Pond Producer Paths

Identify pond producers by following observable traits.

MAQ.5.4 "Use dichotomous keys to identify sample producers within an aquatic ecosystem."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the structures described for Samples A through D, then write the two choice numbers you followed beside each sample to trace its identification.

Who Makes Food in the Pond?

1. A pond's producers use sunlight to make sugars that support other living things. Some producers stand along the shore; others remain underwater or drift through it. To identify them, scientists examine structures, not just where a sample was found. Stems and leaves can often be seen without tools. A microscope can reveal individual cells, chains of cells, and tiny markings on a cell wall. A dichotomous key turns these observations into a series of either-or decisions. At each fork, one choice matches the sample and points to the next step or a name. Record what you actually see before choosing.

2. A dichotomous key gives two choices at each step. Follow only the choice that matches the sample, then continue where it sends you. Start at choice 1: if the producer has distinct stems and leaves, move to choice 2; if it lacks both, move to choice 3. At choice 2, leaves in whorls, or rings, along submerged stems lead to waterweed; long, narrow leaves beside upright stems above water lead to cattail. At choice 3, chains of cells containing green spiral bands lead to Spirogyra; single cells with patterned silica walls lead to diatoms. Silica is a glasslike material. Do not decide by color alone.

3. Four unlabeled samples were gathered during one pond survey. Sample A is a thin strand from a floating green mat. Under a microscope, the strand consists of joined cells, each with green bands that twist inside it. Sample B grows from the muddy shore. Its narrow leaves rise beside upright stems above the water's surface. Sample C is a tiny cell suspended in a water drop. Magnification reveals a patterned, glasslike wall around it. Sample D has clear stems below the surface; several leaves radiate from the same point on each stem. The survey team recorded these features before naming anything.

2 ANSWER WITH EVIDENCE

Use the passage

1. Follow the key for Sample A. Which producer is it, and which choices lead you there?

2. Follow the key for Sample B. Which producer is it, and which choices lead you there?

3. Follow the key for Sample C. Which producer is it, and which choices lead you there?

4. Follow the key for Sample D. Which producer is it, and which choices lead you there?

3 YOUR TURN

Your own words

Write a new three-step dichotomous key for the four named producers. Begin with a choice about patterned silica walls, then add two paired choices that separate the remaining producers; trace Sample D through your new key.

ANSWER KEY

Pond Producer Paths

PART 1 · READ AND MARK

Underline the structures described for Samples A through D, then write the two choice numbers you followed beside each sample to trace its identification. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Follow the key for Sample A. Which producer is it, and which choices lead you there?	**Spirogyra. At choice 1, it lacks distinct stems and leaves; at choice 3, its joined cells have green spiral bands.**
2	Follow the key for Sample B. Which producer is it, and which choices lead you there?	**Cattail. At choice 1, it has stems and leaves; at choice 2, its narrow leaves rise beside upright stems above water.**
3	Follow the key for Sample C. Which producer is it, and which choices lead you there?	**A diatom. At choice 1, it lacks distinct stems and leaves; at choice 3, it is a single cell with a patterned silica wall.**
4	Follow the key for Sample D. Which producer is it, and which choices lead you there?	**Waterweed. At choice 1, it has stems and leaves; at choice 2, its leaves grow in whorls along submerged stems.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Choice 1: If the sample has patterned silica walls, identify a diatom. If it does not, go to choice 2. Choice 2: If it has distinct stems and leaves, go to choice 3. If it lacks both, identify Spirogyra. Choice 3: If leaves form whorls along submerged stems, identify waterweed. If long, narrow leaves rise beside upright stems above water, identify cattail. Sample D follows choices 1, 2, and 3 to waterweed.

Accept equivalent descriptions of the observed traits. The new key must begin with silica walls, separate all four producers through paired choices, and correctly trace Sample D to waterweed.