Name _____

Class _____

Activity

1. Report the data in the table below and save the list to the computer with the TI-GraphLink.

Light Bulb (watts)	Light Intensity (mW/cm^2)

2. What pattern do you see in the data from the list of numbers? That is, what is the relationship between the number of watts for a light bulb and the brightness of that bulb? Use numbers in your answer if possible.

3. Sketch the bar graph from your data in the area provided below. Label each part.

4. What was the name of the line (equation/function) that you got from the Manual-Fit?

5. The number in front of the *x*-value is the rate of change of light intensity per change in wattage (light intensity per watt). Use this value from the expression in Question 4 and compare it with your guess about the pattern in Question 2.

6. Complete the table for your experiment.

Light Bulb (watts)	**Light Intensity Measured (mW/cm^2)**	**Y_1 Value for Light Intensity(mW/cm^2)**	**Percent Difference $(Y_1 - M) \times 100 / M$**

7. What does your model predict for the light intensity of a 300 watt light bulb?

8. What does your model suggest would be needed to create a light intensity of 1.00 mW/cm^2?

Going Further

1. Since a watt is a measure of power, what is the meaning of the units of light intensity (milliwatts per square centimeters)?

2. Given the following data, determine the rate of change (slope) of the light intensity as one changes the watts. Complete the table using this factor.

Light Bulb (watts)	Light Intensity (mW/cm^2)
15	0.10
40	0.27
60	0.40
75	0.50
100	0.67
150	1.00
77	
	1.7

3. What do you think would happen to the numbers for the intensity if you cut your distance in half for the experiment? Why?

4. Express the rate in terms of a 10-watt change in the light bulb. ($mWatts/cm^2$ per 10 watts).