**Answer Key: Investigating Photosynthesis**

**Background**
Plants and animals are interdependent; they depend on each other for their survival. Plants are an important part of the food chain as a source of food and energy for animals. Plants produce their own food, but how? *Photosynthesis* is the answer! In this lab you will learn about the process of photosynthesis to understand its importance.

**Objective**
Explain how plants produce their own food, and the interdependence between plants and animals.

**Safety**
- Follow teacher directions.
- Do not handle plants, only view them visually.

**Teacher demonstration**
Draw and label the contents of each test tube used in the experiment:
*Drawings may vary, contents listed for each test tube below.*

<table>
<thead>
<tr>
<th>Test Tube A</th>
<th>Test Tube B</th>
<th>Test Tube C</th>
<th>Test Tube D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
</tr>
<tr>
<td>bromothymol blue</td>
<td>bromothymol blue</td>
<td>bromothymol blue</td>
<td>bromothymol blue</td>
</tr>
<tr>
<td>carbon dioxide</td>
<td>carbon dioxide</td>
<td>carbon dioxide</td>
<td>Elodea plant</td>
</tr>
<tr>
<td>Elodea plant</td>
<td>Elodea plant</td>
<td>Elodea plant</td>
<td></td>
</tr>
</tbody>
</table>

**Observations**

<table>
<thead>
<tr>
<th></th>
<th>Test Tube A</th>
<th>Test Tube B</th>
<th>Test Tube C</th>
<th>Test Tube D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 (initial)</td>
<td>Yellow water, plant</td>
<td>Yellow water</td>
<td>Blueish green water, plant</td>
<td>Blueish green water</td>
</tr>
<tr>
<td>Day 2 (final)</td>
<td>Blueish green water, plant</td>
<td>Yellow water (no change)</td>
<td>Blueish green water, plant (no change)</td>
<td>Blueish green water (no change)</td>
</tr>
</tbody>
</table>

**Claim-Evidence-Reasoning (CER) Statement**
Write your claim with supporting evidence to answer *Do Plants Breathe?*
- Teacher will guide students to write a **claim**: Referring back to the question “Do plants breathe?” Example: *I claim that plants breathe in carbon dioxide, and release oxygen.*
- Support your claim with **evidence** from the investigation: *The evidence shows the water in test tube A, containing the Elodea, changed from yellow, indicating a carbon dioxide rich solution, back to the greenish/blue color indicating a lack of carbon dioxide. The solution originally contained carbon dioxide because a person exhaled into it, causing the color to change to yellow. After the Elodea sat in the yellow solution it took in the carbon dioxide and released oxygen back into the solution causing the water to return to its original greenish/blue.*
Reason the importance of Photosynthesis: *Photosynthesis is important because we rely on it to change sunlight, water, and carbon dioxide into a chemical energy that our bodies can use for fuel obtained through the food chain.*

Questions
1. Draw an image of photosynthesis and label it.
2. Next, extend the image into a food chain model. Use the words *photosynthesis, carbon dioxide, oxygen, water, sunlight, producers* and *consumers* in the diagram. Example answer combination for 1 and 2 shown below.

3. Cloze passage: Fill in the blanks of these sentences using the word bank provided.

Photosynthesis creates **food** for plants. Plants need carbon dioxide, **water**, and **sunlight** to make their food. **Oxygen** is produced from the plant that people and animals breathe in. Plants and animals are **interdependent**, they need each other to survive.

**Word bank**
- water
- interdependent
- food
- sunlight
- oxygen