

Name: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_ Period: \_\_\_\_\_

**Formulas**

$$I = V/R$$

$$P = I \cdot V$$

$$E = P \cdot t$$

1. A circuit has a resistance of  $4\Omega$ . What voltage difference will cause a current of  $1.4\text{A}$  to flow in the circuit?
2. How many amperes of current will flow in a circuit if the voltage difference is  $9\text{V}$  and the resistance in the circuit is  $3\Omega$ ?
3. If the voltage difference of  $3\text{V}$  causes a  $1.5\text{A}$  current to flow in a circuit, what is the resistance in the circuit?
4. The circuit in an appliance is  $3\text{A}$  and the voltage difference is  $120\text{V}$ . How much power is being supplied to the appliance?
5. What is the current into a microwave oven that requires  $700\text{W}$  of power if the voltage difference is  $120\text{V}$ ?
6. What is the voltage difference in a circuit that uses  $2420\text{ W}$  of power if  $11\text{A}$  of current flows into the circuit?
7. How much energy is used when an  $110\text{kW}$  appliance is used for 3 hours?
8. What is the resistance of a lightbulb that draws  $0.5$  amps of current when plugged into a  $120\text{-V}$  outlet? A circuit has a resistance of  $6\Omega$ . What voltage difference will cause a current of  $2.1\text{ A}$  to flow in the circuit?

**Formulas**

$$I = V/R$$

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9. How many amperes of current will flow in a circuit if the voltage difference is 5V and the resistance in the circuit is  $2\Omega$ ?
  
10. The current in an appliance is 7A and the voltage difference is 120V. How much power is being supplied to the appliance?
  
11. What is the current into a microwave oven that requires 700W of power if the voltage difference is 120V?
  
12. What is the voltage difference in a circuit that uses 2420 W of power if 11A of current flows into the circuit?
  
13. A microwave oven with a power rating of 1,200 Watts is used for 0.25 hours. How much electrical energy does the microwave use?
  
14. The current in an electric clothes dryer is 15A when it is plugged into a 240-volt outlet. How much power does the clothes dryer use?
  
15. A toaster oven is plugged into an outlet that provides a voltage difference of 120V. What power does the oven use if the current is 10A?
  
16. A flashlight bulb uses 2.4 W of power when the current in the bulb is 0.8A. What is the voltage difference?

## Section 1

1. What is measured by a galvanometer \_\_\_\_\_.
- a. Current  
b. Frequency  
c. resistance  
d. voltage
2. A magnetic field exerts a \_\_\_\_\_ on other magnets and objects made of \_\_\_\_\_.
3. The region around a magnet where the magnetic forces act is the \_\_\_\_\_.
- a. Electromagnetic pole  
b. Magnetic domain  
c. magnetic field  
d. magnetic pole

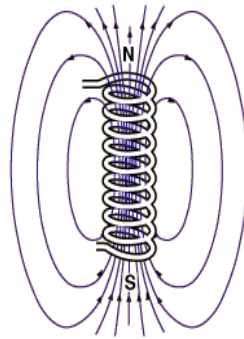


Figure 1A

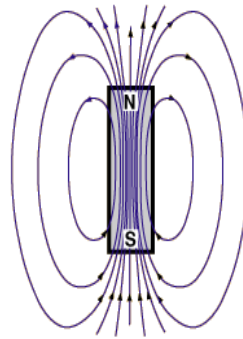


Figure 1B

4. Identify which picture represents a particular kind of magnet. (a) \_\_\_\_\_, (b) \_\_\_\_\_.
5. The location of the strongest magnetic forces is the \_\_\_\_\_.
- a. electromagnets  
b. magnetic domains  
c. magnetic fields  
d. magnetic poles
6. Which change occurs in an electric motor \_\_\_\_\_.
- a. electrical energy to mechanical energy  
b. thermal energy to electrical energy  
c. mechanical energy to electrical energy  
d. wind energy to electrical energy
7. What happens to the magnetic force as the distance between two magnetic poles decrease \_\_\_\_\_.
- a. remains constant  
b. decreases  
c. increases  
d. decreases then increases
8. Two magnets can \_\_\_\_\_ each other, depending on which poles are closest together.

