

Answer the following using complete sentences.

1. An electric charge is present in atoms. Where does it come from?
2. What is the difference between conduction and induction?
4. Electric charges can move more easily through some materials than others. What is the difference between a good conductor and a good insulator? Give an example of each.
5. A static charge is caused by electrons at rest. What is an electric current?
6. What is a circuit? What is the function of a switch in a circuit?
7. What is the relationship between the voltage in a circuit and the electric current?
8. How does resistance affect electric current? What kinds of wire provide low resistance?

Calculate

Use Ohm's Law to calculate the missing measurements 1 to 5. Show your work to the right of the table.

Resistance (R)	Current (I)	Potential Difference (V)
1.	6 amps	12 V
2.	15 amps	120 V
50 ohms	2 amps	4.
50 ohms	1.5 amps	5.
3.	2 amps	150 V

10. Read each statement about series and parallel circuits. Write the term series or parallel next to the proper statement.
- a. All the lamps in the circuit go out when one is removed. _____
 - b. Each lamp is lit as bright as it can be. _____
 - c. Adding a lamp decreases the brightness of the other lamps in the circuit. _____
 - d. The amount of current is the same in all parts of the circuit. _____
11. a. Describe the current path in a series circuit.

- b. How is the current path in a series circuit different from the path in a parallel circuit?

12. What is electric power? How do you calculate power?

13. What is the function of a ground wire on a plug?

14. Calculate the power and the energy used by the following:

a. a 10-volt lamp that burns for 2 hours and has a current of 0.5 amp

b. a 60-watt light bulb that burns for 8 hours a day for 30 days

c. an oven that operates at 120 V and 10 amps for 3 hours

Check Your Knowledge

Choose the answer that best completes each sentence.

15. A positive charge will repel a (positive charge, negative charge).

16. An instrument that is used to detect charges is a(n) (voltmeter, ammeter, electroscope).

17. An example of a good conductor is (copper, glass, wood).

18. Lightning occurs as a result of a discharge of (resistance, static charges, amperes).

19. The closed, continuous path through which electrons can flow is a(n) (circuit, resistor, charge).

Determine whether each statement is true or false. Write true if it is true. If it is false, change the underlined word(s) to make the statement true.

_____ 20. Ohm's law states that current in a circuit is equal to voltage divided by charge.

_____ 21. The Greek letter omega, Ω , is the symbol for the unit of resistance.

_____ 22. A wet cell uses a(n) acid as its electrolyte.

_____ 23. Fuses and circuit breakers protect a circuit from short-circuiting.

_____ 24. A material that resists the flow of electrons well is an insulator.

_____ 25. The strongest part of an electric field is the area farthest from the charge.

_____ 26. A thermocouple uses differences in temperature to generate electricity.

Apply the concepts you have learned to answer each question.

27. If you know the charge of one object, how could you use it to determine the charge of a second object?

28. Describe how lightning forms.