

Recycled Circuits

Estimated Time: 60 minutes

SUMMARY: Create a light up house or picture using materials you might find in your recycling bin! With help from an adult you can create a circuit using old holiday lights, tape, and AA batteries. Turn trash into treasure and learn a little about electric circuits!

WHAT YOU'LL LEARN

- The flow of electricity in a simple circuit goes from one end of the power source, through the light and back to the other side of the battery
- Holiday light strings are made up of lots of little bulbs. Each bulb has two wires that go into the bulb, connected by a filament, or small piece of metal. When electricity goes from one wire to the other through the filament, it heats the filament which gives off a glow.

| Materials Used | Resources Used |
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| <ul style="list-style-type: none"> • AA battery • Strand of old holiday lights with at least some working bulbs • Wire cutters or sharp scissors • Wire stripper or sharp scissors • Electrical tape • Recycled clean milk jugs or containers (optional) • Paper and markers (optional) | <ul style="list-style-type: none"> • https://www.mathworksheets4kids.com/science/electricity/color/electrical-circuit-chart.pdf |

WHAT TO DO

1. With adult help, cut a few bulbs free from the strand of lights, leaving a long wire on each side (see photo to the right). In some strands of lights, there are three wires together, and you can discard the ones not directly attached to the bulb.
2. Carefully strip the rubber insulation off the wire about $\frac{1}{2}$ inch from each end of the wires. The insulation is what keeps the strand of lights from short circuiting – that is, electricity skipping the bulb and not completing the circuit.
3. Touch one end of the bare wire to the plus side of the AA battery. Then touch the other end to the negative end. If the light does not light up, try reversing the ends of the light. See the bottom photo to the right for a complete circuit.
4. With one AA battery the light will be very dim. It will also last longer. Once you have the circuit complete and the light comes on, decide how you want to use your light.



- a. You can take a container and carefully cut holes in it for a lantern
- b. You can create a picture such as a house or and tape your circuit down as part of the picture or behind light-colored paper for a glow.

TIPS

- 3V coin cell batteries are a good alternative for this if you want to make a smaller circuit.
- Because there is nothing to regulate the flow of electricity from the battery through the light, this circuit will probably not last long. To make a more permanent circuit, purchase some individual LED lights, coin cell batteries, and copper tape.

