

Name \_\_\_\_\_

## Unraveling the Flow of Energy and Matter in Ecosystems

### Open-Ended Response Answer Key

1. Energy is transferred between trophic levels as organisms consume each other for food. Producers convert sunlight into chemical energy, which is then passed on to primary consumers, secondary consumers, and tertiary consumers.
2. Nutrient cycling is essential for recycling nutrients like carbon, nitrogen, and phosphorus through ecosystems. For example, decomposers break down dead organic matter, releasing nutrients into the soil, where they can be absorbed by plants and incorporated into new organic matter.
3. The energy flow in ecosystems is often represented as a pyramid because energy is lost as it moves up trophic levels. This results in less energy being available to higher trophic levels, leading to a pyramid-shaped distribution of energy and biomass.
4. Human activities such as deforestation, pollution, and habitat destruction can disrupt energy and matter flow in ecosystems. For example, deforestation reduces the number of producers available to capture energy from the sun, leading to disruptions in food webs and nutrient cycling.

