

Cells and Systems Formative Assessment

Time: 15 min. 6 questions.

Instructions

Answer all six questions. For multiple choice, select the best answer. For short answer, write one or two sentences. For true or false, write the word or circle it. For the numeric question, show your calculation and include units. You may use a calculator.

Questions

1. Which of the following best describes the role of cells in living things?

- A) Cells are found only in animals and help them move around.
- B) Cells are the basic unit of life and make up all living organisms.
- C) Cells are structures that store energy but do not perform other functions.
- D) Cells are found in plants but not in single-celled organisms.

[\(Outcome\)](#)

2. A grizzly bear is a multicellular organism and an amoeba is a single-celled organism. Describe one similarity and one difference between them. [\(Outcome\)](#)

3. True or false: Plant cells have a cell wall, while animal cells have only a cell membrane. [\(Outcome\)](#)

4. In a living organism, the heart pumps blood throughout the body to carry oxygen and nutrients to tissues and organs. This is an example of which body system?

- A) Digestive system
- B) Respiratory system
- C) Circulatory system
- D) Excretory system

[\(Outcome\)](#)

5. Explain how diffusion helps gases move into and out of cells. [\(Outcome\)](#)

6. A student observes that a person's heart rate increases from 70 beats per minute to 120 beats per minute during exercise. Calculate the increase in heart rate. [\(Outcome\)](#)

Curriculum Coverage

Question	Outcome Alias	Content
1	Outcome	Role of cells as basic unit of life
2	Outcome	Similarities and differences between single-celled and multicellular organisms
3	Outcome	Distinction between plant and animal cells
4	Outcome	Human body systems and their functions
5	Outcome	Movement of gases through diffusion
6	Outcome	Changes in body functions in response to stimuli

Answer Key

1. **B**, Cells are the basic unit of life and make up all living organisms, including both single-celled and multicellular life forms ([Outcome](#)).
2. **Similarity:** Both the grizzly bear and amoeba are living organisms made of cells. **Difference:** The grizzly bear is multicellular (made of many cells) while the amoeba is single-celled (made of one cell) ([Outcome](#)).
3. **True**, Plant cells have a cell wall in addition to a cell membrane, while animal cells have only a cell membrane ([Outcome](#)).
4. **C**, The circulatory system is responsible for pumping blood throughout the body to deliver oxygen and nutrients to tissues and organs ([Outcome](#)).
5. **Diffusion is the movement of gases from an area of high concentration to an area of low concentration.** Oxygen and carbon dioxide move across the cell membrane based on these concentration differences, allowing gases to enter and exit cells ([Outcome](#)).
6. **50 beats per minute**, Subtract the resting heart rate from the exercise heart rate: $120 - 70 = 50$ beats per minute ([Outcome](#)).