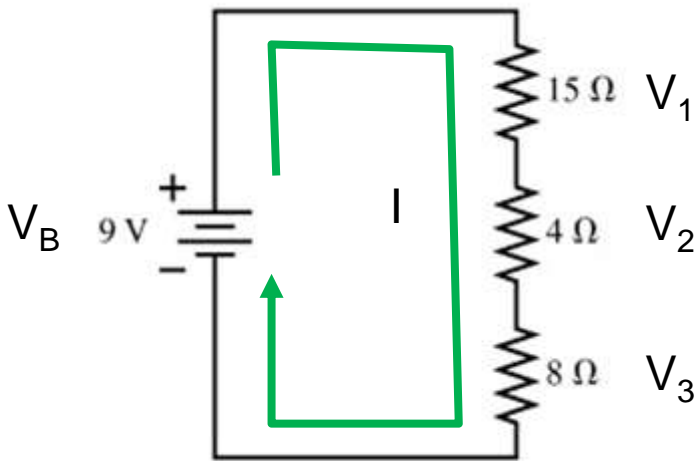


Series

- Resistors are said to be in Series if they are in the same branch.
- Same branch means they carry same current



$$P_{\text{in}} = P_{\text{out}}$$

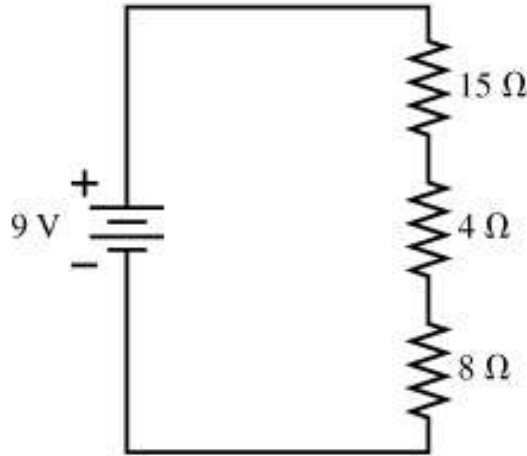
$$V_B I = V_1 I + V_2 I + V_3 I$$

$$V_B = V_1 + V_2 + V_3$$

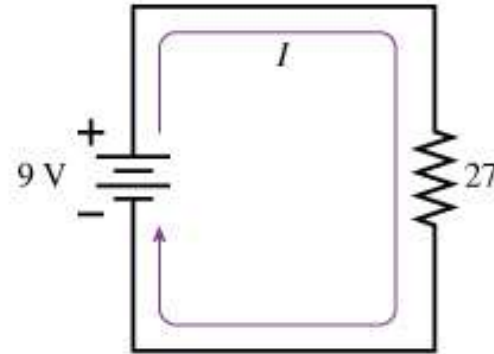
Series Equivalent Resistor

1 resistor that draws same current and power

(a)



(b)



$$P_S = P_1 + P_2 + P_3$$

$$IR_S = IR_1 + IR_2 + IR_3$$

$$R_S = R_1 + R_2 + R_3$$

Summary: Resistors in series carry same current.

$$R_S = R_1 + R_2 + R_3 + \dots$$

Current thru R_S is same as the resistors.