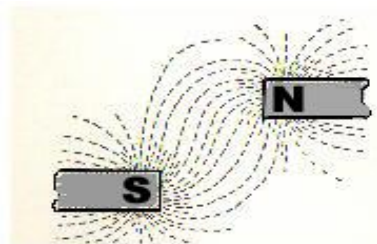


Figure 2

9. Two magnets can \_\_\_\_\_ each other depending on which poles are closest together.

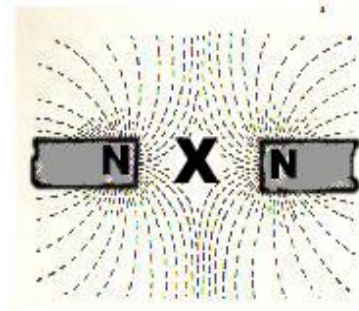


Figure 3

10. The atoms in a magnet are \_\_\_\_\_.

- a. arranged randomly
- b. aligned according to magnetic fields
- c. around an iron core
- d. around a magnetic pole

11. Objects that keep their magnetic properties for a long time are called \_\_\_\_\_.

- a. electromagnets
- b. magnetic domains
- c. permanent magnets
- d. temporary magnets

12. The magnetic force of a magnet is the \_\_\_\_\_.

- a. the same at all parts of the magnet
- b. strongest at the center
- c. strongest at the poles
- d. weakest at the poles

13. A device that increases or decreases voltage in a power line is a \_\_\_\_\_.

- a. commutator
- b. generator
- c. motor
- d. transformer

14. The properties and interactions of magnets are called \_\_\_\_\_.

15. A (n) \_\_\_\_\_ can rotate in a magnetic field when a current passes through it.

16. Alternating current (AC) reverses \_\_\_\_\_.

17. DC current flows only in \_\_\_\_\_ a wire.

18. How do power plants transmit electric energy over long distances? \_\_\_\_\_.

- a. At low voltages, low current
- b. At high voltages, low current
- c. At high voltages, high current
- d. At low voltages, high current

19. Which of the following would not be part of a generator? \_\_\_\_\_

- a. Turbine
- b. Battery
- c. Changes regularly
- d. Changes irregularly

20. \_\_\_\_\_ A balloon is rubbed all over wool. Why will the balloon now attract to the wool?
- The balloon & wool are magnets
  - The balloon & wool have opposite charges
  - The balloon & wool have like charges
  - The balloon & wool are neutral
21. \_\_\_\_\_ What does the rule for conservation of charge suggest?
- An isolated conducting sphere will hold a net charge indefinitely
  - If a charged sphere touches two neutral ones, the neutral ones will each end up with the original charge
  - A piece of silk will be more positively charged after being rubbed with a glass rod
  - Negative charges can be created only if positive charges are also created
22. \_\_\_\_\_ If a negative charge that is free to move is placed exactly between two positive charge, it will
- move to the left
  - move to the right
  - move up or down
  - not move
23. \_\_\_\_\_ An electric motor
- is used to make your television screen work
  - is needed to turn the blades of an electric fan
  - does not require a voltage source
  - takes mechanical energy & transforms it into electrical energy
24. \_\_\_\_\_ Which of the following **does not** normally have magnetic properties?
- piece of iron
  - wire loop of current
  - iron atom
  - plastic loop
25. \_\_\_\_\_ Magnetism comes from
- static charged particles
  - neutrons
  - generators
  - electron spinning on their axes
26. \_\_\_\_\_ If you bring the north pole of a magnet near the south pole of another magnet, what will happen?
- They will attract each other
  - They will repel each other
  - They will do nothing
  - They will release a spark between them
27. \_\_\_\_\_ Which of the following devices does not commonly use a magnet?
- stereo speaker
  - kitchen blender
  - light bulb
  - computer
28. \_\_\_\_\_ Which of the following is a device that transforms mechanical energy into electrical energy?
- a blender
  - a car engine
  - a generator
  - a refrigerator
29. \_\_\_\_\_ The electrical system in most homes are
- direct current in a simple series circuits
  - direct current in parallel circuits
  - alternating current in simple series circuits
  - alternating current in parallel circuits
30. \_\_\_\_\_ An electromagnet becomes stronger when
- its iron core is made thicker
  - the number of coils of wire around its iron core are increased
  - a higher resistance wire material is used
  - a heavier iron core is used