C2 : 5 4 3 2 1 Name:

Date:

**Photosynthesis Lab #2 Light Energy**

**Back Ground information:**

Photosynthesis: Photo= Light Synthesis= Make food (Carbohydrates or Sugars)

Carbohydrates: Carbo= Carbon Hydrate= Water

(Carbon and water held together by chemical energy)= Food

Photosynthesis is the process of how plants make food with Light.

Here is the equation: Reactants 🡪 Products

**carbon dioxide + water+ light energy🡪 carbohydrates (contains chemical energy) + oxygen**

A good scientist only measures 1 thing at a time. This is the variable.

Everything else is kept the same. This is called “**controlling** the experiment”.

Because photosynthesis produces oxygen gas, you can count the bubbles and see how much photosynthesis is going on.

**Purpose:** To show that plants require **Light Energy** in order to photosynthesize.

**Hypothesis: If** test tube **A** is in the dark, test tube **B** is 100mm away from the light, Test tube **C** is 200mm away from the light;

**then**  test tube \_\_\_\_\_\_ will have most bubbles.

And test tube \_\_\_\_\_\_\_ will have the least bubbles.

**Procedure:**

1. **Take 2 test tubes. Label them B and C.**
2. **The teacher will fill test tube A with 40ml of carbonated water.**
3. **You fill test tubes B & C with 40ml carbonated water each.**
4. **The teacher will place a stem of *Elodea* in test tube A and put it in the closet.**
5. **Take 2 pieces of *Elodea* 100mm long and place 1 in each test tube.**
6. **Place test tube B 100mm away from lamp. Place test tube C 200mm from lamp.**
7. **Count the number of bubbles of oxygen that are produced during 5 min.**
8. **Repeat at 10min., 15min. and 20 min.**
9. **Record the data**
10. **Make a drawing of this set up here.**

**Diagram:**

**Data: Table 1.2 The effect of light energy on the number of bubbles produced**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables tested** | **Observations**  **#bubbles 5min.** | **# bubbles 10 min.** | **# bubbles**  **15 min.** | **# bubbles**  **20 min.** |
| **Test tube A:** |  |  |  |  |
| **Test tube B:** |  |  |  |  |
| **Test tube C:** |  |  |  |  |

**Analysis:**

1. Which test tube is the control? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What does the control show you? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which Test tube is the variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Why is counting Bubbles of oxygen a good indication of photosynthesis?

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1. Based on your Data Rank the test tubes from the greatest to the least # of bubbles (This answers your hypothesis.)

**Conclusion:**

1. What is the relationship between the amount of light and the number of bubbles?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What effect does light have on photosynthesis? (This answers your problem)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How would you improve it for the next time? Identify one problem and one solution. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_