

Arduino NG

Ground pin

Digital pins (2-13)

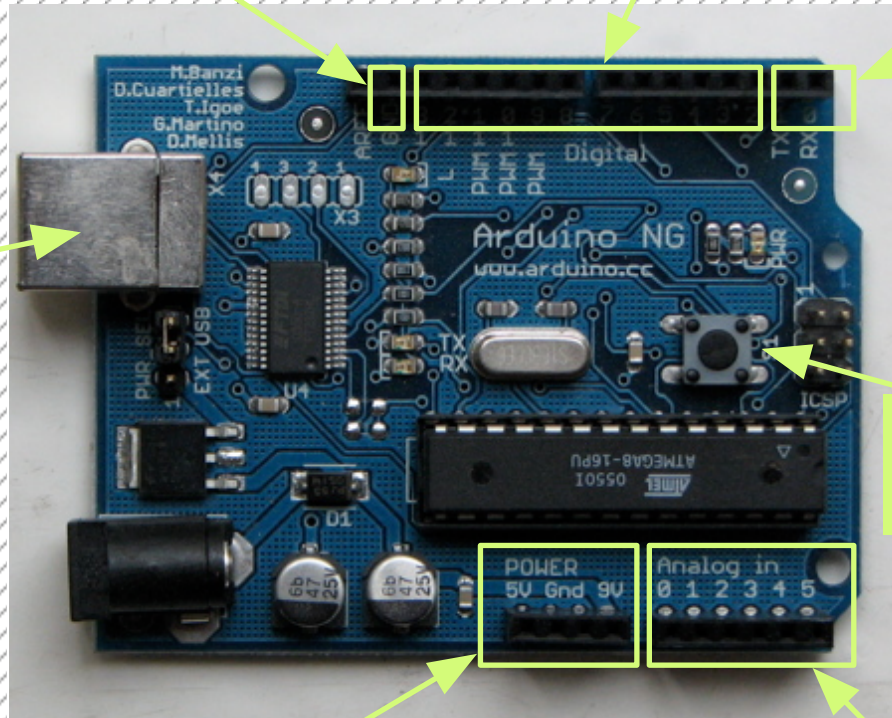
Digital pins (0-1)
shared with USB

Plug a USB cable
(5V is also supplied)

Reset button (click when
you upload program)

5V output, Ground and 9V output pins
(9V output is not in use)

Pins for analog in pins (0 - 5). These
can used as digital pins (14 - 19)



