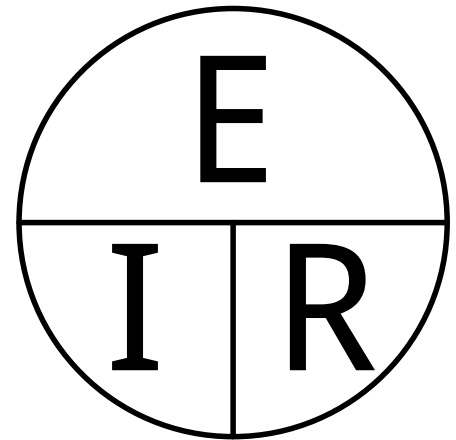
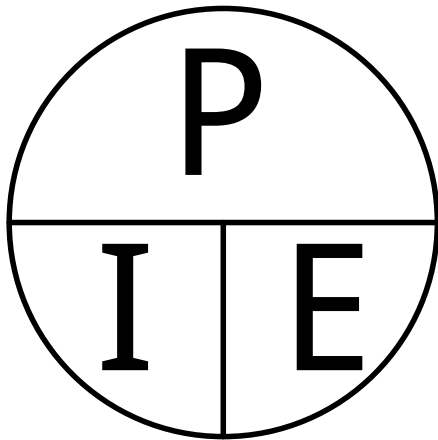


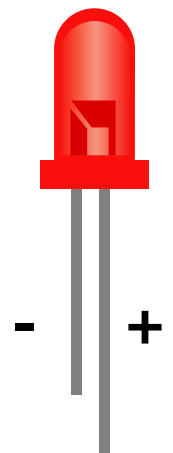
Concept	Unit	Unit Abbrev.	Formula
Voltage (EMF)	Volts	V	E
Current	Amperes	A	I
Resistance	Ohms	Ω	R
Power	Watts	W	P



LED Colors

Color	Wavelength Range (nm)	Forward Voltage (Vf)	Resistor
Ultraviolet	< 400	3.1 - 4.4	
Violet	400 - 450	2.8 - 4.0	
Blue	450 - 500	2.5 - 3.7	
Green	500 - 570	1.9 - 4.0	
Yellow	570 - 590	2.1 - 2.2	
Orange / Amber	590 - 610	2.0 - 2.1	
Red	610 - 760	1.6 - 2.0	
Infrared	> 760	> 1.9	

$$R = \frac{V_{\text{src}} - V_f}{I_{\text{LED}}}$$

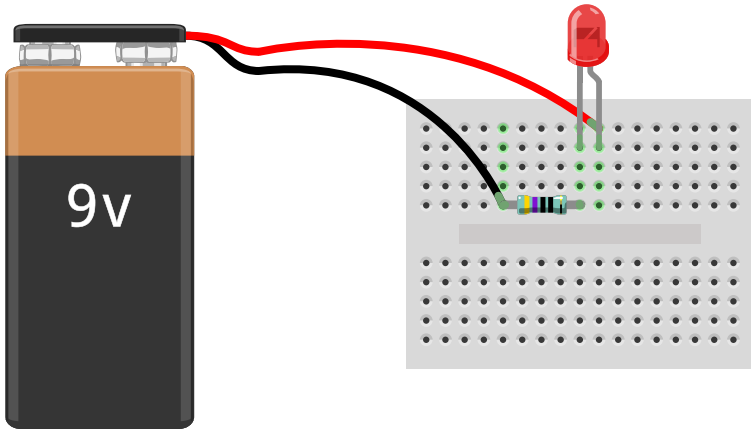


SI Unit Prefixes

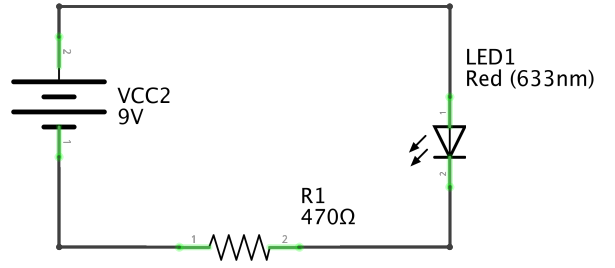
Prefix		Symbol	Base 10	Decimal	English
tera	The	T	10^{12}	1,000,000,000,000	trillion
giga	Great	G	10^9	1,000,000,000	billion
mega	Merciful	M	10^6	1,000,000	million
kilo	King	K	10^3	1,000	thousand
hecto	Hates	h	10^2	100	hundred
deca	Dogs	da	10^1	10	ten
<unit>	Because		10^0	1	one
deci	Dogs	D	10^{-1}	0.1	tenth
centi	Constantly	c	10^{-2}	0.01	hundredth
milli	Make	m	10^{-3}	0.001	thousandth
micro	Messes	μ	10^{-6}	0.000 001	millionth
nano		n	10^{-9}	0.000 000 001	billionth
pico		p	10^{-12}	0.000 000 000 001	trillionth

Decibels

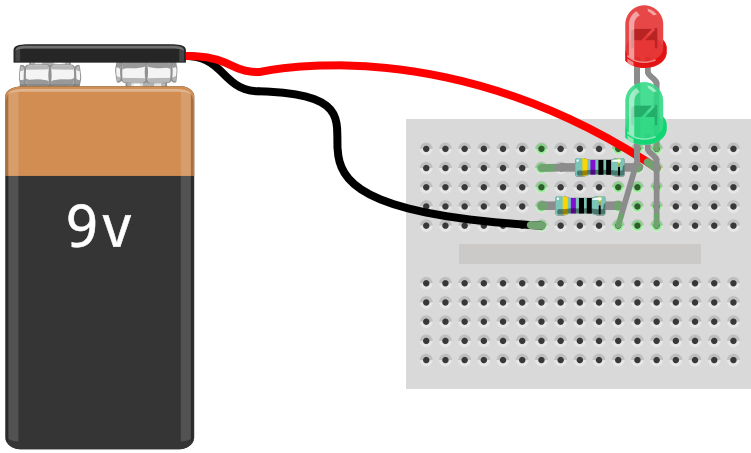
db	power ratio
100	10,000,000,000
90	1,000,000,000
80	100,000,000
70	10,000,000
60	1,000,000
50	100,000
40	10,000
30	1,000
20	100
10	10
6	3.981
3	1.995
1	1.259
0	1
-1	0.794
-3	0.501
-6	0.251
-10	0.1
-20	0.01
-30	0.001
-40	0.000 1
-50	0.000 01
-60	0.000 001
-70	0.000 000 1



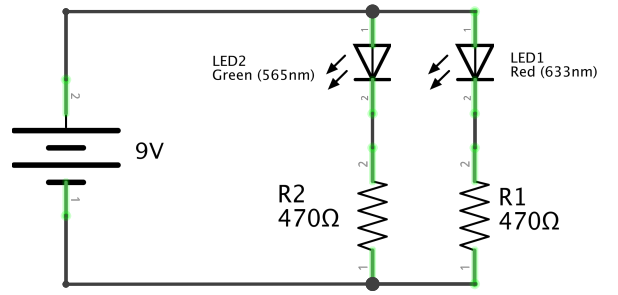
fritzing



fritzing



fritzing



fritzing