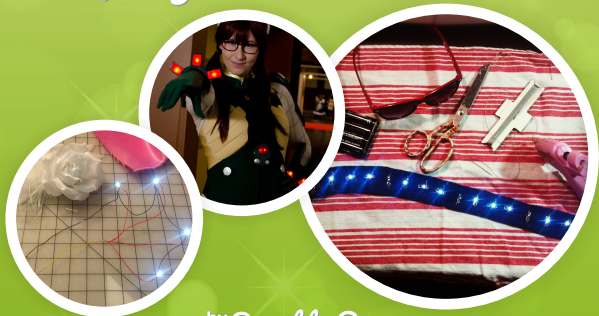


Cosplay Electronics 101



by Sparkle Pipsi

MATERIALS

WHAT YOU NEED AND WHERE TO GET IT

MATERIALS

STANDARD LEDS



STRAW HAT LEDS



MATERIALS

WIRE



MATERIALS

WIRE CUTTERS/ STRIPPERS



JEWELRY PLIERS (ROUND NOSE)



MATERIALS

BATTERY HOLDERS

AA



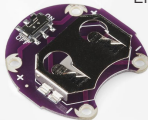
9 Volt



3 Volt



3 Volt
LilyPad



MATERIALS

RESISTORS



MATERIALS

SWITCHES

Slide



Toggle



Push
Button



Rocker



MATERIALS

SOLDERING IRON + SOLDER



MATERIALS

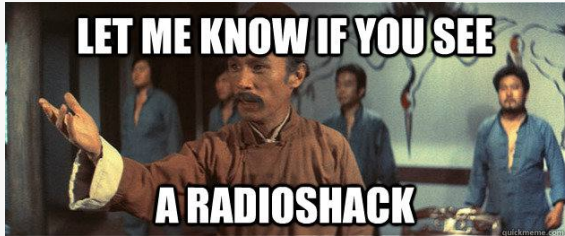
ELECTRICAL TAPE



ALLIGATOR CLIPS



MATERIALS

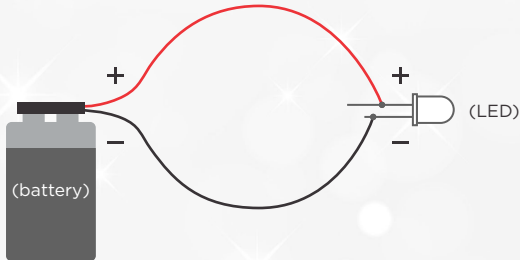


- eBay
- Amazon
- Radio Shack (electronics store)
- Sparkfun.com

BUILDING YOUR CIRCUIT

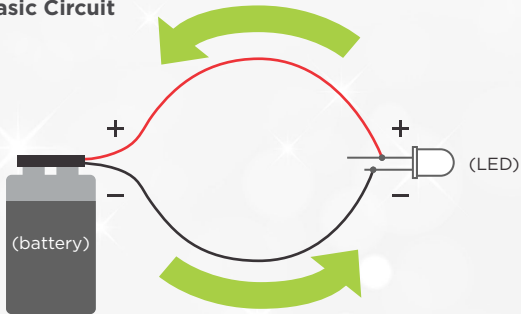
BUILDING YOUR CIRCUIT

1. Basic Circuit



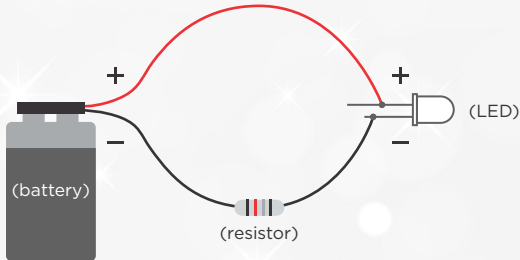
BUILDING YOUR CIRCUIT

1. Basic Circuit



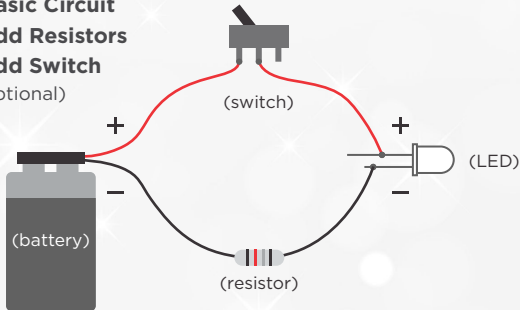
BUILDING YOUR CIRCUIT

1. Basic Circuit
2. Add Resistors



BUILDING YOUR CIRCUIT

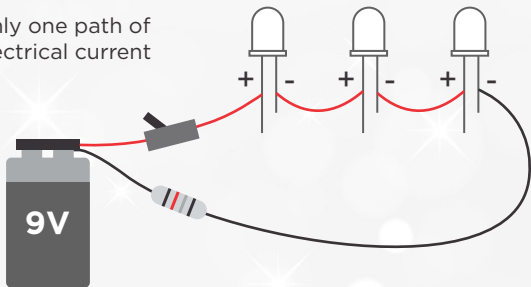
1. Basic Circuit
2. Add Resistors
3. Add Switch
(optional)



BUILDING YOUR CIRCUIT

SERIES:

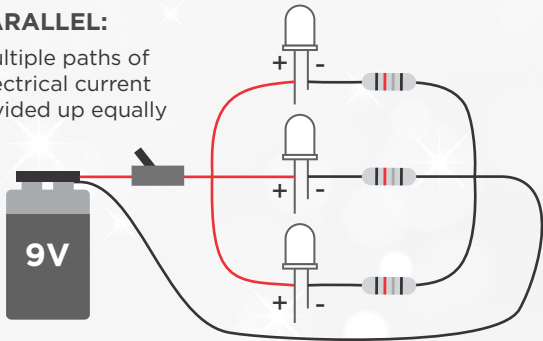
Only one path of electrical current



BUILDING YOUR CIRCUIT

PARALLEL:

Multiple paths of electrical current divided up equally



BUILDING YOUR CIRCUIT



Power supply voltage (V): ?

LED voltage drop (V): ?

LED current rating (mA): ?

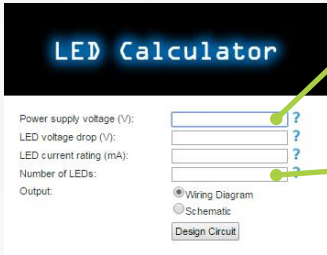
Number of LEDs: ?

Output: ☒ Wiring Diagram ☐ Schematic

LEDCALCULATOR.NET

BUILDING YOUR CIRCUIT

