8 Energy flow and populations – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
ecosystem			
producers			
consumers			
food chain			
trophic level			
population			
carrying capacity			

Recall

You already know how living things depend on one another:

- Food chains show who eats whom, starting with plants.
- Energy from the Sun flows through an ecosystem.
- A population can grow, then level off when resources run low.

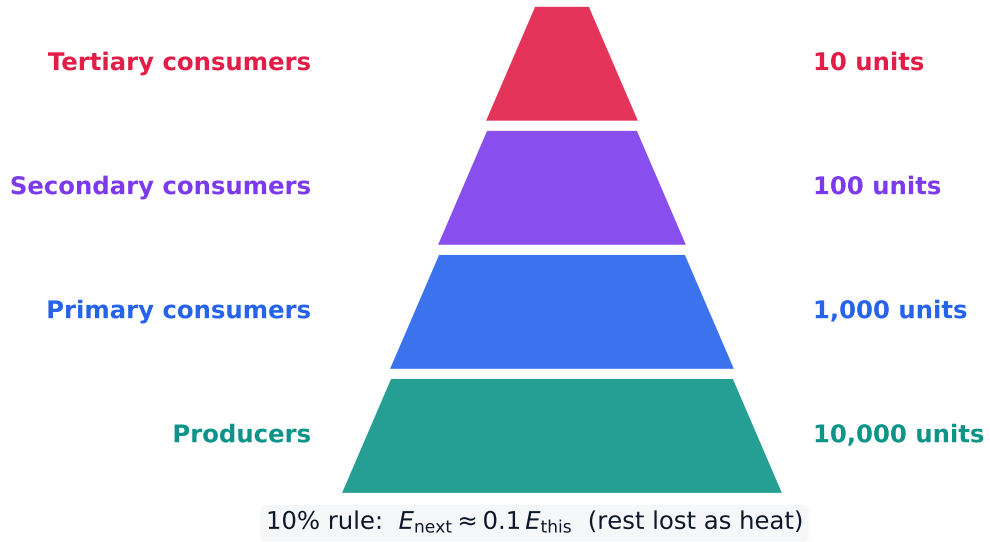
This sheet lines up energy flow and population growth. Each idea has a short worked example.

New ideas

exercises.lol exercises.com.cn

1 Energy flow

Energy enters an **ecosystem** as sunlight, captured by **producers** (plants), then passes to **consumers** along a **food chain**. Each step is a **trophic level**.



2 The 10% rule

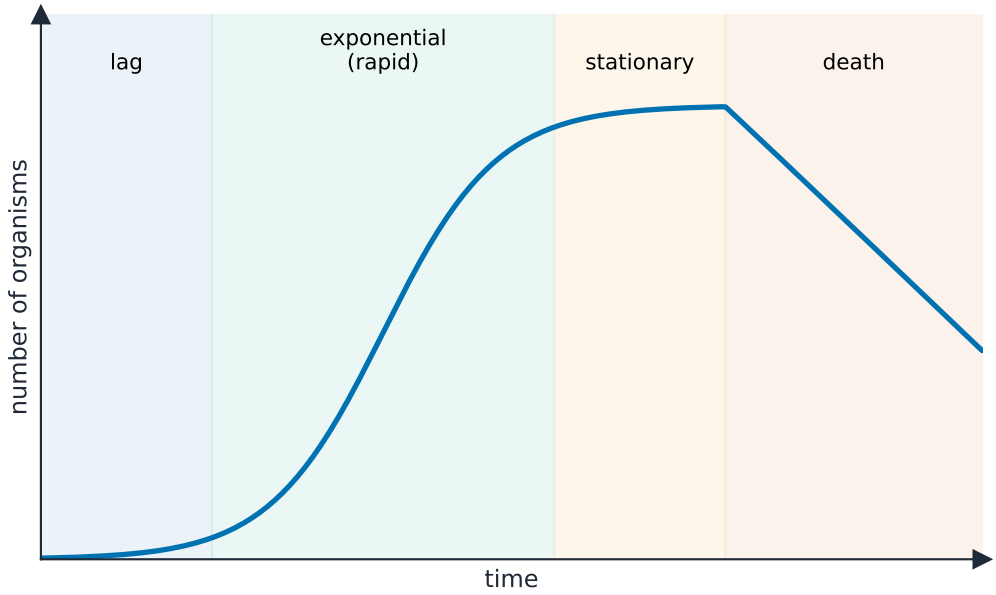
Only about **10%** of the energy passes from one trophic level to the next – the rest is lost as heat. This is why food chains are short and top predators are few.

Worked example. If plants capture 10,000 units of energy, the next level gets about 1,000, then 100, then just 10 – losing 90% at each step.

3 Population growth

A **population** grows quickly when resources are plenty, then slows and levels off at the **carrying capacity** – the most the environment can support.

exercises.lol exercises.com.cn



4 What limits a population

Food, water, space, disease, and predators are **limiting factors** that stop a population growing without end.

Watch out: so much energy is lost between levels (about 90% each step) that a food chain rarely has more than four or five links – there is simply not enough energy left to support another predator.

Practice

Try these in order. The methods are all above.

2.1 State where the energy in an ecosystem originally comes from, and which organisms capture it. [2]

2.2 About what percentage of energy passes to the next trophic level? [1]

exercises.lol exercises.com.cn

2.3 A plant level holds 8,000 units of energy. Estimate the energy at the next two levels. [2]

2.4 State what "carrying capacity" means. [2]

2.5 Give two factors that can limit the growth of a population. [2]

exercises.lol exercises.com.cn