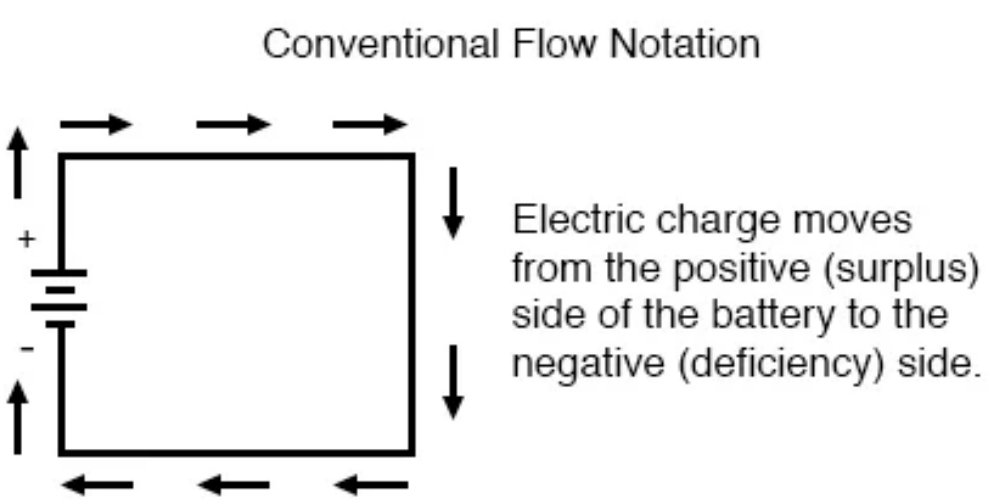
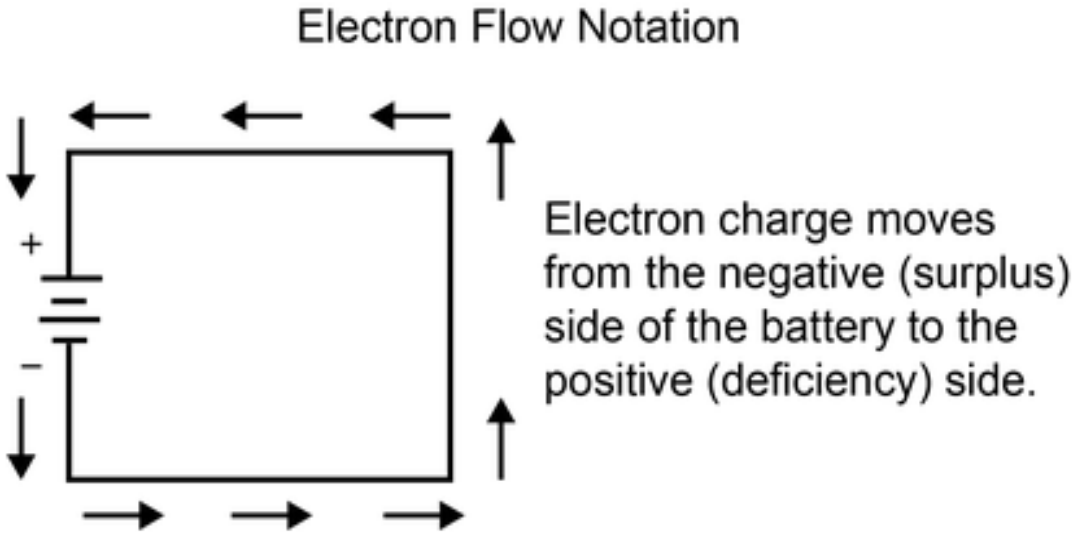
Intro to Electronics



How it's notated



How it actually is

Electrons

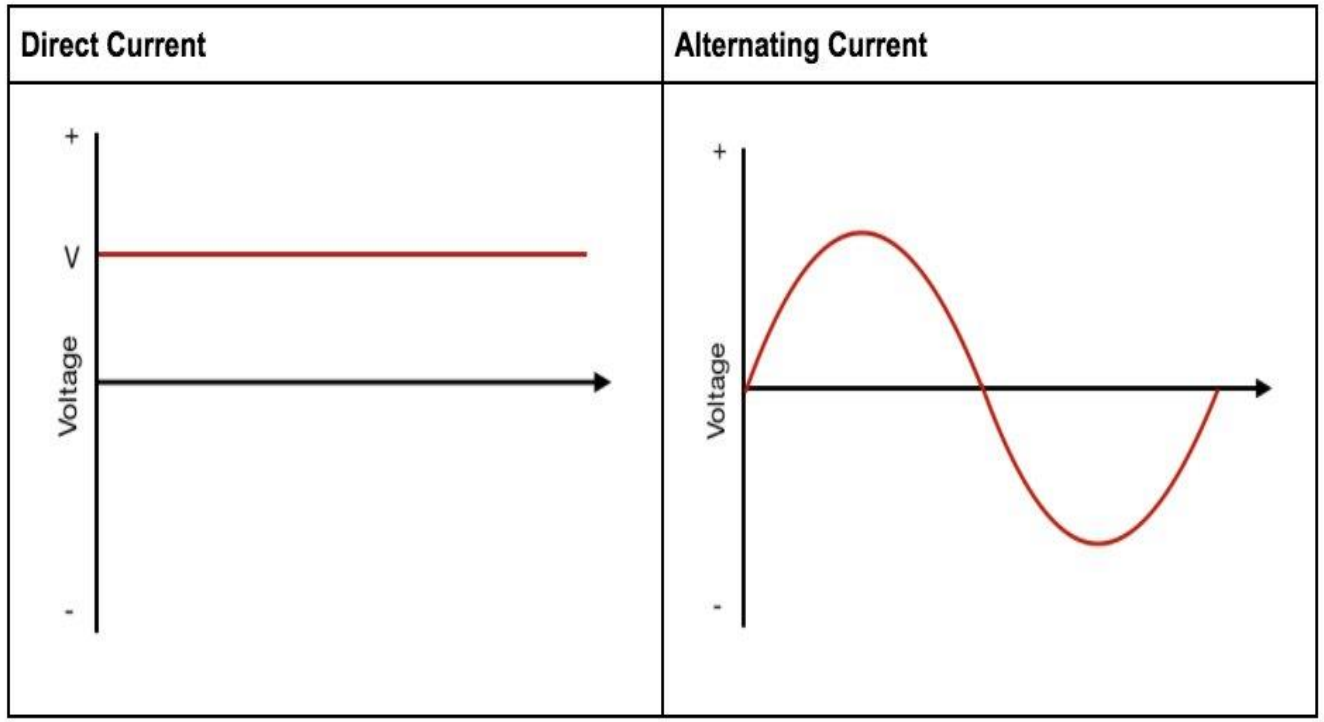
https://www.allaboutcircuits.com/textbook/direct-current/chpt-1/conventional-versus-electron-flow/

