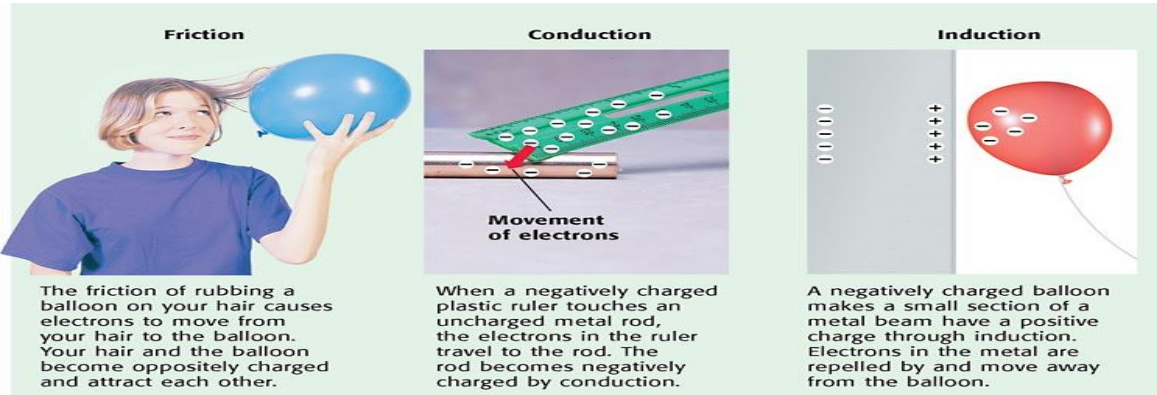


# Electricity and Electromagnetism Study Guide

1. What is electricity? **the flow of electrons**
2. What is the difference between static electricity and current electricity? **static electricity is the build up of charge on the surface of an object; current electricity is the flow of electrons through a conductor/circuit**
3. What are the three ways you can charge an object? Explain and give an example of each.



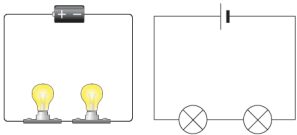
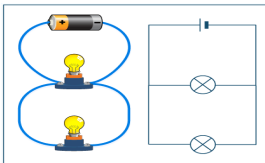
4. Why does electric discharge occur? due to the difference in charge. **The build up of negative charges in an object is attracted to a positively charged object; therefore, the electrons move from negative to positive. Lightning is an example of electric discharge**

5. What is a circuit? **a complete path through which electrons can move**

6. What three things are needed to build a complete circuit?

1. **energy source (battery)**
2. **conductors (wire)**
3. **load (light bulb)**

7. In the table below, compare and contrast series and parallel circuits. Draw a picture of each using the correct symbols.

Series	Parallel
<ol style="list-style-type: none"> <li>1. one path for electrons to flow</li> <li>2. when you add bulbs, the bulbs get dimmer because they share the current</li> <li>3. one goes out, they all go out</li> </ol> 	<ol style="list-style-type: none"> <li>1. more than one path</li> <li>2. same brightness when you add bulbs</li> <li>3. when one goes out, only the bulbs on that circuit go out</li> </ol> 

# Electricity and Electromagnetism Study Guide

8. What is resistance and what 2 factors affect resistance in a wire? **Resistance is the opposition to flow; resistance in a wire can create heat. Thicker wire has less resistance and shorter wire has less resistance**

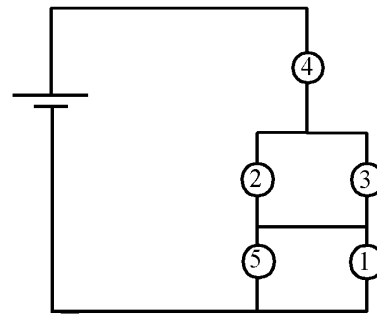
9. How does voltage affect the current in a circuit? What would happen to the brightness of the bulb if you were to use a bigger battery? **The greater the voltage the greater the current. Bulbs will shine brighter with a larger voltage**

10. Look at the diagram below,

a. what would happen if bulb 4 burned out? **all would go out because the circuit would be incomplete**

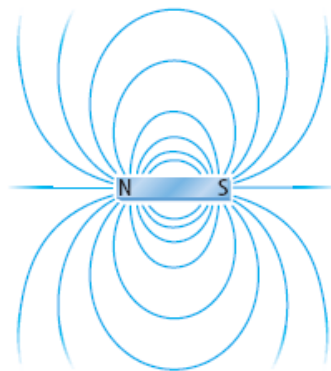
b. what would happen if bulb 2 burned out? **only 2 would go out**

c. what would happen if bulb 1 burned out? **only 1 would go out**



11. What material are magnets attracted to? **iron**

12. Draw what the magnetic field would look like.

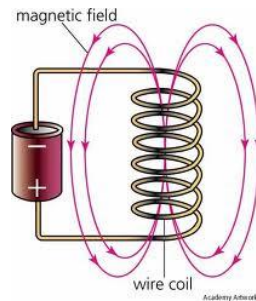


13. Where is the magnetic field the strongest? **at the poles**

14. What makes a magnet magnetic? **the arrangement of atoms inside organized domains. When the domains are aligned poles are formed.**

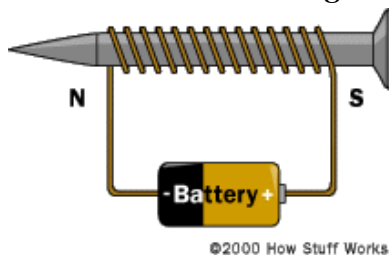
# Electricity and Electromagnetism Study Guide

15. What is a solenoid? Does a solenoid without an iron core produce a magnetic field?  
**A solenoid is a coil of wire without an iron core. A solenoid does produce a magnetic field**



16. What is an electromagnet?  
**a solenoid with an iron core**

17. Draw an electromagnet in the space below.



18. How can you make an electromagnet stronger?

**increase the voltage**

**increase the number of coils**

use a larger gauge wire

use a better conductor

19. Why are electromagnets useful? State some ways in which they are used in everyday life.

**you can turn them off and on using the electricity, you can increase and decrease the strength of an electromagnet**

**electromagnets are used to create electric motors**

20. What is a conductor? Give an example of a conductor.

**a conductor allows heat and electricity to pass through easily, there is less resistance in a conductor; metals are good conductors.**

21. What is an insulator? Give an example of an insulator.

**an insulator does not allow heat and electricity to pass through easily. Wood, plastic, rubber are all insulators**