

## Power Problems

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1. Calculate the power produced by a 12.0 V battery charger if it delivers:
  - a. 10.0 A in the fast charge mode
  - b. 2.0 A in trickle charge mode
2. Calculate the power of an electric stove drawing 13.0 A from a 240 V source.
3. Calculate the power of a heating coil that draws 11.0 A and has a resistance of 11.6  $\Omega$ .
4. Calculate the power of a 2057  $\Omega$  night light plugged into a 120 V source.
5.
  - a. A portable heater, rated at 1.00 kW, is plugged into a 120 V outlet. How many amperes will it draw?
  - b. What amount of charge will be delivered in 1.0 minutes?
  - c. How many electrons will be transferred?
  - d. Find the energy delivered to the heater?
  - e. What is the resistance of the heater?
  - f. If the current exceeds 10 A, the heater will burn out. If it is plugged into a 220 V circuit, will it burn out?
6. What maximum power can be used on a 120 V circuit with a 15 A fuse?
7. How much more current can safely be drawn from a 120 V outlet fused at 15 A if a 600 W curling iron and a 1200 W hair dryer are operating in the circuit.

### Answers

- 1a. 120 W      b. 24W  
2. 3120 W (3.12x10<sup>3</sup> W)  
3. 1400 W (1.40 x10<sup>3</sup> W)  
4. 7.00 W  
5. a. 8.33 A    b. 5.0x10<sup>2</sup> C    c.3.1 x10<sup>21</sup> electrons    d. 6.0x10<sup>4</sup> J    e. 14.4  $\Omega$       f. Yes  
6. 1.8x10<sup>3</sup> W  
7. 0 A