Ch15.notebook March 25, 2012

P698 GB

ELEMENTARY CHARGE

The amount of charge is the product of the number of elementary charges (electrons or protons) and the magnitude of the elementary charge.

q = NeQuantity Symbol Sl unit C (coulomb) number of elementary charges N (pure number, no unit) elementary charge e C (coulomb)

Change on one electron > 1.6×10-19C

Nov 6-6:46 PM

P 699

Charge and Electrons

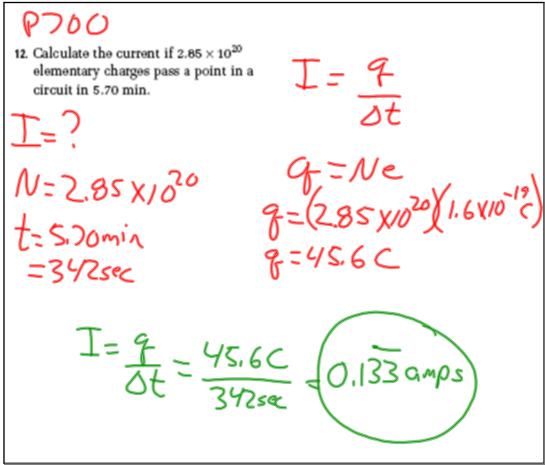
A light bulb draws a current of 0.60 A. If the bulb is left on for 8.0 min, how many electrons (elementary charges) pass through the bulb?

$$q = Ne$$
 $q = TDt$
 $1 = 0.60A$
 $1 = 0.60$

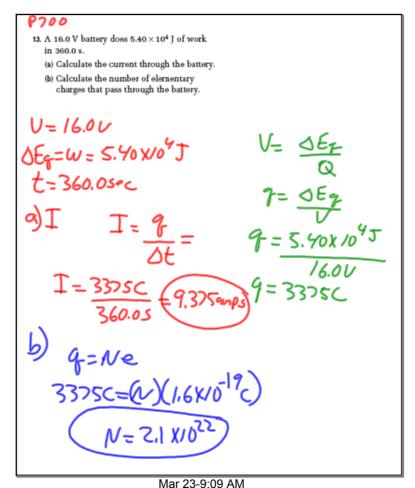
Ch15.notebook March 25, 2012

- Calculate the current if 2.85 × 10²⁰ elementary charges pass a point in a circuit in 5.70 min.
- A 16.0 V battery does 5.40 × 10⁴ J of work in 360.0 s.
 - (a) Calculate the current through the battery.
 - (b) Calculate the number of elementary charges that pass through the battery.
- Calculate the number of elementary charges that pass a point in a circuit when a current of 3.50 A flows for 24.0 s.
- In transferring 2.5 × 10²⁰ elementary charges in 12 s, a battery does 68 J of work.
 - (a) Calculate the current through the battery.
 - (b) Calculate the potential difference of the battery.

Nov 6-6:46 PM



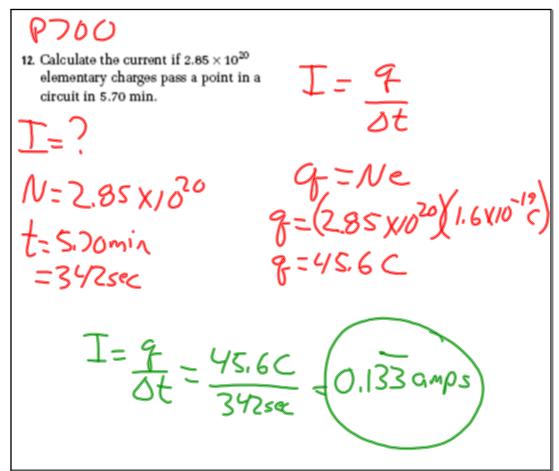
Ch15.notebook March 25, 2012



 Calculate the number of elementary charges that pass a point in a circuit when a current of 3.50 A flows for 24.0 s.

$$n=?$$
 $T=3.50A$
 $Q=[8.50A)(24.0sec)$
 $T=24.0sec$
 $Q=84.0C$
 $S=Ne$
 $S+0C=(N)(1.6\times10^{-19}C)$
 $N=5.25\times10^{-19}C$

Ch15.notebook March 25, 2012



Mar 23-9:04 AM

