Quantity	Unit	Equation	
Current (I)	Ampere (A)	$I = \frac{q}{t}$	$I = \sqrt{\frac{P}{R}}$
		$I = \frac{\Delta V}{R}$	$I = \frac{P}{\Delta V}$
		$I = \sqrt{\frac{E}{Rt}}$	
Charge (q)	Coulomb (C)	$q = It$	$q = \frac{E}{\Delta V}$
Time (t)	Seconds (s)	$t = \frac{q}{I}$	$t = \frac{E}{P}$
		$t = \frac{E}{I^2 R}$	$t = \frac{ER}{\Delta V^2}$
Resistance (R)	Ohm (Ω)	$R = \frac{\Delta V}{I}$	$R = \frac{P}{I^2}$
		$R = \frac{\Delta V^2}{P}$	$R = \frac{E}{I^2 t}$
		$R = \frac{\Delta V^2 t}{E}$	
Potential difference (V) or (ΔV)	Volt (V)	$\Delta V = IR$	$\Delta V = \sqrt{PR}$
		$\Delta V = \frac{E}{q}$	$\Delta V = \frac{P}{I}$
		$\Delta V = \sqrt{\frac{ER}{t}}$	
Power (P)	Watt (W)	$P = I\Delta V$	$P = \frac{E}{t}$
		$P = I^2 R$	$P = \frac{\Delta V^2}{R}$
Energy (E)	Joule (J)	$E = Pt$	$E = I^2 R\mathrm{t}$
		$E = q\Delta V$	$E = \frac{\Delta V^2}{R} t$

Quantity	Unit	Equation	
Series circuit			
Total resistance (equivalent resistance) (R) or (R_{eq})	Ohm (Ω)	$R = R_1 + R_2 + R_3 \ldots$	You add them
Total current (I)	Ampere (A)	$I = I_1 = I_2 = I_3 \ldots$	The same current for all
Potential difference of the source (ΔV_{source}) or the battery	Volt (V)	$\Delta V_{source} = V_1 + V_2 + V3 \ldots$	Every resistor will take some voltage
Voltage divider (series circuit)	Ohm (Ω)	$R_1 + R_2 = \frac{\Delta V}{I}$	
	Ampere (A)	$I = \frac{\Delta V}{R_1 + R_2}$	
	Volt (V)	$\Delta V = I(R_1 + R_2)$	
Parallel circuit			
Total resistance (equivalent resistance) (R) or (R_{eq})	Ohm (Ω)	$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots$	Find 1/R then take the reciprocal المقلوب
Total current (I)	Ampere (A)	$I = I_1 + I_2 + I_3 \ldots$	Each path مسار will take some current
Potential difference of the source (ΔV_{source}) or the battery	Volt (V)	$\Delta V_{source} = V_1 = V_2 = V3 \ldots$	All have the same voltage
Kirchoff rules	Ampere (A)	$\Sigma I = 0$	Junction rule: the total current going in the junction is positive and the total current going from the junction is negative (both are equation to each other).
	Volt (V)	$\Sigma V = 0$	Loop rule: the potential difference in a loop is equal to zero