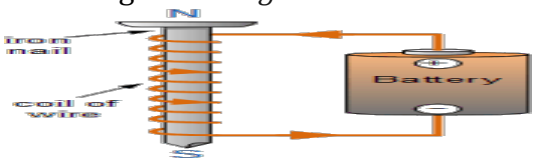
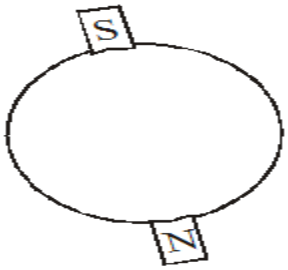
Study Guide: Ch 16

1. Draw the parts of an electromagnet and describe how electromagnets are made stronger. *adding more turns to the coil of wire; increasing the current through coil*



2. How is mass different from weight?
   Mass is made up of matter and is constant (the same) no matter where it is
   Weight is mass and gravity and is dependent on the force of gravity (not constant)
3. Describe why atoms and domains are important when describing properties of magnets. *In some elements groups of atoms are in tiny areas called domains*
   If the north and south poles of the domains line up they make a magnetic field
4. Brandon is building an electric motor using a magnet and a length of thick wire. What shape must the wire have in order for her motor to work?
   Tightly coiled
5. What kind of object (made out of what) could NOT be used to test an electromagnet to find out if it is working?
   As long as it was not made out of nickel, iron or cobalt
6. Which of the following has the largest magnetic field*?* ***__B__***
   A. compass B. Earth C. bar magnet D. electromagnet
7. What is the difference between a bar magnet and an electromagnet?
   A bar magnet has a permanent magnetic field, while an electromagnet has a temporary magnetic field
8. Mr. Nelson is helping his science class build a device that will produce electricity with a rotating magnet. What must he have in order for it to produce electricity?
   A. light bulb B. battery C. resistor D. wire coil ***__D__***
9. When will the gravitational attraction between two objects decrease?
   A bar magnet has a permanent magnetic field, while an electromagnet has a temporary magnetic field
10. A copper wire coiled around an iron nail can be made into an electromagnet by connecting the ends of the wire to each end of a size D battery. What determines the strength of this electromagnet? *The number of coils in a wire*
11. What do you end up with if you cut a magnet in half?
    Two pieces each with a north and a south pole
12. A compass needle responds to a magnetic field because the compass needle is a *__magnet_____*.
13. List the four types of magnets.
    Ferromagnet, electromagnet, temporary, and permanent magnet
14. The gravitational attraction between two objects increase if the *__distance between them decreases__*
15. List the properties of magnets.
    Have two poles; have magnetic forces; and have magnetic fields

16. How can you demagnetize a magnet?
Drop it, hit it with a hammer, heat it, place it in a stronger opposite magnetic field
17. How can you test if an object is magnetic?
When it attracts iron
18. What is created when a magnet moves through a coil of wire?
An electric current
19. Name two effects of Earth's magnetic field.
Compass points to geographic north, auroras seen at both poles
20. What can you make visible by sprinkling iron fillings around a magnet?
The magnetic field lines
21. As electrons move, they make
A. Auroras B. ferromagnetism C. electromagnetism D. magnetic fields
D
22. Whether a material is magnetic or not depends on which of the following? The material's _____
A. density B. weight C. atoms D. mass
C
23. What strengthen a magnetic field made by a current-carrying wire? Circle all that apply.
Electromagnet electric current solenoid electric motor
Electromagnet and electric motor
24. List the items needed to construct an electromagnet?
Battery (power source); wire; iron core (nail)
25. Which objects could be combined to make a deice that would produce electricity.
A. block ice and dark metal box C. magnet and a coil of copper wire
B. magnifying lens and source light D. graduated cylinder and gram scale
C
26. Increasing the number of loops per meter in the coils of a solenoid is one way to *strengthen the solenoid's magnetic field*



Use illustration to answer 27 and 28

27. Which magnetic pole is closest to the geographic North Pole? *magnetic south*
28. Is the magnetic field of Earth stronger near the middle of Earth (in Mexico) or at the bottom of Earth (in Antarctica). EXPLAIN your answer. *Since the earth is like a bar magnet, the magnetic field is strongest at the poles, not in the middle.*