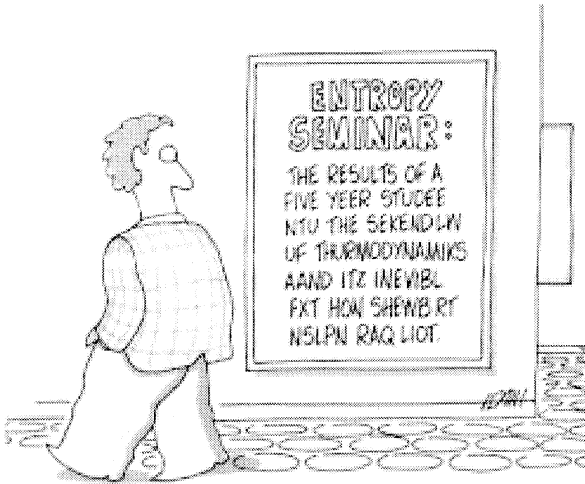


AP 2 Resistors WS 2

Name: _____ Period: _____



Whatever you hold in your mind will tend to occur in your life. If you continue to believe as you have always believed, you will continue to act as you have always acted. If you continue to act as you have always acted, you will continue to get what you have always gotten. If you want different results in your life or your work, all you have to do is change your mind. – Anonymous

1. Resistors in series have the same (a) voltage, (b) current, or (c) power usage.
2. Resistors in parallel have the same (a) voltage, (b) current, or (c) power usage.
3. Under what conditions would two resistors in series have the same voltage?
4. Under what conditions would two resistors in parallel have the same current?
5. A small toy car draws a 0.50-mA current from a 3.0-V nicad (nickel-cadmium) battery. In 10 min of operation, (a) how much charge flows through the toy car, and (b) how much energy is lost by the battery?
6. An electric toy with a resistance of 2.50Ω is operated by a 1.50-V battery. (a) What current does the toy draw? (b) Assuming that the battery delivers a steady current for its lifetime of 6.00 h, how much charge passed through the toy? (c) How much energy was delivered to the toy?
7. A welding machine draws 18 A of current at 240 V. (a) How much energy does the machine use each second? (b) What is its resistance?

8. A 200-W computer power supply is on 10 h per day. If the cost of electricity is \$0.15/kWh, what is the cost (to the nearest dollar) of using the computer for a year (365 days)?

9. A 120-V air conditioner unit draws 15 A of current. If it operates for 20 min, (a) how much energy in kilowatt-hours does it use? (b) If the cost of electricity is \$0.15/kWh, what is the cost (to the nearest penny) of operating the unit for 20 min?

10. A battery charger is connected to a dead battery and delivers a current of 6.0 A for 5.0 hours, keeping the voltage across the battery terminals at 12 V in the process. How much energy is delivered to the battery?

11. A resistor is connected across the terminals of a 9.0-V battery, which delivers 1.1×10^5 J of energy to the resistor in six hours. What is the resistance of the resistor?

12. High-voltage power lines are a familiar sight throughout the country. The aluminum wire used for some of these lines has a cross-sectional area of $4.9 \times 10^{-4} \text{ m}^2$. What is the resistance of ten kilometers of this wire?

13. There are approximately 110 million TVs in the United States. Each uses, on average, 75 W of power and is turned on for 6.0 hours a day. If electrical energy costs \$0.10 per kWh, how much money is spent every day in keeping the TVs turned on?