Introduction to the Electronics Laboratory

Electronic Components, Cables and Tools

1. With each laboratory activity, gradually accumulate a collection of components in the containers. Do not hoard too many items.
2. Learn to distinguish the different functional components and read the specification labels.
3. Take care of the components. Keep the leads a straight as possible, and do not scatter them hither and yon.
4. Keep a minimal set of cables and connecting clips at you station.
5. Return tools that you use to the tool area because everybody has use the same set of tools.

Electronic Instruments and Equipment

1. Power supply
   (a) Deliverable potential and current
   (b) Proper ground connections
   (c) Precautions

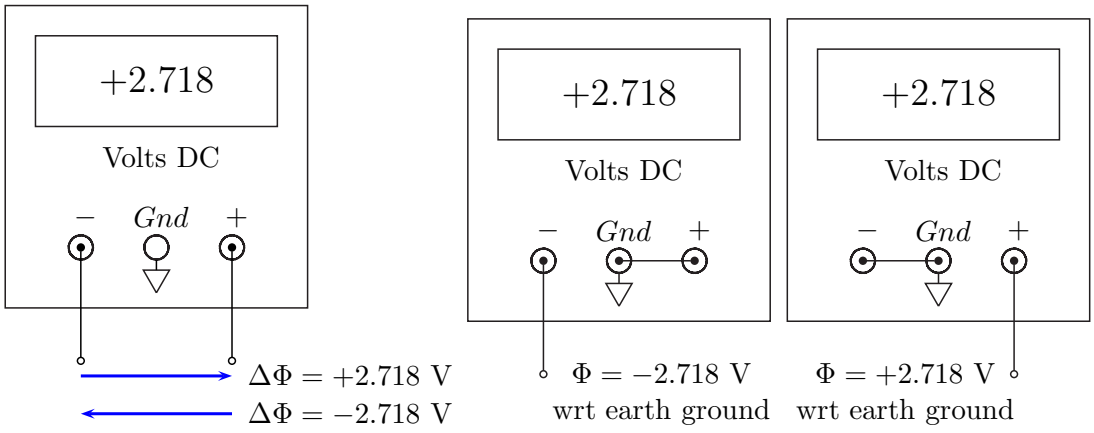

Figure 1: DC power supply can be used either floating or defined with respect to earth ground.

2. Digital multimeter
   (a) Capabilities
   (b) Connections and operation
   (c) Measurement of potential difference
   (d) Measurement of current: precautions, serial arrangement
   (e) Measurement of resistance

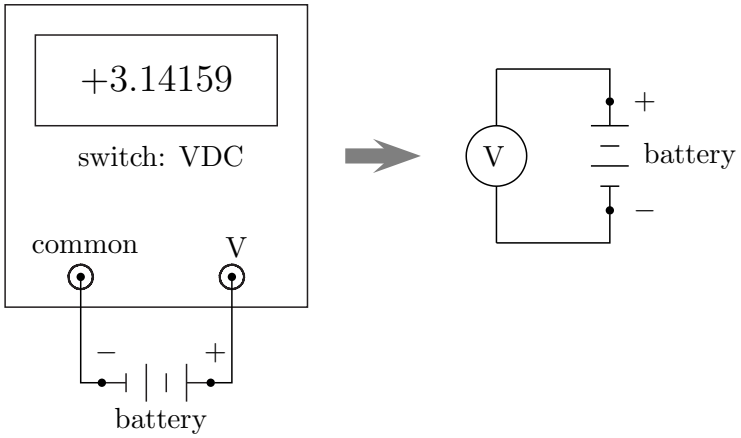

Figure 2: Physical measurement of the potential difference across a battery and the representation of this action in a circuit diagram.

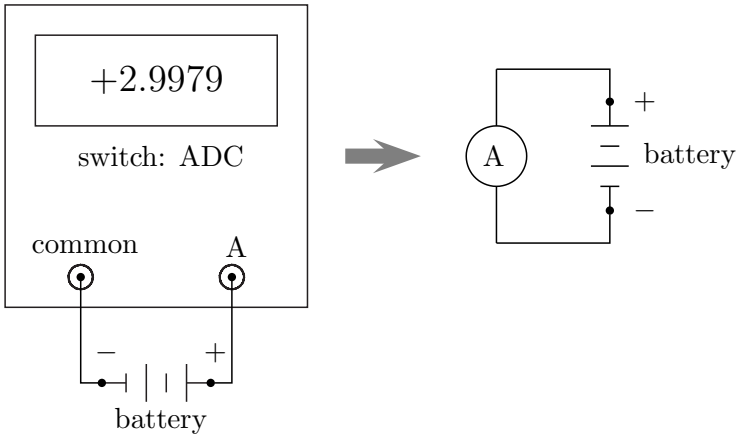

Figure 3: Physical measurement of the current supplied by a battery and the representation of this action in a circuit diagram.

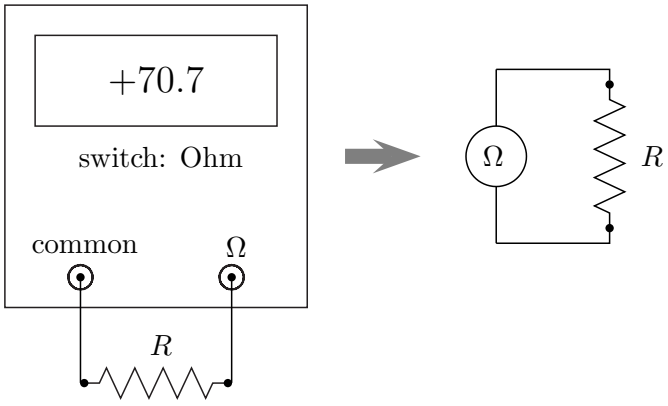

Figure 4: Physical measurement of the resistance of a resistor and the representation of this action in a circuit diagram.

(f) Limitations

3. Breadboard

   (a) Connection topology
   (b) Wire size and solid connections
   (c) Proper wiring technique
   (d) Limitations

4. Oscilloscope and function generator

   (a) Function generator capabilities
   (b) Function generator grounding, connection and adjustment
   (c) Oscilloscope principles of operation
   (d) Intensity and focus
   (e) Triggering
   (f) Time-base adjustment
   (g) Vertical amplifier adjustment
   (h) Bandwidth
   (i) Precautions