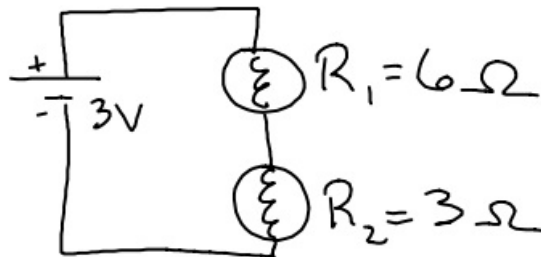• Draw a series circuit with a 3.0V battery, a 6Ω light bulb, and a 3Ω light bulb. Determine the equivalent resistance of the circuit, the current through the circuit, the potential difference across each item in the circuit, the power supplied by the battery, and the power dissipated ("used") by each of the bulbs.

$$R_{eg} = ? \quad I = ? \quad \Delta V_1 = ? \quad \Delta V_2 = ?$$

$$P_B = ? \quad P_1 = ? \quad P_2 = ?$$

$$R_{eg} = R_1 + R_2 = 6\Omega + 3\Omega = \boxed{9\,\Omega}$$

$$I = \frac{\Delta V_B}{R_{eg}} = \frac{3V}{9\Omega} = \boxed{0.33A}$$

$$\Delta V_1 = I R_1 = (0.33)(6\,\Omega) = \boxed{2V}$$

$$\Delta V_2 = (0.33)(3) = \boxed{1V}$$

$$P_B = I(\Delta V_B) = (0.33)(3) = \boxed{1W}$$

$$P_1 = I(\Delta V_1) = (0.33)(2) = \boxed{0.67W}$$

$$P_2 = I(\Delta V_2) = (0.33)(1) = \boxed{0.33W}$$

Please note:
* There is only one current
  (charge is conserved)
* The power supplied by the battery equals the power dissipated by the two bulbs
  (energy isn't created or destroyed)