USB cable

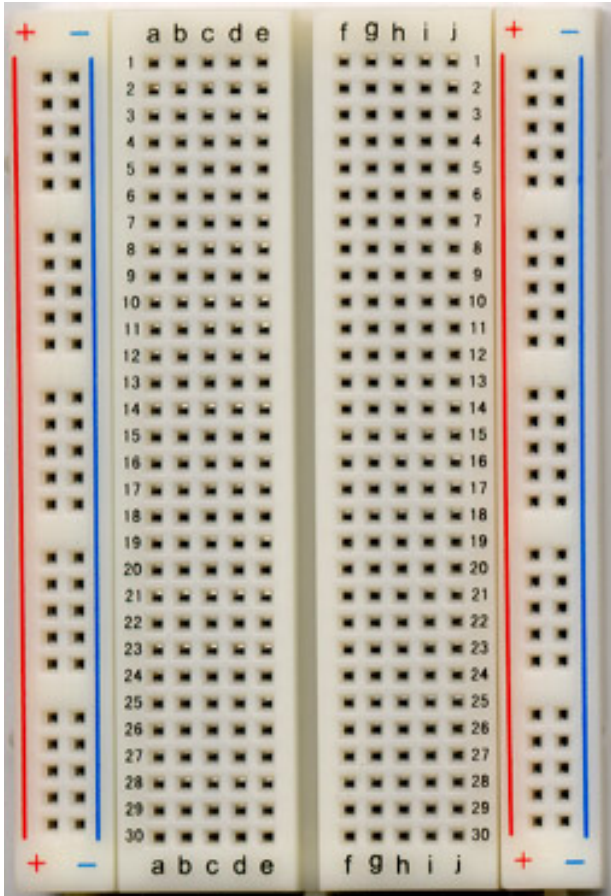


USB A-B cable

Breadboard

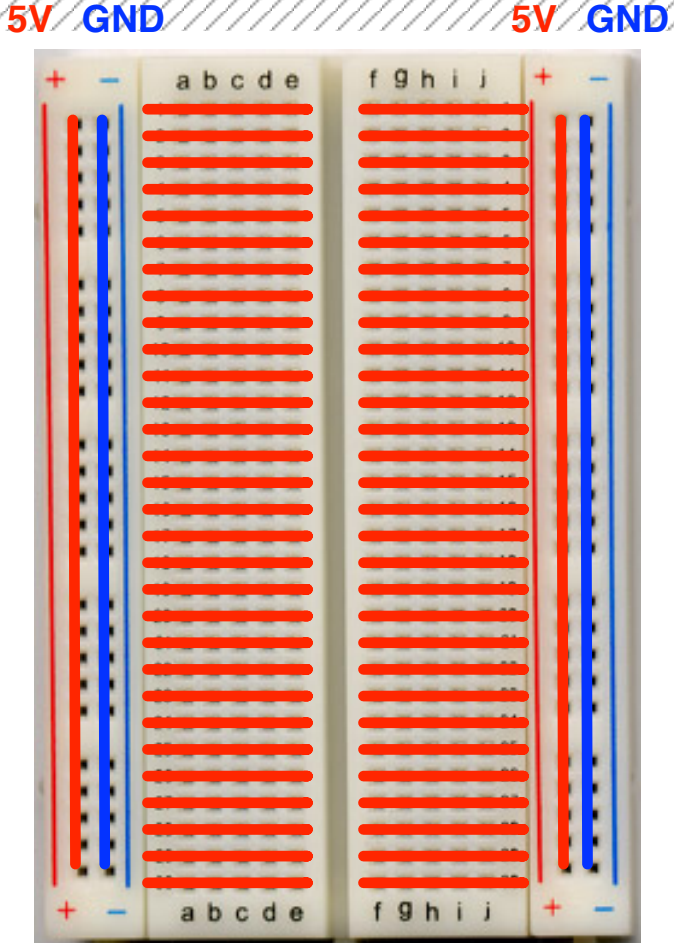


Breadboard (photo)



Video and Website © 2004 ClarkZapper.net

Breadboard (schematic)



