

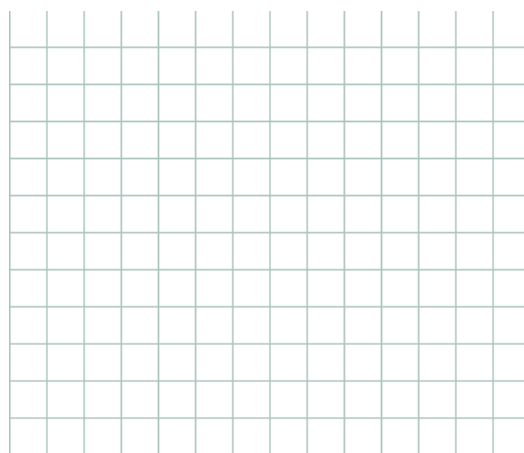
Worksheet 6.1 Electric Circuits*Complete on a separate sheet of paper.*

- 1) A current of 3.60 A flows for 15.3 s through a conductor. Calculate the number of electrons that pass through a point in the conductor in this time. (3.44x10²⁰)
- 2) How long would it take 2.0x10²⁰ electrons to pass through a point in a conductor if the current was 10.0 A? (3.2 s)
- 3) Calculate the current if a charge of 5.60 C passes through a point in a conductor in 15.4 s. (0.364 A)
- 4) What is the potential difference across a conductor to produce a current of 8.00 A if there is a resistance in the conductor of 12.0 Ω? (96 V)
- 5) What is the heat produced in a conductor in 25.0 s if there is a current of 11.0 A and a resistance of 7.20 Ω? (21 800 J)
- 6) 150 J of heat are produced in a conductor in 5.50 s. If the current through the conductor is 10.0 A, what is the resistance of the conductor? (0.273 Ω)
- 7) What is the current through a 400 W electric appliance when it is connected to a 120 V power line? (3.33 A)
- 8) a. When an electric appliance is connected to a 120 V power line, there is a current through the appliance of 18.3 A. What is its resistance? (6.56 Ω)
- b. What is the average amount of energy given to each electron by the power line? (1.92x10⁻¹⁷ J)
- 9) a. What potential difference is required across an electrical appliance to produce a current of 20.0 A when there is a resistance of 6.00 Ω? (120 V)
- b. How many electrons pass through the appliance every minute? (7.5x10²¹)
- 10) A student designed an experiment in order to measure the current through a resistor at different voltages. Given the following data:

Voltage (V)	Current (I)
3.0	0.151
6.0	0.310
9.0	0.448
12.0	0.511
15.0	0.750

a. Draw a graph showing the relationship between current and voltage

(V vs. I)



- b) Using the graph, what is the resistance of the resistor? (20.0 +/- 0.5 Ω)