

Foundation Separate version — Higher Tier (★) questions removed.

**Q1. Explain why food chains rarely contain more than five trophic levels.**

**[3 marks]**

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**Q2. Explain why eating a plant-based diet requires less land than eating a meat-based diet. Use your knowledge of energy transfer in food chains.**

**[4 marks]**

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**Total: 7 marks**

**Q1 (3 marks)**

*Explain why food chains rarely contain more than five trophic levels.*

- Energy is lost at each trophic level through respiration (heat), movement and waste [1]
- Only approximately 10% of energy transfers from one level to the next [1]
- After 5 levels, so little energy remains that a further level cannot be supported [1]

**Q2 (4 marks)**

*Explain why eating a plant-based diet requires less land than eating a meat-based diet. Us...*

- Plants are producers — first trophic level [1]
- Eating plants directly provides the most efficient energy transfer to humans [1]
- Eating meat adds an extra trophic level — ~90% energy lost at each step [1]
- Far more plant material required to produce 1 kg of meat than 1 kg of plant food → more land needed [1]