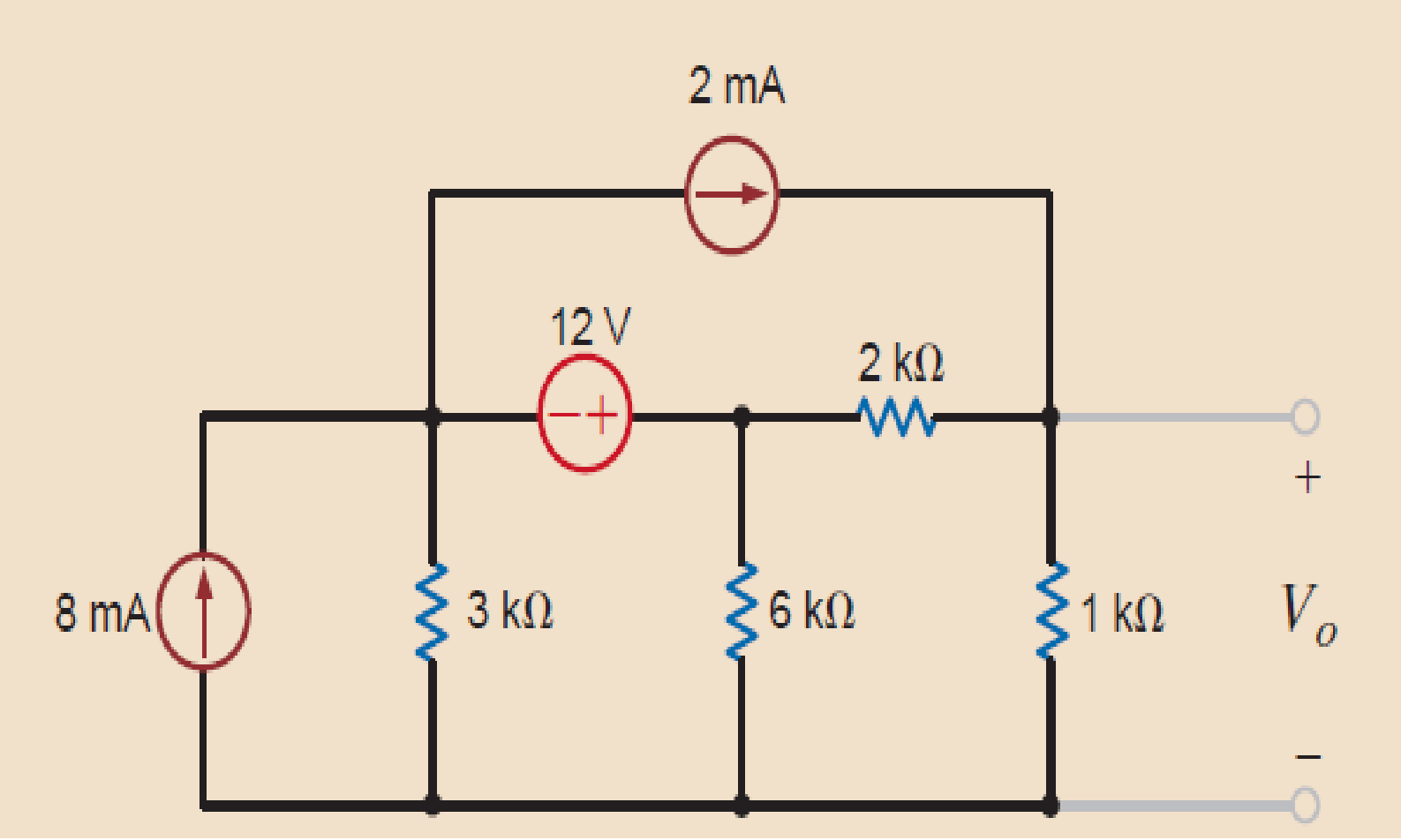
BASIC ELECTRONIC CIRCUITS

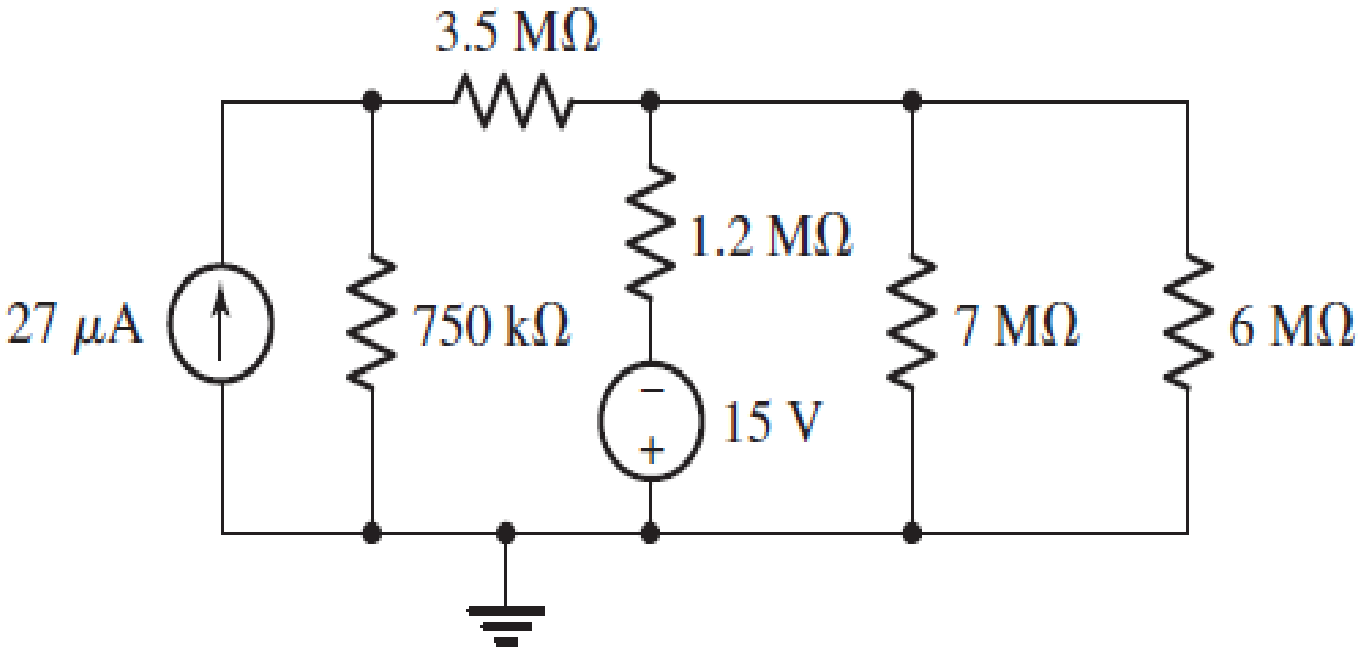
Tutorial

- Find V_o using the superposition

ANSWER: $V_0 = 5.6$ V.

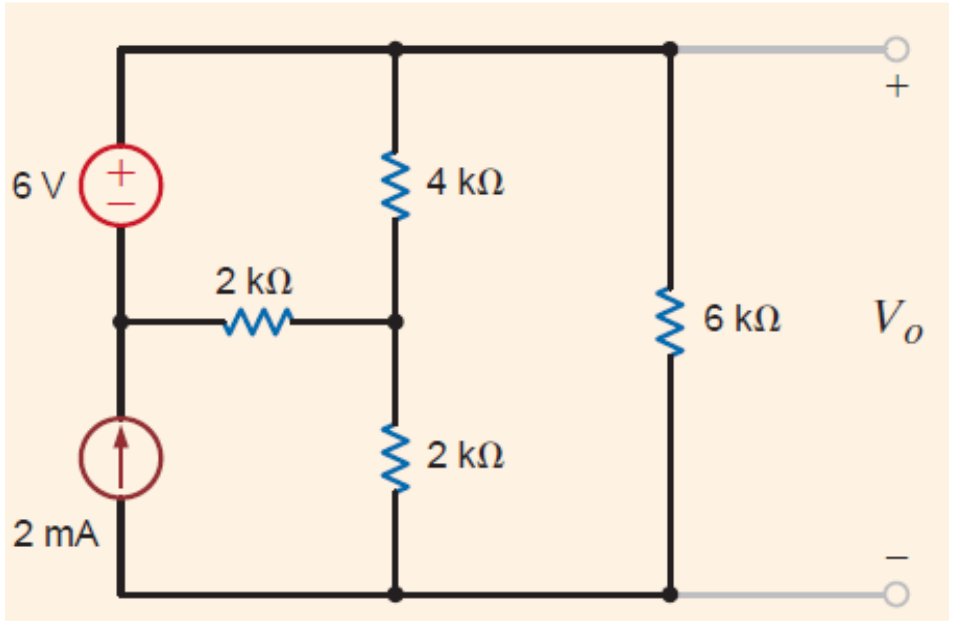


(*a*) Using repeated source transformations, reduce the circuit below to a voltage source in series with a resistor, both of which are in series with the 6 MΩ resistor. (*b*) Calculate the power dissipated by the 6 M Ω resistor using your simplified circuit.