Video and Website © 2004 ClarkZapper.net

Jumper wires

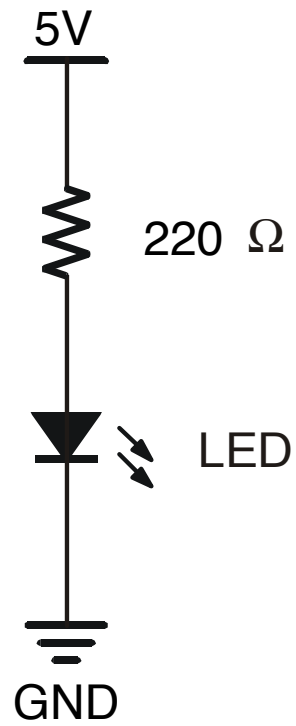


Multimeter

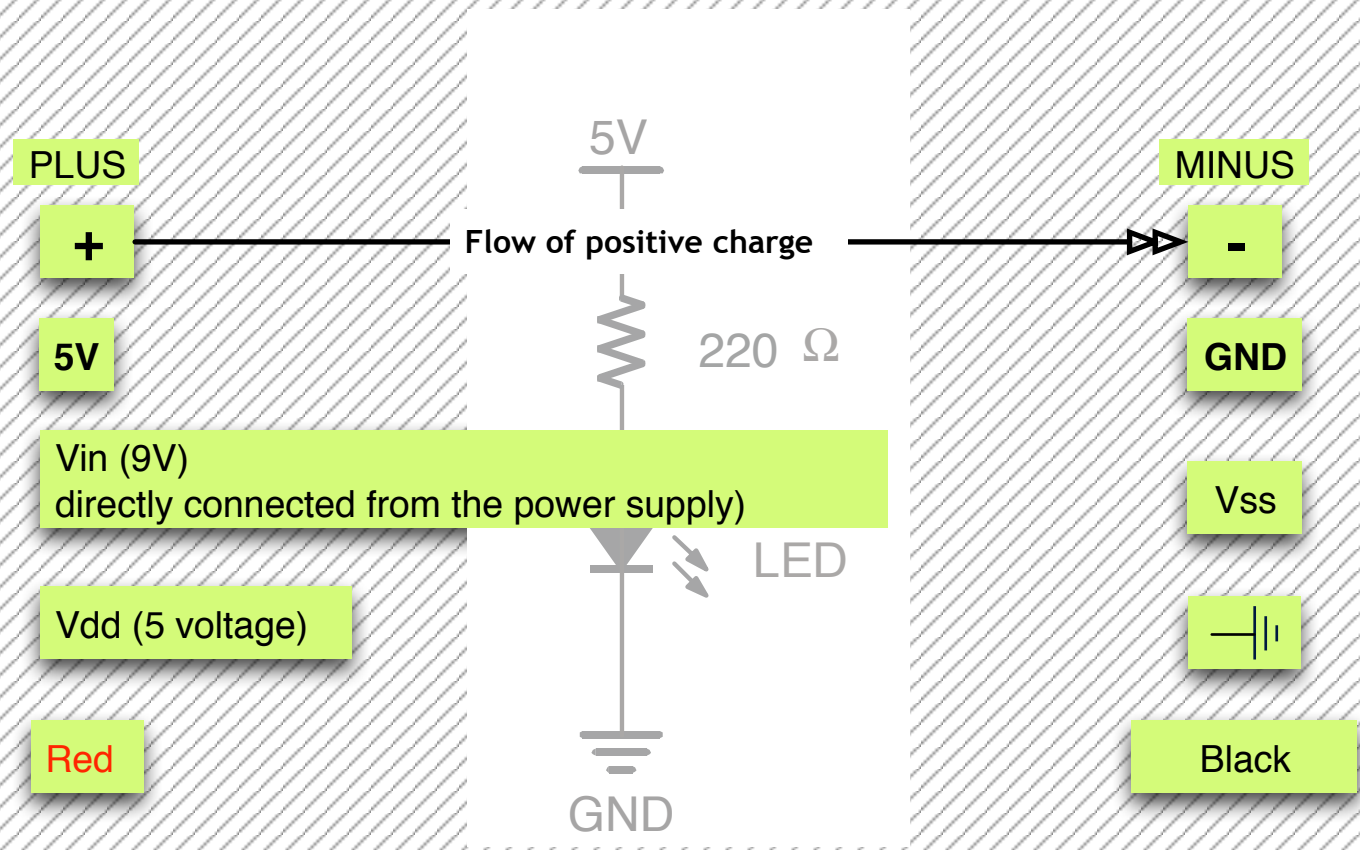


Understanding schematics

What does this mean?

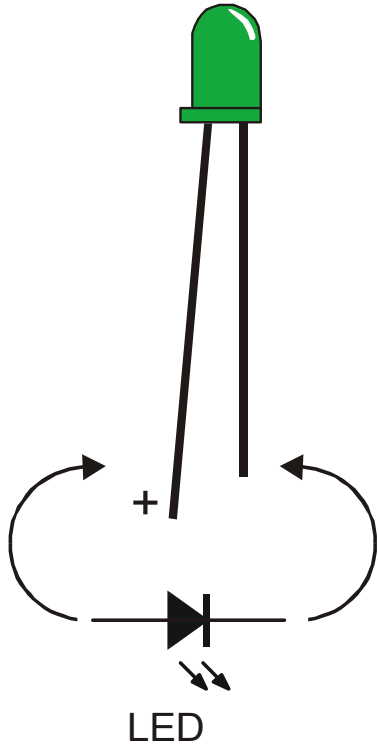


Flow of positive charge



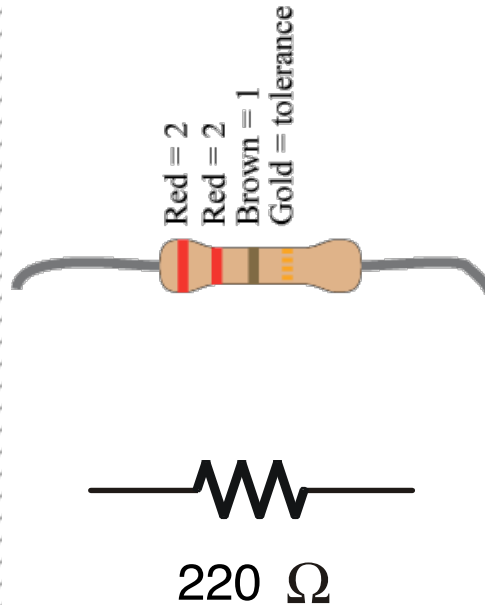
Most Popular components

LED (Light emitting diode)



