

Pond Energy Paths

Trace how photosynthesis supports a pond food chain.

4.2.a "the survival of plants and animals depends on photosynthesis;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the three sentences that use **so**, **because**, or **without** to explain how photosynthesis affects food energy or survival.

Life Around a Pond

- ① Near a sunny pond, green cattails use sunlight, water, and carbon dioxide to make sugar. This process is called photosynthesis. The sugar gives the cattails energy to grow leaves and roots. A grasshopper eats a cattail leaf, so the grasshopper gets energy that first came from photosynthesis. Fish and insects use oxygen released by photosynthesis to breathe.
- ② At the pond, minnows eat tiny water animals. Those tiny animals eat algae, which make sugar by photosynthesis. A heron catches minnows for food. Because the minnows' food energy began in algae, the heron depends indirectly on photosynthesis. Without healthy algae, the tiny animals, minnows, and heron would have less food energy.
- ③ Plants need light to photosynthesize. When tall weeds shade the cattails, the cattails make less sugar and grow poorly. Fewer cattail leaves can mean less food for grasshoppers. Animals that eat grasshoppers may then find less food near the pond. This shows that changing a plant's photosynthesis can affect several animals in a food chain.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How does the sugar made by cattails help the cattails survive?

2 How does a grasshopper get energy that began with photosynthesis?

3 Why does the heron depend indirectly on photosynthesis?

4 What could happen to the food chain if tall weeds shade the cattails? Use two details from the passage.

3 YOUR TURN _____ Your own words

Write three sentences about a food chain not named in the passage. Name a plant, an animal that eats the plant, and an animal that eats that animal, then explain how too little light for the plant could affect the animals.

PART 1 • READ AND MARK

Underline the three sentences that use **so**, **because**, or **without** to explain how photosynthesis affects food energy or survival. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does the sugar made by cattails help the cattails survive?	The sugar gives cattails energy to grow leaves and roots.
2	How does a grasshopper get energy that began with photosynthesis?	The grasshopper eats a cattail leaf. The cattail made sugar through photosynthesis.
3	Why does the heron depend indirectly on photosynthesis?	The heron eats minnows, minnows eat tiny water animals, and the tiny water animals eat algae. The algae make sugar by photosynthesis.
4	What could happen to the food chain if tall weeds shade the cattails? Use two details from the passage.	The cattails would make less sugar and grow poorly. Grasshoppers could have less food, and animals that eat grasshoppers could also have less food.

PART 3 • YOUR TURN (SAMPLE ANSWER)

An oak tree uses sunlight to make sugar by photosynthesis. A caterpillar eats the oak leaves, and a robin eats the caterpillar, so both animals get food energy that started in the tree. If the oak gets too little light, it makes less sugar, and the caterpillar and robin may have less food.

Accept accurate explanations that trace food energy from a photosynthesizing plant to one or more animals. For the open response, accept any accurate new plant and animal chain that explains the effect of reduced light on food availability.