



## Activity 17: A String of Lights

*How many different ways can you connect five lamps?*

### Resources

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- PhET Simulation  
[https://phet.colorado.edu/sims/html/circuit-construction-kit-dc-virtual-lab/latest/circuit-construction-kit-dc-virtual-lab\\_en.html](https://phet.colorado.edu/sims/html/circuit-construction-kit-dc-virtual-lab/latest/circuit-construction-kit-dc-virtual-lab_en.html)
- Optional: Yenka software <https://www.yenka.com/>  
Click Yenka Help-download Yenka  
Download to your computer  
Open Yenka and click Activate Yenka  
Type in the school activation key: 2204-8552-4399

### Instructions

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1. Before you begin building circuits, review all you have learned about circuits and get some extra practice building circuits.
2. You will need Java enabled to do the PhET simulation. Or, open Yenka software and choose Electricity & Magnetism. In the Circuit Diagrams folder, choose Pictorial.
3. You are going to build a circuit using a 1.5 V (9 V online) battery, switch, and five lamps. Drag and drop those items to the work area. Connect them in a single loop.  
Multi-Loop Circuit
4. Now, in addition to the first one, you will build another circuit with exactly the same items as Step 3. If you need more room on your Yenka screen, move your first circuit to the side, or press the full screen button to give yourself more space. This time, you connect the lamps so that each one has its own separate loop and path to the battery. Place a switch so that it operates all the lamps.
5. Turn the switches on in both circuits and look carefully at the lamps. In which circuit are the bulbs glowing brighter?