Resistors in Series: "Proof" that $R_{eq} = R_1 + R_2$

- **Resistors connected end-to-end:**
  - If charge goes through one resistor, it must go through other.

$$I_1 = I_2 = I_{eq}$$

  - Both have voltage drops:

$$V_1 + V_2 = V_{eq}$$

$$R_{eq} = \frac{V_{eq}}{I_{eq}} = \frac{V_1 + V_2}{I_{eq}} = R_1 + R_2$$

R₁

R₂

R_eq