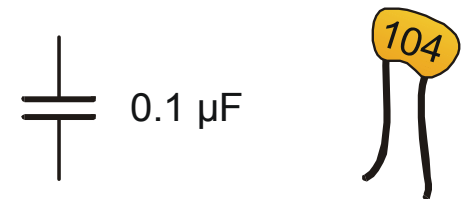
a semiconductor device with two terminals, typically allowing the flow of current in one direction only. LED has polarity

Resistor



a device having a designed resistance to the passage of an electric current.

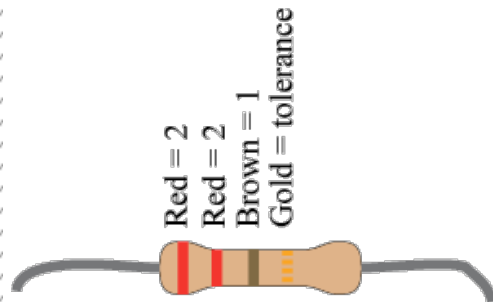
Capacitor



a device used to store an electric charge

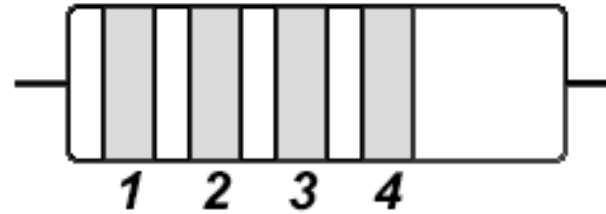
Markings for resistors

Resistor



220 Ω

a device having a designed resistance to the passage of an electric current.



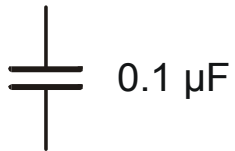
1, 2 3 4

Color	Number	Multiplier	Tolerance
Black	0	1	-
Brown	1	10	$\pm 1\%$
Red	2	10^2	$\pm 2\%$
Orange	3	10^3	$\pm 0.05\%$
Yellow	4	10^4	-
Green	5	10^5	$\pm 0.5\%$
Blue	6	10^6	$\pm 0.25\%$
Purple	7	10^7	$\pm 0.1\%$
Gray	8	10^8	-
White	9	10^9	-
Shiver	-	10^{-2}	$\pm 10\%$
Gold	-	10^{-1}	$\pm 5\%$
No color	-	-	$\pm 20\%$

Download a widget called "Resistulator" in your Mac

Markings for capacitors

Capacitor



Capacitor three digit markings

CODE / Marking	μF microfarads	nF nanofarads	pF picofarads
1R0	0.000001	0.001	1
100	0.00001	0.01	10
101	0.0001	0.1	100
102	0.001	1	1,000
103	0.01	10	10,000
104	0.1	100	100,000
105	1	1,000	1,000,000
106	10	10,000	10,000,000
107	100	100,000	100,000,000

