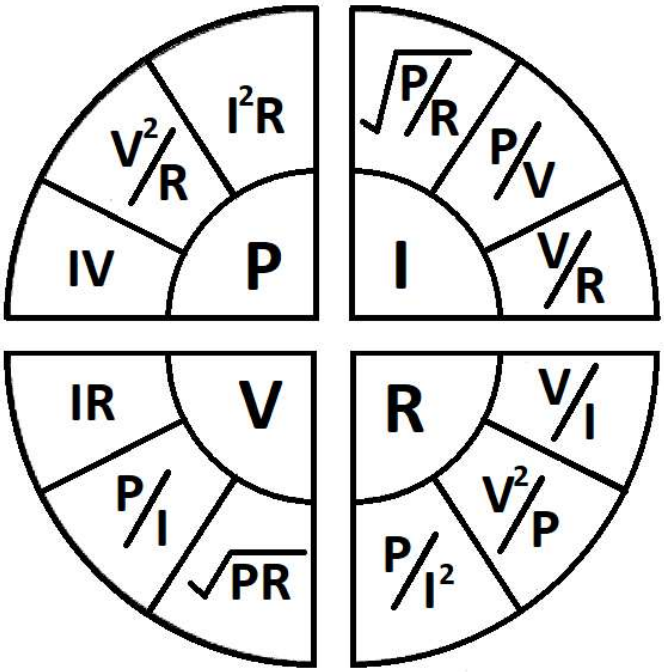


"IS": Current is constant in Series.
"VP": Voltage is constant in Parallel.

Kirchhoff's Voltage Law: $\Sigma V = V_T$
or: $V_T = V_1 + V_2 + V_3 + \ldots + \text{etc.}$

Kirchhoff's Current Law: $I_{IN} = I_{OUT}$
or: $I_T = I_1 + I_2 + I_3 + \ldots + \text{etc.}$

Series: $R_T = R_1 + R_2 + R_3 + \ldots + \text{etc.}$

Parallel: $R_T = \dfrac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \text{etc.}}$

If only two branches: $R_{EQ} = \dfrac{R_1 \times R_2}{R_1 + R_2}$

For missing R_x: $R_x = \dfrac{1}{\frac{1}{R_{EQ}} - \frac{1}{R_1} - \frac{1}{R_2} - \frac{1}{R_3} - \text{etc.}}$

A Short has 0 Resistance and ∞ Current
An Open has ∞ Resistance and 0 Current

Series Voltage Divider: $V_1 = \dfrac{R_1 V_T}{R_T}$

Parallel Current Divider: $I_1 = \dfrac{R_2 I_T}{R_1 + R_2}$ or $\dfrac{G_1 I_T}{G_T}$

Quantity	**Unit**
Voltage (V or E)	Volt (V)
Current (I)	Ampere (A)
Resistance (R)	Ohm (Ω)
Power (P)	Watt (W)
Frequency (f)	Hertz (Hz)
Capacitance (C)	Farad (F)
Inductance (L)	Henry (H)
Charge (Q)	Coulomb (C)
Energy (ε)	Joule (J)
Work (W)	Joule (J)
Conductance (G)	Siemen (S)

Size	Prefix	Abbr.
10^{12}	Tera	T
10^{9}	Giga	G
10^{6}	Mega	M
10^{3}	Kilo	k
10^{-3}	Milli	m
10^{-6}	Micro	μ
10^{-9}	Nano	n
10^{-12}	Pico	p

1 V = 1 J / 1 C
1 A = 1 C / 1 sec
1 W = 1 J / 1 sec
Q = C x V
G = 1 / R
1 J = 0.7376 ft lbs
1 C = 6.25 x 10^{18} electrons
1 electron = 0.16 x 10^{-18} C

Resistors:

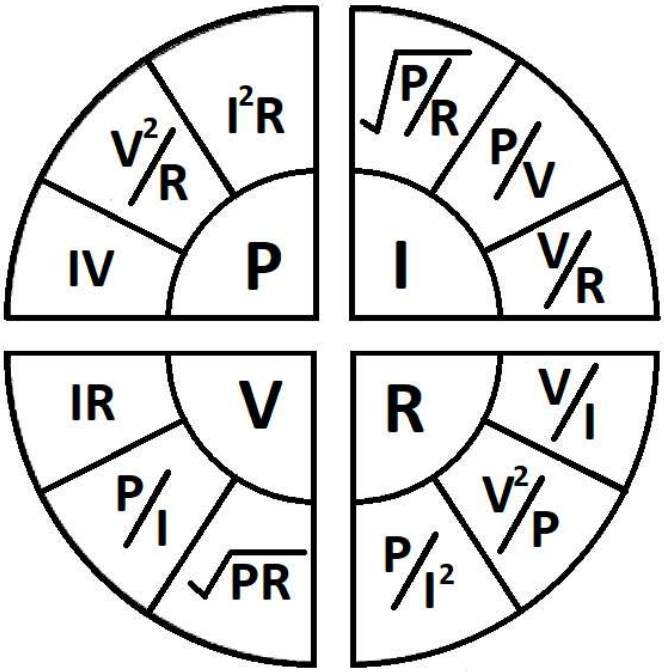
0	Black
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Grey
9	White

Multiplier:

x0.1	Gold
x0.01	Silver

Tolerance:

±5%	Gold
±10%	Silver



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Current (I)	Ampere (A)
Resistance (R)	Ohm (Ω)
Power (P)	Watt (W)
Frequency (f)	Hertz (Hz)
Capacitance (C)	Farad (F)
Inductance (L)	Henry (H)
Charge (Q)	Coulomb (C)
Energy (ε)	Joule (J)
Work (W)	Joule (J)
Conductance (G)	Siemen (S)
Magnetic Flux (ϕ)	Maxwell (Mx)
Magnetic Flux (ϕ)	Weber (Wb)
Flux Density (B)	Gauss (G)
Flux Density (B)	Tesla (T)
Permeability (μ_r)	no unit
Dielectric Constant (K_ε)	no unit

Size	Prefix	Abbr.
10^{12}	Tera	T
10^{9}	Giga	G
10^{6}	Mega	M
10^{3}	Kilo	k
10^{-3}	Milli	m
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1 W = 1 J / 1 sec
Q = C x V
G = 1 / R
1 J = 0.7376 ft lbs
1 C = 6.25×10^{18} electrons
1 electron = 0.16×10^{-18} C
1 Wb = 1×10^{8} Mx
1 G = 1 Mx / cm^2
1 G = 1 Wb / m^2
B = ϕ / area

Resistors:

0	Black
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Grey
9	White

Multiplier:

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