Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

Q1. Write the word equation for aerobic respiration and state where it occurs in the cell.

[2 marks]

Q2. Explain why a student is wrong when they say: "Respiration is just breathing."

[3 marks]

Q3. Explain why muscle cells contain large numbers of mitochondria.

[3 marks]

Total: 8 marks

Q1 (2 marks)

Write the word equation for aerobic respiration and state where it occurs in the cell.

- Glucose + oxygen → carbon dioxide + water [1]
- Mitochondria [1]

Q2 (3 marks)

Explain why a student is wrong when they say: "Respiration is just breathing."

- Breathing is the physical movement of air in and out of lungs (ventilation) [1]
- Respiration is a chemical process in cells that releases energy (ATP) from glucose [1]
- Respiration occurs in every living cell continuously — not just in lungs [1]

Q3 (3 marks)

Explain why muscle cells contain large numbers of mitochondria.

- Muscle cells require large amounts of energy for contraction [1]
- Energy is produced by aerobic respiration in mitochondria [1]
- More mitochondria → more aerobic respiration → more ATP produced → muscle can contract more / for longer [1]