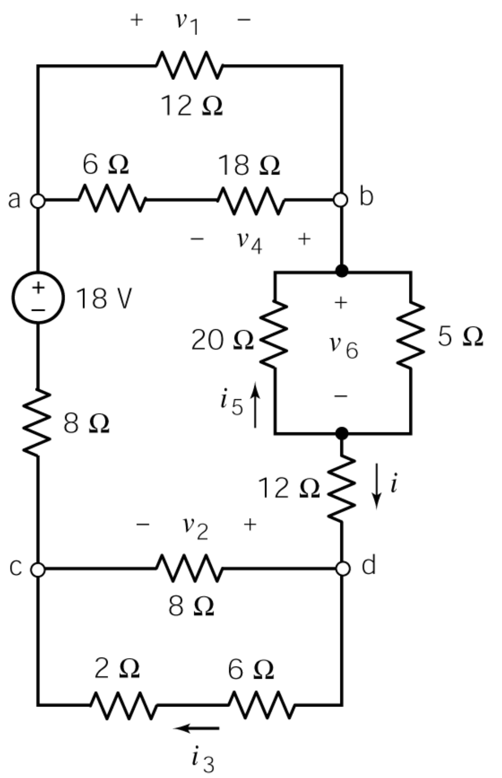
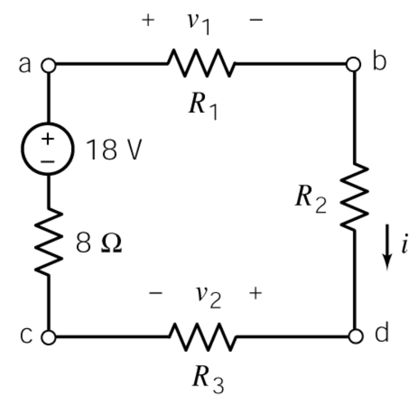
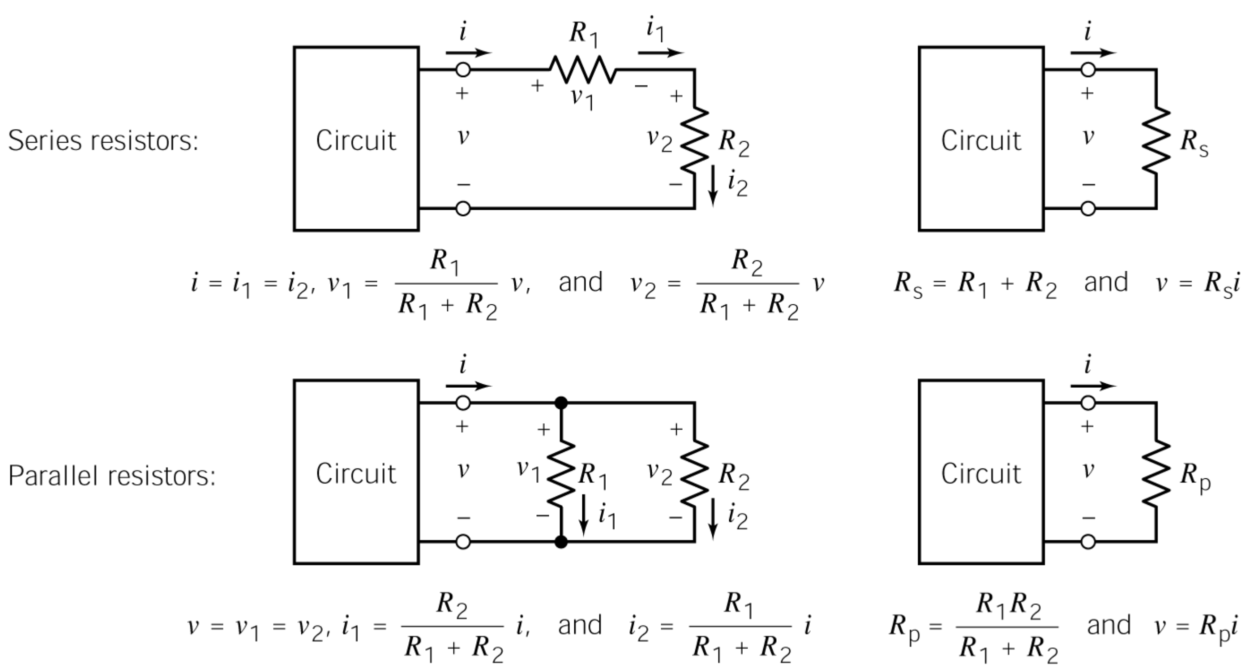
Example 3.6-3 Determine the values of i_3, v_4, i_5 and v_6.

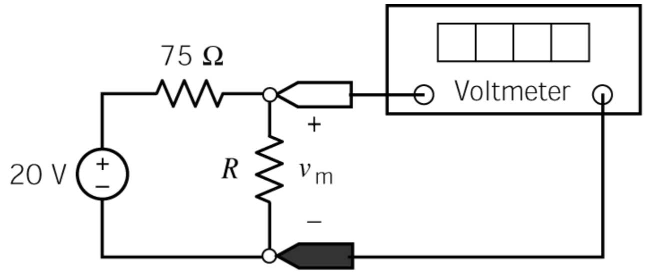






Temperature Sensor

Example
Consider the voltage divider circuit



The resistor represents a temperature sensor. Suppose the resistance *R*, in Ω, is related to the temperature *T*, in °C, by the equation

$$R = 50 + \frac{1}{2}T$$

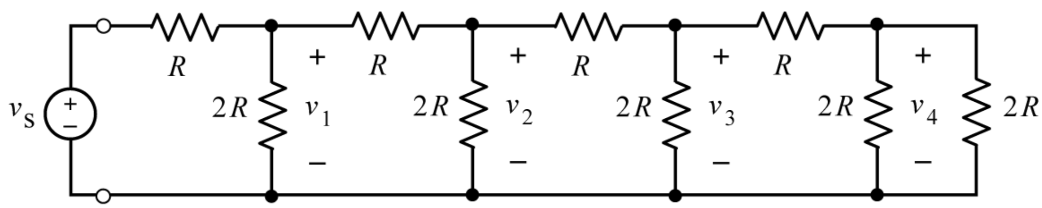
Suppose the temperature is expected to be in the range $0\,°\text{C} \le T \le 100\,°\text{C}$.

a) Determine the meter voltage, v_m, corresponding to temperatures 0 °C, 75 °C and 100 °C.

b) Determine the temperature, *T*, corresponding to the meter voltages 8 V, 10 V and 15 V.

R-2*R* Ladder Networks

Example
Consider the *R*-2*R* ladder network:



Show that

$$v_1 = \frac{1}{2^1}v_s = \frac{1}{2}v_s,\ v_2 = \frac{1}{2^2}v_s = \frac{1}{4}v_s,\ v_3 = \frac{1}{2^3}v_s = \frac{1}{8}v_s \text{ and } v_4 = \frac{1}{2^4}v_s = \frac{1}{16}v_s$$