Recitation #7
Physics 132, Spring 2013

Name:

Electric Circuits

1. Lighting a single bulb

A. Work individually for this part. In the space at right, sketch how you could light a small flashlight bulb using a battery, a single wire, and a light bulb. (Your instructor can show you the equipment if you like.) Show the details of the bulb and battery in your sketch and explain your reasoning.

If it is not possible to light a bulb with a battery and one wire, explain why not.

- B. Compare your reasoning with that of your partners. You don't have to agree with one another, but discuss your answers until you understand each others' reasoning.
- C. Obtain a battery, bulb, and wire from your instructor. Connect them in as many ways as you can. For each arrangement, note whether the bulb lights or does not light. Sketching each arrangement will help you to be systematic.

Arrangements that light the bulb	Arrangements that do not light the bulb
	·

D. Find at least four different arrangements that light the bulb. How are they similar? How are they different from arrangements in which the bulb fails to light?

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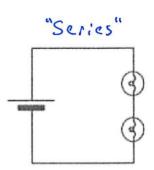
2. Lighting Two Bulbs

(We call

"Sen'es")

A. If you connect two bulbs to a battery in the way depicted at right, which will be brighter?

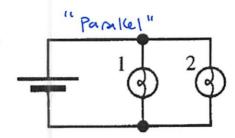
B. How can you determine that the bulbs themselves are "identical"?



3. More about current

Set up a two-bulb circuit with identical bulbs so that their terminals are connected together as shown.

Bulbs connected in this way are said to be connected in parallel.



- A. Compare the brightness of the bulbs in this circuit.
 - 1. What can you conclude from your observation about the amount of current through each bulb?
 - 2. Describe the current through the entire circuit.
- B. How does the brightness of each bulb in the two-bulb parallel circuit compare to that of a bulb in a single-bulb circuit? In particular, is each one half as bright?

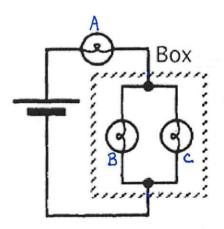
How does the amount of current through a battery connected to a single bulb compare to the current through a battery connected to a two-bulb parallel circuit? Explain.

- C. The circuit at right contains three identical bulbs. Don't set it up! Just *predict*:
 - · the relative brightness of the bulbs in the circuit
 - how the brightness of bulb A would change if you unscrewed bulb C

Now check your predictions.

Explain why you can't predict how the brightness of bulb B would change if you unscrewed bulb C just by thinking about what happens to the current.

(If you think you can, go for it, but double-check with a TA.)



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