

Name _____
SI Physics
Period _____

Date _____
Lab #33V (30 pts)
Mrs. Nadworny

Partners: _____

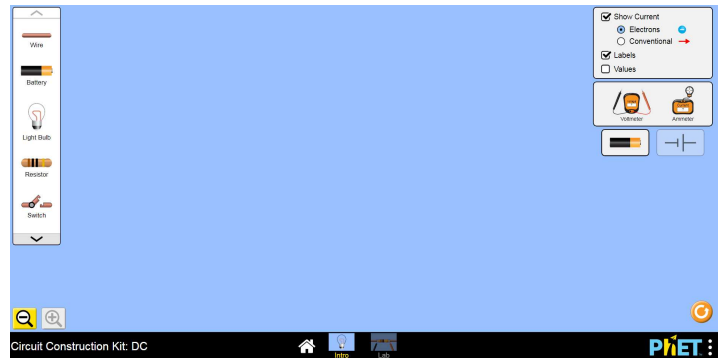
Due Date _____

Series Simulations

NO Lab Write-Up Required

Procedure

1. Go to <http://phet.colorado.edu>. Click on **Simulations** to get to the list of simulations. From the menu choose **Physics** and then click on the **Circuit Construction Kit (DC Only)** simulation. Click on **Play** to open the simulation. Click on **Intro**. You should see the screen shown.

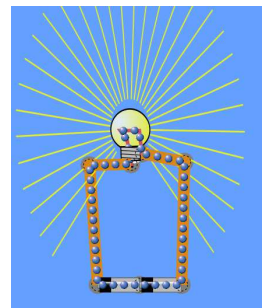


2. Take time to drag items around and practice building circuits.

- Drag items from the menu at the left into the main area to work with it.
- Clip items together by overlapping the circles on the end.
- Left click on the overlapping circle to “Split Junction” and separate items.
- Left click on an item to adjust its properties or remove it.

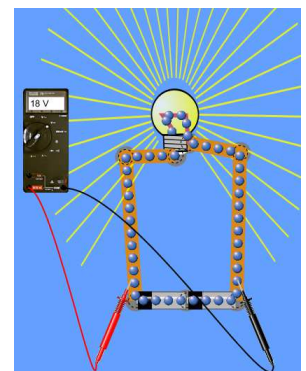
3. Build a circuit with two batteries and one light bulb.

4. What do the blue dots represent? (1)



5. Select the “voltmeter” tool from the right side and connect it to your circuit as shown.

6. What is the reading on the voltmeter? Ignore any negative signs. (1)



7. Remove one of the batteries and reconnect everything else.

8. What is the reading on the voltmeter now? (1)

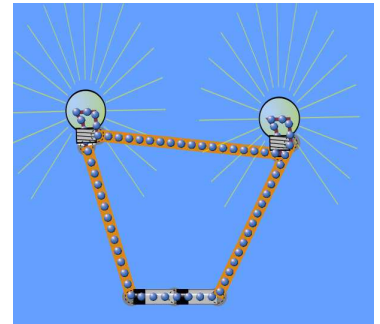
9. What happens to the speed of the blue dots? (1)

10. What happened to the brightness of the bulb? (1)

11. Build a circuit with two batteries and two light bulbs in series.

12. Compare the brightness of the two bulbs to each other. (1)

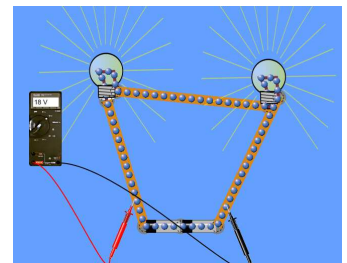
13. Compare the brightness of one of these bulbs to the single bulb with two batteries from step 3. (1)



14. Compare the speed of the blue dots in this circuit to the speed from the single bulb with two batteries. (1)

15. Select the “voltmeter” tool from the right side and connect it to your circuit as shown.

16. Measure the total voltage by touching to both sides of the batteries. What is this total voltage reading? (1)

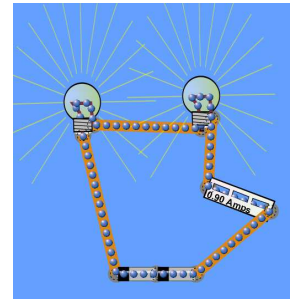


17. Move the voltmeter probes so they are touching to both side of the left light bulb. What is this first voltage reading? (1)

18. Move the voltmeter probes so they are touching to both side of the right light bulb. What is this second voltage reading? (1)

19. What is the equation for voltage in a series circuit? Does your data support this? (2)

20. Select the "Ammeter" tool from the right side. Right click on the overlapping circles to "split the junction" of the wires. Clip the ammeter into the flow of current as shown.



21. What is the reading on the ammeter? This is your total current. (1)

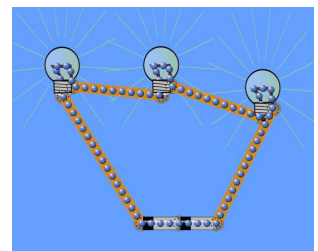
22. Move the ammeter to between the two light bulbs. What is this first current reading? (1)

23. Move the ammeter to the other side of the left light bulb. What is this second current reading? (1)

24. What is the equation for current in a series circuit? Does your data support this? (2)

25. Build a circuit with two batteries and three light bulbs in series.

26. Compare the brightness of the three bulbs to each other. (1)



27. Compare the brightness of one of these bulbs to the double bulb with two batteries from step 11. (1)

28. Compare the brightness of one of these bulbs to the single bulb with two batteries from step 3. (1)

29. Compare the speed of the blue dots in this circuit to the speed from the single bulb with two batteries. (1)

30. As more bulbs were added in series, what happened to the total resistance of the circuit? (1)

31. As more bulbs were added in series, what happened to the total current flowing through the circuit? (1)

32. As more bulbs were added in series, what happened to the brightness of an individual bulb? (1)

33. Right click on one of the light bulbs. Change its resistance to 20 ohms.

34. Compare the brightness of this higher resistance bulb to the other two lower resistance bulbs. (1)

(4 pts)
neatness