

Name _____

Hour _____

Electricity & Magnetism Study Guide

Goal 1

1. When two objects with opposite charges meet, they will _____.
2. When two objects with the same charges meet, they will _____.
3. Describe what happens when magnets are placed near each other for scenarios A & B.

A.



B.



Goal 2

4. What is static electricity?
5. Describe how a static charge builds up on an object.
6. When you walk across carpet, your socks lose electrons. What charge is built up on you?

7. When you brush your hair, your brush gains electrons that leave your hair. What charge does your brush now have?

8. What is a static discharge?
9. Once static discharge occurs, the objects are _____ charged.
10. Give two examples of a static discharge:

Goal 3

11. What is current electricity?
12. What is a circuit? Describe what is required for a light bulb to turn on.
13. Describe how a switch works in a circuit. Include “opened” and “closed” in your explanation.
14. What does it mean for a material to be a conductor of electricity? Insulator of electricity?
15. Electricity is the energy of moving _____.
16. Draw a diagram of a circuit with 2 batteries, 3 light bulbs, and 1 switch using scientific symbols for each item. Label the each item.

Goal 4

17. Explain how filaments works in a light bulb. Include resistance in your explanation.
18. What would happen to the brightness of the light bulbs if you add an additional battery to a series circuit? What if you add an additional light bulb?
19. You have a simple electrical circuit. If you add a rubber band between two wires in the circuit, what will happen? Explain why this happens.
20. If you have a circuit with two batteries, does it matter how you place them in the circuit? Why?

Goal 5

21. **Diagram** a series circuit with 3 bulbs using scientific symbols. **Label** the sources, bulbs, and wires.

22. **Diagram** a parallel circuit with 3 bulbs using scientific symbols. **Label** the sources, bulbs, and wires.

23. What happens if you unscrew a light bulb in a **series circuit**? What about in a **parallel circuit**?

Why does this happen?

24. Label the statements below as **series advantage (SA)**, **series disadvantage (SD)**, **parallel advantage (PA)**, or **parallel disadvantage (PD)**.

- Each bulb is usually brighter in this circuit because it has it's own path to the battery. _____
- This circuit uses more energy and is more expensive to operate, because the total current is higher. _____
- This circuit uses less energy. _____
- The light bulbs are usually dimmer because they share a current. _____
- This circuit uses less energy which is more energy efficient. _____

Goal 6

25. The law of conservation of energy states _____
_____.

26. A heater transfers electrical energy into _____.

27. How is energy transferred in a simple closed series circuit? Write the name of each form of energy used in the correct order.

_____ batteries -----> _____ wires -----> _____ light bulb

28. During photosynthesis, energy from the sun is changed from _____ energy to _____ energy.

Goal 7

29. Complete the table:

Type of light	Pros (name 2)	Cons (name 2)
Incandescent		
CFL		
LED		

Goal 8

30. What is a magnetic field?

31. All magnets have two _____, or ends.

32. Opposite poles _____; the same poles _____.

33. What is the difference between a permanent and temporary magnet?

34. Give an example of a temporary magnet. _____

35. Give an example of a permanent magnet. _____

36. Place the objects in the correct place in the chart below: **paperclip, zinc washer, rubber band, toothpick, aluminum foil, penny**. They may belong in one, both, or none of the columns.

Conducts Electricity	Magnetic

