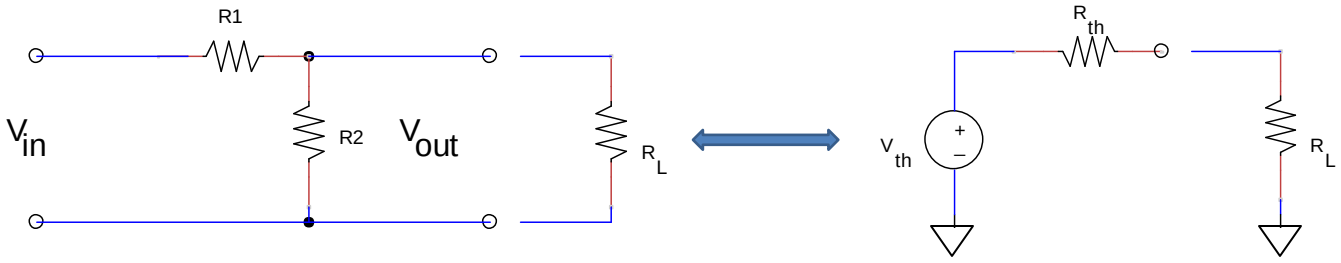
Voltage Divider



Consider the voltage divider above, and its Thevenin equivalenyt circuit: `

a. Predict the Thevenin equivalents V_{th} and R_{th}, and the short-circuit current, for V_{in} = 15V
b. Construct this voltage divider, with $R_1 = R_2$ = 10k: Apply V_{in} = 15V. Measure V_{out}. Compare with Prelab prediction.
c. Attach a 10k load across V_{out}. Measure this new V_{out}. Explain (quantitatively, show calculation) why V_{out} drops when the load is attached.
d. Remove the 10k load. Insert an ammeter in series with V_{out} and measure this short-circuit current. Find $R_{th} = V_{th} / I_{sc}$ and compare with Prelab prediction.
e. From your measurements, calculate the Thevenin equivalent parameters: V_{th} and R_{th} and sketch the Thevenin equivalent circuit.
f. Build the Thevenin equivalent circuit, and repeat parts a - c. You should get the same results.
g. Change the resistors to 10M (megohm) and repeat your measurements. Figure out why they're different.