Electrical Current, Charge and Potential
Worksheet

1. Calculate the unknown quantity.

   (a) I = 0.4 A, t = 20 s. Q = ?

   (b) Q = 240 C, t = 300 s, I = ?

   (c) I = 2 A, Q = 400 C, t=?

   (d) Q = 140 C, t = 4 minutes, I = ?

   (e) I = 0.3 A, t = 1.5 hours, Q = ?

2. A current of 1.5 A flows through a lightbulb for 10 minutes.

   (a) How much charge flowed through the lightbulb?

   (b) How many charges flowed through the lightbulb?

3. 3.0×10^{24} charges pass a given point in 5 s. Calculate the current in the wire.

4. A current of 2 A passes through a wire. How long will it take for 1.0×10^{21} charges to pass a given point?

5. Calculate the unknown quantity.

   (a) $E = 1.5 \times 10^{-12}$ J, $Q = 1.6 \times 10^{-19}$, $V = ?$

   (b) $Q = 3.2 \times 10^{-19}$ C, $V = 5.0$ V, $E = ?$

   (c) $Q = 8.0 \times 10^{-17}$ C, $E = 4.0 \times 10^{-19}$, $V = ?$

6. What is the electric potential of an electron with energy of 5.0×10^{-16} J?