

Plants live in many different environments. Some live in the ocean, some live in the desert. Plants are very important to everyone on the planet. Every environment needs plants. Animals need them, and so do people. Many **herbivores** consume plants. Many animals use them to make homes, such as animals that make nests in plants or that create holes in trees to create a secure place to live. If there were no plants in those environments, the animals would be homeless.

When you see a plant you can **discern** a lot about its environment. If the plant has extensive leaves and flowers, that tells you where it lives. It lives in a warm environment. That plant needs warm sunny days to grow, and it needs water, too. So that environment will be wet and warm. Those are part of the climate. Climate is what the weather is all year, how warm or cold the place is in winter, spring, summer, and fall. Wind is part of climate, too. There are constant changes in the wind, it seems, but actually there are patterns. For example, the wind in the United States usually tends to move towards the east from Chicago, so if you are traveling by plane from Chicago to the east your plane's journey will be faster than when you return because you'll be traveling against the wind.

Each state has a state flower. That state flower is a clue to the climate of that state. The state flower of Illinois is the violet, which is a small plant that has little flowers. What is the climate of Illinois? We have hot summers and long cold winters, and there is frequent rainfall and often deep snowfall, so there is substantial precipitation. Plants start to grow here in spring, and the growing season continues through summer, so most Illinois plants grow big—you can see that if you visit a cornfield or a forest preserve. Then in fall they lose their leaves and flowers. Illinois is a Midwestern state. The magnolia could not live in a Midwestern state. It needs a different climate. If you look at the state flowers of Midwestern states you will see they have small flowers. The violet also is the state flower of Wisconsin.

Some states have really **unique** state flowers. You won't find their flowers in other states. The cactus is the state flower of Arizona, a state in the southwestern United States. The Saguaro Cactus lives in the desert. A desert is a climate that has less than 10 inches of rain or snow all year. Arizona has a dry, hot climate. The cactus is the most prominent plant there. It has adapted to that hot, dry climate. Birds live there, too. Some birds live in the Saguaro cactus. They make holes in the side of the cactus. The Saguaro cactus cannot live in Illinois or Florida. It has adapted to the hot dry desert climate. Desert plants and animals **exemplify** how to adapt to a hot dry climate. They do not just survive. They **thrive**.

The magnolia is a plant that grows in a warm rainy climate. It has very big flowers. The artist Martin Heade painted pictures of magnolias when he lived in Florida. He thought they were beautiful flowers. People think his paintings are beautiful. You will find magnolias in Florida and other states of the southeast United States. You will see them in Mississippi. In fact, the magnolia is the state flower of Mississippi and also the state flower of Louisiana.

*Directions: Choose the best answer for each question*

1. Which words tell you what **herbivores** means in this passage?

- a. eat them
- b. needs plants
- c. different environments
- d. make homes

2. What does **unique** mean in this passage?

- a. a kind of plant
- b. very different from others
- c. with big leaves
- d. live in desert

3. What does **exemplify** mean in the passage?

- a. example
- b. show
- c. survive
- d. experiment

4. What does **thrive** mean in the passage?

- a. succeed
- b. adapt
- c. change
- d. thorough

5. *Write your own answer to this question.*

What does **discern** mean in the passage?

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Questions developed for Chicago Public Schools by CUE, 2009.

**TEACHER NOTES: Develop Students' Skills: Exercise Thinking**

These questions have not been validated, so decisions about student's achievement should not be made based on their responses. They are intended to exercise skills. Recommended activities include: students work in pairs to choose the best response; give students the questions without the responses so they generate their own answers; students make up additional questions; students make up questions like these for another passage.

**Answers:** *You can remove this answer key and then give it to students and ask them to figure out the basis for the correct response.*

Item	1	2	3	4
Answer	a	b	b	a

Question 5 is open-ended. Here is a suggested response.

5. Figure out.

Even when I was very young, I always loved plants. When we walked to school, I would look at the different plants. I would make up names for them. When my teacher asked us to draw a picture of anything we liked, I always drew pictures of plants. I sometimes invented plants that had strange leaves and very colorful flowers, and I would add birds and other features to the artwork.

When I got to high school, I took a course in botany, a course that was all about plants. Most students selected the course in biology, but I took the course on plants. As part of our course, we went into the park and identified different species. It was amazing to find that there were at least 27 different kinds of plants in our neighborhood park. In fact, there were about 12 different kinds of trees. Some were **deciduous**. We were there in the spring, so they had their leaves. Others were evergreen—they kept their leaves all year, although they had a cycle in which they grew in spring and summer and were dormant in winter.

Through analyzing ecosystems, I learned that weeds are not really bad plants. They are interlopers that come from another environment. Somehow they get to the new environment. It could be that animals bring them. The animals might pick up the seeds on their fur and carry them to the new habitat, where the seeds could fall off and start to grow. In history, there have been some weeds that were brought accidentally from one continent to another, creating ecological problems. An ecosystem needs to have a balance, the plants and animals need to coexist. If you change the population of a plant by introducing a foreign species, you can create a problem for the natural vegetation.

When I went to college, I knew that I wanted to study plants. I wanted to work in a career in which I would be a plant scientist. I wanted to be a **botanist**. I took courses in math, English, and history. They were good courses. But it was the science courses I loved. I spent many hours in the botany lab, classifying plant specimens, and learning about mutations—changes in the way a plant is formed.

Now I am teaching at a college, and, predictably, I have made my specialization what I teach. I am teaching college students the knowledge I have acquired through my research. I explain how fertilizers can help plants grow but also can destroy the balance of nature. I teach about helpful insects. One of the most helpful insects for plants is the ladybug. Ladybugs are small insects that eat aphids, so they are problem solvers. They can protect plants by eating the aphids that would eat the plants' leaves. There are about 5,000 kinds of ladybugs. In winter the ladybug hibernates, and then in spring it comes back out and starts to protect the plants again. Several states have named the ladybug their state insect.

I teach about ecology, too. I explain that if you introduce a **non-native herbivore** into an environment, it can cause problems. For example, in Australia long ago people brought rabbits. The rabbits ate so many plants that they caused a problem. This **invasive species** ate plants that other animals depended on. The rabbits even killed trees. They ate the bark off the trees, and the trees died. Some people think that Australia's desert has expanded **significantly** because of the introduction of the rabbits. They say it is a very big problem.

I keep learning more about plants and the animals that depend on them. I explain the concept of interdependence with the ecosystem. I like being a teacher because I am always learning more and helping students understand their world. I learn from my research on the Internet now, as well as going to the park and studying the plants in my community.

Directions: Choose the best answer for each question

6. What does **deciduous** mean in this passage?

- a. a kind of environment
- b. a kind of animal that eats plants
- c. a kind of tree that loses leaves in fall
- d. a kind of habitat where plants live

7. What does **non-native herbivore** mean in this passage?

- a. an animal that eats insects
- b. a plant that animals eat
- c. an introduced animal that eats plants
- d. a kind of species that lives in parks

8. What does **significantly** mean in this passage?

- a. symbolically
- b. importantly
- c. necessarily
- d. certainly

9. What does this **invasive species** mean in this passage?

- a. rabbits
- b. animals
- c. plants
- d. desert

10. Write your own answer to this question.

What is a **botanist**?

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**Answers:** You can remove this answer key and then give it to students and ask them to figure out the basis for the correct response.

Item	6	7	8	9
Answer	c	c	b	a

Question 10 is open-ended. Here is a suggested response.

10. A botanist studies plants.