a device used to store an electric charge

Assemble electronics

+

-

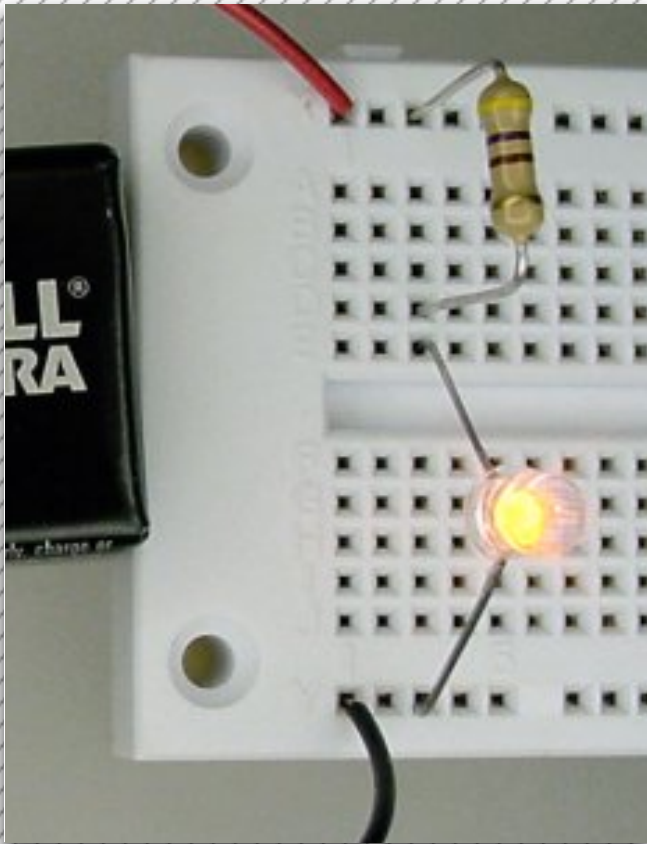
Vdd

GND

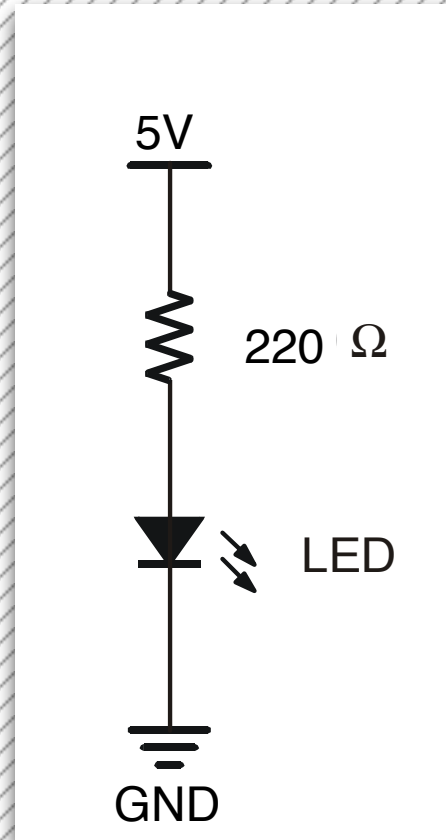
5V

Vss

Breadboard (photo)

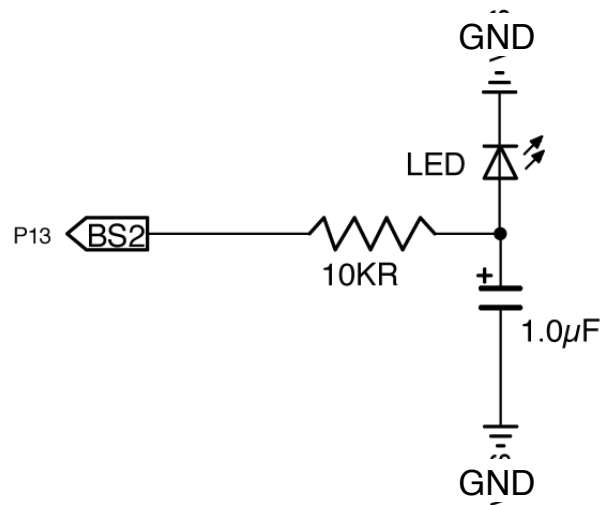
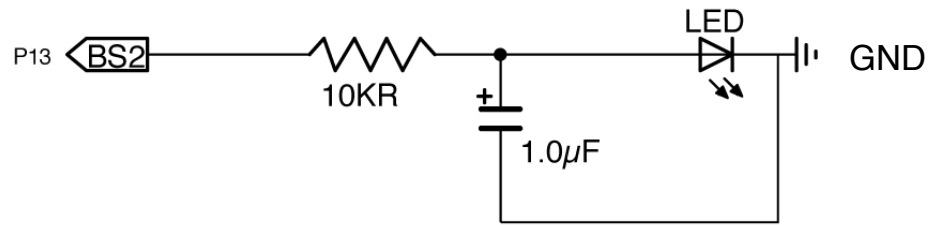
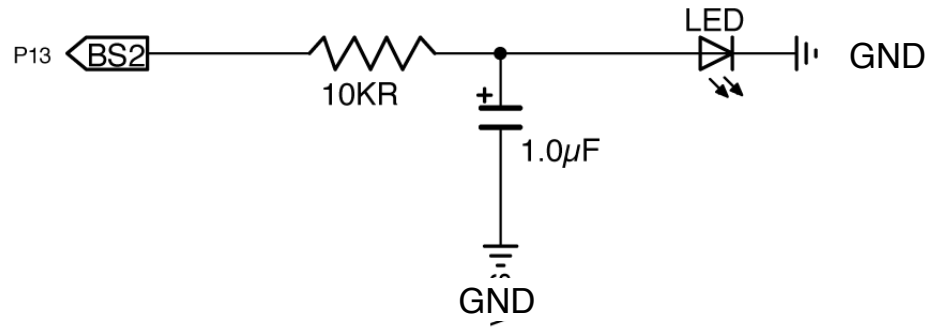


