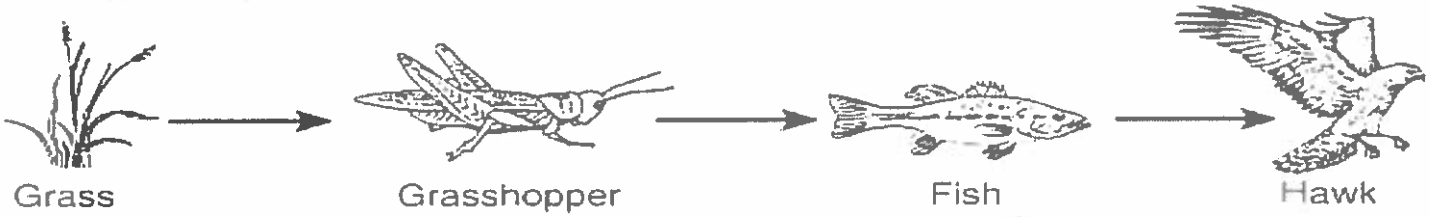
STUDY GUIDE: ENERGY FLOWS IN AN ECOSYSTEM

1) .What is the source of energy in <u>most</u> ecosystems? the sun.

2) Why are plants called producers? because they produce their own food.

Use the diagram to answer questions: 3-6



3) The diagram shows a food chain

4) Which organism is a producer? grass

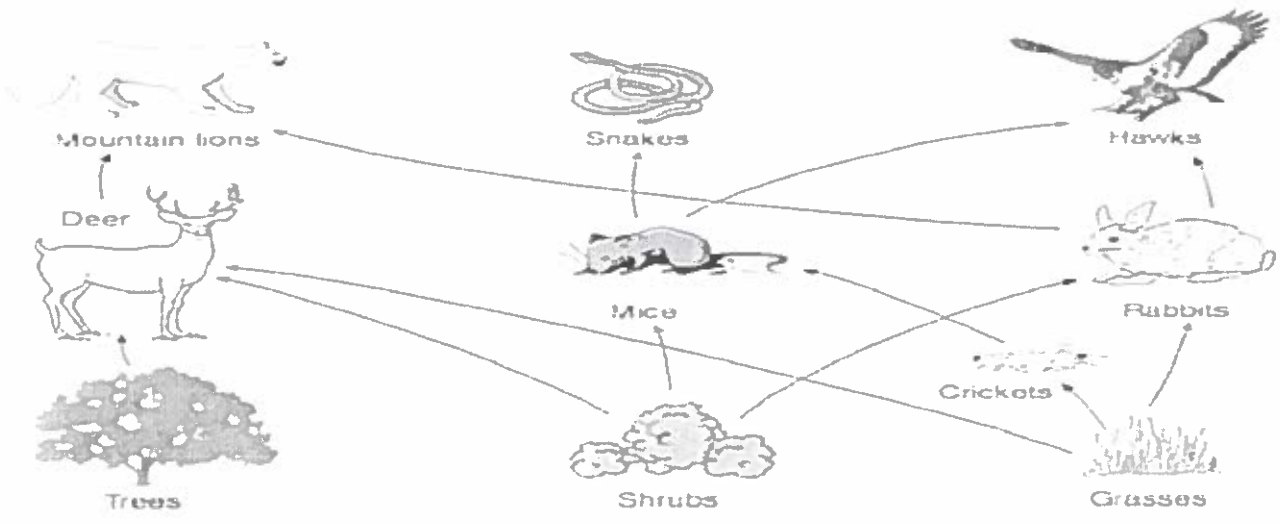
5) Which organism is a primary consumer? grasshopper

6) Which organism is a higher level consumer? hawk

7) Where do primary consumers get their energy from? plants

8) The correct order of a food chain is: start with _____, then a _____, and end with _____
producer, primary consumer, higher level consumer.

Use the diagram to answer questions: 9-12



9) What does this diagram show?

food web

10) Which organism is a producer?

Trees

11) Which organism is a Primary Consumer?

