

Cells and Systems Quiz

Time: 30 min. 6 questions.

Instructions

Answer each question in the space provided. Read multiple choice options carefully before choosing one answer. Show your work for the numeric question. You may use your notes on body systems and cell structure.

Questions

1. Which structure is found in a plant cell but not in an animal cell?

- A) Cell membrane
- B) Nucleus
- C) Cell wall
- D) Cytoplasm

[\(Outcome\)](#)

2. True or false: A single-celled organism, such as an amoeba, and a multicelled organism, such as a grizzly bear, must carry out the same basic life functions, even though their structures differ greatly.

[\(Outcome\)](#)

3. Describe, in general terms, the role of the lungs and the circulatory system in getting oxygen to the body's tissues. Use the terms "gas exchange" and "circulation" in your answer.

[\(Outcome\)](#)

4. A student's resting heart rate is 72 beats per minute. During exercise, her heart rate increases by 45%. Calculate her heart rate during exercise, in beats per minute. Round your answer to the nearest whole number.

[\(Outcome\)](#)

5. Which of the following best describes the process of diffusion in a cell?

- A) A cell actively pumps molecules from low to high concentration using energy
- B) Molecules move from an area of higher concentration to an area of lower concentration
- C) Water moves out of a cell only when the cell wall is damaged
- D) Gases move only in one direction, from inside the cell to outside

[\(Outcome\)](#)

6. Give one example of scientific research into human cells, organs or body systems, and describe one way this research has improved human health.

[\(Outcome\)](#)

Curriculum coverage

Question	Outcome alias
1	Outcome
2	Outcome

3	Outcome
4	Outcome
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6	Outcome

Answer key

1. C) Cell wall. Plant cells have a rigid cell wall outside the cell membrane, while animal cells have only a cell membrane ([Outcome](#)).
2. True. Even though single-celled and multicelled organisms differ in structure, both must carry out shared life functions such as obtaining food, exchanging gases and responding to their environment ([Outcome](#)).
3. The lungs perform gas exchange, taking in oxygen and releasing carbon dioxide, and the circulatory system then carries that oxygen through the blood to tissues and organs throughout the body ([Outcome](#)).
4. 104 beats per minute. Multiply 72 by 1.45 ($72 \times 1.45 = 104.4$), which rounds to 104 beats per minute, showing how heart rate rises in response to exercise ([Outcome](#)).
5. B) Molecules move from an area of higher concentration to an area of lower concentration. This describes diffusion, which does not require the cell to use energy, unlike active transport ([Outcome](#)).
6. Any reasonable example is acceptable, such as research into insulin production for diabetes leading to improved treatment, or vaccine research leading to immunization programs that prevent disease ([Outcome](#)).