*What is an emf? Your book doesn't like the original definition: "ElectroMotive Force", because it implies that a voltage is a force. It isn't. Remember that the units for voltage is N/C, so it does give a force to charges. If you think of emf like a voltage, you'll be OK.*

1) Write Faraday's law of magnetic induction:

2) Define each of the variables and give their units:

   Notice that Δ is OUTSIDE the parenthesis, meaning that one or more of those quantities inside the parenthesis must change.

3) SOOOOOO, using the equation above, what factors can create an emf?

4) Give four ways to induce a current in a circuit.

5) A coil with 15 loops has a radius of 2 cm. It is oriented 20° to the magnetic field. If the magnetic field changes from 3.2 T to 4.5 T in 4 seconds, find the emf created in the wire loop.

6) Read about and explain Lenz' Law of induction.

7) Using Lenz' Law of induction figure out which side of the solenoid will become a north pole when the bar magnet is moved inside.
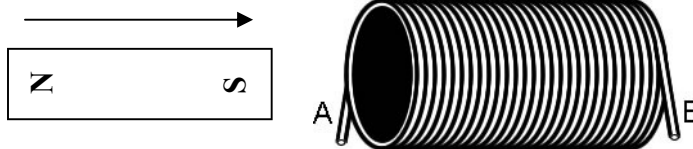
8) The diagram at the right shows a current carrying wire surrounded by compasses. Draw the orientation of the compasses.
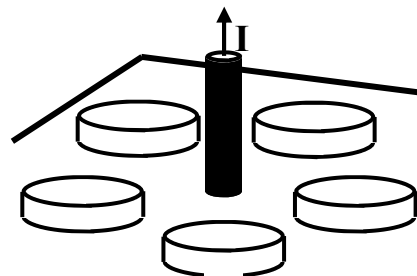
9) On the left is a current carrying loop. Which direction will it turn due to the magnet below?
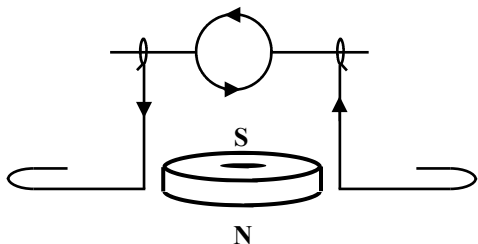
Read about transformers.

10) Does a transformer work on AC or DC power?

11) What is the difference between a primary and secondary?

12) Use the diagram at the right to answer the following.
   A) If electricity is put on the left, which side is the primary?

   B) If the primary is the right side, does it increase or decrease
      the voltage?