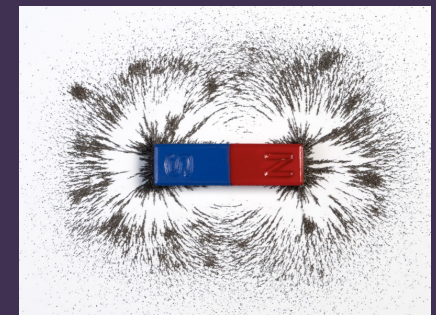
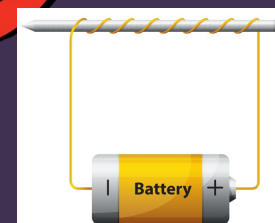
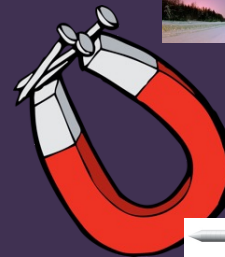
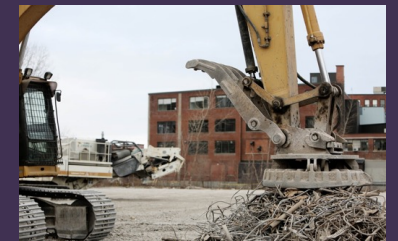
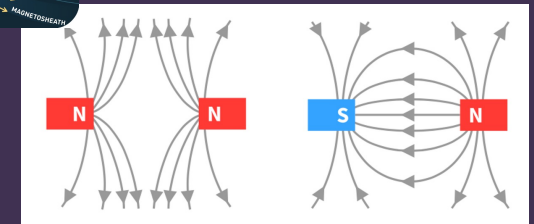
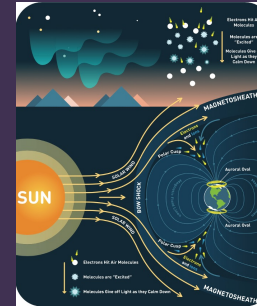


Magnets and Electromagnets

- Magnets and their Uses
- Magnetism and Magnetic Fields
- Law of Magnetic Poles
- Permanent vs. Temporary Magnets
- Earth's Magnetic Field
- Northern and Southern Lights
- How a Compass Works
- Electromagnets



Preview File

Please enjoy this preview of your Student Version of the presentation. Please note within this sample file:

- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
- Other slides may have on them, this represents writing that has been removed on this sample

**The paid full version of your resource includes
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Magnets

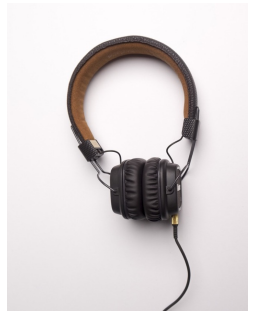
With the person beside you, write down how you think magnets work.

Applications of Magnets

With the person beside you, write down three different ways we use magnets.

Some Uses of Magnets

- Maglev trains
- Particle accelerators
- Magnetic resonance imaging (MRI) systems
- Speakers in stereos, earphones, and televisions
- Store data in computers
- Car horns and motors

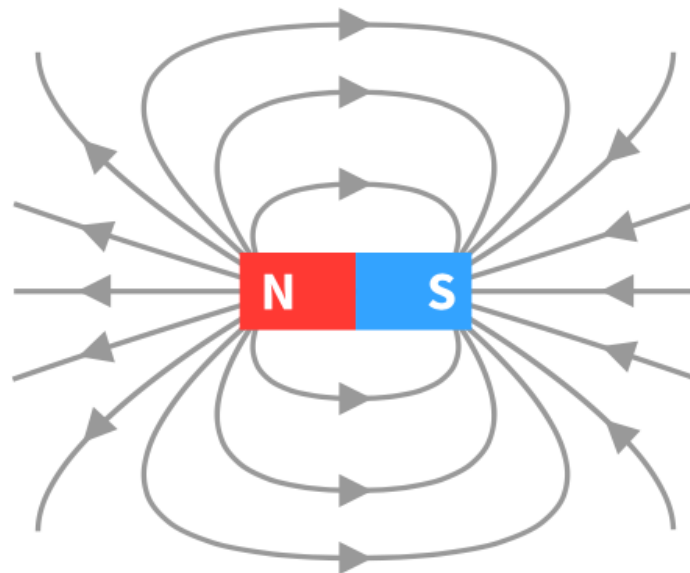


Look at the list above and choose 1 use of uses you didn't know about. Spend 5 minutes researching it and then write 2-3 sentences on how it works.

