

A. The Fixed Magnets.

- ☐ I found the North and South pole of the red rectangular magnet.
- ☐ I found the North and South pole of the lodestone

Draw a picture of the hard drive magnets. Each facing half has a N and S pole facing up. Draw a picture of the domains below: (indicate where the N and S poles are)

**B. The mysterious Levitation Spinny Magnet.**

Draw a picture of the base of the spinny magnet and the rotor. Find the hidden magnets:

Picture of the base, and where the N and S poles are

Picture of the rotor and where its N and S Poles are

C. Electric motors

- ☐ I found the North and South poles of the fixed magnet motor demo
- ☐ I admired the motor that generates the fixed magnets with electric current
- ☐ I pulled out the hard drive platters and looked at the electromagnets under it, and located the fixed magnets on the rotor itself. (on the bottom of the platters)
- ☐ I made the speaker move in and out with the battery. I looked at the other speakers in various states of disassembly, and found the voice coil in the taken apart speaker.
- ☐ I looked at the seek arms and how they have the hard drive magnets around them
- ☐ I turned on the computer, waited, hit F1, and watched the seek arm going crazy as it loads the OS.

D. The generators.

- ☐ I tried the hand crank generator with no load, with a light bulb attached, and with a dead short. I pondered how the torque needed to turn the generator increased as the load increased.
- ☐ I connected the generators together, had my partner turn one, and I allowed the other handle to spin in my hand.
- ☐ I tried both of the flashlights.

When does the shaker flashlight light up?

How does the squeeze flashlight stay lit between squeezes?

E. A current carrying straight wire. (outside in the computer lab)

- ☐ I used my right hand rule to predict the direction of the magnetic field around the wire
- ☐ I used the magnaprobe to confirm this. (The red end points in the direction of B)

F. Flat solenoid.

- ☐ I used my right hand rule to predict the direction of the North pole of the whole big flat solenoid.
- ☐ I used the magnaprobe to confirm this. (The red will point toward the South pole)

G. The long long solenoid. (on the principal's table at the back of the room)

- ☐ I used my right hand rule to predict the direction of the North pole of the long long solenoid.
- ☐ I used the magnaprobe to confirm this.
- ☐ I explored the space inside of, and around the long long solenoid with the magnaprobe

Put your magnaprobe back on the paper where you found it.

H. Transformers

- ☐ I checked out the big beefy microwave oven transformers

If they are step up transformers, which side is the primary? The one with more windings, or the side with fewer?

- ☐ I checked out the doorbell transformer and the isolation transformer
- ☐ I checked out the power supplies. I located the
 - transformers
 - diodes
 - capacitorson each one

I. BusyTown

- ☐ I drove a little car around BusyTown

How must the poles of the magnets be laid out above and below the cardboard?