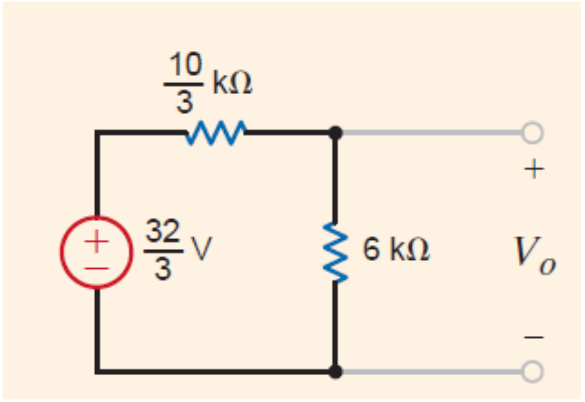


Power dissipated by the 6 MΩ is = 5.27 μwatt.

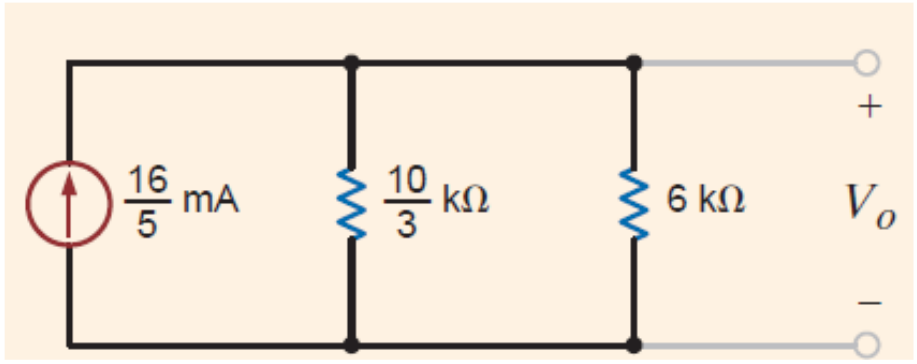
- Obtain the Thevenin and Norton equivalent circuits of the circuit shown below:



