**Photosynthesis Lab Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Introduction:** Photosynthesis is the process in which plants use light energy, water, and carbon dioxide to produce food. Plants use the food they make for growth and for carrying out other life processes. Sunlight is the natural energy source for photosynthesis. White light from the sun is a mixture of all colors of the visible light spectrum: red, orange, yellow, green blue, and violet. Light can be either absorbed or reflected by substances called pigments. Most plants are green because chlorophyll reflects green and yellow light and absorbs other colors of the spectrum.

In this virtual lab, you will perform an experiment to investigate what colors of the light spectrum cause the most plant growth. You will calculate the plant growth by measuring the height of each plant under different colors of light. You will compare these measurements and interpret a graph to determine which colors of the spectrum cause the most plant growth.

**Directions**:

1. Make a hypothesis (prediction) about what part of the light spectrum will cause the most plant growth and which part of the light spectrum will cause the least. Assume all other variables are the same. Write the prediction below and give a REASON WHY.
2. Choose a type of seed that you want to test by clicking on the seed packet.
3. Click the arrows on the color display to select a color light filter for each of the three plants
4. Start the experiment by clicking the light switch to the ON position
5. Click the ruler and drag it to each plant to measure plant height.
   1. Record the high in the data table
   2. Calculate the average height and record in the data table
6. Click the reset button. Repeat the experiment using a different color light filter and the same type of seed.
7. Repeat steps 2- 6 with the other two types of seeds.
8. Answer analysis questions.

**Prediction**:   
Make a prediction and give a reason why. Plants will grow best/least in \_\_\_\_\_\_\_ light because \_\_\_\_\_\_\_\_\_\_\_\_\_

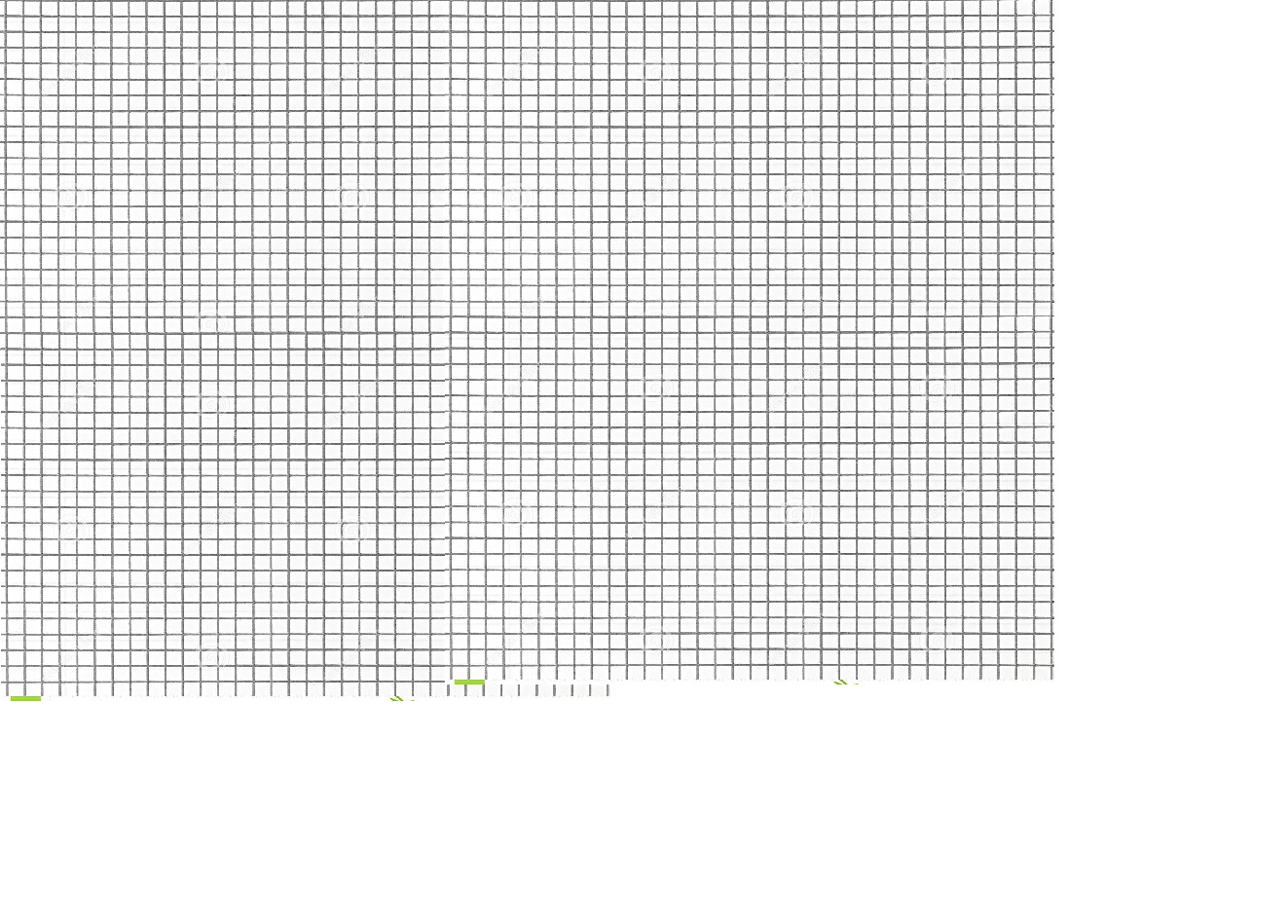
**Table 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Filter Color** | **Spinach Height**  **(cm)** | | | **Avg. (cm)** | **Radish Height (cm)** | | | **Avg. (cm)** | **Lettuce Height (cm)** | | | **Avg. (cm)** |
| **Red** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Orange** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Green** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Blue** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Violet** |  |  |  |  |  |  |  |  |  |  |  |  |

**Analysis**

1. Which color in the visible light spectrum resulted in the most plant growth? Were there variations among the plants?
2. Which color in the visible light spectrum resulted in the least plant growth? Were there variations among the plants?
3. Based on the results of the experiment, the green filter did not result in significant plant growth. Explain why green plants under a green light filter do not result in significant growth.
4. How is growth of the plant related to photosynthesis (**think energy**)?
5. Given that white light contains all colors of the spectrum, what growth results do you expect the occur under white light?
6. You actually set up a similar experiment using corn plants placed in boxes under colored gels. How do you think the results of this virtual experiment will compare to the one using corn plants?

Create a bar graph comparing average growth of plant at each color filter.   
Use a different color for each type of plant



AVERAGE HEIGHT OF PLANTS (cm)

RED ORANGE GREEN BLUE VIOLET