Dorm Room Magnetic Field Mapping Experiment
Due Wednesday April 30, 2008
ESS 7 Intro to Space Weather

Equipment: (Provided by Instructor)

compass
magnet

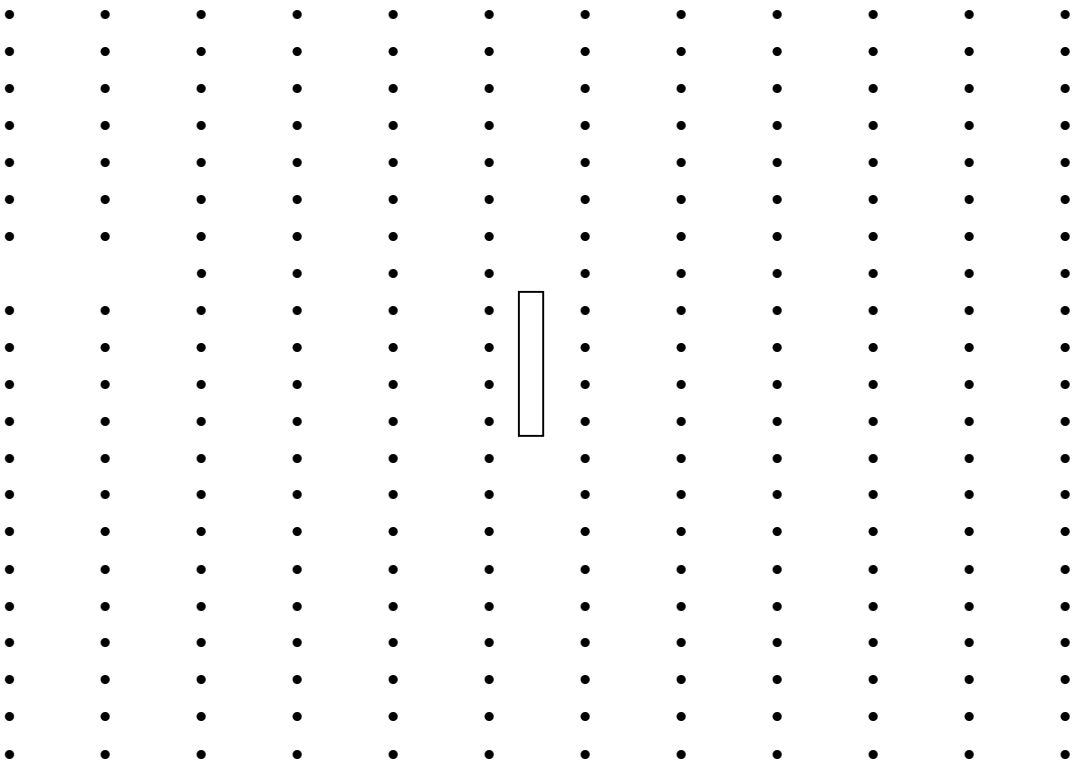
Description: This experiment has two parts: (1) Determine the direction of magnetic north (i.e., how to use a compass) and (2) use the compass to map the magnetic field lines of a dipole magnet.

Procedure:

(1) Hold or place the compass in front of you. Rotate the entire compass so that the red end is pointing toward the "N". This is the direction of magnetic north.
(2) Place the magnet on its side onto the sheet of paper provided (page 2). First move the compass around the magnet to get a feel for how the red arrow moves. Now move the compass next to the magnet on top of one of the dots and either draw a short arrow in the direction of the red needle just in front of the compass needle or remember the direction. Then move the compass away from the dot and draw the arrow originating at the dot. Move the compass to all of the dots around the magnet and draw new arrows for each dot. Do not go beyond the "dots".

Questions:

(1) What direction is North Campus from the Inverted Fountain?
(2) If you were on North Campus (say the Young Research Library), and used your compass to find the direction North, how would you find the direction of the Inverted fountain in terms of direction (i.e., describe how you would know if it was north, south, east or west of you using the compass).
(3) Using your arrows that you drew on the dots, can you label the North and South pole of your magnet? Label the "poles" on the paper.
(4) Can you draw magnetic force field lines from the "north pole" to the "south pole" that go through some of your arrows? (i.e., connect the dots starting from the north pole going around to the south pole to find the shape of the path.)
(5) Describe how the Earth is like a magnet in 4 sentences or less.



Place magnet on side like to rectangle above. Move compass from dot to dot and draw short arrows in the direction of the red compass needle starting on the dot. Label which direction in “north” and explain why. The poles are the part of the magnet where the magnetic field comes directly out of or into the magnet.