

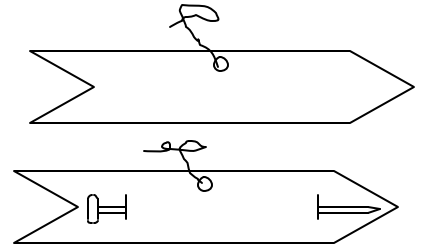
- Purposes:
1. To build a simple compass.
 2. To investigate the effect of a magnet on a compass.
 3. To investigate the effect of an electric current on a compass.

Material:

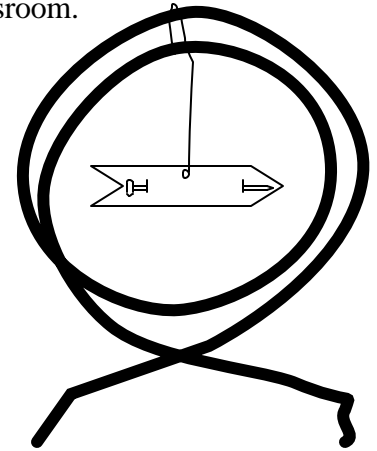
Needle	Bar Magnet	Thick paper	1 m wire	Thread
3 Alligator leads	Battery	Switch	Scissors	

Procedure:

1. Cut a small arrow shaped piece of paper slightly larger than the needle.
2. Poke a hole in the top center of the arrow shaped paper.
3. Use the hole to tie the thread to the paper.
4. Wipe the needle with the bar magnet thirty times in the same direction.
5. Put the needle through the paper twice to hold it in place.
6. Wrap the wire into two coils about 3 inches in diameter with the ends bent to hold the coil upright. Make sure it stand by itself
7. Use the thread to hang the needle and arrow in the center of the coil. Cut off any excess thread.
8. Let the needle swing freely. Describe which direction it points in the classroom.



9. Turn the coil 90° and wait for the needle stop moving. Describe which direction it points in the classroom.



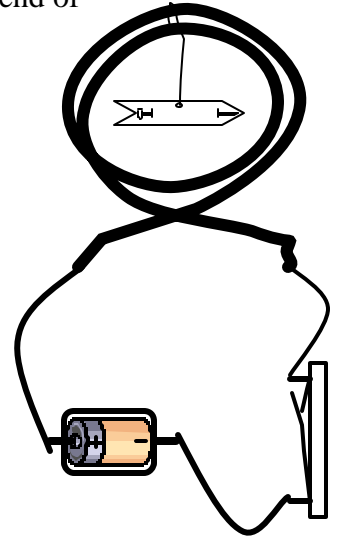
10. Move south of the bar magnet toward the needle. Describe what happens.

11. Move north of the bar magnet toward the needle. Describe what happens.

12. Set the bar magnet down next coil. Describe what happens.

13. Turn the bar magnet 180° and set it down. Describe what happens.

14. Use the alligator leads to connect the battery to one wire of the coil, the other end of the battery to the switch and the switch to the other end of the coil.
15. Push the switch. Describe what happens.



16. Turn the coil 90°, let the needle stop moving, and then push the switch. Describe what happens.

17. Turn the battery around, and then push the switch. Describe what happens.

18. Turn the coil 90°, let the needle stop moving, and then push the switch. Describe what happens.

Analysis:

1. What pattern was there to how the bar magnet affected the needle?
2. Why did the electricity affect the magnet?
3. Why did turning the battery around have a different effect?