Physical Science Section 7.3 Practice Problems Name_____Period___

Electric Power & Energy

1. Calculate the current required for a 40W light bulb connected to 120V.

2. Calculate the voltage required to light a 60W light bulb with 30A of current.

3. Calculate the energy (in kilowatts per hour) used by a 3000W water heater that operates continuously for 30 minutes.

4. A light bulb is plugged in a 110-V wall outlet. How much electric power does the light bulb use if the current in the bulb is 0.5 A?

5. What is the current in a toaster if the toaster uses 1500 W of power when plugged into a 110-V wall outlet?

6. What is the voltage in a dryer if the dryer uses 5000 W of power when plugged into a 20.0-A wall outlet?

7. What is the current in a dryer if the dryer uses 5600 W of power when plugged into a 220-V wall outlet?

8. A microwave oven with a power rating of 1000 W is used for 0.4 h. How much electrical energy is used by the microwave?

9. A refrigerator operates on average for 8.0 h a day. If the power rating of the refrigerator is 800 W, how much electrical energy does the refrigerator use in one day?

10. A TV with a power rating of 400 W uses 0.6 kWh in one day. For how many hours was the TV on during this day?

11. A TV with a power rating of 250 W uses 0.7 kWh in one day. For how many hours was the TV on during this day?

12. Your kitchen uses 400 watts of lighting. How much does it cost if the lights are on 24 hours a day, for a whole month, at 7¢/kilowatt? How much per year?

13. A hair dryer with a current of 2.0 A is connected to a 120 V potential difference.
    a. How much resistance does the hair dryer have?

    b. What is the electrical power used by the hair dryer?

14. A toaster with a resistance of 90.0 Ω is connected to a 120V potential difference.
    a. What is the electrical power used by the toaster?

    b. How much current does the toaster draw?

15. A toy car has a maximum power of 23.0 W when it is hooked up to a 9.0 V battery.
    a. How much current is the car drawing?

    b. What is the resistance of the car?

16. A 60 W light bulb is connected to a 120 V potential difference.
    a. What is the current drawn by the bulb?

    b. What is the resistance of the bulb?

17. The power company charges $0.07/kWh.
    a. If you use 50 kWh in a day, how much will you be charged for that day?

    b. If you turn your 9.0 Ω toaster on for 10 minutes with a 120 V circuit, how much will that cost?

18. A light bulb is plugged in a 110-V wall outlet.
    a. How much electric power does the light bulb use if the current in the bulb is 0.5 A?

    b. How much electric power does the light bulb use if the current in the bulb is 0.6 A?

19. A dryer is plugged into a 20.0-A wall outlet.
    a. What is the voltage in a dryer if the dryer uses 5000 W of power?

    b. What is the current in a dryer if the dryer uses 5600 W of power when?

20. A TV has a power rating of 400 W
    a. How many hours was the TV on during the day if it uses 0.6 kWh?

    b. How much electrical energy does the TV use during a 2 hour period?

21. You are purchasing a new refrigerator. Of the two you are comparing, one has a power rating of 1000 W.
    a. How much electrical energy would this refrigerator use in a day if it operates on average for 8 h a day?

    b. How much does it cost to operate this refrigerator if your local power company charges $0.07/kWh?

22. With the purchase of your refrigerator, the appliance store is offering a percent off deal on microwaves.
    a. How much electrical energy is used by a 1000 W microwave if used for a total of 30 minutes every day?

    b. How much would it cost to run the microwave for a week if the power company charges $0.07/kWh?