

Cells and Systems: Formative Quiz

Time: 20 min. 6 questions.

Instructions

Answer all six questions in complete sentences where required. You may use a calculator for the numeric question. Show your work for the numeric question so your teacher can check your reasoning.

Questions

1. Which statement best describes the role of the cell in a living thing?
A) Cells only exist in plants, not animals
B) The cell is the basic unit of life, and all living things are made of one or more cells
C) Cells are visible without a microscope in every organism
D) Only complex organisms like humans are made of cells
([Outcome](#))
2. Describe, in your own words, the role that lungs play in keeping the human body healthy. Include what gases move in and out during this process.
([Outcome](#))
3. True or false: During diffusion, gases and liquids move into and out of cells based on differences in concentration.
([Outcome](#))
4. A student's resting heart rate is 70 beats per minute. During a soccer game, her heart rate increases by 60 percent. What is her heart rate during the game, in beats per minute?
([Outcome](#))
5. Which of the following is a real structural difference between plant cells and animal cells?
A) Animal cells have a cell wall; plant cells do not
B) Plant cells have a cell wall; animal cells have only a cell membrane
C) Plant cells have no membrane at all
D) Animal cells are always larger than plant cells
([Outcome](#))
6. Give one example of scientific research into human cells, organs, or body systems that has led to an improvement in human health. Explain briefly how it helped.
([Outcome](#))

Curriculum coverage

Question	Outcome alias
1	Outcome
2	Outcome
3	Outcome
4	Outcome
5	Outcome
6	Outcome

Answer key

1. **B.** Cells are the basic unit of life, and living things are made up of one or more cells that carry out life processes ([Outcome](#)).
2. **Sample answer: Lungs exchange oxygen and carbon dioxide between the air and the blood.** Oxygen moves into the blood while carbon dioxide moves out and is exhaled, supporting the body's need for oxygen and removal of waste gas ([Outcome](#)).
3. **True.** Diffusion moves gases and liquids into and out of cells according to concentration differences, moving from areas of higher concentration to lower concentration ([Outcome](#)).
4. **112 beats per minute.** $70 \times 0.60 = 42$, and $70 + 42 = 112$, showing how heart rate rises in response to exercise ([Outcome](#)).
5. **B.** Plant cells have a rigid cell wall in addition to a cell membrane, while animal cells have only a cell membrane ([Outcome](#)).
6. **Sample answer: The development of vaccines through research into how immune cells respond to disease has reduced illness and death from infectious diseases.** Research into cells and body systems has led to medicines, immunization procedures and diets suited to organ health ([Outcome](#)).