AP Physics C: E&M Notes

Miso Park

January 24, 2026

Contents

Notation / Symbol map

Name	Symbol	Meaning / definition	SI	Notes (variants)
Electric charge	q	Property that sources electric forces/fields	C	Often $q = ne$; common: q_0
Current	I	Rate of flow of charge, $I = \frac{\mathrm{d}q}{\mathrm{d}t}$	A	Common: $I_{\text{avg}}, I_{\text{rms}}, I_{\max}$
Voltage	V	Electric potential difference (energy per unit charge)	V	Common: V_0, V_{th}
Resistance	R	Ratio V/I for ohmic element	Ω	$V = IR$; common: R_{eq}

Table 1: Symbol map (base symbols only; variants listed in Notes).

1 CED Unit

1.1 OpenStax/CED

1.1.1 Kirchoff's Rule

KCL: sum of currents into a node = sum out. **KVL:** sum of potential changes around a loop = 0.

1.1.2 RC circuits

$$\tau = RC \tag{1}$$

$$Q_{\text{charge}}(t) = C\mathcal{E}\left(1 - e^{-t/RC}\right) \tag{2}$$

$$Q_{\text{discharge}}(t) = Q_0 e^{-t/RC} \tag{3}$$

sectionCircuit sketch (starter)

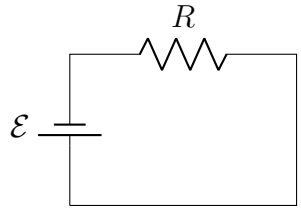

Figure 1: Basic single-loop circuit.

2 Mechanics

2.1 Work, energy, power

$$W = \int \mathbf{F} \cdot d\mathbf{r} \tag{4}$$

$$K = \tfrac{1}{2}mv^2 \tag{5}$$

$$P = \frac{\mathrm{d}W}{\mathrm{d}t} = \mathbf{F} \cdot \mathbf{v} \tag{6}$$