

Light Bulbs in Series, Parallel, and Combination

Each group must hand in their pre-lab predictions before obtaining the materials for this investigation.

Learning Tasks:

1. Use the available resources (bulbs and circuit items, web-based circuit simulation, text, peer counsel) to **determine what happens** to the **brightness** of identical light bulbs in a dc circuit as more and more bulbs are **a) added in series** and **b) added in parallel**.
2. **Develop a thorough explanation** of why this occurs.
3. Use these same resources to develop **an explanation** of how one can determine the relative brightness of multiple bulbs when they are connected in **combination circuits**.
4. Hand in a complete explanation of your findings, containing **multiple examples** comparing the brightness of the bulbs in each type of circuit (series, parallel, and combination). Your explanation should include a method of how one may look at a schematic diagram of a combination circuit and be able to **a) list the bulbs in order of increasing or decreasing brightness** and **b) tell which bulbs would be equally bright**. Illustrate your method with two or more examples containing **at least six** bulbs in each of varying brightness.



Resources:

bulbs, wire, D cells, cell holders, multi-meters, textbook, peer counsel, computer simulation of a circuit found at <http://www.physicslessons.com/exp41.htm>