Virtual Breadboard Activity

Physical Science and Technology

For this activity you will use the virtual breadboard available through the 123D Circuits app located at https://123d.circuits.io. You will need to create an account: click on the "Sign up" button in the top right-hand corner of the screen and enter your birth date. To help us help you remember your login information, you should use the same user name and password that you use to log on to the computers here at school – but put a "PST" in front of both. (For example, Mr. Bregar's user name would be "PSTdan.bregar" and his password would be "PST00231233".) Instead of a parent e-mail, put Mr. Bregar's e-mail: dan.bregar@corvallis.k12.or.us.

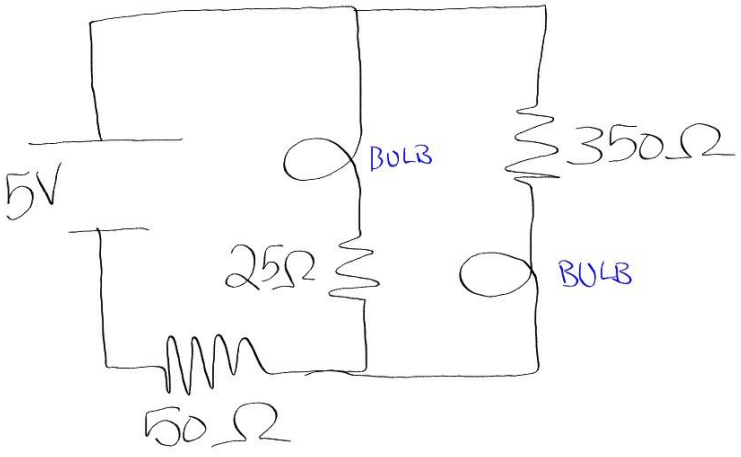
Once you've created your account, sign in and click the "+ New" button and choose "New Electronics Lab". Then, follow these steps to explore the app.

1. Start by experimenting with the different features of the app. You can add different circuit components by clicking on the "+ Components" button. You can start or pause the simulation to test the circuits you create. Note that the breadboard itself will clearly show how different rails and strips are connected. **Show an instructor what you've done before you move on to the next step.**

2. Create a simple circuit that lights a lightbulb (you might need to delete elements of your other circuit or start over). Add other elements to your circuit and practice changing the parameters for those elements. **Show an instructor what you've done before you move on to the next step.**

3. Add three multimeters. Set one to measure current, one to measure voltage, and one to measure resistance. Practice making measurements. Make sure your measurements make sense – both with what you know about each component and with Ohm's Law (V = IR). **Show an instructor what you've done before you move on to the next step.**

4. Set up the following circuit. **Show an instructor what you've done before you move on to the next step.**



5. Using the multimeters, complete the following table of measurements for the circuit you set up in question 4. Do your work for this question and question 6 on a clean sheet of paper.

	Light Bulb 1	Resistor 1	Light Bulb 2	Resistor 2	Resistor 3
Resistance					
Current					
Voltage					

6. Look at the values you recorded in the table above. Discuss whether Ohm's Law seems to accurately predict what you see.

7. Make sure your name is on the assignment, and turn it in to your instructor.