

Name \_\_\_\_\_

# GROWTH & DEVELOPMENT

**Directions:** Read the information below.

Plants are resilient organisms. They make their own food, and they can grow and thrive without human interaction. For some plants, even after they die off in the winter they will grow back in the spring. How do plants grow and develop? A mixture of environmental and genetic factors influence this.

Environmental factors include the access to resources they need from outside. You know that plants need sunlight, carbon dioxide and water to help produce energy. Plants that undergo photosynthesis will need all these elements. Restricted access to any of these necessities will hinder the plant's growth. For example, if a plant is overshadowed by taller neighbors, it may block the plant from accessing sunlight. During a drought, a plant may not be able to absorb all the water it needs from the ground. Additional factors include temperature (if a plant is exposed to freezing temperatures it will likely be unable to withstand it) and the presence of invasive pests (like insects which feed on plant leaves, killing them off).

Genetic factors also play a role in promoting a plant's growth and development. These are factors that, despite the best environmental conditions, can prevent a plant from successfully growing. One example of this is the seed production. A plant that is unable to produce many seeds will not reproduce very well. Some farmers have begun to use genetically modified crops that are designed to promote better output by changing the genetics of the seeds.

In reality, a mix of genetic and environmental factors work together to contribute to a plant's success.

**Directions:** As you complete the online simulation, record your results below.

Type of plant (circle one)

**Farm Plant**

**Wild Plant**

	Weather	Leaves & Roots	Water	Minerals	Sunlight	CO <sub>2</sub>	Water	Sugar
<b>March</b>		Leaves: Roots:						
<b>April</b>		Leaves: Roots:						
<b>May</b>		Leaves: Roots:						
<b>June</b>		Leaves: Roots:						
<b>July</b>		Leaves: Roots:						
<b>August</b>		Leaves: Roots:						
<b>September</b>		Leaves: Roots:						

**Directions:** After reading the passage and completing the simulation, answer the questions below.

1. What was your plant's status at the end of the game?

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2. What factors do you believe contributed to your plant's success?

<b>Environmental</b>	<b>Genetic</b>

3. What factors prevented your plant from achieving its full potential?

<b>Environmental</b>	<b>Genetic</b>