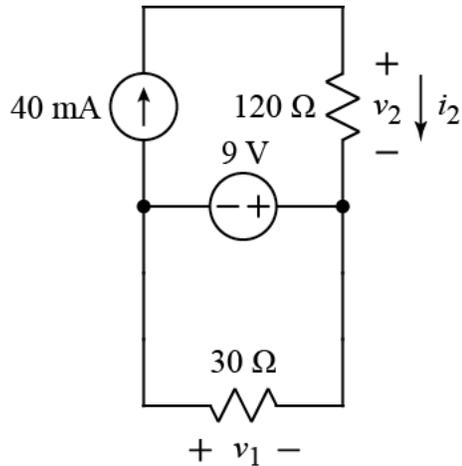


Ex:



Use Kirchhoff's laws to find v_1 and i_2 .

SOL'N: The $120\ \Omega$ resistor is in series with the $40\ \text{mA}$ source and must carry $40\ \text{mA}$. If we follow the arrow from current source around the circuit to the $120\ \Omega$ resistor, we find that it points in the same direction as the measurement arrow for i_2 . Thus, we use the same sign for i_2 .

From the lower voltage loop we find that $v_1 = -9\ \text{V}$. This follows from a clockwise v -loop starting at the lower left:

$$9\ \text{V} + v_1 = 0 \Rightarrow v_1 = -9\ \text{V}$$

Note that we can find these quantities using only Kirchhoff's laws. If we want to find i_1 and v_2 , we can use Ohm's law.