

## Problem 17.1

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1.)

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$$i = \frac{\Delta q}{\Delta t}$$

$$\Rightarrow q = i \Delta t$$

$$\Rightarrow = (80 \times 10^{-3} \text{ A}) \left[ (10 \text{ min}) \left( \frac{60 \text{ sec}}{\text{min}} \right) \right]$$

$$\Rightarrow = \left( 80 \times 10^{-3} \frac{\text{coulombs}}{\text{sec}} \right) \left[ (10 \text{ min}) \left( \frac{60 \text{ sec}}{\text{min}} \right) \right]$$

$$\Rightarrow = 48 \text{ coulombs}$$

$1.6 \times 10^{-19} \text{ coulombs / electron,}$

There are:

$$\# \text{ of electrons} = \frac{(48 \text{ C})}{(1.6 \times 10^{-19} \text{ C / e})} = 3 \times 10^{20} \text{ electrons.}$$

2.)