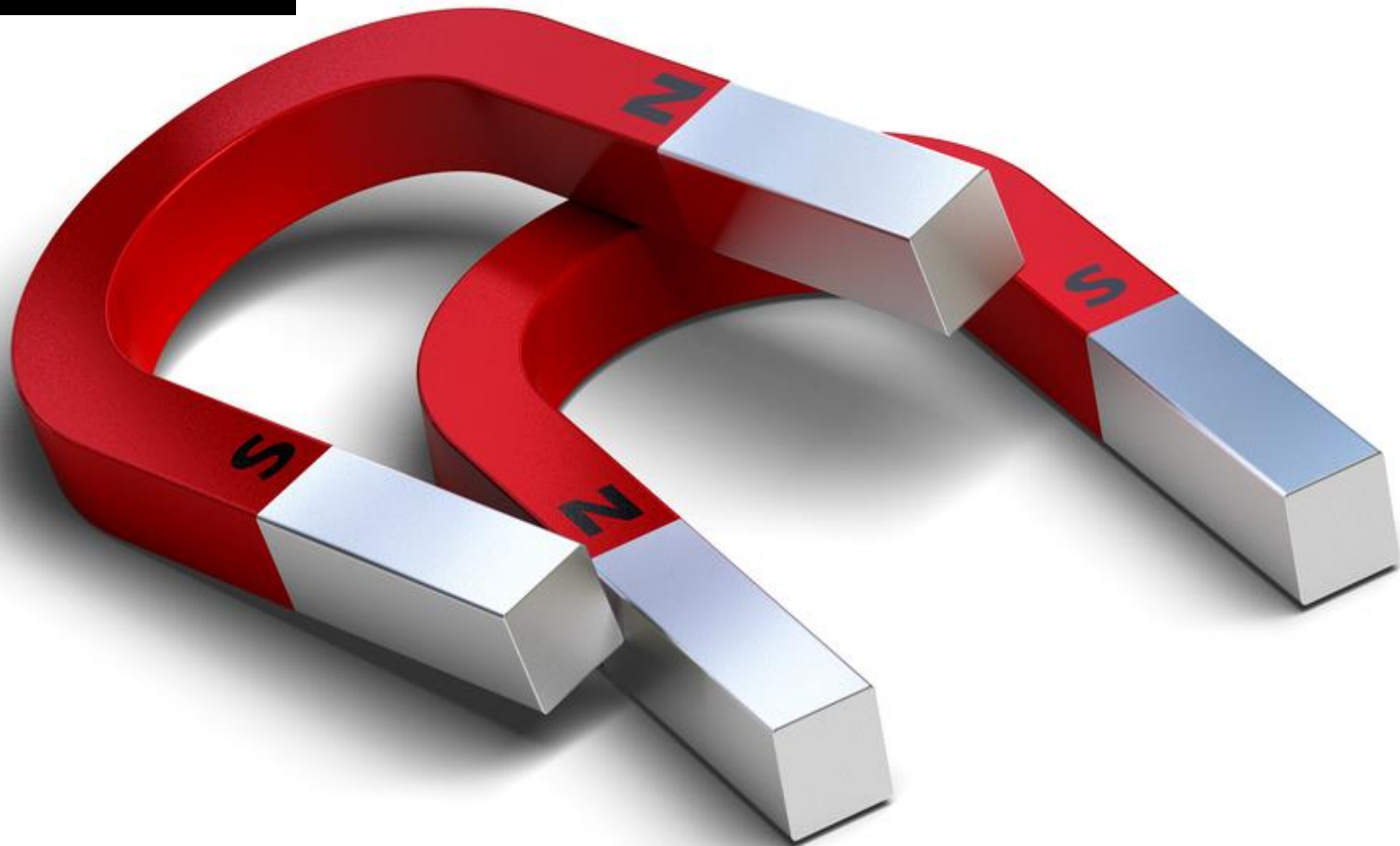


Magnetism

YEAR 5

Spring 1



LESSON 2

What are magnets?



Do Now -

1) What is a contact force?

2) What is a non-contact force?

3) Write down the names of each of the forces into the 'contact' or 'non-contact' force column

