

Full Higher Separate content. ★ = Higher Tier. ◆ = Separate Science only.

Q1. Explain why approximately only 10% of energy transfers from one trophic level to the next.

[3 marks]

★ HIGHER TIER

Q2. ★ A forest has: trees 50,000 kg, caterpillars 5,000 kg, birds 250 kg. (a) Calculate efficiency from caterpillar to bird. (b) Why is this relatively low?

[3 marks]

Total: 6 marks

Q1 (3 marks)

Explain why approximately only 10% of energy transfers from one trophic level to the next.

- Energy lost through respiration (heat) [1]
- Energy used for movement [1]
- Energy lost in undigested waste (faeces) [1]

Q2 (3 marks) [★ HT]

★ *A forest has: trees 50,000 kg, caterpillars 5,000 kg, birds 250 kg. (a) Calculate effici...*

- (a) $(250 \div 5000) \times 100 = 5\%$ [1]
- (b) Birds are active/warm-blooded — use much energy for movement and temperature regulation [1]
- And/or: not all caterpillar biomass is digested by birds [1]