

What is an Ecosystem?

Worksheet

An ecosystem is all the living organisms (biotic factors) in an area interacting with non-living components (abiotic factors) like sunlight, water, and soil, exchanging energy and matter.

Questions

1. Which best defines an ecosystem?

- A) A single species population
- B) A community of organisms and their physical environment
- C) Only the non-living parts of nature
- D) A food chain with one trophic level

2. Which of these is an abiotic factor?

- A) Bacteria
- B) Sunlight
- C) Fungi
- D) Grass

3. Roughly what percentage of energy transfers to the next trophic level?

- A) 100%
- B) 50%
- C) 10%
- D) 1%

4. What do decomposers do?

- A) Produce their own food via photosynthesis
- B) Eat only producers
- C) Break down dead organic matter and recycle nutrients
- D) Capture solar energy directly

5. In a grassland ecosystem, producers capture 10,000 kcal of solar energy. Using the 10% energy transfer rule, how much energy reaches primary consumers and secondary consumers?

6. A pond ecosystem has 200 fish (secondary consumers) supported by 20,000 kg of algae (producers) via the 10% rule. Estimate the biomass of primary consumers (herbivorous fish).

7. Classify components of a desert ecosystem: cactus, lizard, sand, sunlight, scorpion.

8. Define: What is an ecosystem?

9. Define: Biotic vs abiotic factors?

10. Define: What is a food chain?

Answer Key

1. B) A community of organisms and their physical environment - An ecosystem includes both biotic communities and abiotic surroundings.
2. B) Sunlight - Sunlight is a non-living, abiotic factor.
3. C) 10% - About 10% of energy is passed on; the rest is lost as heat (10% rule).
4. C) Break down dead organic matter and recycle nutrients - Decomposers like bacteria and fungi recycle nutrients from dead matter.
5. Producers: 10,000 kcal Primary consumers receive 10% = 1,000 kcal Secondary consumers receive 10% of that = 100 kcal
6. Producers biomass: 20,000 kg Primary consumers 10% = 2,000 kg Secondary consumers 10% of that = 200 kg - consistent with 200 fish observed
7. Biotic (living): cactus, lizard, scorpion Abiotic (non-living): sand, sunlight This split defines the ecosystem's biotic and abiotic factors
8. A community of organisms interacting with each other and their physical environment.
9. Biotic = living parts (plants, animals, microbes); abiotic = non-living parts (water, sunlight, temperature, soil).
10. A linear sequence showing how energy flows from producers to various levels of consumers.

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