Short Performance Assessment: **MS-LS1-6**

Grade Level: **Middle School**

Adapted from SNAP[1]

Title	**Growth of a New Type of Plant**		
Designed by	Next Generation Science Assessment (NGSA) project	Course(s)	**Middle School**

Performance Expectation	**MS-LS1-6**: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. **Clarification Statement**: Emphasis is on tracing movement of matter and flow of energy. **Assessment Boundary**: Assessment does not include the biochemical mechanisms of photosynthesis.

Science and Engineering Practice	**Constructing Explanations** • Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
Disciplinary Core Ideas	**LS1.C: Organization for Matter and Energy Flow in Organisms** • Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. **PS3.D: Energy in Chemical Processes and Everyday Life** • The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (secondary)
Crosscutting Concept	**Energy and Matter** • Within a natural system, the transfer of energy drives the motion and/or cycling of matter.

Student Performance	1. Articulating the explanation of phenomena 2. Evidence 3. Reasoning

[1] The Short Performance Assessment (SPA) and the Assessment Rubric adapted from the Stanford NGSS Assessment Project http://snapgse.stanford.edu/

Name_____

Scientists have found a new type of plant. They think that the new plant type might grow differently compared to normal plants. To determine this the scientists collected data on plant growth for both a normal plant and one of the new plants. They grew both plants under the same conditions. Their observations are in the table below.

Plant Type	Picture of a young plant after 1 week	Plant Growth Observations
Normal Plant		1. Normal amount of sugar in leaves and stems. 2. 11 leaves on average 3. Size of leaves on average: 2cm wide, 3cm long
New Plant Type		1. Half as much sugar in leaves and stems when compared to normal plants. 2. 8 leaves on average 3. Size of leaves on average: 1cm wide, 2cm long

Write a scientific explanation on why there are differences in the growth patterns between the normal plant and the new type of plant.

Your explanation should include:

1. A **claim** about why the plants grow differently.
2. **Evidence** from the table to support your claim.
3. **Reasoning** that draws on your knowledge of photosynthesis and plant growth to explain how the evidence you provided supports your claim.

EVIDENCE	CLAIM
	REASONING