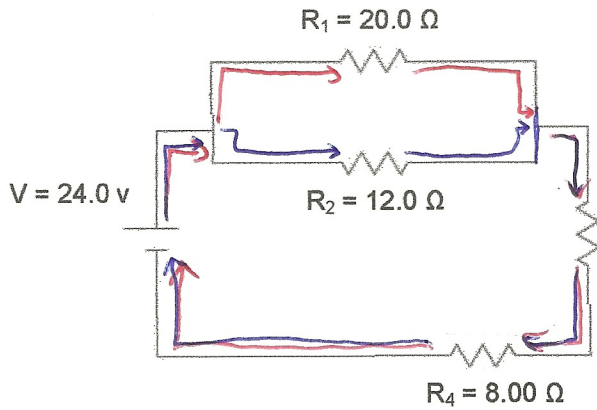


Physics: Circuits
Class Example

Combination Circuits

Example 12:

- Find the equivalent resistance
 - Draw a simplified circuit with 3 resistors
 - Draw a simplified circuit with 1 resistor
- What is the total current at the battery?
- What is the current and voltage dropped at each resistor?

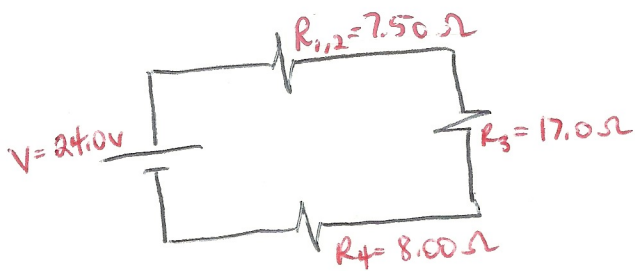


$$\frac{1}{R_{1,2}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_{1,2}} = \frac{1}{20} + \frac{1}{12}$$

$$\frac{1}{R_{1,2}} = 0.133$$

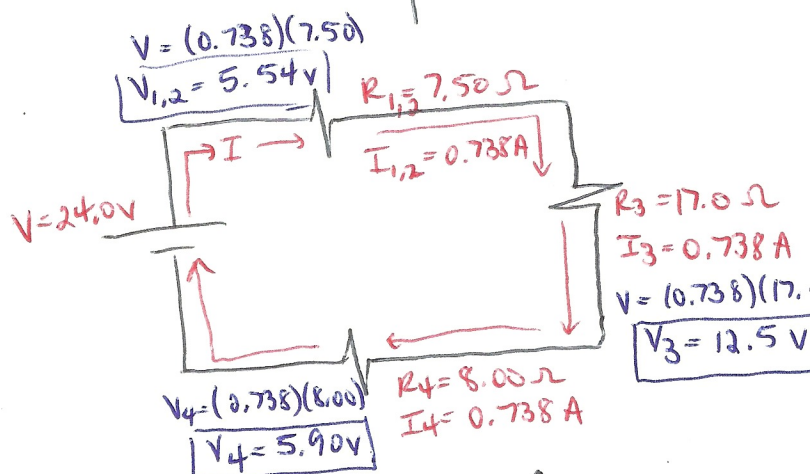
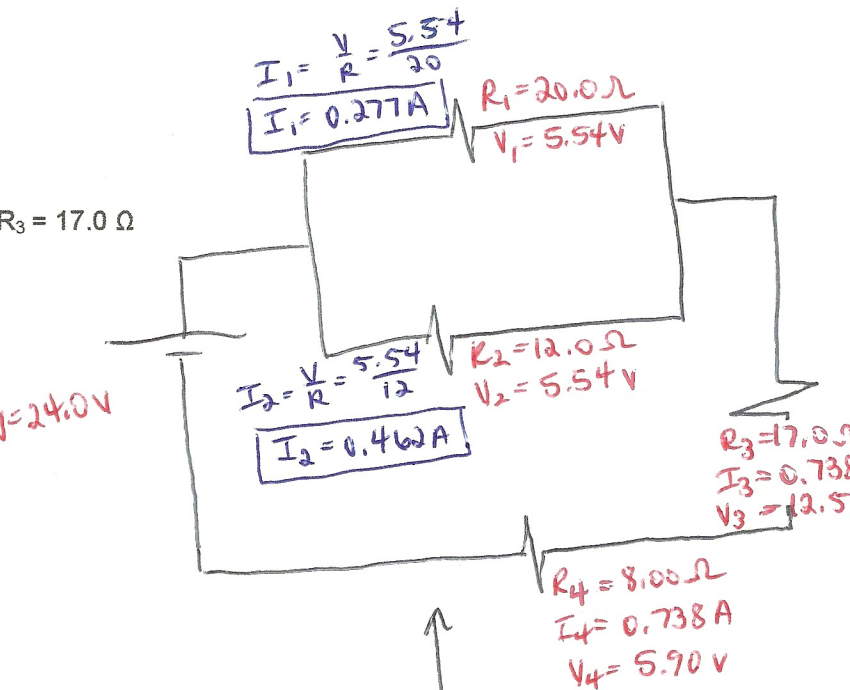
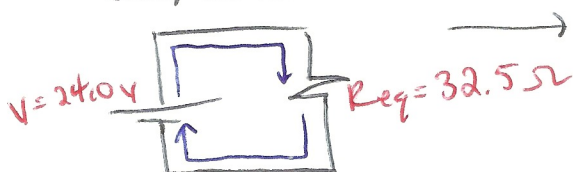
$$R_{1,2} = \frac{1}{0.133} = 7.50 \Omega$$



$$R_{eq} = R_{1,2} + R_3 + R_4$$

$$R_{eq} = 7.50 + 17.0 + 8.00$$

$$R_{eq} = 32.5 \Omega$$



$$V = I \cdot R$$

$$I = \frac{V}{R}$$

$$I = \frac{24.0}{32.5} = 0.738 \text{ A}$$