

Chapter 7 worksheet Electricity

Answer the following problems on a separate sheet of paper.

1. Describe how you could quickly determine whether a string of lights is wired in series or in parallel.
2. Why does a spark jump from your hand to the doorknob as you reach for the door after walking across a carpeted floor?
3. Explain why clothes stick together when they are removed from a drier.
4. What is static electricity?
5. Is there any negative charge on a positively charged object? Why or why not?
6. What happens to the leaves of an electroscope that is not charged?
7. How is electric current different from static electricity?
8. How do electrons flow in an electric circuit in terms of voltage difference?
9. Why is a fuse or circuit breakers an important device in an electrical circuit?
10. Explain how a fuse works if there is a current that is too high.
11. Explain how a circuit breaker works if the current's too high.
12. Explain Ohm's Law.
13. What happens to the current in a device if the resistance of the device increases and the voltage difference stays the same?
14. A(n) _____ contains a piece of metal that melts if the current becomes too high
15. A(n) _____ allows electrons to move through it easily
16. A(n) _____ contains a piece of metal that bends when it gets hot
17. A(n) _____ detects the presence of electric charges
18. A(n) _____ does not allow electrons to move through it easily
19. _____ represents the way that homes are usually wired.
20. _____ is the type of circuit that causes an entire string of decorative lights to go out when one of the bulbs burns out.

Problems: Be Sure to SHOW ALL WORK FOR PROBLEMS!

21. A light bulb with a resistance of $160\ \Omega$ is plugged into a 120 V outlet. What is the current flowing through the bulb?
22. Find the current flowing through a $20\ \Omega$ wire connected to a 12 V battery.
23. What is the current flowing through a $20\ \Omega$ wire connected to a 6 V battery?
24. The current flowing through a lamp is 1.5 A. It is plugged into a 120 V outlet. What is the resistance of the lamp?
25. If you connect a copper wire with a current of 1.2 A to a 1.5 V dry cell battery, what would be the resistance of that wire?
26. If you connect a copper wire with a current of 1.4 A to a 1.5 V dry cell battery, what would be the resistance of that wire?
27. If you connect a copper wire with a current of 1.1 A to a 1.5 V dry cell battery, what would be the resistance of that wire?
28. A toy car has a 1.5 A current and its internal resistance is 2 ohms. How much voltage does the car require?
29. A stove heating element has a resistance of $13\ \Omega$ and operates on 220 volts. What is the current flowing through the stove element?
30. Calculate the potential voltage difference across a $25\ \Omega$ resistor if a 0.3 A current is flowing through it.
31. If a current flowing through a lightbulb is 0.75 ampere and the voltage difference across the lightbulb is 120 volts, how much resistance does the light bulb have?
32. A television that requires an average of 0.40 ampere of current is operated on a 120 volt service. What is the resistance of the television?