What you'll need to know:



The screenshot shows a web application titled "LED Calculator" in a glowing blue font on a black background. Below the title, there are five input fields with labels to their left: "Power supply voltage (V):", "LED voltage drop (V):", "LED current rating (mA):", "Number of LEDs:", and "Output:". Each of the first four input fields has a small blue question mark icon to its right. Below these fields are two radio button options: "Wiring Diagram" (which is selected) and "Schematic". At the bottom of the form is a button labeled "Design Circuit". Two green arrows point from the text on the right to the first and fourth input fields.

Power Supply Voltage:

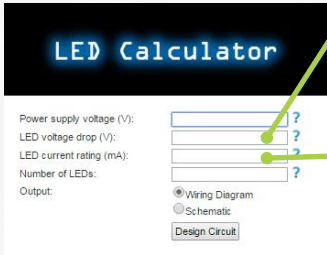
Voltage of your battery

Number of LEDs:

How many LEDs you want

BUILDING YOUR CIRCUIT

What you'll need to know:



The image shows a screenshot of an "LED Calculator" web application. The title "LED Calculator" is displayed in a glowing blue font on a black background. Below the title, there are four input fields for the following parameters: "Power supply voltage (V):", "LED voltage drop (V):", "LED current rating (mA):", and "Number of LEDs:". Each input field has a blue question mark icon to its right. A green line points from the "LED Voltage Drop (V)" text to the second input field, and another green line points from the "LED Current Rating (mA)" text to the third input field. Below the input fields, there are two radio buttons: "Wiring Diagram" (which is selected) and "Schematic". At the bottom of the form is a button labeled "Design Circuit".