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Magnetic Fields

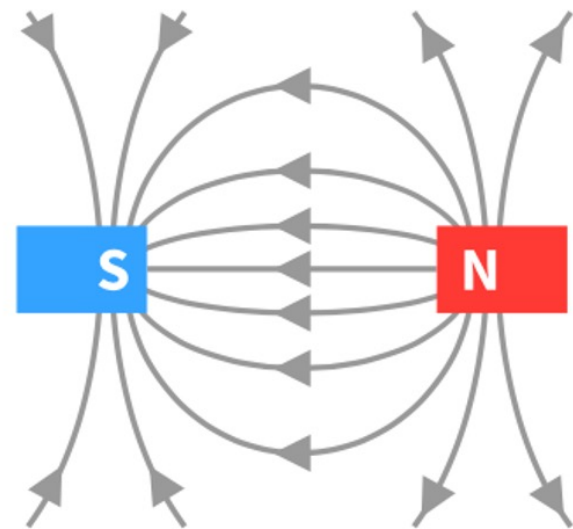
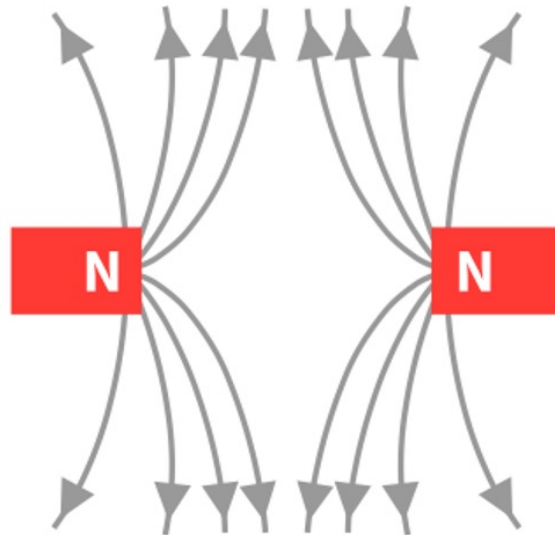
- ---
- The lines around the magnet show where the magnetic field is



Magnetic Field

Law of Magnetic Poles

- _____
- Similar magnetic poles (N and N, S and S) repel



Demonstration/Activity

If you sprinkle iron filings near a permanent magnet, the iron filings will line up along the magnetic field.

Using iron filings and magnets,

draw the field lines for:

- individual magnet
- like poles (N and N, S and S)
- unlike poles (N and S)

Draw them on a separate sheet of paper.

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Permanent vs. Temporary Magnets

- _____
- Other things like paper clips, iron nails, etc., can become a magnet if they are near a permanent magnet
 - Called temporary magnets



Permanent vs. Temporary Magnets – Try It

When the permanent magnet is removed, temporary magnets lose their magnetism.

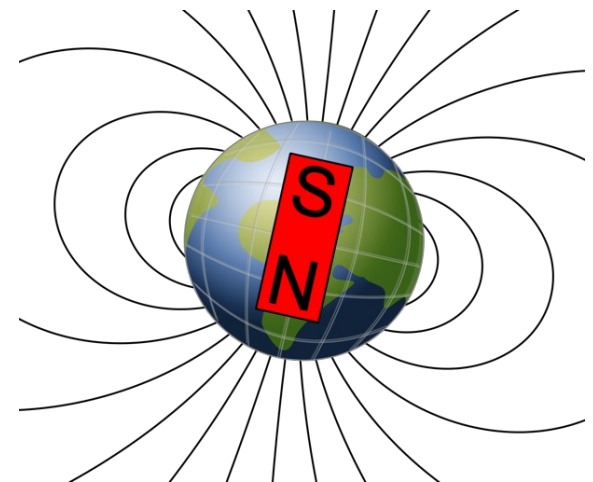
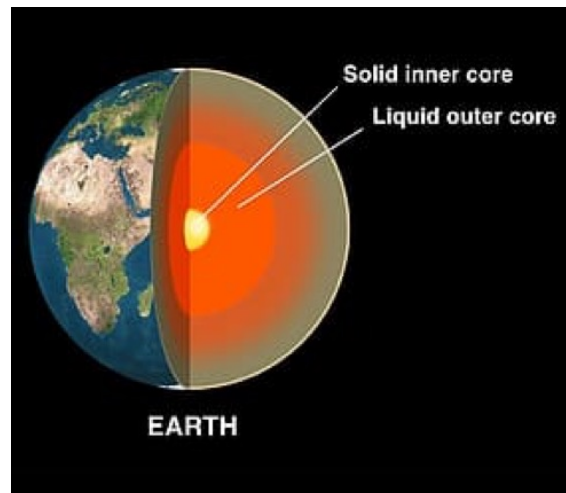
Try it with the person next to you. Magnetize a temporary magnet like a paper clip by bringing it near a permanent magnet. See if it will attract other objects. What objects does it push or pull?



