**Homework**

1) If a current of 80.0 mA exists in a metal wire, how many electrons flow past a given cross section of the wire in 10.0 min?
2) A 1.00-V potential difference is maintained across a 10.0-Ω resistor for a period of 20.0 s. What total charge passes through the wire in this time interval?
3) A lightbulb has a resistance of 240 \( \Omega \) when operating at a voltage of 120 V. What is the current in the bulb? What is the power rating of the bulb?
4) If electrical energy costs 12 cents, or $0.12, per kilowatt-hour, how much does it cost to (a) burn a 100-W lightbulb for 24 h? (b) operate an electric oven for 5.0 h if it carries a current of 20.0 A at 220 V?
5) How many 100-W light bulbs can you use in a 120-V circuit without tripping a 15-A circuit breaker? (The bulbs are connected in parallel, which means that the potential difference across each light bulb is 120 V.)