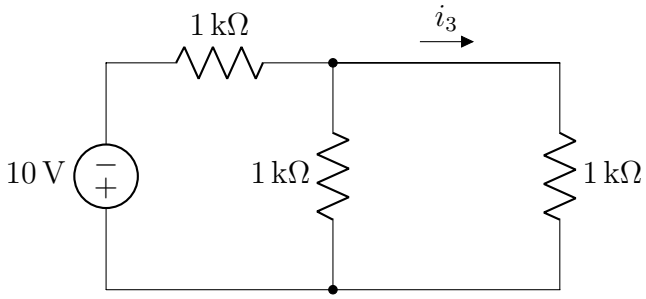
Lab assignment 02
-
Basic circuits 2

This lab assignment mainly focuses on learning how to use electrical equipment that will be useful during the semester.

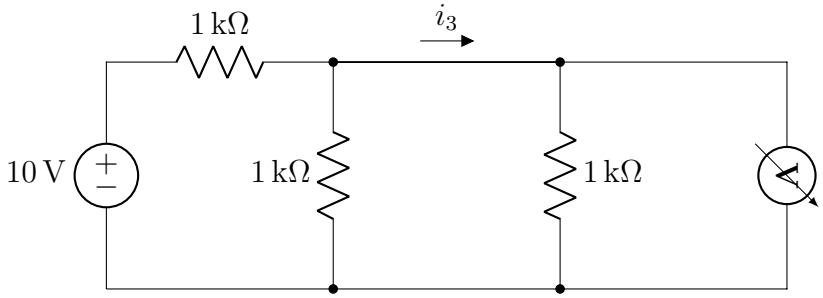
Exercise 1 - Multimeter

Wire the following circuit on the breadboard:



- Analytically determine the voltages across the resistors
- Check the result with a simulation software
- Check experimentally the voltages with the multimeter

When checking the voltages with the multimeter, the circuit is connected in the following way:

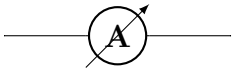


Considering that the voltmeter is electrically equivalent to a resistor, what is its resistance value if we want to accurately measure the voltages in our circuit? Check the reference manual of the multimeter to find its resistance value (actually called impedance) when using DC voltage measure mode.

The current i_3 can be retrieved by using Ohm's law and knowing the voltage across the resistor. But the multimeter is also able to measure currents directly. Check the user manual of the multimeter in order to find how to wire it for DC current measurement.
Before turning any device on, call the professor to check your wiring.

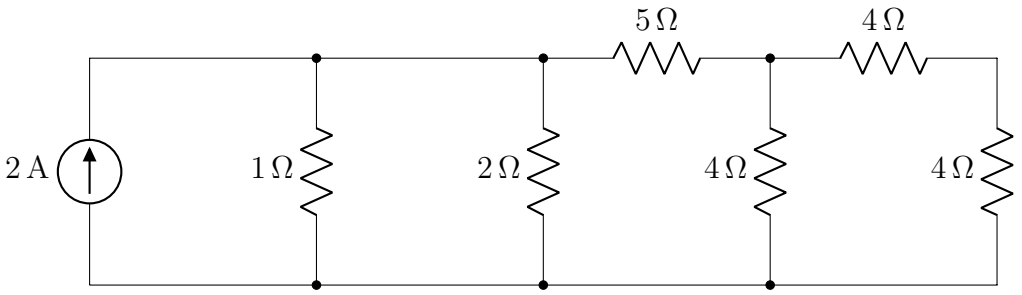
- Experimentally measure i_3 with the multimeter

Draw the circuit with an **ammeter** (for **Am**pere **Meter**) connected for measuring i_3.
Considering (again) that the ammeter is electrically equivalent to a resistor, what is its resistance value if we want to accurately measure the currents in our circuit? Check the reference manual of the multimeter to find its resistance value (actually called impedance) when using DC current measure mode.

Symbol for ammeter: 

Exercise 2 - Complex circuit

Wire the following circuit on the breadboard:



- Simulate this circuit
- Which voltage limit should you set on the DC power supply?
- Determine experimentally the different voltages and currents
- Compare the values