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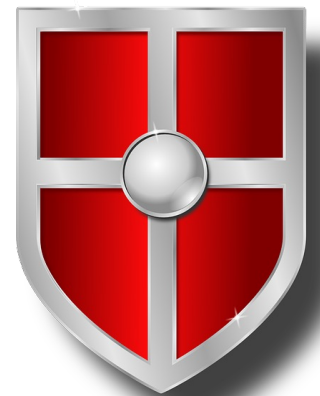
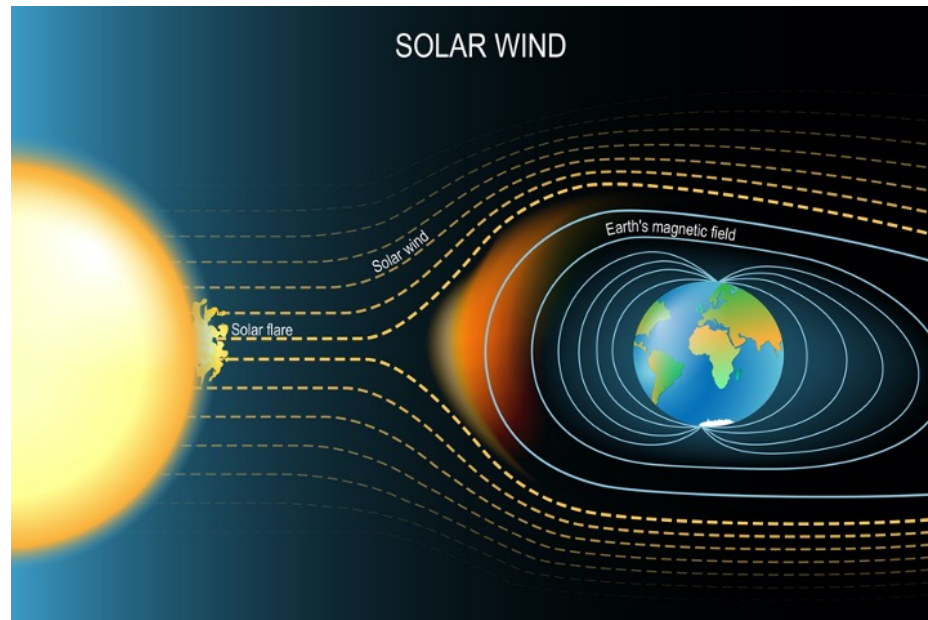
Earth's Magnetic Field

- In the center of Earth, there are a lot of metals that can become magnetic
- Because the center of Earth is always spinning, these metals create a magnetic field around the Earth



Earth's Magnetic Field

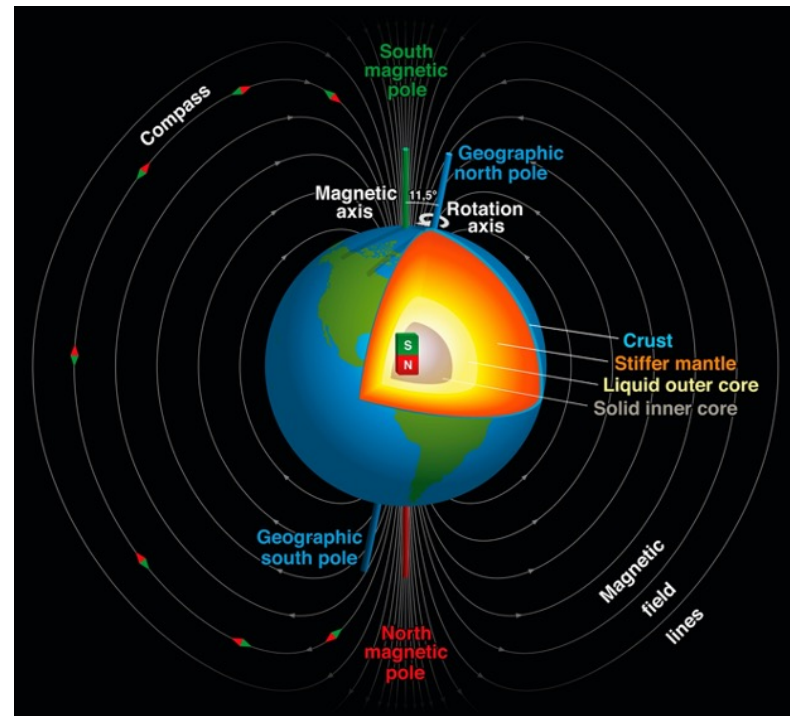
- _____
- Without it, life as we know it couldn't exist on Earth