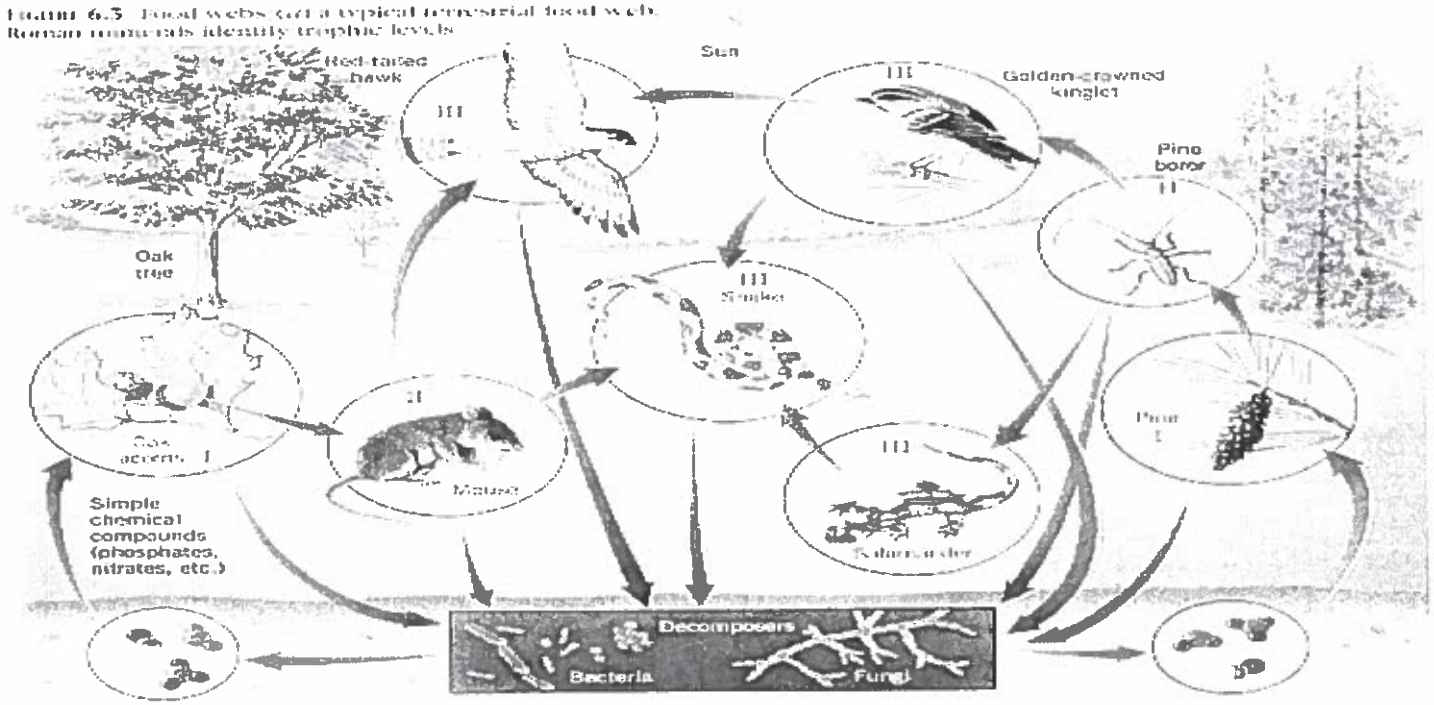
Crickets

12) Which organism is a tertiary (higher level) consumer?

snakes

13) Sunfish depend mostly on plankton for food. How MIGHT an ecosystem change if the population of plankton increased? the number of sunfish would increase

Use the diagram to answer questions: 14-17



14) What is the place of the mouse in this terrestrial food web?

a) The mouse is eaten by the Golden Crown Kinglet and Snakes

(b) The mouse eats acorns and is eaten by snakes and Red-tailed hawks

c) The mouse eats acorns and snakes

d) The mouse eats salamanders and is eaten by snakes

15) What is the place of the Pine borer in this terrestrial food web?

(a) The Pine borer eats pines and is eaten by salamanders and decomposers

b) The Pine borer eats the Golden Crown Kinglet and salamanders

c) The Pine borer is eaten by snakes and eats pines

d) The Pine borer eats mice and pines

16) What is the role of decomposers in this terrestrial ecosystem?

they provide plants with nutrients

17) If all of the salamanders were removed from this food web, which population will likely decrease first?

(a) Snakes b) Golden Crowned Kinglet c) Pine borer d) Red-tailed Hawk

18) What happens to energy as you move up each level in a food chain?

a) The energy increases with each step up in the food chain

b) The energy increases with consumers and decreases with producers

c) The energy stays the same at each level

(d) The energy is lost with each additional level in a food chain.

19. autotroph- is an organism that can produce its own food using light, water, carbon dioxide.

20. What is the chemical equation for photosynthesis? $6CO_2 + 6H_2O \xrightarrow{\text{Sunlight}} C_6H_{12}O_6 + 6O_2$

21. Where is photosynthesis occurring in the leaf? (Give detailed information) inside the chloroplast in the chlorophyll.

22. The energy transformation occurring in photosynthesis is radiant energy to chemical energy.

23. The energy that powers photosynthesis comes from sunlight

24. What components **(Reactants)** are consumed in the process of photosynthesis? carbon dioxide, water, sunlight, chlorophyll

25. What components **(Products)** are produced in the process of photosynthesis? glucose + oxygen

26. Explain the difference between a food chain and a food web. a food web are multiple interconnected food chains

27. cellular respiration- process in cells by which oxygen is chemically combined with food molecules and energy is released.

28. What is the chemical equation for cellular respiration and where does it occur?
$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + ATP$. Mitochondria

29. Law of Conservation of Matter-
States that matter can neither be created nor destroyed, it can only change form.

30. Stomata-

31. Chlorophyll- Green pigment in plants that captures sunlight for photosynthesis

32. What percent of energy will be passed on at each level? 10 %

33. Biomass-
total mass of living organisms in a certain area

34. As the material in a compost bin decomposes the organic matter-

a. remains unchanged

c. is broken down into useful compounds

b. will degrade into toxic material

d. eventually is completely destroyed

35. What energy transformation occurs as biomass decays in a compost bin? Chemical Energy → Thermal Energy

36. why are decomposers important in the cycling of matter? they break down dead organisms Putting nutrients back into the soil.

37. Why is composting important?

It allows the nutrients in organic waste to be released