

Biology Knowledge Organiser Quiz

Mixed recall across cells, photosynthesis, respiration, variation, inheritance and adaptation.

Name _____ Date _____ Class _____

Learning objective: I can recall and apply key biology knowledge from across KS3.

✓ I can recall key facts ✓ I can write word equations ✓ I can correct misconceptions

1 Cells and organisation Circle the correct answer.

- Which structure controls the cell?
(A) cytoplasm (B) nucleus (C) cell wall
- Which structure is found only in plant cells?
(A) chloroplast (B) mitochondrion (C) cell membrane
- A group of similar cells working together is a...
(A) tissue (B) organ (C) system
- Which is the correct order?
(A) organ → tissue → cell (B) cell → tissue → organ (C) tissue → cell → organ

2 Photosynthesis and respiration Complete each word equation.

- carbon dioxide + water → _____ + oxygen
- Aerobic respiration: glucose + _____ → carbon dioxide + water
- Anaerobic respiration in muscles: glucose → _____
- Anaerobic respiration in yeast (fermentation): glucose → _____ + carbon dioxide

3 Spot the misconception Tick true or false. Correct the false ones in the answer space below.

	TRUE	FALSE
1 Plants respire only at night.	☐	☐
2 Animal cells do not have a cell wall.	☐	☐
3 Respiration is the same as breathing.	☐	☐
4 Mitochondria are where aerobic respiration happens.	☐	☐

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4 Variation and inheritance Use the word bank.

Word bank: pairs continuous protein DNA discontinuous gene

- 1 Genetic information is stored in _____, which is found in chromosomes in the nucleus.
- 2 A _____ is a section of DNA that codes for a characteristic.
- 3 Human body cells contain 23 _____ of chromosomes.
- 4 Height is an example of _____ variation because it can take any value in a range.
- 5 Blood group is an example of _____ variation because it falls into distinct groups.

5 Explain it

- 1 Explain how natural selection can lead to a population of rabbits with thicker fur in a cold climate. [3 marks]

- 2 Give **two** ways a polar bear is adapted to its habitat. [2 marks]

- 3 Why is it important to protect endangered species? Give **one** reason and **one** way it can be done. [2 marks]

6 Compare

Compare aerobic and anaerobic respiration in humans. Include where oxygen is needed, the products and the amount of energy released. [4 marks]

Answer Key

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Question	Answers
1 Cells and organisation	1 B (nucleus); 2 A (chloroplast); 3 A (tissue); 4 B (cell → tissue → organ)
2 Photosynthesis and respiration	1 glucose; 2 oxygen; 3 lactic acid; 4 ethanol
3 Spot the misconception	1 False – plants respire all the time; photosynthesis happens only in the light; 2 True ; 3 False – respiration is a chemical reaction in cells that releases energy; breathing moves air in and out of the lungs; 4 True
4 Variation and inheritance	1 DNA; 2 gene; 3 pairs; 4 continuous; 5 discontinuous
5 Explain it	1. Rabbits vary; those with thicker fur are better adapted, so more survive and reproduce, passing on the genes for thick fur; over many generations most of the population has thick fur. 2. Any two: thick fur and fat for insulation; white fur for camouflage; large feet to spread weight on ice/snow; small ears to reduce heat loss. 3. Reason: to keep biodiversity/food webs stable, for possible future medicines or because extinction is permanent. Method: gene banks/seed banks, breeding programmes, protected habitats, hunting bans.
6 Compare	Look for: • Aerobic uses oxygen; anaerobic does not • Aerobic products: carbon dioxide and water; anaerobic (in muscles): lactic acid • Aerobic releases much more energy; anaerobic happens during hard exercise when not enough oxygen reaches the muscles

Teaching note: section 3 targets common misconceptions; pupils should write a correction for each false statement. Use any section as a starter or retrieval quiz.