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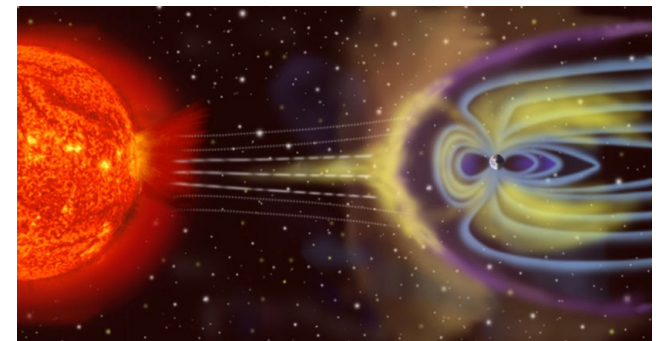
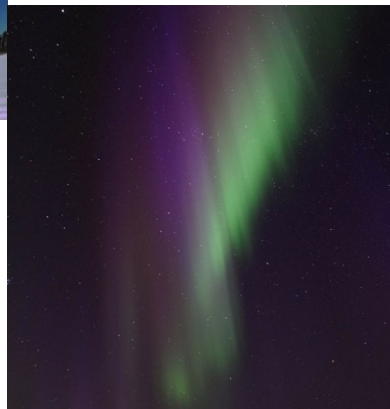
Earth's Magnetic Field

These solar winds get closest to us at the poles – still not dangerous though.



Northern and Southern Lights

- _____
- This creates the northern and southern lights



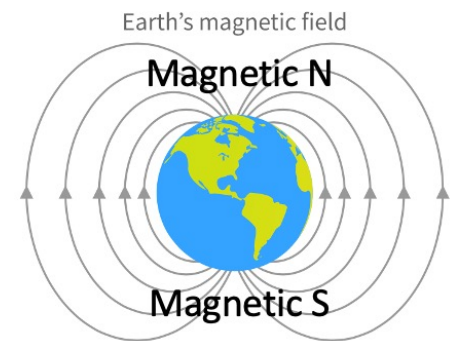
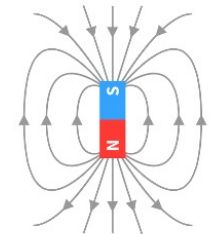
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A Compass

Certain animals can migrate thousands of miles to an exact location using their own internal compass and Earth's magnetic field.

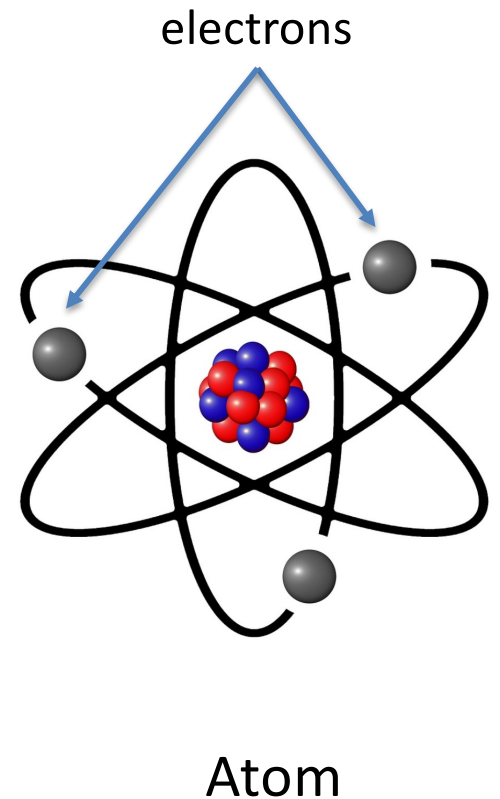


Canadian Geese fly from Ontario to the southern United States every winter!



