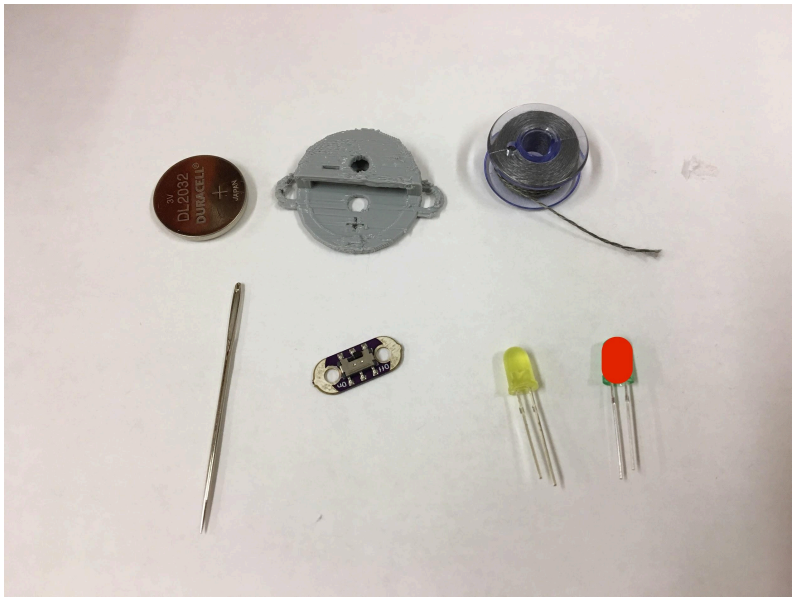
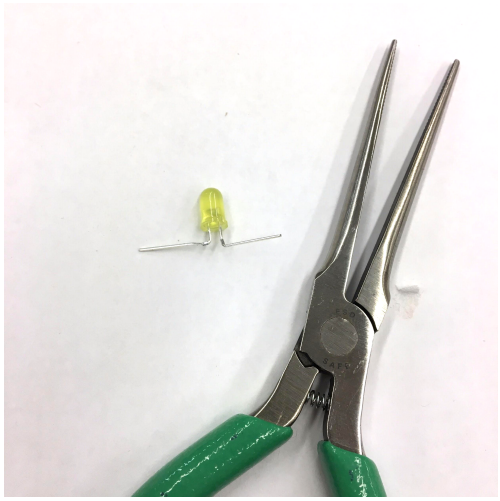
Light Up Your Monster With An LED Circuit



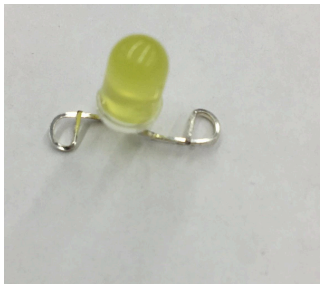
You need:
1 or 2 LEDs
A bobbin of conductive thread
A needle
A coin cell battery
A 3D printed battery holder
A sewable switch

NOTE: Some LED colors light up with less energy than others. If you pair one that is easier to light with one that is harder, the easier will suck the energy away from the harder. Here are the combinations that will work:

