

Cells and Systems

This worksheet develops your understanding of how cells form the basic unit of life and how they work together in systems ([Outcome](#)). You will examine the structures and functions of plant and animal cells, compare single-celled and multicelled organisms, and explore how body systems keep humans healthy ([Outcome](#)).

Exercises

1. **Plant and animal cells both contain a nucleus and mitochondria. Name two structures found in plant cells that are NOT found in animal cells.**

_____ and _____

2. **The table below shows four organisms. Classify each as single-celled or multicelled, and explain one reason for your choice.**

Organism	Single-celled or Multicelled?	Reason
Amoeba		
Oak tree		
Paramecium		
Grizzly bear		

3. **A red blood cell is placed in pure water. The cell swells and bursts. Which process explains what happened?**

- A) Diffusion
- B) Osmosis
- C) Active transport
- D) Photosynthesis

4. **Match each human body system with its primary function.**

System	Function
Respiratory system	A) Breaks down food and absorbs nutrients
Circulatory system	B) Exchanges oxygen and carbon dioxide with the air
Digestive system	C) Removes waste products from the body
Excretory system	D) Carries oxygen and nutrients to all body tissues

5. **Your heart rate increases when you exercise. Describe this as a response to a stimulus, naming the stimulus and the body's response.**

Stimulus: _____

Body's response: _____

6. **Bone tissue contains bone cells that produce a hard mineral substance. Explain how this structure supports the function of the skeletal system.**

Answer Key

1. Cell wall and chloroplast (accept: vacuole, plasmodesmata, or other plant-specific structures).
2. Amoeba: single-celled (it is one cell that performs all life functions); Oak tree: multicelled (it is made of many cells organized into tissues and organs); Paramecium: single-celled (one cell that carries out all functions); Grizzly bear: multicelled (made of many specialized cells organized into tissues, organs and systems).
3. B) Osmosis.
4. Respiratory system: B; Circulatory system: D; Digestive system: A; Excretory system: C.
5. Stimulus: exercise (or increased physical activity); Body's response: heart rate increases (accept: increased blood flow, faster pumping of blood).
6. The hard mineral structure of bone cells makes bone strong and rigid, which allows the skeletal system to support the body's weight and protect internal organs.