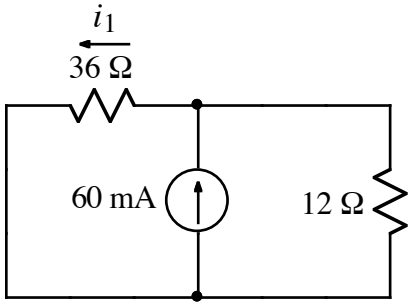
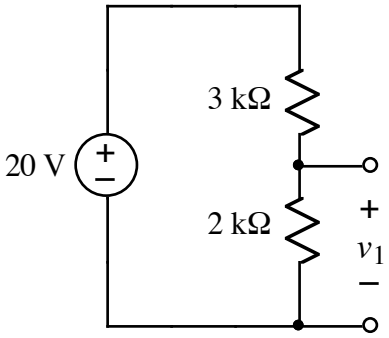
HOMEWORK #3 prob 2 solution

Ex:



a) Use the current-divider formula to calculate i_1.



b) Use the voltage-divider formula to calculate v_1.

Sol'n: a) The two resistors are in parallel across the current source. Current flows up through the current source and back down through the two resistors. The current-divider formula gives the value of i_1:

$$i_1 = 60\text{ mA} \cdot \frac{12\ \Omega}{12\ \Omega + 36\ \Omega} = 15\text{ mA}$$

b) This is a standard voltage divider configuration.

$$v_1 = 20\text{ V} \cdot \frac{2\text{ k}\Omega}{2\text{ k}\Omega + 3\text{ k}\Omega} = 8\text{ V}$$