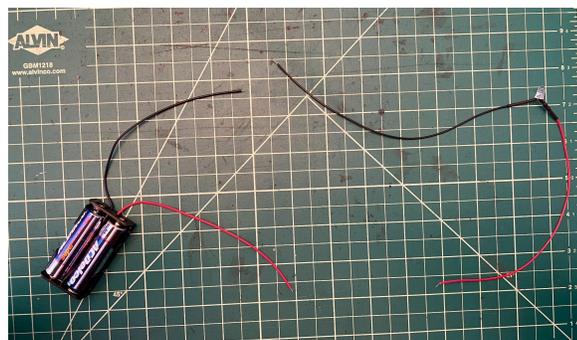**Maker Skill: LED Circuit**

This example demonstrates how to use a pre-wired battery case and a pre-wired LED to complete a series circuit using alligator clips. The same technique can be used with other wired electrical outputs like motors and buzzers.
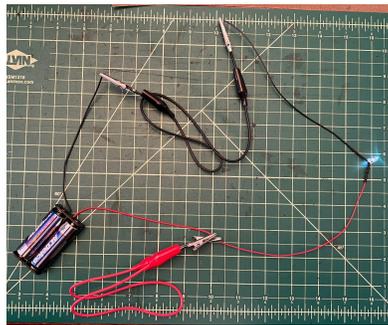
1. Insert the batteries into the battery case. Ensure the batteries are inserted in the correct direction. For AA and AAA batteries, the flat side of the batteries (negative) should be touching the springs of the battery case.

2. Align the negative wire of the battery case with the negative wire of the LED. In most cases, the negative wires on both the battery case and the LED will be black.

3. Align the positive wire of the battery case with the positive wire of the LED. In most cases, the positive wire on the battery case will be red. The positive wire on the LED may be red or another color, which usually indicates the color of the LED bulb.

4. Use an alligator clip to connect the negative wire of the battery case to the negative wire of the LED. Ensure the metal clip is connected to the metal part of the wire. Do the same with another alligator clip to connect the positive wire of the battery case to the positive wire of the LED.

5. Troubleshoot the connection. If your LED is not turning on, try the following tips:
   ○ Change the battery connection so that the positive/negative sides are connected to the opposite sides of the LED.
   ○ Ensure all connections are metal-to-metal so that electricity can flow.
   ○ Make sure you haven't created a short circuit! If the positive and negative connections accidentally touch, this will create a short circuit and prevent the electrical energy from moving through the LED. If a short circuit stays connected, the batteries can become quite hot. Spread out your circuit parts as shown above so that you can trace the pathway of electricity and prevent short circuits.

Note: Alligator clips can be difficult to open, especially for younger makers. To help, try removing the plastic covers on the clips by sliding them down off the clips or cutting them off entirely. It may also help to push the alligator clip open against the work surface instead of pinching it between your fingers.