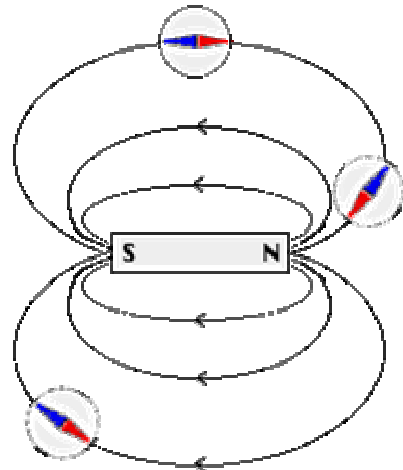
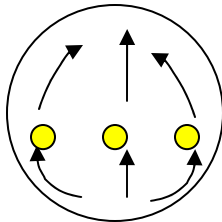


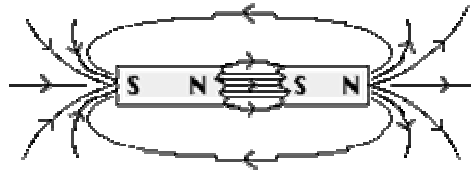
Phys Sc 430
Pretest 4.2 Solutions

- Which of the following materials form domains?
 - plastic__no__
 - silver(Ag)__no__
 - copper(Cu)__no__
 - cobalt(Co)__yes
 - neodymium(Nd)_ yes
- What will happen to a ferromagnetic material like nickel if it comes into contact with a temporary magnet?
It will stick to it.
- Draw the domains of within a permanent spherical magnet.



- In the diagram to the right, are the magnetic field lines drawn correctly? yes
 - Label the North end of each compass needle. North is blue
 - Modify the diagram so that it represents a stronger magnet. Add more lines

5. a. In the diagram below, can you predict whether the 2 magnets are attracting? **Yes they are. Look at N and S in the middle.**



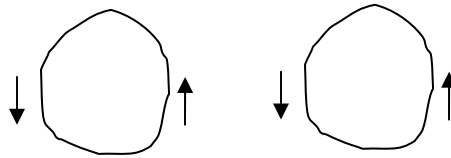
- b. Are the magnetic field lines correctly represented in between the two opposite poles? **Yes**

6. a. Consider two wires parallel to each other, each with a strong identical current flowing in the same direction. Draw the magnetic field surrounding each wire.

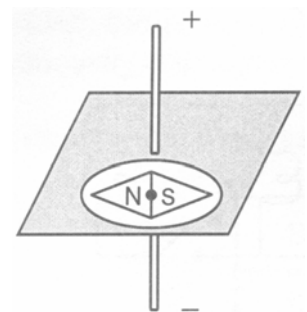
Use the left hand rule.

- b. Will there be an attraction between the wires? Why or why not?

Yes they will attract. Note that the adjacent fields are pointing in opposite directions even though both fields are counter clockwise.



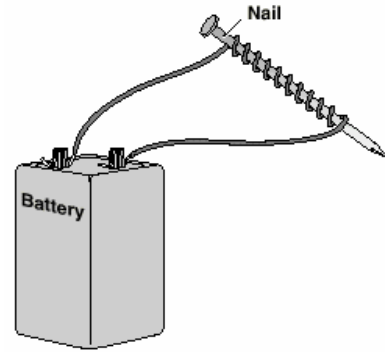
7. Point out the direction of the compass in the diagram. **It points left.**



8.

The diagram depicts an electromagnet. Which of the following would strengthen the electromagnet?

- A. Using a longer wire from the battery to the nail. **no**
- B. Wrapping more wire around the nail. **yes**
- C. Wrapping the wire around a copper nail **no**
- D. Making the loops of wire less tightly coiled **no**



9. Why do the Aurora Borealis and Aurora Australis occur?

The earth's magnetic field redirects charged particles from the sun towards the poles. These fast moving particles collide with oxygen and nitrogen, causing their electrons to move to higher energy levels. When these electrons return to lower levels they emit energy in the form of visible light. Oxygen emissions are green and red. Nitrogen causes purple and other red emissions.

10. Identify the direction of electron flow in each diagram below:

