

Photosynthesis: Where the magic starts

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As increasing daylight awakens your garden, trees and other plants begin making a precious gift. And it's wrapped in a leaf. Plants offer beauty, yes. Delicious food for your table, yes.

But there's something even more fundamental.

Trees and other plants can make their own food, which virtually no other organism on our planet can do. They do this through photosynthesis, the most important natural process and the basis for life on earth as we know it, according to Donna Danielson, botany instructor at The Morton Arboretum.

"Photosynthesis is the reason all organisms, including us, have food to eat and oxygen in the air to breathe," said Danielson, who uses the book, "Botany for Gardeners" to help students understand this concept.

"The more plants that we grow, the more oxygen they release into the air. The destruction of the rain forests is a serious problem, because they are the lungs of the earth. Their dense vegetation produces oxygen all year long," said Danielson. Even in our northern climate, planting long-lived trees and shrubs in your yard or community means these trees add oxygen and remove carbon dioxide from the air, and store carbon in their wood.

Photosynthesis combines carbon dioxide, sunlight and water to make fresh oxygen, sugars and other things they need to grow. "Plant growth fuels the whole food web. You can see this in your yard when a caterpillar nibbles on an elm leaf, then a robin eats the caterpillar, and so on," said Danielson.

Plants harvest sunlight using tiny parts in their leaf and stem cells called chloroplasts. These contain chlorophyll that makes the leaves green in spring.

Names: _____ pd: _____

2nd Quarter Benchmark: Photosynthesis Article Questions

Use the article on photosynthesis to assist you with answering the following questions.

- 1) According to the article, which statement below best demonstrates why the author chose the title "Photosynthesis: Where the magic begins".
 - a. Because the blooming of flowers and the change in leaves from Spring to fall is like "magic".
 - b. Because trees and other plants make their own food which no other organism can do.
 - c. Because the author really likes David Copperfield.
 - d. Because the author is probably a magician.

- 2) According to the article, why are plants unique compared to all other organisms?
 - a. Because they can grow flowers.
 - b. Because they make their own food.
 - c. Because they take in carbon dioxide.
 - d. Because they produce a pigment that makes them stay green.

- 3) Photosynthesis is important to all living things because...
 - a. it's the reason all organisms have food to eat and oxygen to breathe.
 - b. it's like magic!
 - c. most living things like green plants.
 - d. It allows pollinators to do their thing and that is the main reason.

- 4) One of the serious obstacles to affecting photosynthesis world wide is...
 - a. destruction of the honey bee.
 - b. people walking through forests and crushing plants.
 - c. destruction of the rainforests.
 - d. destruction of the desert land areas in the world.

- 5) Which biome is extremely important to the process of photosynthesis because it provides oxygen worldwide?
 - a. Desert
 - b. Tundra
 - c. Taiga
 - d. Rainforest

- 6) How does photosynthesis create oxygen?
- It mixes it with sunshine and love that makes the world go round.
 - It combines sugar and glucose in leaf of plant.
 - It combines carbon dioxide, water and adds sunlight.
 - Only plants created oxygen.
- 7) Besides providing oxygen and food for other organisms, how else is photosynthesis beneficial?
- Acts as a filter as harmful carbon dioxide is removed from the air.
 - Acts as a filter as sunlight is removed from the air.
 - It provides something for the plants to do so they don't get bored.
 - The process of photosynthesis plays no role in the life process of any organism.
- 8) The more plants that grow the...
- less oxygen that is produced.
 - prettier flowers will be.
 - more oxygen that is released into the air
 - happier the farmers will be.
- 9) How does plant growth impact the environment?
- Plant growth doesn't impact the environment at all.
 - Plant growth fuels all food webs because it "all starts with producers".
 - Plant growth only affects those animals that eat plants directly.
 - Plant growth provides pretty flowers for Holidays.
- 10) How do plants collect sunlight to power photosynthesis?
- Plants don't collect sunlight.
 - The roots of the plant collect sunlight and shoot it up the xylem to the leaves.
 - Tiny cells in the leaf called stoma collect the sunlight.
 - Tiny organelles in the leaf called chloroplast collect the sunlight.