

Phys 115: Inquiry Into Physics	Seventh Assignment, due Monday Oct. 22nd
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A general note on the idea of clarity, coherence, and filling in your argument: As you may have heard, scientists write papers/articles in special journals to explain their ideas to their peers. And in order that they convey what they are saying they need to be very clear about their own ideas, not only in their own minds, but also in their writing. Also, they need to present their ideas so that one little bit of reasoning fits in with the earlier bits and the following bits; make sure that any modifications to their idea are still in tune with the earlier observations; and provide the entire chain of their thoughts (the reader should not have to fill in the missing bits of reasoning by herself, unless that little bit is something that is well understood within the community and a simple reference to it conveys the idea). Of course, quite often one scientist cannot fill in all the missing pieces or provide a perfect explanation by herself. A good scientist would explore what are the portions in their explanation that are missing, which bits are speculations, and which bits are supported by evidence, examine hidden assumptions and worry about the plausibility of those assumptions; and she would explicitly mention that in her paper. Often other scientists would respond to an article with a rebuttal letter or a critique of the original paper (often in the same journal) and at times the critique could be that the author of a particular paper is not clear about what the implications of their idea are. I want you to think about essays in the way that you are trying to get your ideas across in writing as clearly as possible, fitting together bits of reasoning and examining the hidden assumptions.

With that, here is the assignment:

Question #1:

In class on Wednesday, we tried circuits with two batteries. I want you to think about circuits 3 and 4 in particular. To remind you, I have redrawn the circuits here:

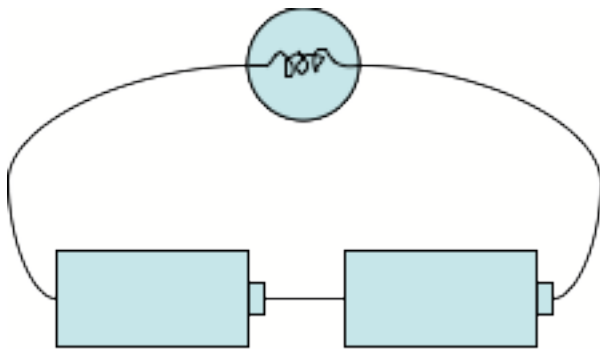


Figure 1 Two Battery: Circuit 3

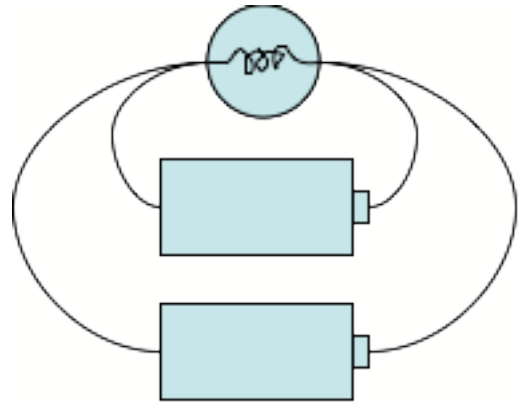


Figure 2: Circuit 4

- A. BEFORE you made your observations, what did you think would happen in each of these two circuits – would there be a flow, would the bulb light, will the bulb be brighter than when we had just one battery and any other thing that you might have predicted. Explain your reasoning behind the prediction.
- B. Tell me about your observation. What did you notice when you made the connection in each of the two cases?

If your observation did not agree with the predictions, then what specifically do you think could be wrong/missing in your original reasoning? , Now how do you now make sense of the observation? You need not get to a perfect resolution, but I want you to speculate about one possible way you could approach making sense of the observation.

If your prediction did agree with the prediction, then think about one way you or someone else could have come to a different prediction, and what would your response be?

Question 2: Thinking about what your idea implies for other circuits

In class we have been talking about different ideas for what goes on inside the circuit – different models for **how** the circuit works. What does your model of what goes on inside the circuit imply for each of these connections. Some things you might think about are – will the bulb light, will there be a flow, how bright would the bulb be, and anything else that you think your idea tells about this circuit. Whatever you think the implications are, describe your reasoning behind your thoughts.

I do not want you to restate your model (you are revising that in HW6) but how your model applies to these circuits.

NOTE: I am not asking "what you think would happen", but "what your model says would happen"

A. More Batteries?

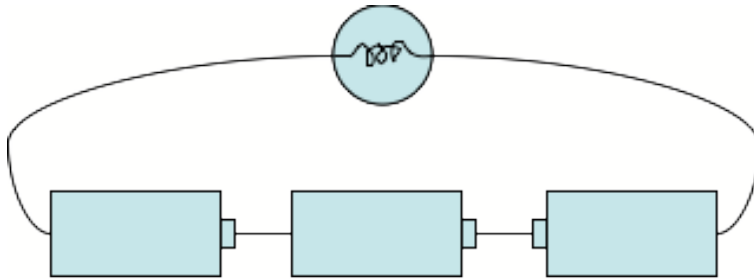


Figure 3: Putting in one more battery into the double-battery-Circuit#5

B. More bulbs?

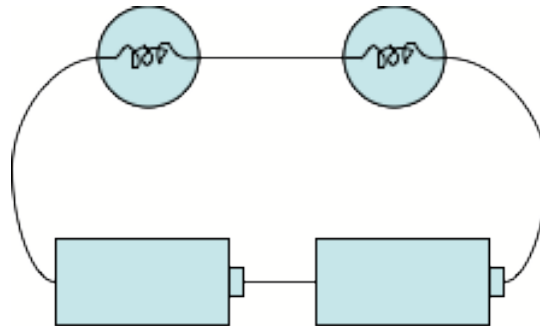


Figure 4. Two bulbs and two batteries.

C. More Bulbs - but differently attached?

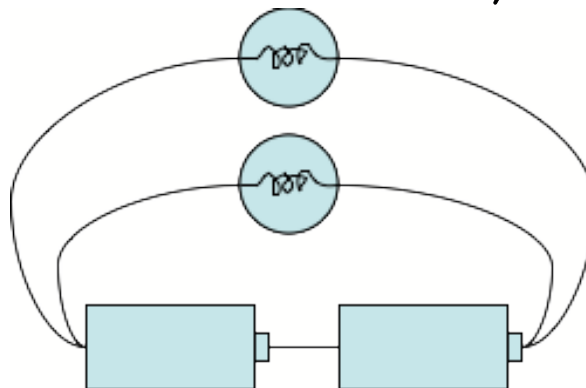


Figure 5. Two bulbs attached differently.