



Current Electricity Review Problems

1. Draw a circuit schematic to include a 12 volt battery, an ammeter, a resistor (3.0 ohms) and some connecting wires.
 - Show the polarity of the battery and the direction of the current.
 - Add a voltmeter that measures the potential difference across the resistor.
 - Indicate the ammeter reading and the voltmeter reading

2. A battery of potential difference 24 V delivers 2.0×10^3 J to a conductor. What is the quantity of charge that flows through the conductor?

3. A current of 4.0 A flows for 10.0 minutes through a bulb and delivers 15000 J of electric energy to the bulb. What is the potential difference across the bulb?

4. A 60.0-watt night light is plugged into a 120-volt circuit and operates 3.0 hours per day for 1 month (30 days). Find the following:
 - a. the current it draws:
 - b. the resistance of its filament:

 - c. the energy (kWh) consumed in a month:

 - d. the cost of its operation for a month at the rate of 11.0 cents per kWh:

5. What is the electric energy (J) transferred in a 100-W light bulb that is on for 1.0 minute @ 120 volts.

6. A space heater has a resistance of 12.0 ohms and is operated at 120.0 V for five hours each night in a 30 day month.
 - a. What is the power rating of this heater?

 - b. If the local power company charges nine cents per kWh, how much does it cost to operate the heater during this month?