

1. What is Ecology?

Ecology is the study of how living things interact with their environment.

2. Complete the table about levels of organization:

LEVELS OF ORGANIZATION

Level	Definition
Species	A species is a group of organisms so similar to one another that they can breed together and produce fertile offspring
Population	A group of individuals that belong to the same species and live in the same area
Community	A collection of different populations that live together in an area is referred to as a community.
Ecosystem	An ecosystem includes all the organisms that live in a particular place, together with their physical environment.
Biosphere	A group of ecosystems that have the same climate and dominant communities

3. What is the original source of energy in a food chain?

the sun

4. Arrange the following organisms in a food chain with arrows:

grasshopper, frog, grass, eagle

grass → grasshopper → frog → eagle

5. Identify the above organisms into:

herbivore, primary consumer, producer carnivore, secondary consumer, tertiary consumer.

Grass: producer

Grasshopper: primary consumer, herbivore

Frog: secondary consumer, carnivore

Eagle: tertiary consumers, carnivore

6. What are the different types of producers (on land and in the sea)?

Land: plants

Sea: phytoplankton, seaweeds (algae)

7. What do the producers do in the presence of sunlight?

Make their own food and energy through photosynthesis.

8. Which are biotic or abiotic factors?
 soil type, decomposers, temperature, plant life, parasite, zooplanktons, rainfall
 (a) Biotic factors = *decomposers, plant life, parasite, zooplanktons*
 (b) Abiotic factors = *soil type, temperature, rainfall*
9. What is the difference between a food chain and a food web?
Food Chain: only follows just one path as animals find food.
Food Web: consists of many food chains.

10. Give one physical adaptation of a shark and one behavioural adaptation of earthworm.

(a) Shark

It has gills, which take in oxygen directly out of the water. Because of its gills, sharks can stay underwater and not have to come to the surface to breathe.

Sharks also have a tremendous number of sharp teeth, which make them fierce predators. In fact, if a shark accidentally breaks a tooth while chomping down on something, the tooth is almost immediately replaced by another tooth growing in the jaw. With all these special adaptations, sharks do really well in the ocean, but it would be very hard for a shark to survive in the Sahara Desert.

(b) Earthworm

Earthworms cannot see or hear but they are sensitive to vibrations. Birds looking for food or humans collecting earthworms for bait stamp on or vibrate the ground in some manner, causing earthworms to move to the surface.

Earthworms lose moisture through their skin. They move out of their burrows to migrate or reproduce when the ground is wet with dew – one reason why we may see them in the early morning.

11. Give 3 important functions of a plant like a tree to other organisms.

Produces food and oxygen, provides shelter for other organisms.

12. The term that describes the living relationship between 2 different organisms (species) is

S _____.

Symbiosis

There are 3 main types: complete the table by writing whether the species is getting benefits (+) from other species or being harmed (-). If there is no effect, just use (0).

Living relationship	Species A	Species B
Parasitism	+	-
Commensalism	+	0
Mutualism	+	+

13. What is the term used in Ecology for the following diagram?

E _____ P _____
Ecological Pyramid or Energy Pyramid

- a) Write a food chain. (organisms are snake, rabbit, owl, grasshopper, rat, grasses and carnivorous shrew)

grasses → rabbit → owl (etc)

- b) Give a reason why the community (organisms) are represented by such a diagram.

An energy pyramid is a graphical model of energy flow in a community. The different levels represent different groups of organisms that might compose a food chain.

- c) Name one related biotic factor that is not shown in the diagram. Start with D _____ S.

Decomposers

- d) What are they (c) ? Give a function of these organisms in the ecosystem?

Decomposers convert organic matter into inorganic matter. Decomposers obtain their energy and nutrients from dead organic material. This includes dead organisms and their wastes (such as faeces and skin flakes). As they feed, they break down the organic matter chemically into simple inorganic forms or mineral nutrients. Their wastes are then returned to the environment to be recycled by producer organisms. This recycling of matter from one form to another within ecosystems is key to their sustainability.

- e) Which is the producer?

grass

- f) Which is a secondary consumer?

snake or rat

- g) Name a carnivore.

owl, snake, rat or carnivorous shrew

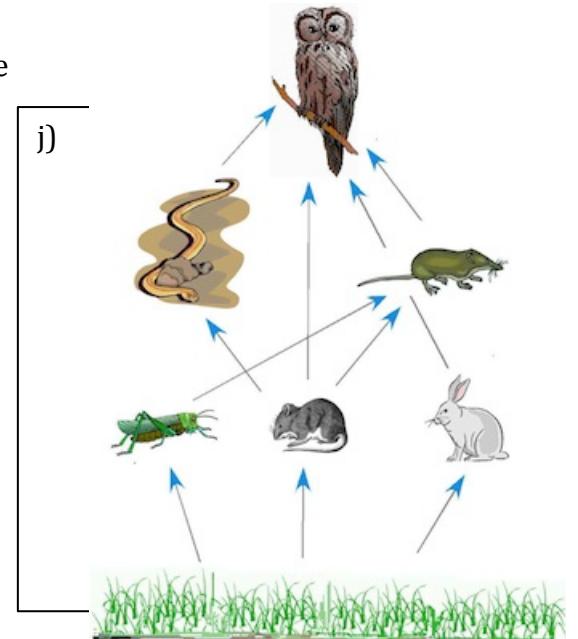
- h) In what form does the energy lose in the ecosystem.

Energy is not recycled, nor can it be created or destroyed. Energy is transformed from one form to another. At each level in the food chain, some energy is also released to the environment in other forms.

- i) Why does a food chain consist only of 4-5 members at the most?

Only about 10 per cent of the chemical energy is passed from one trophic level to the next, most food chains do not usually contain more than four trophic levels. There is also a limit to the number of organisms that can exist at each level.

- j) Using the animals and grasses above to create a food web.



14. The diagram on the RIGHT shows a food web.

- a) Write a food chain and label the organism with herbivore, consumer, etc.

Grass (producer) → Caterpillar (primary consumer, herbivore) → Thrush (secondary consumer) → Hawk (tertiary consumer, carnivore)

- b) Which are the top predators? Why?

Hawk and Fox because they are the top of the food chain.

- c) If the caterpillars have got a disease, leading to a small population. Which organisms will be affected?

Thrush & Hawk