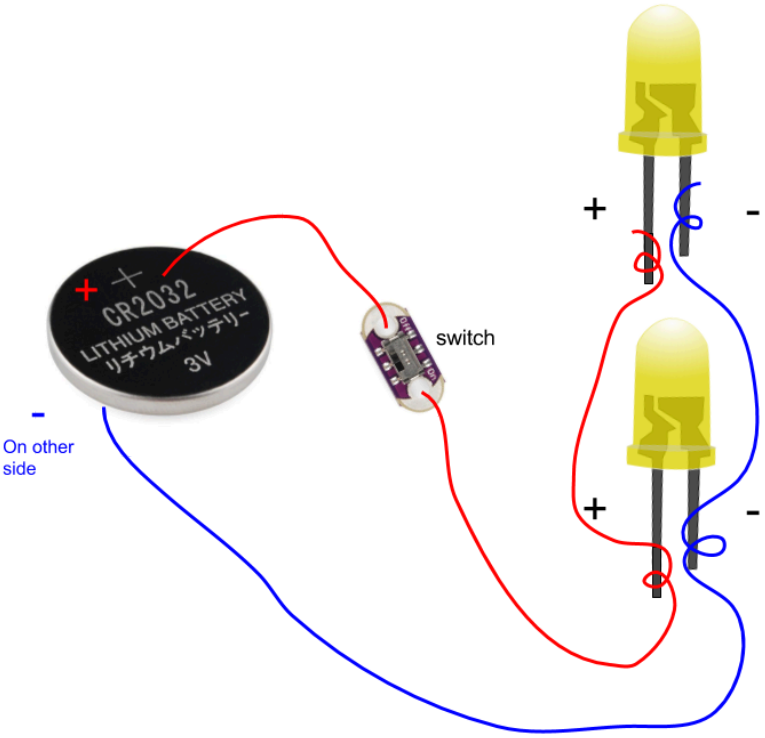
Any two of the same color
Yellow + red
White + blue
White + green
Blue + green



Prepare your LEDs (or LED if you only want 1).
Use needle nose pliers to bend the legs straight out, just a little below the bottom of the LED.



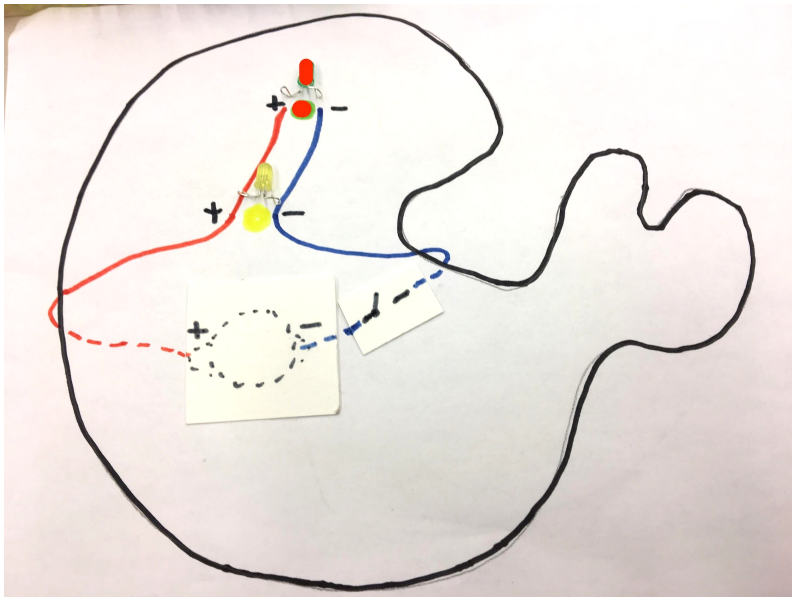
Bend the legs into sideways loops.



Understand how your circuit will work.
LEDs have a **positive** and **negative** side.
They must match up with the positive and negative sides of the battery.

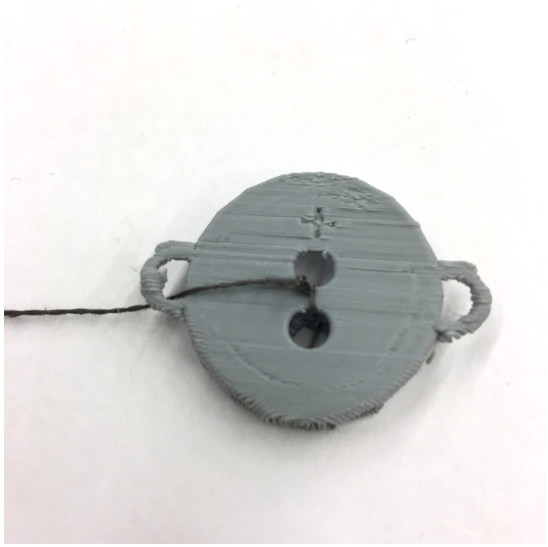
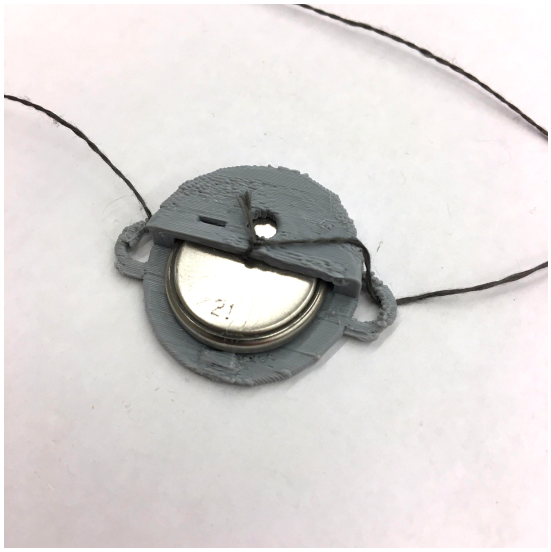
- The positive leg is longer and the negative leg is shorter
- The positive side has a small shape inside, and the negative side has a larger, triangular shape inside

