .

Question 16.

A muscle contracting and pulling the hand away is shown by _____ .

Question 17.

Yeast is used to bake bread and rolls. When dry, yeast looks like a light brown powder. When mixed with water and sugar, yeast grows and reproduces, producing gases that make dough rise.

A student is given a beaker containing a sample of dry yeast. Which investigation will produce data to best support the claim that yeast is a living thing?

- A. Keep the dry yeast in sunlight for several days, and see if more yeast appears.
- B. Combine dry yeast with water, and measure the heat released from the mixture.
- C. Mix dry yeast with water and sugar, and measure the mixture's change in volume.
- D. Mix dry yeast with water and sugar, and use a microscope to observe if cells are visible.

Question 18.

All living things are made up of one or more _____ .

Question 19.

A student views a cell under a microscope. The student makes the claim that the cell is from a plant and not an animal. Figure 1 shows a sketch the student makes while viewing the cell.

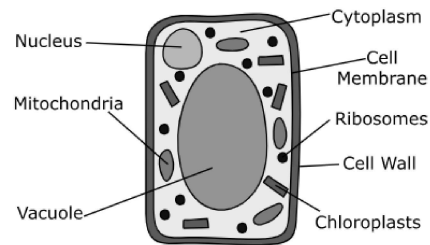


Figure 1. Cell Sketch

Which statements best support the student's claim?

Select **two** of the five statements.

- A. The cell contains the structures used for protein synthesis.
- B. The cell contains the structures used for cellular respiration.
- C. The cell contains the structure that holds genetic information.
- D. The cell contains the rigid structure that supports and protects the cell.
- E. The cell contains the structures that can convert light energy to chemical energy.

Question 20.

Students observe a worm creeping along the edge of a sidewalk at a very slow pace. One student claims that movement in multicellular organisms requires the interaction of body systems. Explain this claim.

Complete the sentences by choosing the correct answer from each box.

Nervous tissues **Box Y** different parts of the body. As a result, muscular tissues **Box Z**, causing the worm to move.

Box Y

- A. extend and contract
- B. remove wastes from
- C. send messages to
- D. pump blood to

Box Z

- A. extend and contract
- B. remove wastes
- C. send messages
- D. pump blood

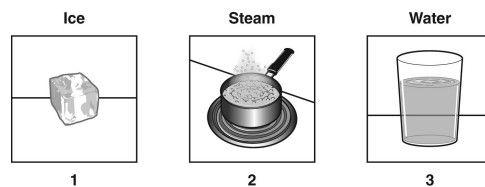
Question 21.

When frozen carbon dioxide (CO_2) is heated, it changes directly into a gas. Which statement **BEST** indicates that a physical change has taken place?

- A. Heat caused an increase in gas production.
- B. Heat caused a new substance to form.
- C. Heat caused a decrease in energy.
- D. Heat caused a change in state.

Question 22.

The motion of atoms is affected by temperature. The pictures show water at three different temperatures.



Which order of the pictures indicates decreasing motion of atoms?

- A. 1, 2, 3
- B. 2, 3, 1
- C. 3, 2, 1
- D. 1, 3, 2