LED Voltage Drop (V):

Amount of power needed for LED to light up (volts)

LED Current Rating (mA):

Amount of current needed to LED to light up (milliamps)

BUILDING YOUR CIRCUIT

LED COLOR

V

mA

White	3.0-3.5	20mA
Red	1.8-2.1	20mA
Yellow	2.4	20mA
Green	2.6	20mA
Blue	3.0-3.5	20mA

BUILDING YOUR CIRCUIT

Samples:

Power supply voltage (V): ?

LED voltage drop (V): ?

LED current rating (mA): ?

Number of LEDs: ?

Output:

☒ Wiring Diagram

☐ Schematic



Power supply voltage (V): ?

LED voltage drop (V): ?

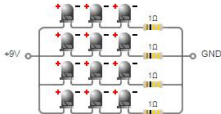
LED current rating (mA): ?

Number of LEDs: ?

Output:

☒ Wiring Diagram

☐ Schematic



BUILDING YOUR CIRCUIT

SOLDERING:



... it's like hot glue, but metal

BUILDING YOUR CIRCUIT

PLAN AHEAD!

Where will your lights go?
... your switch?
... your battery pack?

**Make wires in between
each of these long
enough to reach!!**



BUILDING YOUR CIRCUIT

SHORTS = SUFFERING

If the positive and negative lines touch at any point in your circuit, nothing will light up!!

(#starry)

APPLICATIONS & EXAMPLES

APPLICATIONS & EXAMPLES

GEM LIGHTS



APPLICATIONS & EXAMPLES

GEM LIGHTS



APPLICATIONS & EXAMPLES

PLASTIC SHEETS (or folders!)



APPLICATIONS & EXAMPLES

CLEAR ORNAMENTS



APPLICATIONS & EXAMPLES

CLEAR ORNAMENTS



APPLICATIONS & EXAMPLES

CABOCHONS (drilled)



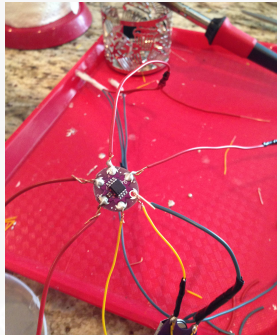
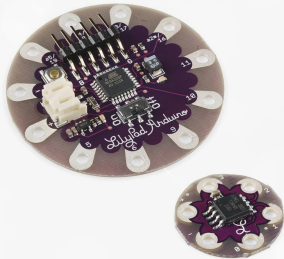
APPLICATIONS & EXAMPLES

FABRIC & FLOWERS



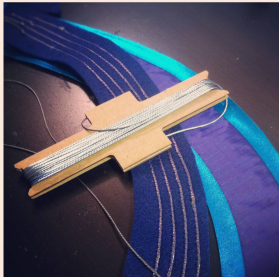
APPLICATIONS & EXAMPLES

LILYPAD (Arduino)



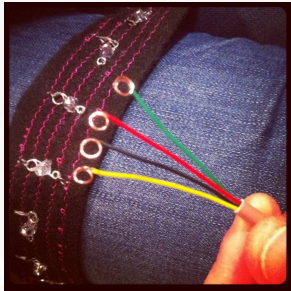
APPLICATIONS & EXAMPLES

CONDUCTIVE THREAD



APPLICATIONS & EXAMPLES

CONDUCTIVE THREAD



Open Q&A

Come on up and
check out the
samples!

sparklepipsi.com/electronics101