$$\mathbf{F = ma}, \text{ so } \mathbf{a = F / m}$$

$$\mathbf{a = e\,E / m_e},$$

where **E** is the electric field and $\mathbf{m_e}$ is the effective mass of the electron

$$\mathbf{v_d = a\,\tau = e\,E\,\tau / m_e}$$

where τ is the average time between collisions

$$\mathbf{I = \Delta Q / \Delta t = n\,e\,A\,v_d = n\,e\,A\,e\,E\,\tau / m_e = (n\,e^2\,A\,\tau / m_e)E}$$

For a uniform wire, the electric field is the electric potential divided by the length,

$$\mathbf{E = V / L}$$

$$\mathbf{I = (n\,e^2\,A\,\tau / m_e)\,V / L}, \text{ or rearranging}$$

$$\mathbf{V = \{m_e / (n\,e^2\,\tau)\}\,\{L / A\}\,I}$$

$$\boxed{\mathbf{V = R\,I}}$$

where $\mathbf{R = \{m_e / (n\,e^2\,\tau)\}\,\{L / A\}}$

$$\mathbf{R = \rho\,L / A}$$

where R is the resistance in ohms and ρ is the resistivity on ohm meters.

Note: 1 ohm = 1 volt / ampere

How do you expect R to change with temperature ?

1) increase

2) stay the same

3) decrease