

Magnetic Fields

http://www.youtube.com/watch?v=NJUTUFAWfEY&safety_mode=true&persist_safety_mode=1&safe=active

Lodestone

naturally magnetic piece of the mineral magnetite. Ancient people first discovered the property of magnetism in lodestone. Pieces of lodestone, suspended so they could turn, were the first magnetic compasses and their importance to early navigation is indicated by the name *lodestone*, which means 'course stone' or 'leading stone'. Lodestone is one of only two minerals that is found naturally magnetized; the other, pyrrhotite is only weakly magnetic



Laws of Magnetic Forces

A magnet will always have two poles which we call arbitrarily North and South. If magnet is broken in two this will create two new magnets with North and South po

1. Like pole repel each other.
2. Unlike poles attract and will stick together.



The Domain Theory of Magnetism

The domain theory states that inside a magnet there are small regions in which the magnetic alignment of all the atoms are aligned in the same directions.

Within a magnetic substance most of the domain are aligned (pointing in the same direction).

If these domains are out of alignment, the substance will not be magnetic.

Ferromagnetic substances are strongly attracted by magnets and become strong induced magnets. They are composed of iron, nickel, cobalt and their alloys.

How can domain theory explain the following?

- (a) a nail becomes magnetized when left in a magnetic field
- (b) dropping a magnet weakens it
- (c) heating a magnet weakens it

Gravitational Field	Magnetic Field	Electric Field
<p>affect masses</p> <p>Strongest + generated by earth</p> <p>only attraction</p> <p>force ↓ as d ↑</p>	<p>(ferro)magnetic substances</p> <p>gen. by earth</p> <p>attraction <u>or</u> repulsion</p> <p>“</p>	<p>charges</p> <p><u>not</u> gen. by earth</p> <p>attraction or repulsion</p> <p>“</p>