Station 1: Circuit Building

1. Create the following circuit:

After it has been checked by a teacher, dismantle the circuit.

Station 2: Circuit Fixing

Below is a circuit diagram. On the table is a completed circuit, but it has three errors.

1. What are the errors?
2. How would you fix it?

Station 3: Ohms Law

V = IR

1. What does each variable stand for (include units)?
2. If you had a 5 Volt power supply, what resistance would you use to create a current of 4mA?

Station 4: Resistance and Temperature



1. What does each variable stand for (with units)?
2. The small town of voltland is concerned with how their electrical power lines will be affected by the summer heat. The power lines were installed during the winter with a temperature of 5oC, resistance 100Ω, and a coefficient of resistivity of 0.015 oC-1. What would the resistance be of the power lines during the summer time, which has an average temperature of 35oC?

Station 5: Power

P = IV

1. What do the variable above stand for (include units)?
2. What is the resistance of a high-powered (8.5 kW) special effects spot light that uses 240V of potential difference?
3. You now run that spot light for 25 minutes, how much energy is dissipated?

Station 6: Power, Energy, and Money

1. In the town of Ohmville electricity costs $0.40/kWhr. Jerome has $12 to put towards playing his gaming system which runs at 250W. How many hours can he play his game?

Station 7: Alternating Current

1. Describe how charges move with regards to Alternating Current.
2. What is the difference between Vrms and Vmax?
3. What would be the maximum current in a system with a root mean squared voltage of 110 V and a resistance of 49 Ω?

Station 8: Resistivity

1. What does each variable in the above stand for (include units)?
2. Chips ‘R Us wants to make a new silicon chip that has a resistance of 37.2 Ω, however their machine can only create chips that are 6.2 cm long with a cross sectional area of 0.25 m2. How many of these chips should be connected end-to-end in order to create their desired resistance? (ρsilicon = 50 Ω·m)