

WHAT'S FOR DINNER?

BENCHMARKS and TASKS

SC.B.1.2.1 The student knows how to trace the flow of energy in a system (e.g., as in an ecosystem).

SC.B.2.2.1 The student knows that some source of energy is needed for organisms to stay alive and grow.

SC.F.1.2.2 The student knows how all animals depend on plants.

SC.G.1.2.1 The student knows ways that plants, animals, and protists interact.

SC.G.1.2.5 The student knows that animals eat plants or other animals to acquire the energy they need for survival.

- The student recognizes that some source of energy is needed for all organisms to stay alive and grow.
- The student identifies the major source of energy of ecosystems as sunlight. Energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis. That energy then passes from organism to organism in food webs.
- The student categorizes populations of organisms by the function they serve in an ecosystem; plants and some microorganisms as *producers* that make their own food; animals, including humans, as *consumers*, which obtain food by eating other organisms; and *decomposers*, primarily bacteria and fungi, recyclers that break down dead plant and animal materials into elements that return to the soil, water, and air for use again.
- The student examines patterns of interdependency in ecological systems by analyzing relationships in food webs among producers, consumers, and decomposers and discovers that no matter how distant the relationship may seem, all things are connected.
- The student classifies changes in an ecosystem as either beneficial or harmful to specified organisms.
- The student values humans as part of the web of life, in which everything is connected and recognizes the need to live in ways that respect the interconnectedness of all things.

KEY QUESTION

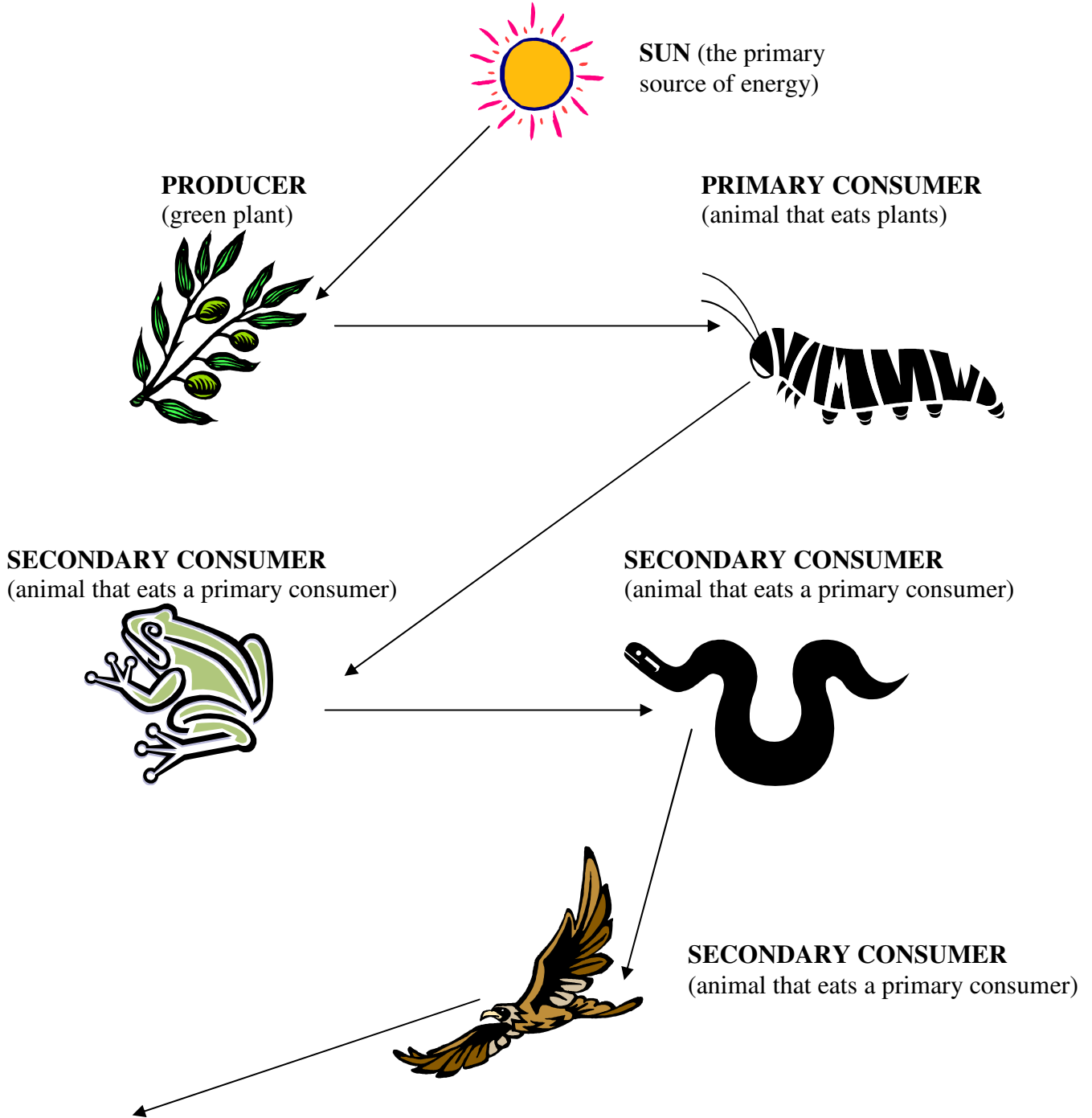
How are plants and animals interdependent?

