

Lab Science

Name _____

Intensity vs. Distance

Date _____ Period _____

In class we learned that intensity is the rate of the flow of energy through a given area. The intensity of light depends upon the amount of light that the source puts out and the distance from the source. In this lab, we will see and measure the effect of distance on light intensity.

We will set up a simple circuit which includes a photoresistor. A photoresistor is a device whose resistance to current depends on the amount of light hitting it. We will use a multimeter to measure the current that is moving through the circuit as the light shining on the photoresistor is moved back.

Materials – each table will need the following

- 1 multimeter with leads
- 3 wires with alligator clips
- 1 meter stick
- 2 meter stick supports
- 1 photoresistor clip
- 1 flashlight
- 1 battery pack w/batteries

Procedure

1. Set the meter stick in the supports and set it on the table so that it is level and balanced and so that you can easily read it. Clip the photoresistor so that it is on the 10 cm line.
2. Use a wire to connect the black lead of the multimeter to the black lead of the battery pack. Use a second wire to connect the red lead of the battery pack to one side of the photoresistor. Use the third wire to connect the other side of the photoresistor to the red lead of the multimeter. **Make sure that none of the wire or lead ends are touching except where they are supposed to connect.**
3. Turn the knob of the multimeter to the 200m setting. This allows for current readings up to 200 milliamps.
4. Place the flashlight on the meter stick so that the front of the flashlight is at the 15 cm mark. This will be the location for the 5 cm reading since the flashlight will be 5 cm from the photoresistor. **Make sure that the brightest part of the flashlight beam hits the photoresistor by placing a sheet of paper behind the resistor and viewing the shadow.** Record the current reading in the data table provided.
5. Move the flashlight back 5 cm to the 20 cm mark and repeat step 4.
6. Repeat steps 4 and 5 until you have filled in the entire table.
7. After all readings have been taken, turn the multimeter knob to the off position and disassemble your circuit. Remove one of the batteries from the pack and return all of the materials to the proper location.
8. Use the data you collected to create a graph on the grid provided. Remember that the independent variable belongs on the x-axis and the dependent variable belongs on the y-axis. Also remember to label each axis.

Distance (centimeters)	Current (milliamps)
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	