AC / DC

Direct current for lower voltages and running circuit boards

Alternating for higher power: appliances, tube amps, etc.

Some circuits use a rectifier circuit to change AC to DC



Ohm's Law

V = I*R

voltage = current * resistance

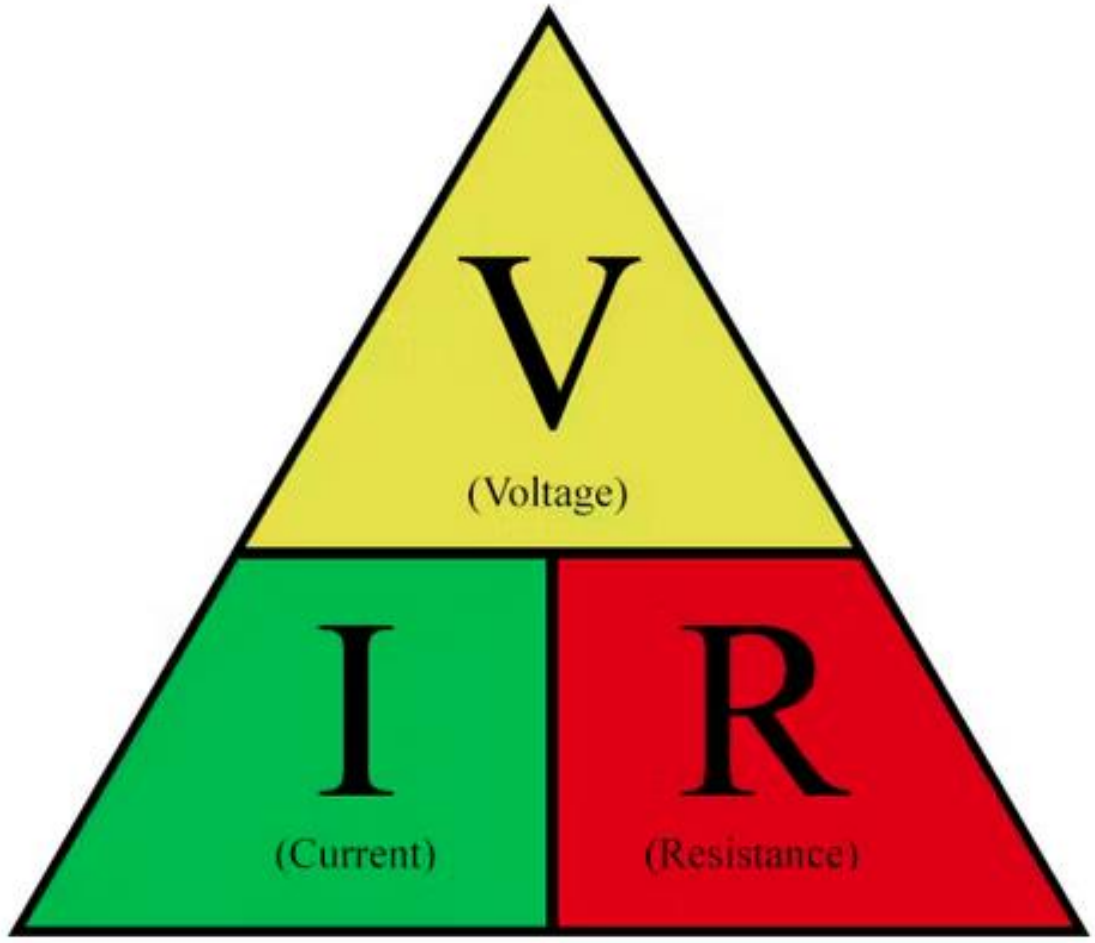
voltage = volts

current = amperes (amps)

resistance = ohms

Voltage is the pressure from an electrical circuit's power source that pushes charged electrons (current) through a conducting loop