BACKGROUND INFORMATION

Food webs illustrate the interdependence of life forms in a **community**. Animals are classified according to how they get their food. All green plants are **producers** because they manufacture their own food through the process of **photosynthesis**. Animals that eat plants are called primary **consumers**. Animals that eat primary consumers are called secondary consumers. Animals, including humans, that eat both producers and consumers, are called omnivores. Organisms that feed on the remains or wastes of other organisms are known as **decomposers**. Decomposers are always the final link in a food web. The **sun** is also an important part of all **food webs**. Without the sun, there would be no photosynthesis and no plants. All animals are bound together in a web of interdependency.

Food **energy** transfers in the food web but so do many poisonous substances. Poisons are not used for life processes, so most of the poison consumed is passed along to the next level consumer.

WHO'S WHO IN THE FOOD CHAIN?



The waste products and remains of dead animals and plants are returned to the soil, where the **SCAVENGERS** and **DECOMPOSERS** complete the cycle so that it can begin again.

→ The arrows show the direction in which the energy flows.

MATERIALS

Per class

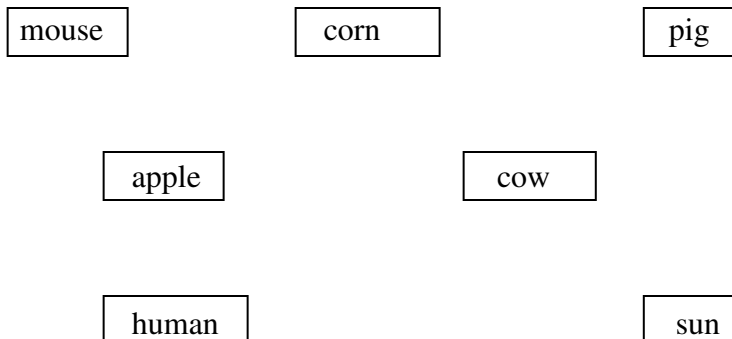
Pass the Energy, Please! Barbara Shaw McKinney, 1999, Dawn Publications

ENGAGE

Use a circle map to assess students' prior knowledge about food chains. Ask students to share what they know about food chains.

EXPLORE

1. On the board, write the names of various plants and animals and the sun inside rectangles.



2. Divide the class into two groups, A and B. Have one member from group A draw a line from something that provides energy to the plant or animal that uses the energy (e.g., from sun to corn; corn uses the sun's energy for photosynthesis).
3. Have a member of Group B do the same. Each time a line is drawn, discuss the relationship briefly with the class.
4. Continue letting members of each team alternate drawing lines until they cannot draw a line they can justify. The group that draws the last line wins. Each group may challenge the opposing group's line. If the group can justify their reason, the line can stay.
5. Have students identify each component of the food web as producer, consumer, decomposer, etc.
6. The game can be repeated for several rounds using other communities

Examples:

grass	sparrow
shrub	insect larva
grasshopper	mouse
rabbit	hawk
caterpillar	berry
frog	crow
snake	man
hawk	leaf
vulture	fox

EXPLAIN

When a round of the game is over, ask students to examine the food web they have constructed.

Discuss:

How is energy transferred from one component to another in a food web?

Where does the energy originate? (with the sun)

What is the role of green plants in a food web? (Green plants use carbon dioxide, water, and energy from the sun to produce their own food for growth and maintenance.)

What is the role of decomposers in a food web?

What would happen if one component of the web were to become extinct?

What other developments would occur if certain components in food webs disappeared?

What are some factors that are harmful to food webs and possibly to humans?

What happens when a poisonous substance becomes part of the food web? (Poisons are not used for life processes, so most of the poison consumed is passed along to the next level consumer.)

EXTEND/APPLY

Read *Pass the Energy, Please!* by Barbara Shaw McKinney.

ASSESSMENT

Have each student create a food chain or web, including himself, other animals, and plants.