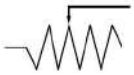
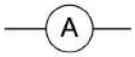
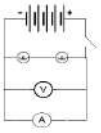
Electricity and Magnetism Test Review

1. **What are the two forces involved in electron flow?** ***force of attraction and force of repulsion***
2. **What will cause an electron to leave or enter the atom?** ***rubbing (friction), conduction, induction***
3. **Define electric field.** ***the region surrounding a charged object where the electrical forces are felt***
4. **Define electricity.** ***flowing motion of electric charge***
5. **Define electric discharge.** ***the sudden release of electric charge that has been stored in an object***
6. **What is an example of extreme electric discharge?** ***lightning***
7. **What is potential difference?** ***another term for voltage; it is the concentration difference between a high conce electrons (negative terminal of a battery) and a low concentration of electrons (positive terminal of a battery)***
8. **What are the three methods of charging?** ***friction, conduction, induction***
9. **Describe an electroscope and how it is used.** ***Two thin metal leaves hanging from a pole in a glass container. charged object approaches or touches the pole, the charge is transferred to the metal leaves causing the repel ea move apart.***
10. **What is static electricity and how is it created?** ***the build up of charge in an object; rubbing (friction)***
11. **Write the symbols for the following parts of a circuit:**
    - ***a.*** **switch** 
    - **b. resistor** 
    - **c. variable resistor** 
    - **d. light bulb** 
    - **e. ammeter** 
    - **f. voltmeter** 
    - **g. battery** 
12. **What are the two types of circuits?** ***series and parallel***

13. **Draw a circuit in which 2 light bulbs are in parallel with a voltmeter and an ammeter.**



14. **What is the difference between a fuse and a circuit breaker?** ***both turn off a overloaded circuit; fus and have to be replaced while a circuit breaker switches off and only has to be switched back on***
15. **What are the three measurements of electricity?** ***voltage, current, and resistance***
16. **What is the definition, unit, instrument, and symbol for the following:**
    a. **voltage-** ***push of electrons (potential difference) through a wire; volts, voltmeter, V***
    b. **current-** ***the number of electrons flowing within the circuit per unit of time; amperes (amps); a***
    c. **resistance-** ***opposition to the flow of electricity; ohms, no instrument; R***
17. **What is the formula for Ohm's Law?** ***V= I X R***
18. **Solve the following:**
    a. **What is the voltage of a circuit that has 50 amps of current and 4 ohms of resistance?** ***200 vo***
    b. **What is the resistance in a circuit that has 100 amps and 1.5 volts?** ***0.02 ohms***
19. **What does resistance depend on?** ***the size of the wires (length and width), how easily the electrons flo (conducting material); the type of resistor***
20. **Define electrochemical cell.** ***uses an electrolyte (chemical that produces electrons) to transfer electron metal terminal to another (battery)***
21. **What are the three types of electrochemical cells?** ***dry cell, wet cell, thermocouple***
22. **What are the two types of current?** ***AC and DC***
23. **What type of battery and current would be most effective for a flashlight?** ***dry cell; DC***
24. **What is the formula for power?** ***P= V X I***
25. **Solve the following:**
    a. **How much power is created from 50 volts and 60 amps?** ***3000 Watts***
26. **What is the formula for energy?** ***E= P X T***
27. **Solve the following:**
    a. **How much energy is used if an appliance requires 5000 watts in 6 hours?** ***5000 watts= 5 kw; 5 kw X 6 hours= 30***
    b. **How much energy is required if a toaster uses 5 amps from a 120 volt outlet for 2 hours?** ***5 amps X 120 volts= 6 kw; .6 kw X 2 hours= 1.2 kw-h***
    c. **A microwave draws 6.0 A when it is connected to a 120 V outlet. If electrical energy cost $0.070/kW•h, what is running the microwave for exactly 4 hours?**
       6.0 ams X 120 volts= 720 watts or .72 kw; .72 kw X 4 hours= 2.88 ~ 3 kw-hrs; 3 kw-hrs X 0.070= .21 ~ $.
28. **What was the first naturally occurring magnet called?** ***magnetite***
29. **What name was magnetite changed to?** ***lodestone***
30. **Define magnetism.** ***force of attraction or repulsion due to an arrangement of electrons***
31. **The ends of the magnet are called _____.** ***poles***
32. **What shapes are magnets?** ***bar or horseshoe***
33. **What rule do the poles obey?** ***like poles repel; opposite poles attract***
34. **Define magnetic field.** ***region surrounding a magnet where magnetic forces are felt***

35. **What are magnetic lines of force?** ***invisible lines of magnetism that are used to determine where a ma located around the magnet***
36. **What is the difference between a permanent and temporary magnet?** ***permanent-hard to magnetize magnetized; temporary-easy to magnetize but loses magnetism quickly***
37. **What is magnetic induction?** ***process in which a material is made into a magnet***
38. **What alloy makes the best permanent magnet? What do the letters stand for?** ***ALNICO; aluminum and cobalt***
39. **How can a magnet be demagnetized?** ***dropping/hitting/heating***
40. **An electric current in a coiled wire creates a _____ field.** ***magnetic***
41. **How do you increase the magnetism in an electromagnet?** ***increase the number of coils***
42. **What energy conversion is created in the following:**
    - ***a.*** **motor-** ***electrical to mechanical***
    - ***b.*** **generator-** ***mechanical to electrical***
43. **What are the two types of transformers?** ***step up (transformer increases voltage like in a neon sign); (transformer decreases voltage like in a doorbell)***