Breadboard (schematic)



Schematic plans

These are all same schematics.

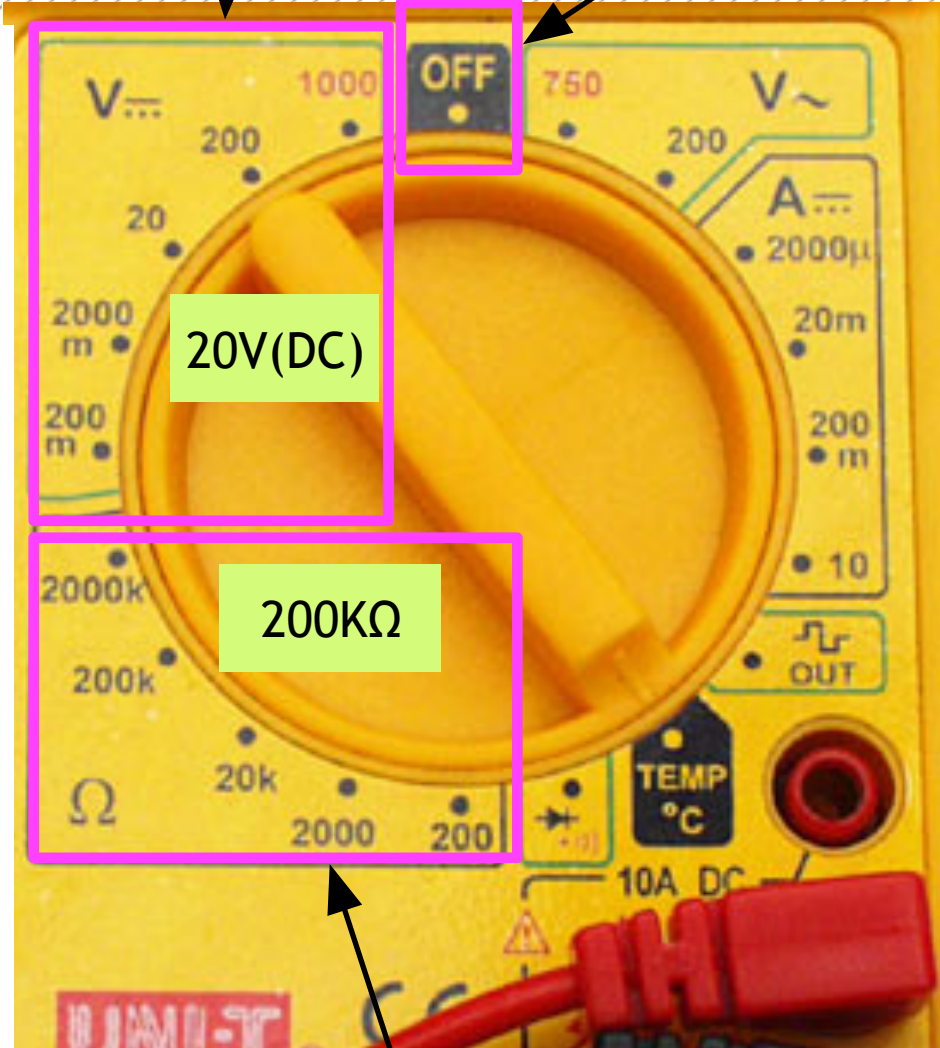


Checking your circuit

Multimeter

Measuring voltages

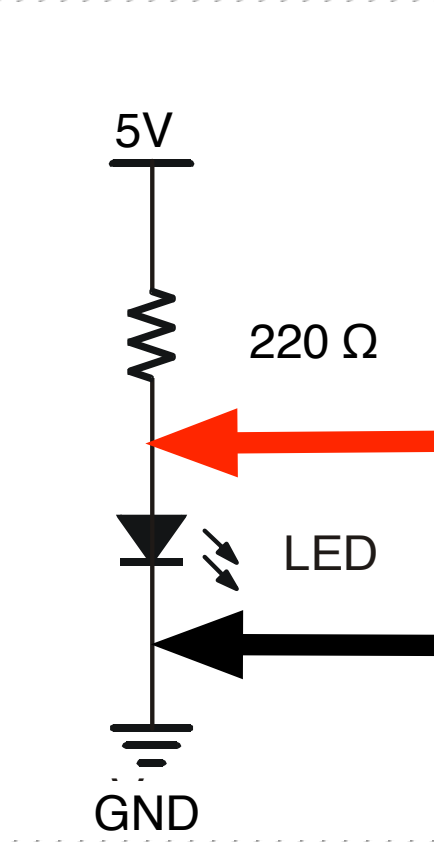
Off switch