The switch will allow you to turn the LEDs on and off.

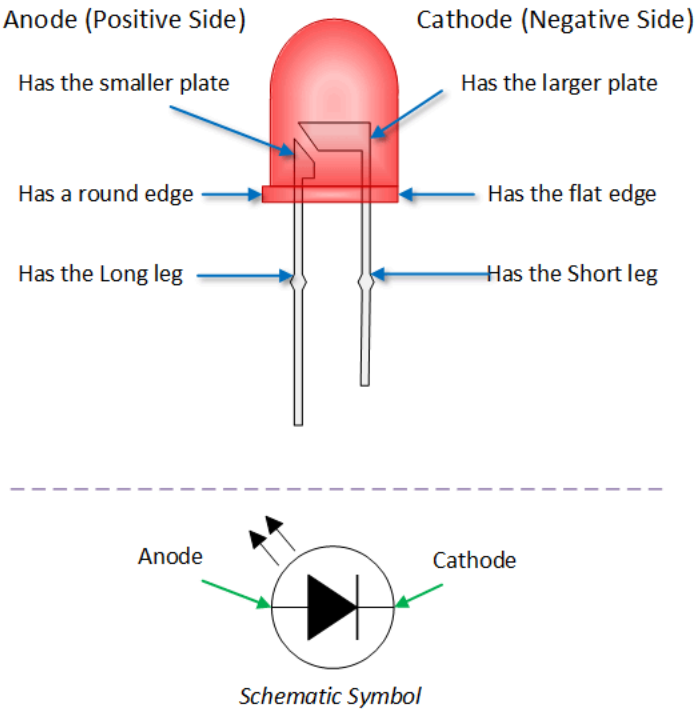


Plan your circuit!
Draw how you will sew your components on the monster. You can just use a pencil but you should use dotted lines for stuff on the back and show positive (+) and negative (-) charge. Notice the

symbol for the switch . In this diagram the battery and switch are on the back and the LEDs are on the front. You will create a **simple circuit** if you have 1 LED and a **parallel circuit** if you have 2 LEDs. Notice that polarity (+/-) is very important.

	Tie one piece of conductive thread through the holes on the POSITIVE side of the battery holder and loop it through a hole on the side.
	Tie a **second** piece of thread through the hole in the NEGATIVE side of the holder and loop it through the hole in the other side. Slip the battery into the holder with the FLAT SIDE DOWN so the positive and negative charges travel in the right directions. **DON'T LET THE TWO THREADS TOUCH. YOU WILL HAVE A SHORT AND THE BATTERY WILL HEAT UP.** A circuit with no load (something using the energy) releases energy as heat.

	Now stitch your components onto your monster, following your circuit plan. Start by stitching the battery holder loops to the fabric a couple times to secure it.
	Cut the thread and tie off the switch at each hole.



Schematic Symbol

IMPORTANT
When you sew your LEDs to the circuit, look closely to see which leg has the small plate (+) and which leg has the larger plate (-). If you sew it in backwards it will not light up.

Here is how I sewed my LEDs. When you get to each curled leg, loop through a few times to fasten it well.

When you finish make sure to test your circuit!