https://www.fluke.com/en-us/learn/blog/electrical/what-is-voltage



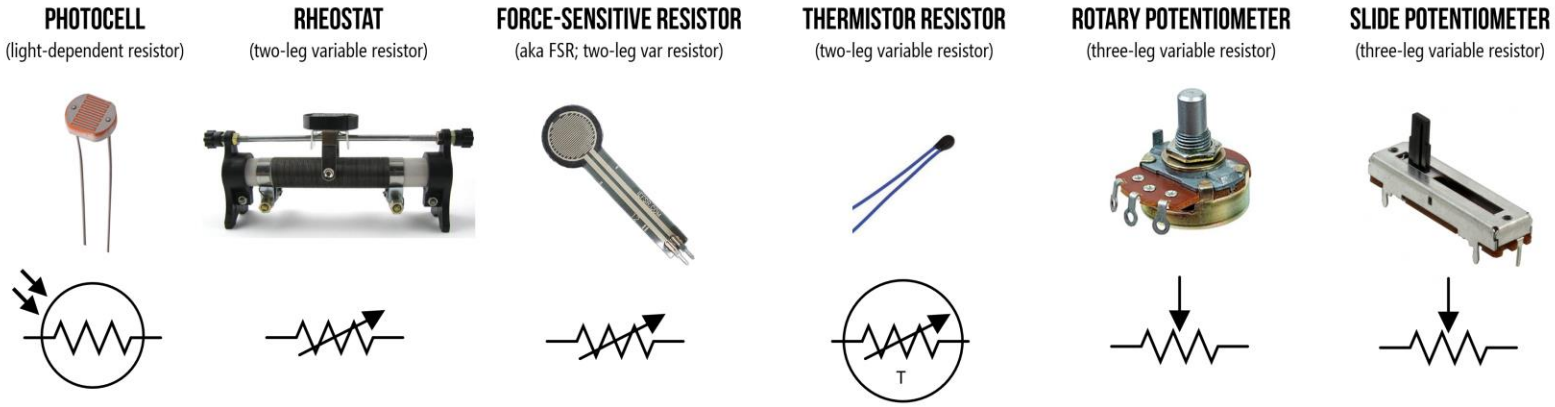
Conductors & Insulators

Resistor

Diode

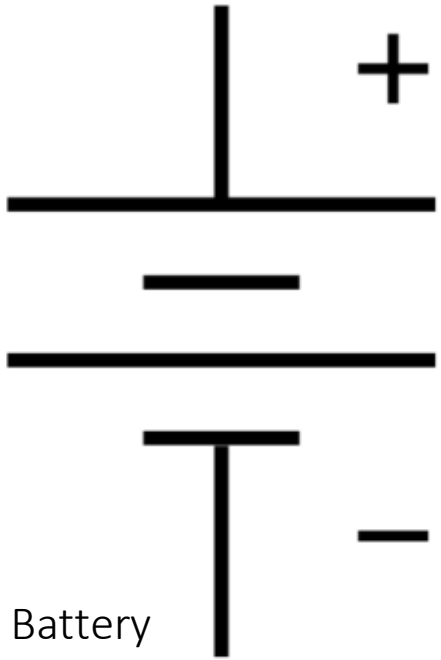
Capacitors

Light Emitting Diode (LED)



Some Electronics Parts

(… are polarized, some are not)



Battery

Resistor (2 symbols)

