Heater Circuit

1. Set out kit
Heater Circuit

2. Layout Resistors on Perf Board

Front:

Back:
Heater Circuit

3. Fold the leads of two of the resistors and solder them together as shown:
Heater Circuit

4. Clip the leads:
5. Repeat steps 3 and 4 so the resistors are soldered in series, using the leads of the resistors
Heater Circuit

Your circuit should look like this:
Heater Circuit

6. Twist all the Red wires from the 9V connector together and solder them to the single red wire in your kit
Heater Circuit

7. Twist all the Black wires from the 9V connector together and solder them to the single black wire
Heater Circuit

8. Check continuity for all “−” and “+” terminals to each other
Heater Circuit

9. Check continuity for all “+” terminals of the battery with the end of the single RED wire.

10. Check continuity for all “-” terminals of the battery with the end of the single BLACK wire.
Heater Circuit

11. Put electrical tape on solder joints
12. Solder the single **RED** wire from 9V connector to one end of the resistor string and the **WHITE** wire to the other end of the resistor string.

*Green boxes are battery connectors*
Heater Circuit

13. Solder the switch in between the black wire and the white wire
Heater Circuit
Heater Circuit
Heater Circuit

14. Put electrical tape on black to black connection
15. Put electrical tape on white to red connection
Heater Circuit

16. Test your finished Heater by turning on the switch and putting your finger on the resistors – if they get warm, you’re done. If they don’t, check continuity at the following points:
Heater Circuit

16. Now add an LED to the circuit
Heater Circuit

17. Add wires to red LED
17. Add wires to red LED
Heater Circuit

18. Add heat shrink to wires on red LED
19. Add resistor to circuit (in parallel to power) to heater circuit
**Heater Circuit**

20. Connect resistor to red wire of circuit and red wire from LED
Heater Circuit

20. Connect resistor to red wire of circuit and red wire from LED
Heater Circuit

21. Connect black wire from LED to white wire of heater circuit
22. Retest your heater by switching it ON. Red LED should now also come on.