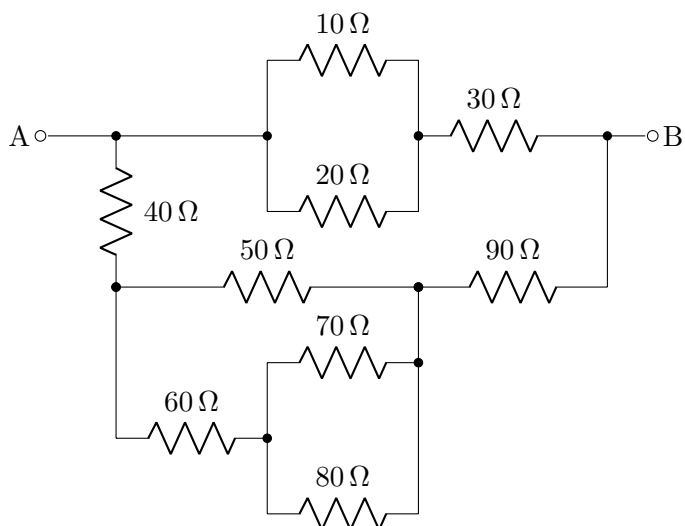(2) **1.** Calculate how many electrons flow per second past a fixed point in a wire carrying 10 mA of current. If the current moves from left to right, which way do the electrons move?

(1) **2.** Calculate the gain in kinetic energy, in J, for an electron moving from a point of voltage 3 V to a point of voltage 5 V.

(1) **3.** Calculate the resistance of a silver wire, 2.0 m long and of radius 1.0 mm.

(3) **4.** If a wire has a resistance R, what would be the resistance of a wire, made of the same material, with twice the length and twice the diameter?

(3) **5.** The same voltage V is applied across each of the two wires of problem **4**. Assuming that power dissipated per unit surface area of the wire is the limiting factor, which of the two wires will melt first, as V is increased?

(4) **6.** Reduce this circuit using only the simple in-series/in-parallel reduction rules. Determine R_{AB}.

(6) **7.** Calculate I_1, I_2, I_3.