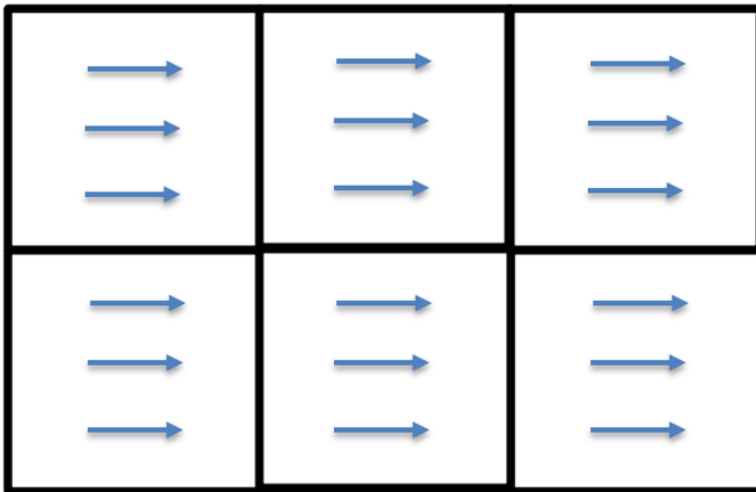
Electromagnets

Magnets are made up
of small

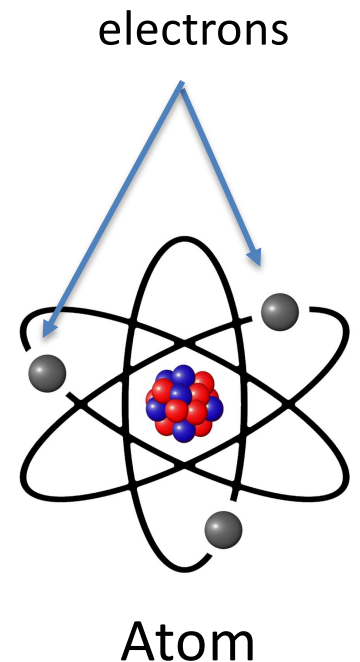


Electromagnets

- _____
- Permanent magnets always have their electrons facing the same direction → magnets are “always on”



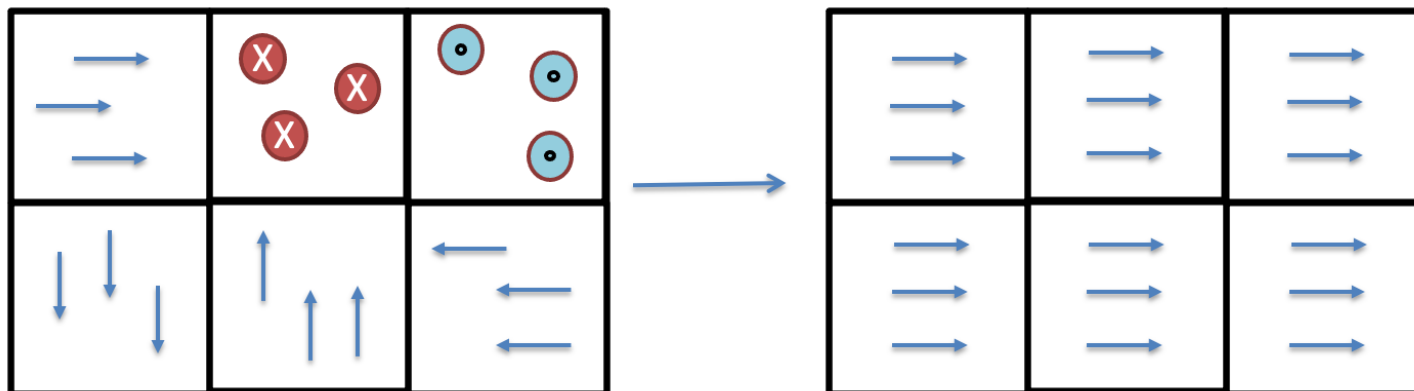
Electrons in a permanent magnet all facing the same way.



Electromagnets

- Temporary magnets have their electrons forced in the same direction by a strong magnet or electrical current (electricity)

- _____

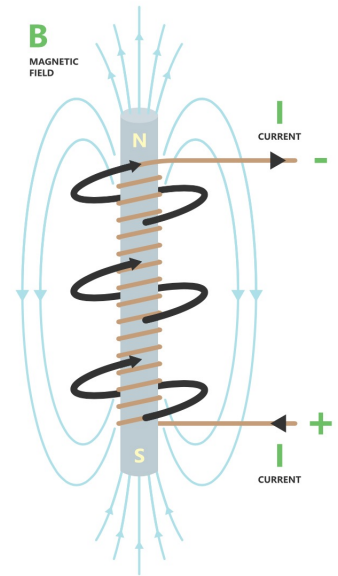


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Electromagnets and Coils

We use electromagnets all the time. Just turn on the electricity and they start working. Turn the power off, and they stop.

- ✓ In junkyards for lifting scrap metal
- ✓ Doorbells
- ✓ Speakers
- ✓ A lot more



Magnetic Field Strength

The strength of a magnetic field depends on:

1. The
2. The number of turns of wire in an electromagnet.

.....

3. The amount of electrical current going through an electromagnet.

More current = greater field strength.

4. _____

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