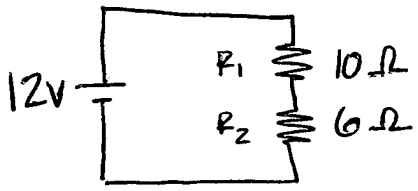
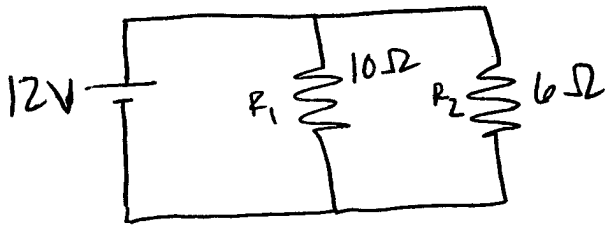
# Ohm's Law in Circuits

## Series




$$V_T = V_1 + V_2$$
$$R_T = R_1 + R_2$$
$$I_T = I_1 = I_2$$

## Parallel




$$V_T = V_1 = V_2$$
$$I_T = I_1 + I_2$$
$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}}$$

Ex: $V_T = 12V$

$R_T = 10\Omega + 6\Omega = 16\Omega$

$I_T = 0.75A$

$V_T = R_T I_T$

$\frac{12}{16} = \frac{16I}{16}$

$0.75A = I$

Ex: $V_T = 12V$

$$R_T = \frac{1}{\frac{1}{10} + \frac{1}{6}}$$
$$= \frac{1}{\frac{3}{30} + \frac{5}{30}}$$
$$= \frac{1}{\frac{8}{30}}$$
$$= \frac{30}{8}$$
$$= 3.75\Omega$$

$$I_T = I_1 + I_2$$
$$= \frac{V_1}{R_1} + \frac{V_2}{R_2}$$
$$= \frac{12}{10} + \frac{12}{6} = 1.2 + 2 = 3.2A$$