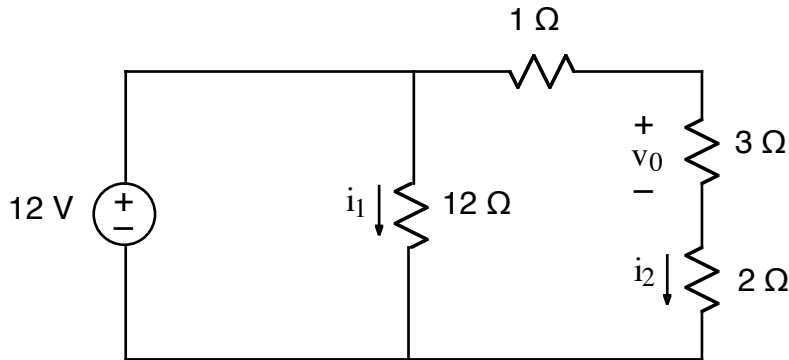
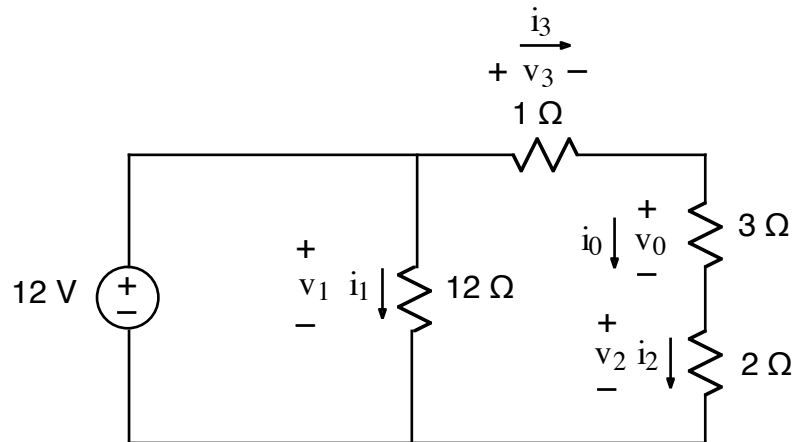


Ex:

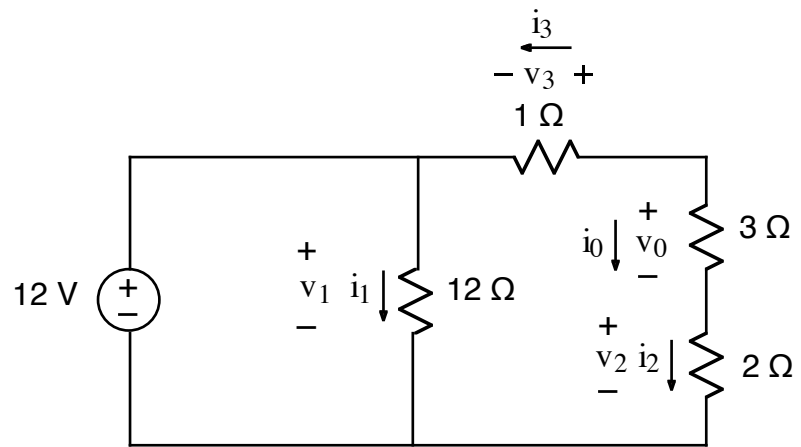


Using the passive sign convention, complete the labeling of all currents and voltages for the resistors in the above circuit.

SOL'N: By the passive sign convention, the arrow for the polarity of the current measurement must point from the + sign of the voltage measurement toward the - sign of the voltage measurement. Thus, the voltage measurement in the $12\ \Omega$ resistor must have the + on top, and the voltage measurement for the $2\ \Omega$ resistor must have the + on top. Likewise, the current measurement for the $3\ \Omega$ resistor must point down. For the $1\ \Omega$ resistor, we have two possible ways of choosing the polarity of the measurement of voltage. Once we choose which way the voltage measurement is made, the arrow for the current measurement must point toward the minus sign of the voltage measurement. Thus, either of the two solutions shown below are acceptable:



or



In general, measuring the voltage with the + sign on the top or on the left side proves to be convenient.