Spec ref: 4.1.3.3

KEY FACTS

- Active transport: movement from LOW to HIGH concentration — AGAINST the gradient
- Requires ENERGY (ATP from respiration) and carrier proteins in the membrane
- Example 1: root hair cells absorb mineral ions from soil against concentration gradient
- Example 2: glucose absorbed from gut into blood even when blood concentration is already high

★ Blocking respiration stops active transport — shows it needs ATP

KEY TERMS

Active transport	Movement against concentration gradient — requires ATP and carrier proteins
ATP	The energy currency of cells — produced by respiration
Carrier protein	Protein in membrane that transports substances by active transport

■ EXAM TIP: Active transport: AGAINST the gradient + needs ENERGY. Both facts must be stated. Confusing direction with diffusion loses marks.