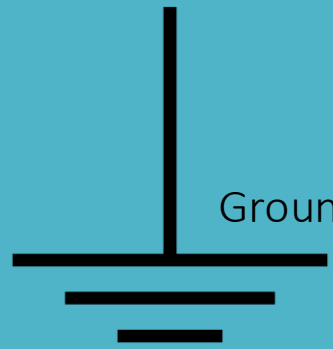
diode

light emitting diode

Non-polarized Capacitor

Polarized Capacitor

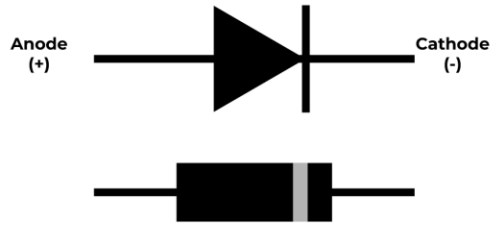
Some Schematic Symbols

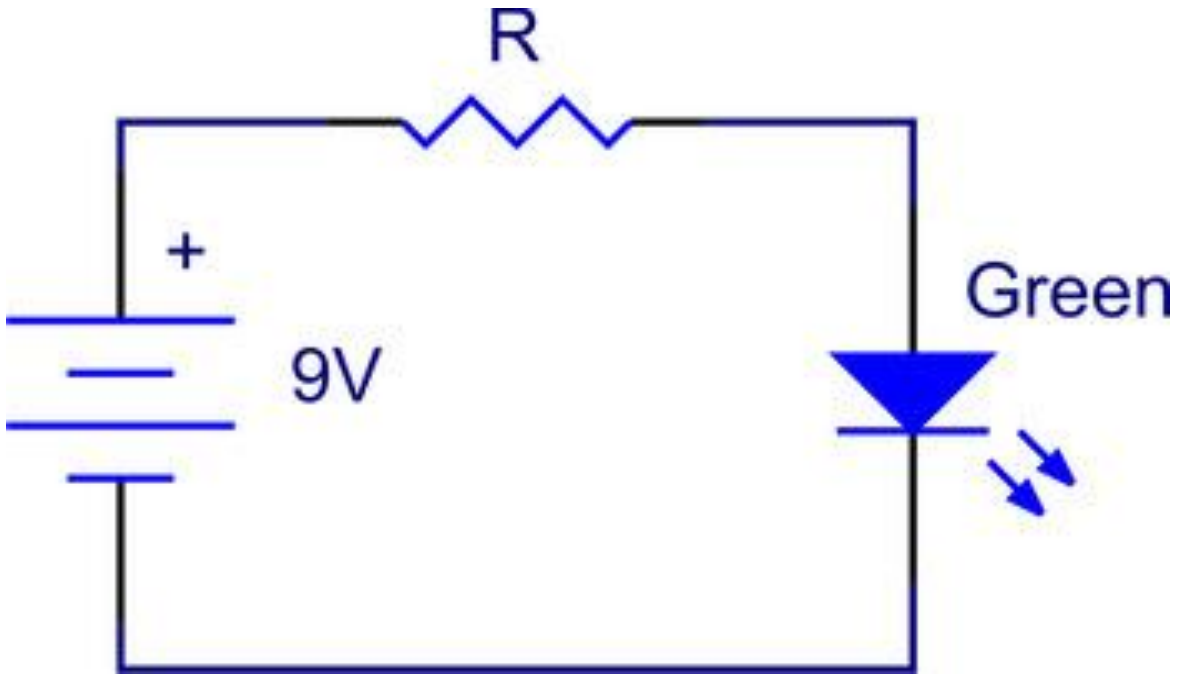


Ground

Schematics, In General

Hint:





Tells you what is connected to what

But how to lay out the circuit on your breadboard is up to you

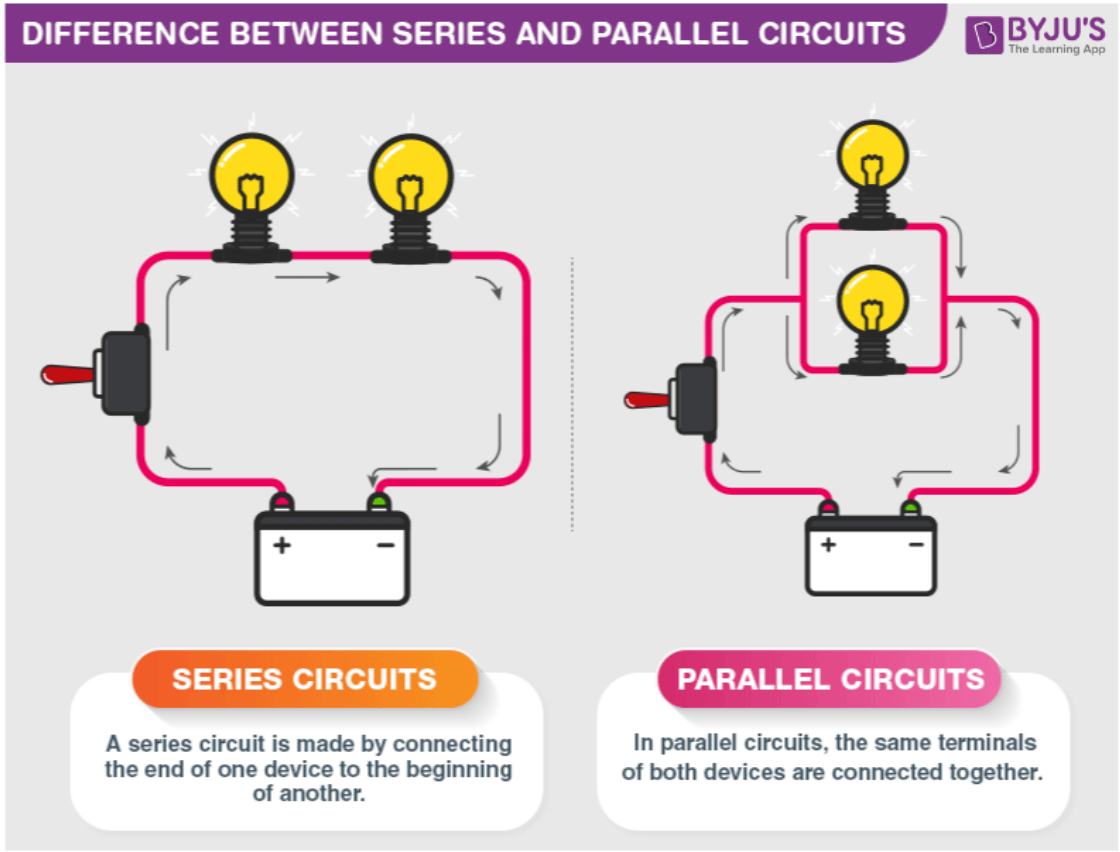
Series and Parallel

Resistors: Series sums

Capacitors: Parallel sums

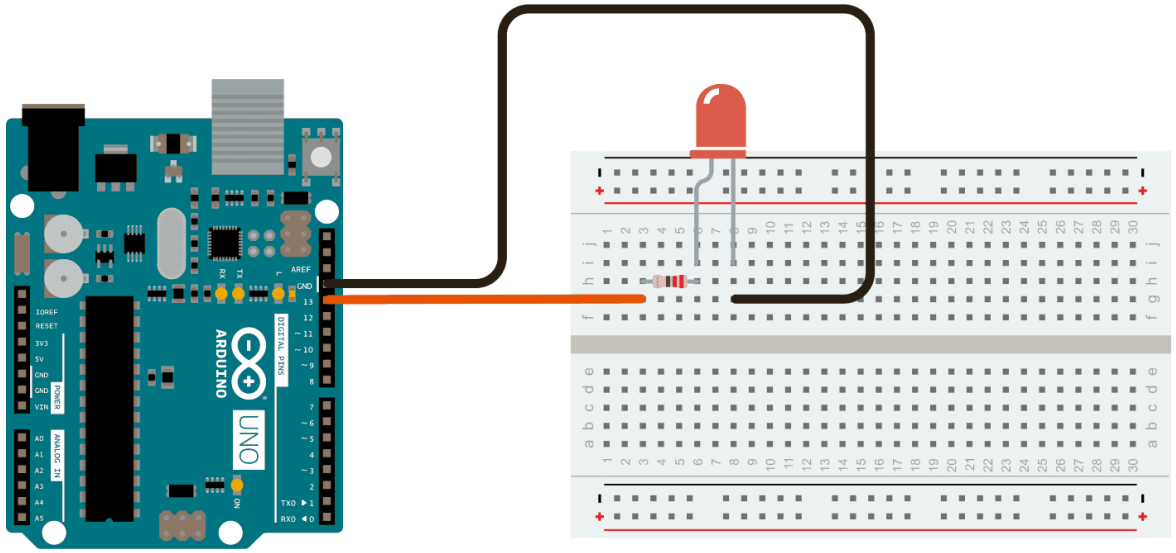
Otherwise, it's:

