

## Grade 8 Nature of Science

**Standards 3.2.7.B – 2.3.7.C**

**Reporting Category S8.A**

**Anchor**

**S8.A.2.1 Apply knowledge of scientific investigation in different contexts to make inferences to solve problems**

**Eligible Content**

**S8.A.2.1.3 Design a controlled experiment**

**S8.A.2.1.4 Interpret data/observations**

**S8.A.2.1.5 Use evidence to clearly communicate solutions**

Two farmers notice that some bean plants are much taller than others, even though they are growing in the same field. One farmer thinks the difference in height is due to inheritance. The other farmer thinks it is because some plants in the field get more water than others.

Describe an experiment that will provide evidence for which farmer is right. You can use seeds from both tall and short plants.

1. Describe the steps you will follow.
2. Describe how you will collect your data.
3. How will you conclude if tallness is inherited or caused by getting more water?

## Scoring Rubric

Performance Level	Description
<b>Advanced – 4</b>	Student response describes the essential components of an experiment that will provide evidence to determine whether plant height <i>is inherited or caused by getting more water using method 1 or 2</i>
	<p><i>Method 1:</i> The same types of seeds are used in each group and the amount of water is varied. Response consists of five components as follows:</p> <ol style="list-style-type: none"> <li>1) Plant seeds <i>from tall plants, short plants, or both types of plants</i>;</li> <li>2) Treat plants with <b>different amounts</b> of water;</li> <li>3) Control for at least one environmental condition such as amount of sunlight, available nutrients, soil type;</li> <li>4) Measure the heights of the plants in each group; and</li> <li>5) Explain that if plants are taller in the group that got lots of water, then tallness is controlled by the amount of water.</li> </ol>
	<p><i>Method 2:</i> The same amount of water is given to each group and the types of seeds are varied. Response consists of five components as follows:</p> <ol style="list-style-type: none"> <li>1) Plant seeds from <i>both types of plants</i>;</li> <li>2) Treat plants with the <b>same amount</b> of water;</li> <li>3) Control for at least one environmental condition such as amount of sunlight, available nutrients, soil type;</li> <li>4) Measure the heights of the plants in each group; and</li> <li>5) Explain that if the resulting plants are different heights under the same watering conditions, then tallness is inherited.</li> </ol>
<b>Proficient—3</b>	Student response describes an experiment that will provide evidence to determine whether plant height is inherited or caused by getting more water, but is missing one of the five essential components.
<b>Basic—2</b>	Student response describes an experiment that will provide evidence to determine whether plant height is inherited or caused by getting more water, but is missing two or three essential components.
<b>Below Basic—1</b>	Student response describes one essential component of an experiment that will provide evidence to determine whether plant height is inherited or caused by getting more water.
<b>Unsatisfactory/ Incorrect—0</b>	Student response is inadequate or incorrect.