IGCSE BIOLOGY • EXERCISE SHEET

19.1 Energy flow

Name: _____ Class: _____ Date: _____ **Total: 7 marks**

Objective

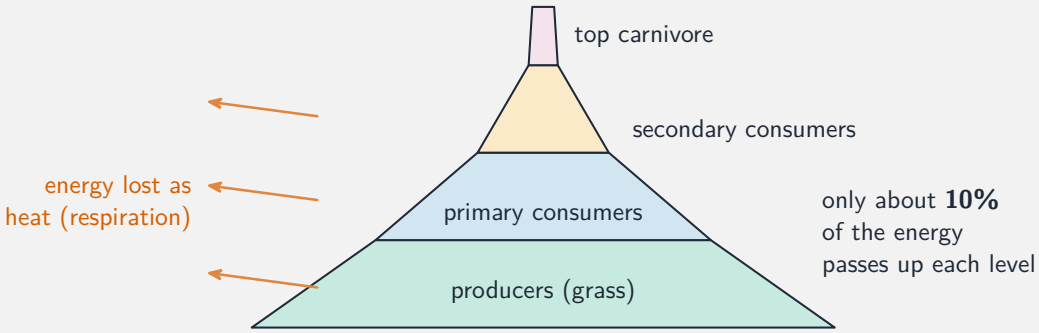
Build the skills to answer exam questions on **energy flow** 能量流动—the Sun as the source, **trophic levels** 营养级, energy loss, and pyramids.

You must be able to:

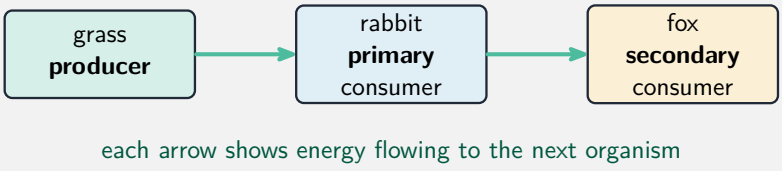
- describe how energy enters and flows through a food chain
- explain why only ~10% of energy passes up each level
- interpret pyramids of numbers, biomass and energy

1 Worked examples

Energy loss



Energy enters from the Sun, flows one way, and is lost as heat at each level (~10% passes up)



Energy flows along a food chain

- the rest is lost as heat (respiration), in movement and in waste.
- so chains have fewer than ~5 levels; eating plants directly wastes less energy.

2 Practice

2.1 State the main source of energy for almost all food chains. [1]

2.2 State the form in which most energy is lost at each trophic level. [1]

3 Exam-style questions

3.1 Roughly what percentage of energy passes from one trophic level to the next? [1]

- **A** 1%
- **B** 10%
- **C** 50%
- **D** 90%

3.2 Energy is lost along a food chain.

(a) Explain why food chains usually have fewer than five trophic levels. [2]

(b) Explain why it is more efficient for people to eat crop plants than meat. [2]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **19.1 Energy flow** past-paper sheet in the Library, or try these in **Practice mode**:

- 0610/21 N25 —Q32 (energy flow)
- 0610/22 N25 —Q35 (trophic levels / pyramids)

Solutions

2.1 the Sun.

2.2 as heat (from respiration).

3.1 B. About 10% passes up each level.

3.2 (a) energy is lost at each level, so after a few levels too little is left to support another. (b) eating plants directly is one trophic level; eating meat adds a level, where energy is lost, so it is less efficient.