https://learn.sparkfun.com/tutorials/capacitors/capacitors-in-seriesparallel

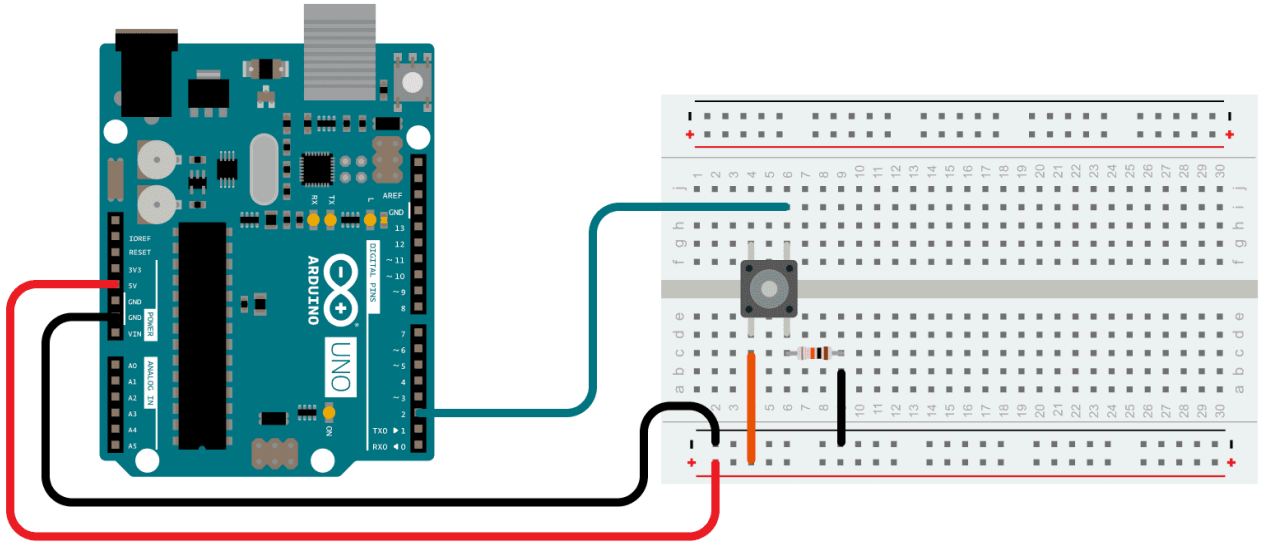


Arduino : Digital I/O

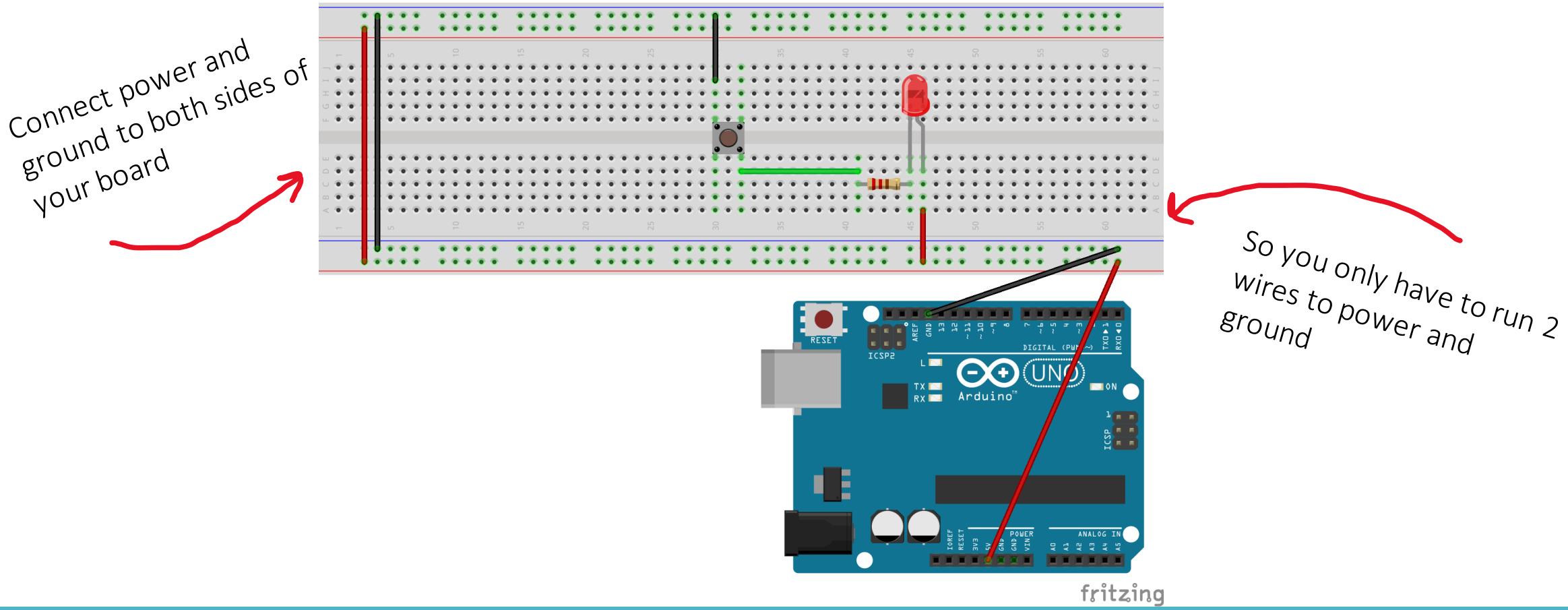
