- Electric Circuits

1. What is a circuit?
2. Trace the flow of charges from a battery, through a light bulb, and back to the battery.

3. What is a series circuit?
4. Draw a series circuit
5. Write the five important characteristics of a series circuit.
6. What happens to current in other lamps if one lamp in a series circuit burns out?
7. What happens to light intensity of each lamp in a series circuit when more lamps are added to the circuit?

8. What is a parallel circuit?
9. Draw a parallel circuit.
10. Write the five major characteristics of a parallel circuit.
11. What happens to the current in other lamps if one of the lamps in a parallel circuit burns out?
12. What happens to the light intensity of each lamp in a parallel circuit when more lamps are added to the circuit?

Section 35.7

13. What does it mean to say an electrical line is overloaded?
14. What is a fuse and how does it prevent overloading?
15. What is a short circuit?

Chapter 35 problems

1. If three lamps are connected in series to a 6.0 V battery, how many volts are impressed across each lamp?
2. If one of three lamps blows out when connected in series, what happens to the current in the other two?
3. If three lamps are connected in parallel to a 6.0 V battery, how many volts are impressed across each lamp?
4. If one of the lamps blows out when connected in parallel, what happens to the current in the other two?
5. In which case will there be more current in each of three lamps – if they are connected to the same battery in series or in parallel?
6. In which case will there be more voltage across each lamp – if they are connected to the same battery in series or in parallel?
7. What happens to the total circuit resistance when more devices are added to a series circuit? To a parallel circuit?

8. What is the equivalent resistance of a pair of 8.0 ohm resistors in series? In parallel?
9. Calculate the current in a 48.0 V battery that powers a pair of 30.0 Ω resistors connected in series. Draw a diagram also.
10. Calculate the current in a 48.0 V battery that powers a pair of 30.0 Ω resistors connected in parallel. Draw a diagram also.
11. A 4.00 W night light is plugged into a 120.V circuit and operates continuously for a 31 day month.
    a. How much current does it draw?
    b. What is the resistance of the filament?
    c. How much energy does it use in a month?
    d. What is the cost of its operation for the month at a rate of 10.0 cents per kwh?