**Rate of Photosynthesis Lab: Answer KEY**

**Write the formula for photosynthesis here:**

*CO2 + H2 O + light energy → C6H12O6 + O2*

**Now, write the formula in the form of a sentence:**

*Carbon dioxide plus water plus light energy from the Sun combine to form glucose and oxygen.*

**Hypothesis**:

*If a plant receives more light, then it will have a higher rate of photosynthesis.*

**Materials:**

Elodea plant sprigs

Test tube

Baking soda

Test tube stopper

**Procedure:**

1. Remove several leaves from the cut end of the Elodea stem. Gently crush the end of the stem.
2. Add a pinch of baking soda to the test tube.
3. Place the Elodea sprig in the test tube, cut side up.
4. Add enough water from the beaker to cover the Elodea sprig.
5. Place the stopper in the test tube.
6. Place the test tube in the direct sunlight.
7. As soon as see small bubbles coming from the cut end of the stem, time the reaction for 10 minutes. (If you do not see bubbles, ask your teacher to cut the stem again and crush it again.)
8. At the end of 10 minutes, count the number of bubbles in the test tube and record it in the data table. Calculate the rate of photosynthesis in bubbles per minute by dividing the total number of bubbles by 10.
9. Move the test tube away from the direct sunlight and repeat steps 7 and 8.
10. Answer the analysis questions.

**Data Table** (*Answers will vary*.)

|  |  |
| --- | --- |
| **Direct Sunlight** | **Shade** |
| Total number of bubbles: | Total number of bubbles: |
| Rate of Photosynthesis: \_\_\_\_\_ bubbles/minute | Rate of Photosynthesis: \_\_\_\_\_ bubbles/minute |

**Analysis Questions**

1. When baking soda is added to water, it produces carbon dioxide gas in the form of bubbles. What is the purpose of adding baking soda to the plant? (Hint: Look at the formula for photosynthesis).

*Baking soda is added as a source of carbon dioxide so that the plant can carry out photosynthesis*.

1. What are the bubbles that form in the test tube?

*The bubbles are oxygen.*

1. Do your data support your hypothesis? Why or why not?

*The data support the hypothesis, because the rate of photosynthesis is higher in direct sunlight than in the shade*.

1. Why is sunlight important for plants?

*Sunlight is important for plants because it provides the energy they use to carry out photosynthesis, so they can make their own food*.