Buttons and on/off signals



Arduino LED Wiring



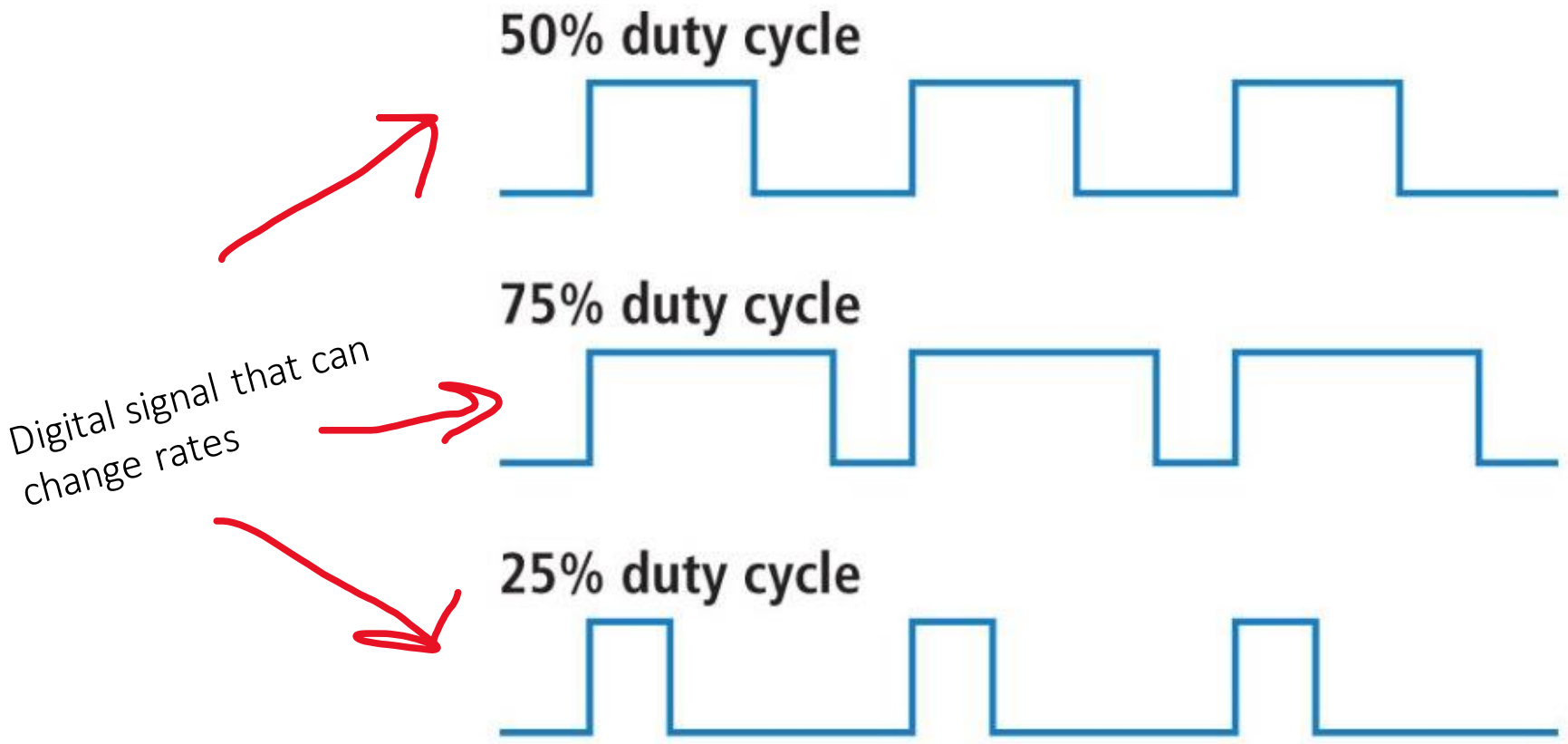
Arduino Button Wiring



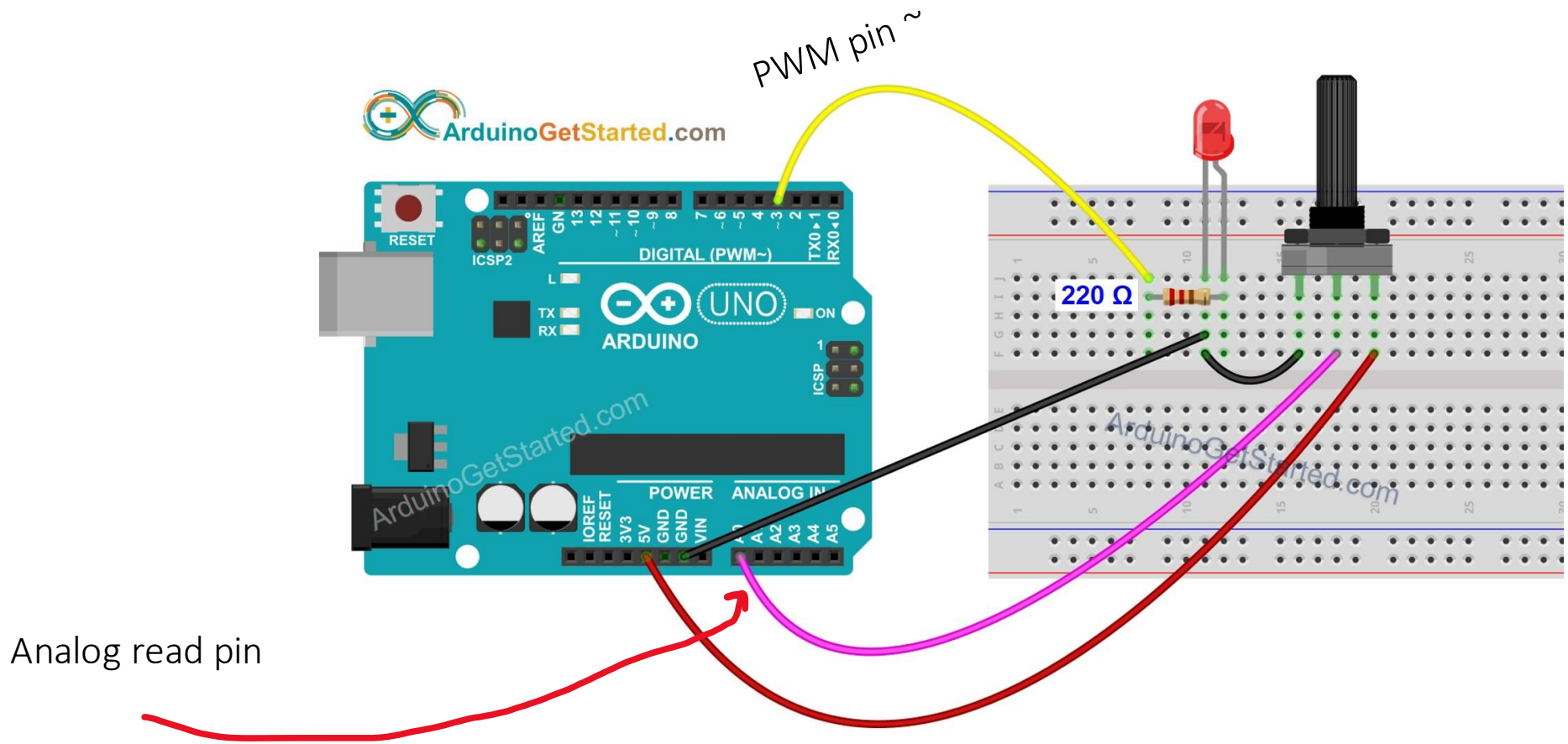
Arduino Button & LED Wiring

