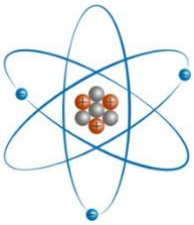
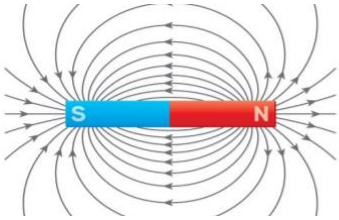
Science V12/S3 - Magnets

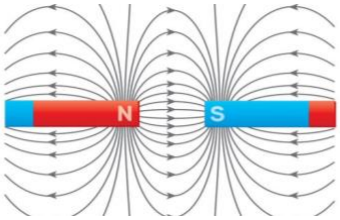
You have heard of magnets, but do you know how they work? Magnet refers to an electric force. Magnetism can cause an attraction or a repulsion of two magnets. It may pull them together or push them apart.

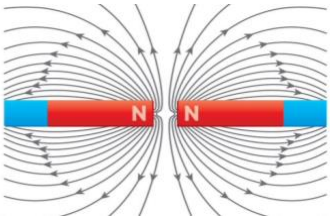


Everything is made of atoms that have electrons. Those electrons are spinning around in circles. If all the electrons are spinning in the same direction, it will make the atoms in these substances strongly magnetic. The motion of electrons in the atoms of certain materials creates a positive or negative magnetic force, also called north or south.

All magnets have north and south poles. Opposite poles are attracted to each other, while the same poles repel each other. This means that positive force will "stick to" a negative force. It also means if you put a positive with a positive, they will not want to touch. Opposites attract!







Some things, like rocks and minerals, are natural magnets. These objects have magnetic fields, which are magnetic forces near or around them. The Earth has a magnetic force, which is how compasses work to show you magnetic North. Other things like paper, cloth, or rubber, do not have a strong magnetic field, so we say that they are not magnetic.

You can also create a magnet by producing an electric current that flows through a coil of wire around a piece of metal, magnetizing the metal. The coil of wire and the metal together are called an electromagnet.

Magnets are everywhere. They come in a wide variety with an equally wide variety of uses. There are magnets that help to hold a cabinet or purse closed. Motors with electromagnets help run many household appliances, cars, and airplanes. Huge magnets in a special machine called an M.R.I. can now give doctors detailed pictures within the body without surgery.

There are even special trains that run on magnets. The tracks become an electromagnet, and they repel the large magnets on the bottom of the train. The train literally levitates over the tracks. The force of gravity is pushed against the opposing magnetic force so the train can float without touching the tracks. This allows it to move faster than a traditional train.