

Physics 115 – Section 201  
Homework #4  
Due February 26, 2007

Essay 1 (10 points)

How would you use an ammeter to determine the amount of current flowing in a **series** circuit containing two batteries and two light bulbs? Draw a picture of the circuit with the ammeter connected. How would you use a voltmeter to determine the voltage across the two batteries in this circuit? Draw a picture of the circuit with the voltmeter connected.

Essay 2 (10 points)

In the circuit in Essay 1, how would the reading on the ammeter change if more bulbs were placed in series in the circuit? Why? What experiment have you done which would lead you to think this? In the circuit in Essay 1, how would the reading on the voltmeter change if you added more batteries in series? Why? What experiment have you done which would lead you to think this?

Problem 1, 10 points

A student does the spring experiment and gets the following equation:  $l = (2.3 \text{ cm/g}) * w + 25 \text{ cm}$ , where  $l$  is the length of the spring and  $w$  is the weight hanging from the spring. Draw a graph of their result. Describe what you know about her spring from her equation using words.

Problem 2 (10 points)

Rank the bulbs marked A-H on the drawing on the next page according to their brightness. If two or more bulbs are equal in brightness, indicate that. Rank the points marked 1-10 in the circuits by the arrows by the amount of current flowing through that point in the circuit. If two or more points in the circuits have equal current, indicate that.

Picture for Problem #2:

