Electricity and Magnetism Study Guide

1. What happens when you cut two magnets in half? get two magnets with N & S poles
2. Name three features of all magnets. magnetic(poles, force, field)
3. Where are the forces of magnets the strongest? poles
4. Name the components of a complete circuit. power source, wires (conductor), load
5. A circuit that has more than one pathway for electrons to follow is a: parallel circuit
6. A magnet or piece of metal can feel the force of another magnet once it enters the area around a magnet called this: magnetic field
7. Name the parts of an atom and give their charges. Proton(+), Electron(-), Neutron (0)
8. Which part of an atom is responsible for the flow of electric current? electrons
9. Explain which wire has the greatest resistance using the diagram below:

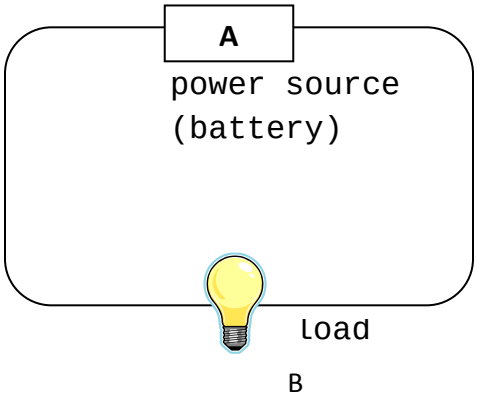
A B

longer = more resistance

10. Explain which wire has the greatest resistance using the diagram below:

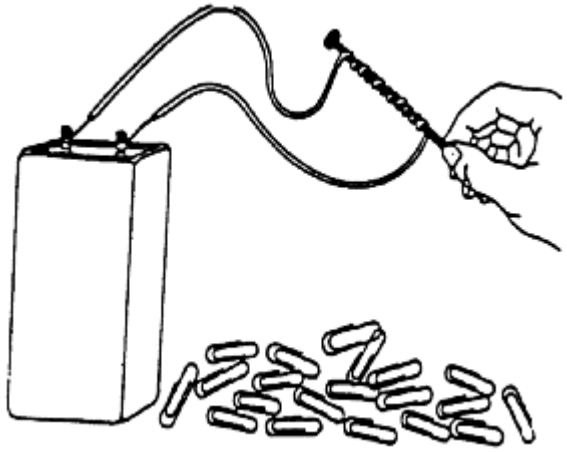
A B

narrower = more resistance



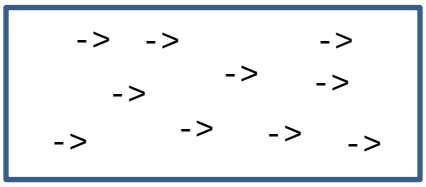
C wires (conductor)

11. For the circuit diagram shown above, name and describe parts A, B and C and tell their function.



12. What is shown in the illustration above? electromagnet
13. What will happen to the nail once a current is passed through it? becomes magnetized
14. What will happen to the nails as they come into contact with the paper clips? attraction

15. In the boxes below, draw arrows to indicate the direction of the atoms in the domains for an object that is magnetized and for one that is not.



Magnetized object Non-magnetized Object

16. Describe what happens to the brightness of bulbs in a series circuit when you add additional bulbs. they all become dimmer
17. A conductor allows electricity to easily pass through it because its electrons are NOT tightly bound to its nucleus.
18. An insulator does not allow electricity to easily pass through it because its electrons ARE tightly bound to its nucleus.
19. Which would have lower resistance, a metal or a plastic? Why? metal, is a good conductor
20. Describe the difference between static electricity and current electricity in terms of electron movement. static is stationary (not moving)/ current flows
21. Describe the energy transformations taking place when a light bulb is powered by a battery, including why the battery diminishes over time. chemical to electrical to light/heat energy lost to power light
22. When you rub a balloon on your hair, what type of charges do the balloon and your hair have? opposite
23. Describe how electrons flow when a circuit is open: there is NO flow
24. Describe how electrons flow when a circuit is closed. they flow freely

Please define the following terms:

Atom smallest part of matter

Electron negative charge moving around the nucleus of an atom in energy levels

Electric Current moving electrons

Electric Circuit a closed pathway for electrons (current) to flow

Series Circuit single pathway

Parallel Circuit multiple pathways

Load anything which uses electricity (light bulb, TV,refrigerator etc)

Static discharge sudden movement of a static charge as it moves to ground

Resistance acting against the flow of electricity

Magnetic Field area around a magnet in which the magnetic force acts