

MAGNETIC LEVITATION

Did you know . . .

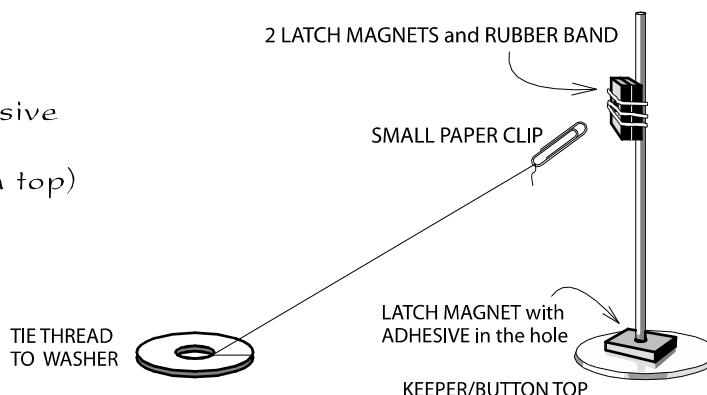
In Japan, passenger trains float above the tracks on a cushion of magnetism!

Today you will use the power of magnetism to perform tricks of levitation

Experiment 1: THE HOVERING PAPER CLIP

WHAT YOU NEED:

3 latch magnets
tiny piece of reusable adhesive
clear plastic rod
keeper disk (really a button top)
small paper clip
heavy washer
invisible thread
rubber band
ruler



WHAT TO DO:

Set it up as shown in the picture.

Pull a tiny piece from the reusable adhesive in your magnet case.

Put it into the hole of the bottom latch magnet. Push it into place with the clear plastic rod. The adhesive will make the rod stay in place.

Use a rubber band to hold the other two magnets to the rod.

Slowly slide the washer away from the magnets. How far from the magnets can the paper clip float?

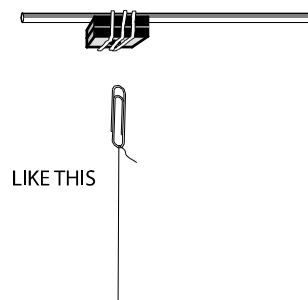
The distance is _____ centimeters.

Try sliding different objects into the gap between the paper clip and the magnets. Try paper, aluminum foil or anything else you can think of.

Did anything stop the magnetism?

EVEN BETTER:

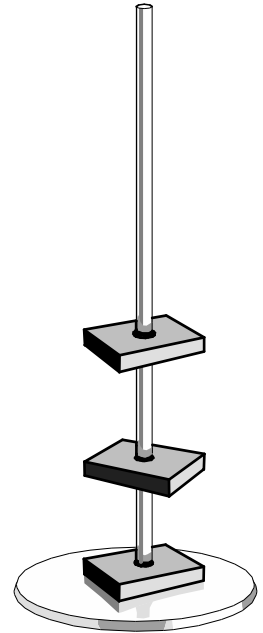
The levitation works even better if the magnets are directly above the paper clip. Try it.



EXPERIMENT 2: THE INVISIBLE SPRING

WHAT YOU NEED: the 3 latch magnets, rod, disk and ruler from experiment 1.

WHAT TO DO: Arrange the magnets as shown, so they repel.



BOUNCE IT!

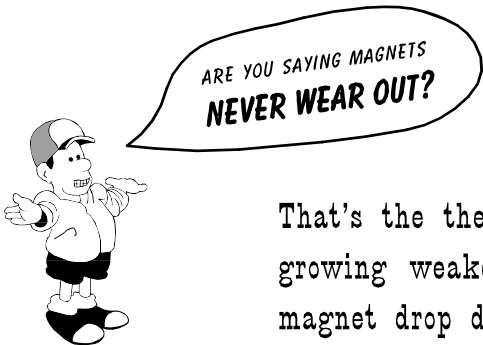
Magnetic repulsion acts like a spring keeping the top magnet **LEVITATING** above the other.

SHOOT IT!

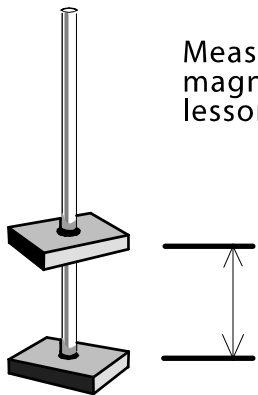
By pressing down on the top magnet, you can actually **STORE ENERGY** between the magnets. Release this energy by letting go. How far can you launch the top magnet?

BELIEVE IT OR NOT...

*PERMANENT MAGNETS USE **NO ENERGY** TO STAY IN PLACE, SO THEY SHOULD BE ABLE TO LEVITATE PRACTICALLY **FOREVER!***



That's the theory! Check to see if the magnetic repulsion is growing weaker over time. If it is, you will see the top magnet drop down closer to the bottom magnet.



Measure the distance between the magnets. Leave it until the next lesson and see if it changes.

Separation distance is _____ centimeters.

