4. Carefully connect the power supply to the wires from the light socket, and adjust the power supply to 5.0 V. ***Do not plug in the power supply until your teacher has approved your setup.*** When your teacher has approved your setup, carefully plug the power supply into the wall outlet to light the lamp.

5. Use the light meter to read the intensity. Select the "fast" mode, and use the "data hold" option if the intensity values continually fluctuate. Record the intensity value for that distance in your data table.

6. Repeat this procedure for all other bulb distances recorded in your data table.

7. After the last trial turn off the light source. Cover the opening of the phototube with the piece of black paper. Draw a line above or below your data table, and label it *Background*. Use this space to record the intensity reading of the light meter without the bulb illuminated.

8. Clean up your work area. Put equipment away as directed by your teacher.

ANALYSIS

1. **Organizing Data**   For each trial, find the real value of the measured light intensity by subtracting the background from the measured value.

2. **Constructing Graphs**   Make a graph of the intensity plotted against the distance. Use a graphing calculator, computer, or graph paper.

3. **Organizing Data**   For each trial, calculate $1/(Distance^2)$. This value represents the inverse of the distance squared.

4. **Constructing Graphs**   Make a graph of the intensity plotted against the inverse of the distance squared.

CONCLUSIONS

5. **Analyzing**   Based on your graphs, what is the relationship between the intensity of the light and the distance from the light source? Explain how your graphs support your answer.