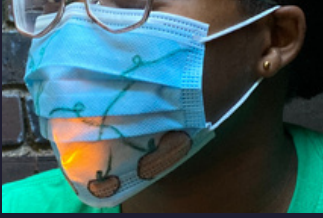


HALLOWEEN

MAGICAL GLOW MASK

****ADULT SUPERVISION REQUIRED****



DIRECTIONS:

- 1) Decorate a disposable mask with washable markers. (Do not use Sharpies because the smell is very strong.)
- 2) Choose option 1 or 2.

OPTION 1:

- Use a ready-to use LED and tape on the reverse side of the mask, at the bottom near the chin.

MATERIALS:

- disposable mask
- washable markers
- masking tape
- ready-to use LED

Need a ready-to use LED for option 1? Smith College has you covered! We will have a no-contact pickup for ready-to use LEDs.

Sign up here:

<https://forms.gle/VQCRvDAetmYooG4PA>

OPTION 2 (more hands-on):

- Create an LED battery sandwich and tape on the reverse side of the mask. For a fun challenge, use reverse engineering.

MATERIALS:

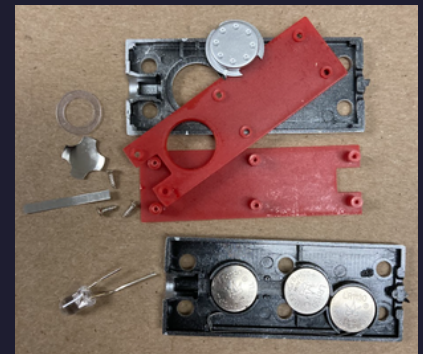
- disposable mask
- washable markers
- masking tape
- LED
- button batteries
- LED keychain (reverse engineering only, no need to buy LED and button batteries separately)
- small phillips head (criss-cross) screw driver (reverse engineering only)

HOW TO CREATE AN LED BATTERY SANDWICH (OPTION 2)

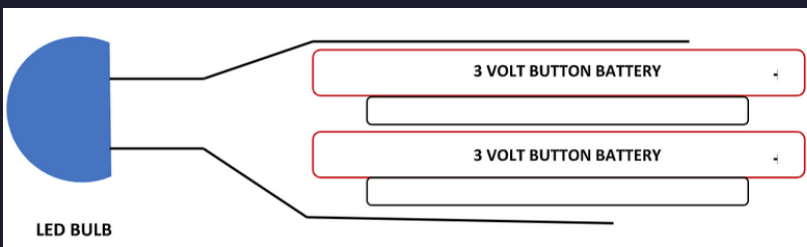
****ADULT SUPERVISION REQUIRED****

REVERSE ENGINEERING INSTRUCTIONS:

- 1) Buy an LED keychain. (We used the blue and red ones at Foster Farrar True Value Hardware store. See photo on right.)
- 2) Unscrew the screws and try to figure out how the light works. Think like an engineer!
- 3) Remove the batteries and the LED bulb. These batteries are each 1.5 volts. (Optional: You can buy and use 3 volt batteries instead.)



If not using reverse engineering, buy LEDs and button batteries separately. You can buy LEDs online: <https://www.adafruit.com/product/754>.



BATTERY SANDWICH: $3v + 3v = 6v$

MASKS: Use one or two 3v battery

DECORATIONS: Use two 3v batteries to make it brighter.

DIRECTIONS (refer to figure on left):

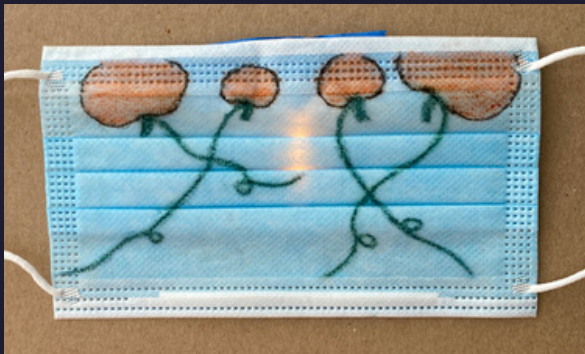
- 1) Stack two batteries to make a battery sandwich that is 3 volts (1.5 volts + 1.5 volts). Stack three to make it 4.5 volts. **DO NOT EXCEED 6 VOLTS.**
- 2) Tape batteries with a LED wire "leg" on the top and the bottom of the battery sandwich. (Switch the "legs" if it doesn't light the first time.)

SAFETY:

- Always wrap masking tape around all the metal batteries and metal LED wires. No metal should be showing.
- Don't get your LED and batteries wet. (No drooling candy on the LED either!)
- **NEVER** power your LED with more than 6 volts (two 3 volt batteries or four 1.5 volt batteries). LEDs can shatter at higher voltages.

MAGICAL GLOW MASK

SCIENCE BEHIND IT + ADDITIONAL INFO



WHY DOES THE MASK GLOW?
Some of the light will pass through the mask because it is **translucent** meaning it scatters the light along the material to create a glowing Halloween effect.

WANT ANOTHER LED PROJECT?

Use an LED to light a Halloween decoration made from **translucent** materials. Coffee filters, toilet paper, and paper towels are translucent. Tape an LED inside to light them up. Here's an owl we made from coffee filters!



Battery Sandwich Hints:

- Tape the battery stack together tightly and make sure the LED legs touch the top & bottom surface of the sandwich.
- Your light will be easier to make with just one 3 volt button battery.
- Batteries must be stacked like the figure. The stack should be top-to-bottom, top-to-bottom. Battery "tops" (positive side) should not touch each other. Battery "bottoms" (negative side) should not touch each other.

DID YOU KNOW...

LEDs have a positive wire "leg" (longer) and a negative "leg". The positive leg must touch the positive side of the battery and the negative leg must touch the negative side of the battery. If the LED is reversed, nothing bad happens but it won't light!