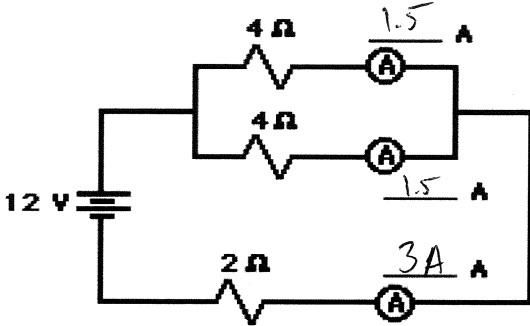


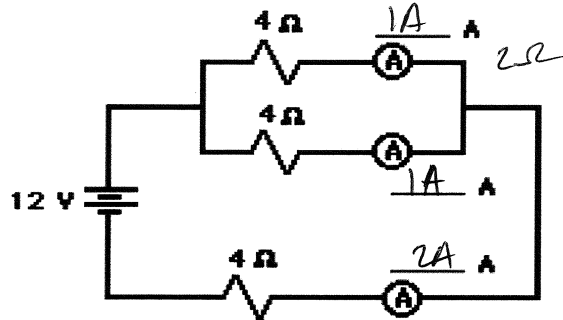
The circuits below are known as combination or compound circuits; they are composed of resistors that are arranged both in parallel with each other as well as other resistors arranged in series with each other. In each circuit, the resistors that are arranged in parallel have the same resistance value. For each combination circuit shown below, determine the equivalent resistance for the combination of three resistors, the total current (i.e., at the battery), and the current at each of the three indicated locations.

$$\frac{1}{R} = \frac{1}{4\Omega} + \frac{1}{4\Omega} = 2\Omega$$



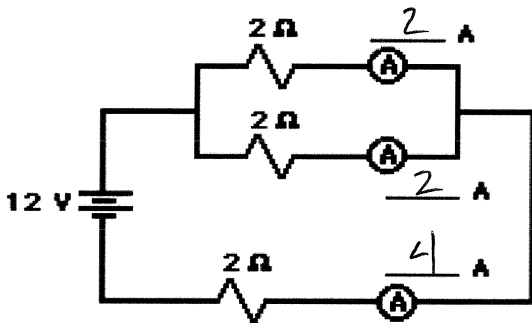
$$R_{eq} = 2\Omega + 2\Omega = 4\Omega$$

$$I_{tot} = \frac{12V}{4\Omega} = 3A$$



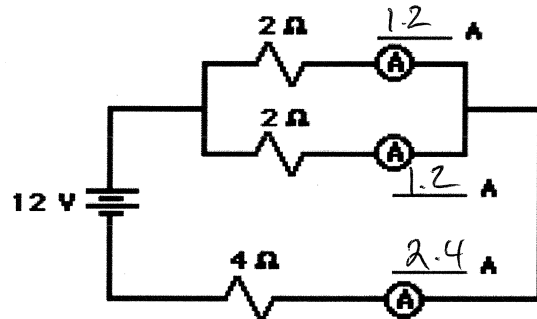
$$R_{eq} = \frac{6\Omega}{2} = 3\Omega$$

$$I_{tot} = \frac{12V}{3\Omega} = 4A$$



$$R_{eq} = \frac{3\Omega}{2} = 1.5\Omega$$

$$I_{tot} = \frac{12V}{1.5\Omega} = 8A$$

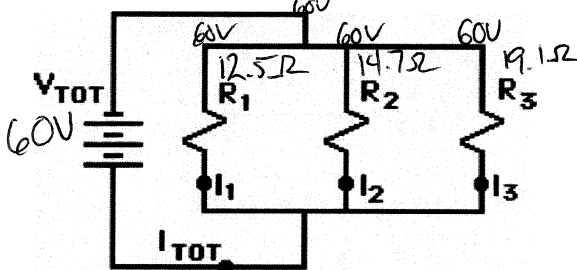


$$R_{eq} = \frac{5\Omega}{2} = 2.5\Omega$$

$$I_{tot} = \frac{12V}{2.5\Omega} = 4.8A$$

$$\frac{1}{R} = \frac{1}{12.5\Omega} + \frac{1}{14.7\Omega} + \frac{1}{19.1\Omega}$$

Fill in the blanks in the following diagram. Show appropriate units.



$$V_{Tot} = 60.0 V$$

$$R_1 = 12.5 \Omega \quad R_2 = 14.7 \Omega \quad R_3 = 19.1 \Omega$$

$$R_{Tot} = 5.2 \Omega$$

$$\Delta V_1 = 60V$$

$$\Delta V_2 = 60V$$

$$\Delta V_3 = 60V$$

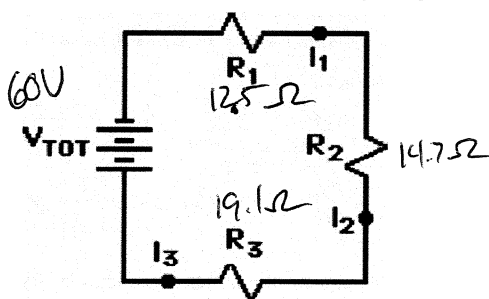
$$I_{Tot} = \frac{V_T}{R_T} = \frac{60V}{5.2\Omega} = 12A$$

$$I_1 = \frac{V_1}{R_1} = \frac{60V}{12.5\Omega} = 4.8A$$

$$I_2 = \frac{V_2}{R_2} = \frac{60V}{14.7\Omega} = 4.08A$$

$$I_3 = \frac{V_3}{R_3} = \frac{60V}{19.1\Omega} = 3.14A$$

Fill in the blanks in the following diagram. Show appropriate units.



$$V_{Tot} = 60.0 V$$

$$R_1 = 12.5 \Omega \quad R_2 = 14.7 \Omega \quad R_3 = 19.1 \Omega$$

$$R_{Tot} = 46.3 \Omega$$

$$I_{Tot} = 1.3A$$

$$\Delta V_1 = I \cdot R = 1.3A \cdot 12.5\Omega = 16.3V$$

$$\Delta V_2 = 1.3A \cdot 14.7\Omega = 19.1V$$

$$\Delta V_3 = 1.3A \cdot 19.1\Omega = 24.8V$$

$$I_{Tot} = 1.3A$$

$$I_1 = 1.3A$$

$$I_2 = 1.3A$$

$$I_3 = 1.3A$$