

2. The chemical energy of the battery is reduced by $\Delta E = q\mathcal{E}$, where q is the charge that passes through in time $\Delta t = 6.0$ min, and \mathcal{E} is the emf of the battery. If i is the current, then $q = i \Delta t$ and $\Delta E = i\mathcal{E} \Delta t = (5.0 \text{ A})(6.0 \text{ V})(6.0 \text{ min})(60 \text{ s/min}) = 1.1 \times 10^4 \text{ J}$. We note the conversion of time from minutes to seconds.