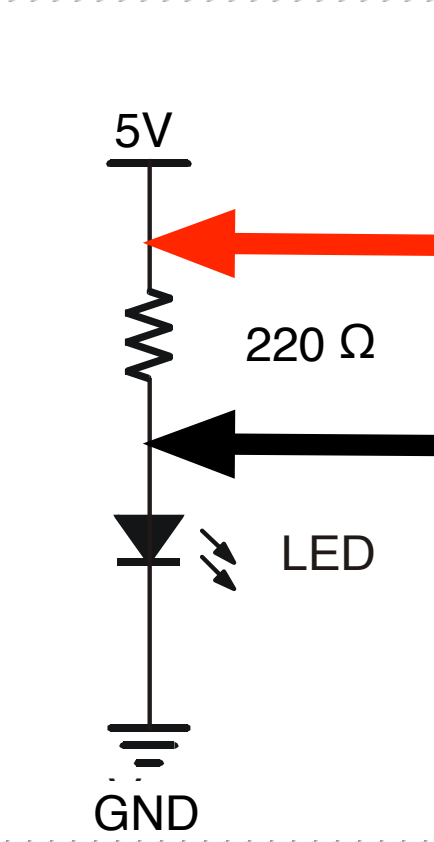
Measuring conductivity and resistance

Measuring electricity with multimeter

Voltage

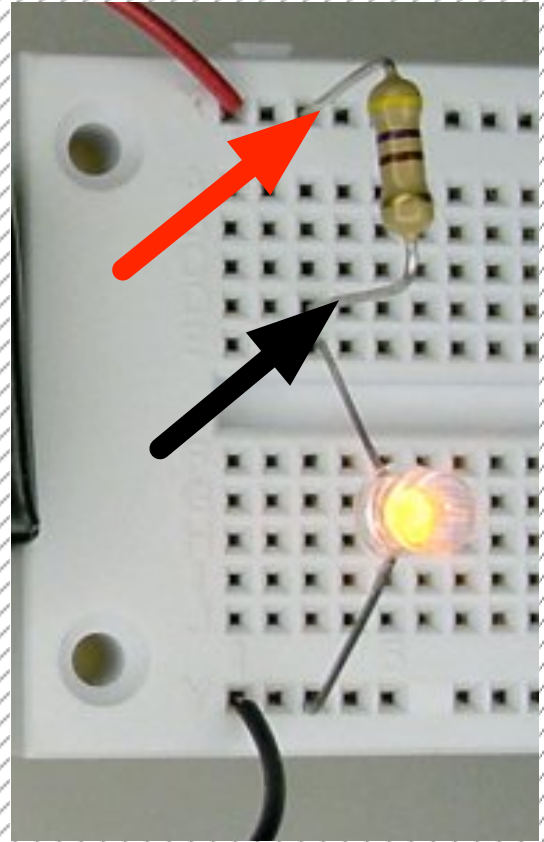


Resistance



Turn off power.

Conductivity



Turn off power.