Analog I/O and PWM

Serial read and mapping

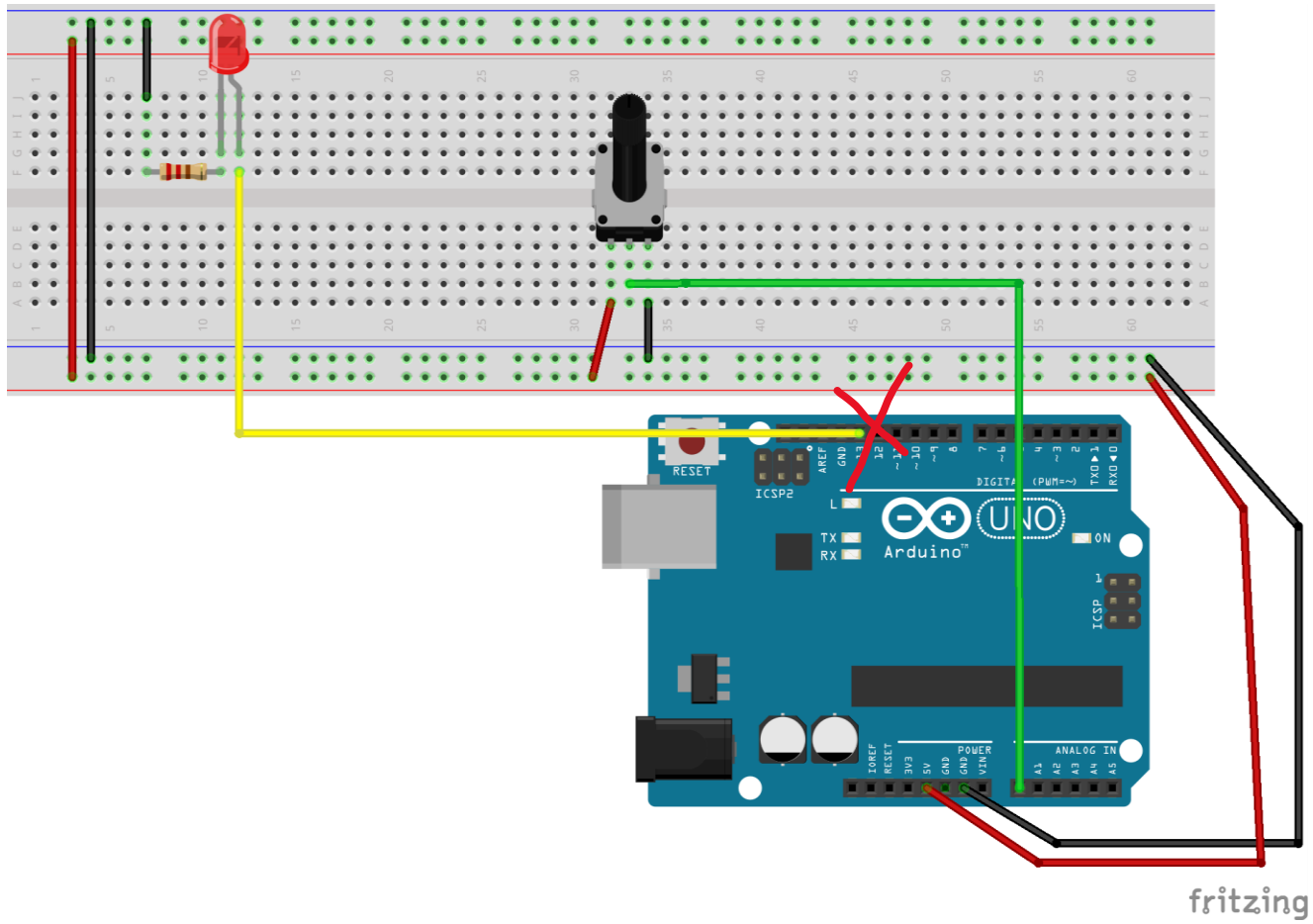


Pulse Width Modulation

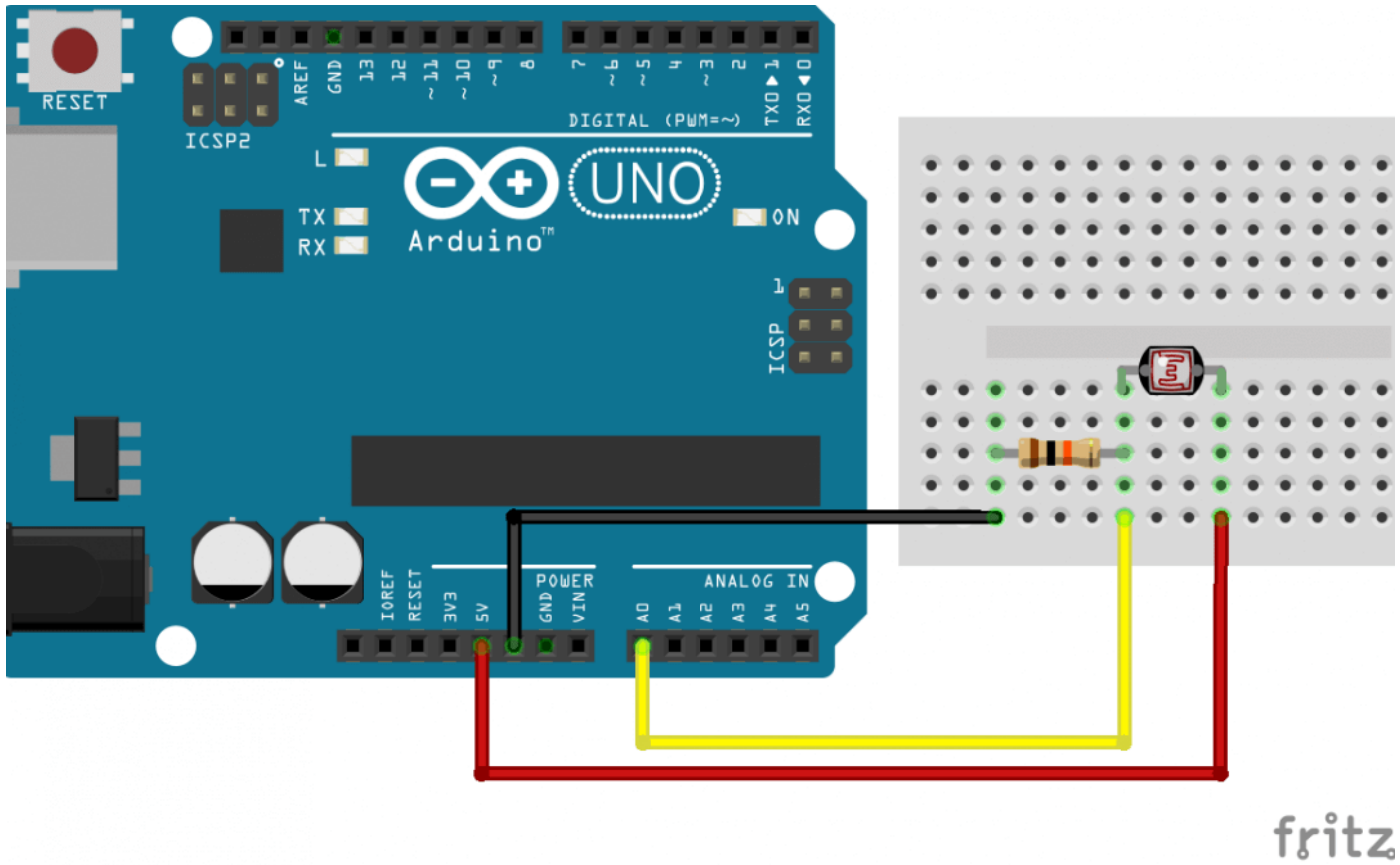


LED (PWM) and Knob (Analog)

Best practice to connect grounds to ground rail instead of to each other



Better Wiring, Pin 13 not PWM



Create 3 pins to read middle pin

Light-dependent Resistor (Analog)