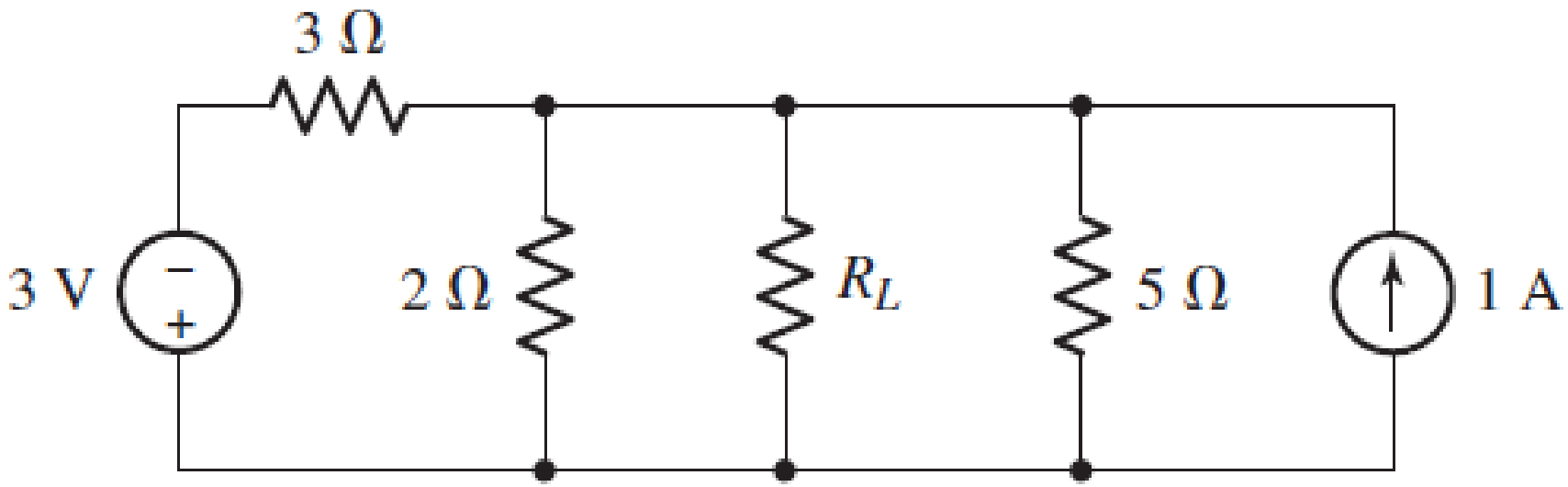
Thevenin's Equivalent



Norton's Equivalent

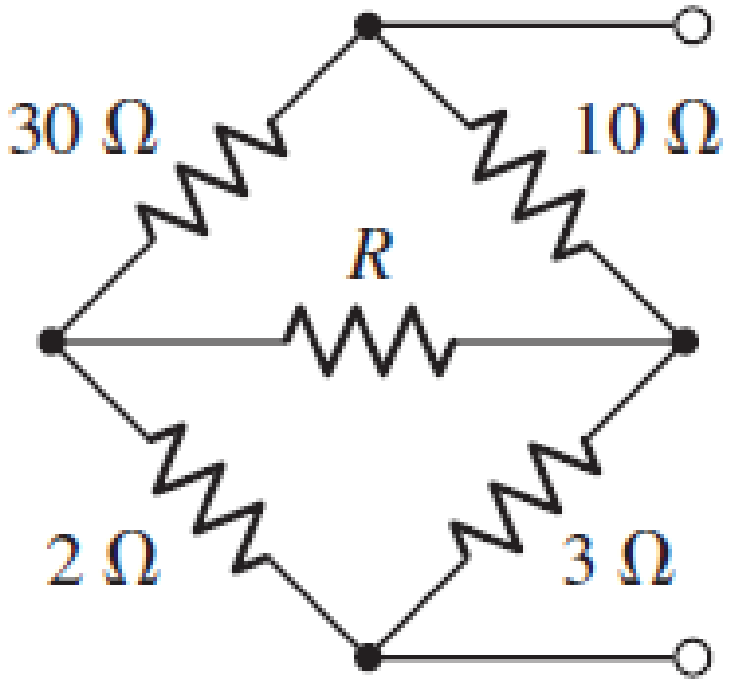


- For the circuit given below, what value of *RL* will ensure it absorbs the maximum possible amount of power?

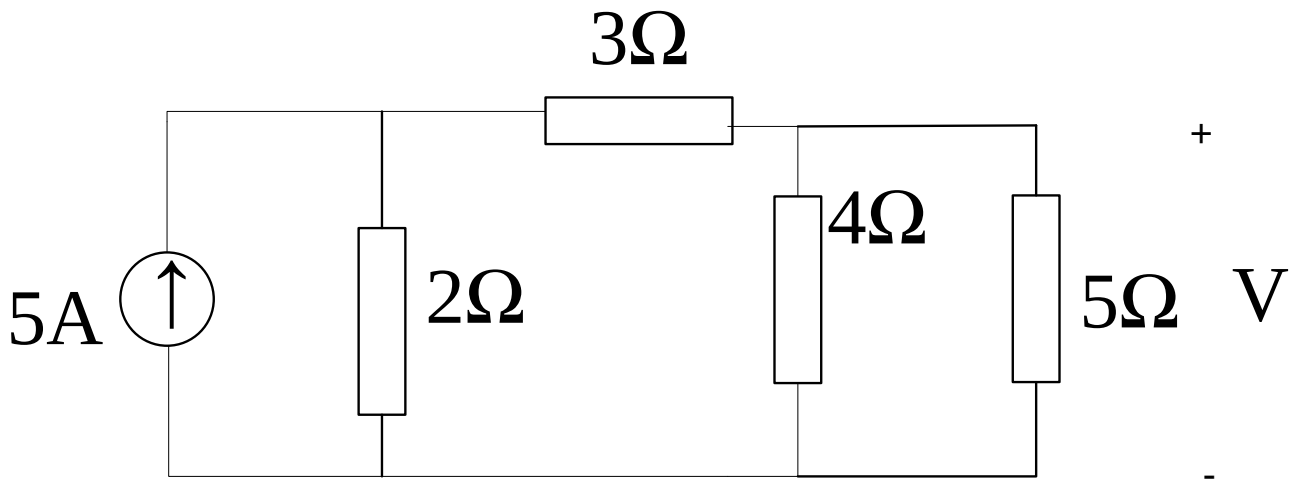


R_{th} = 0.967 Ω

- For the network of Fig. 5.97, select a value of *R* such that the network has an equivalent resistance of 9Ω . Round your answer to two significant figures



- Verify the reciprocity theorem:



V = 3.07 V

Note: To verify the reciprocity, interchange the source and observer, that is, place 5 A current source in parallel with 5 ohm resistor and calculate the voltage across the 2 ohm resistor. Then the voltage across 2 ohm resistor must be 3.07 V.