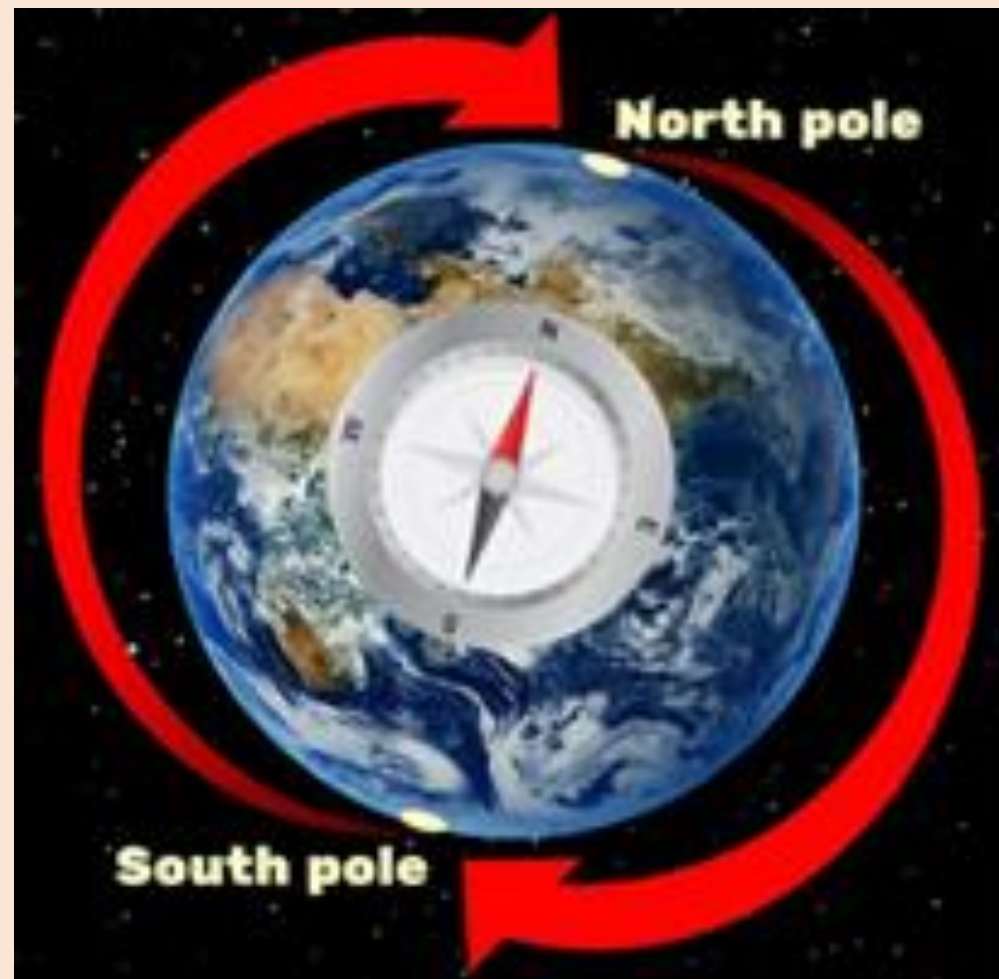
Gravitational force | Friction | Magnetic force | Upthrust | Air resistance

Contact forces	Non-contact forces
- _____	- _____
- _____	- _____
- _____	

From previous learning:

Give an example of each of the following types of mixtures:

Example of mixture of solids	_____
Example of mixture of liquids	_____
Example of mixture of gases	_____





Read the following passage about magnets

A long time ago it was discovered some objects attracted or repelled by other objects without having to heat them up or do anything to them at all. These materials were called **magnets** and have become very important in a range of applications.



Complete the definition of magnets below:

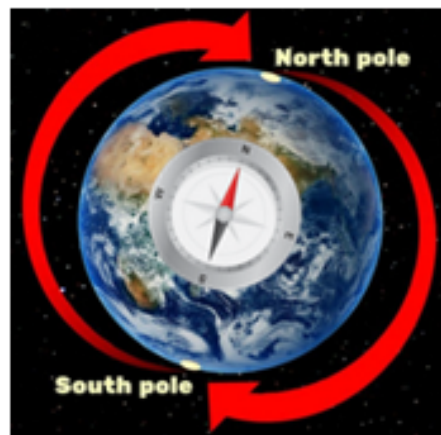
Magnets are objects that a _____ or r _____ other magnetic objects or materials.

Magnets were first found as objects called **lodestones**. The oldest known reference to lodestone's properties appeared in 600 BCE, when a Greek philosopher called Thales of Miletus noticed iron's attraction to it.



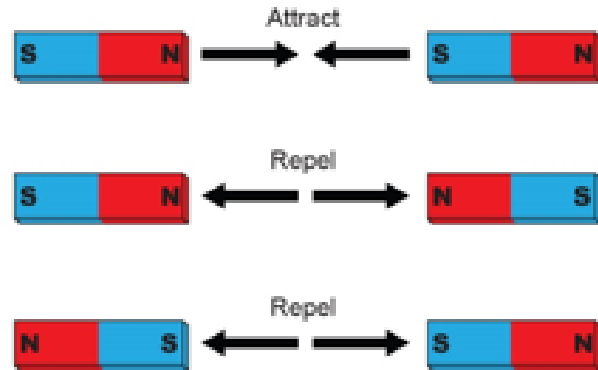
What were the first known magnetic objects called?

If you dangle a magnet from a piece of string, one side will point towards the north pole of the Earth and the other side will point towards the south pole of the Earth. Therefore we call the first side the **north pole** of the magnet and the second side the **south pole** of the magnet.



What do you call the two sides of a magnet?

When two magnets are placed near each other, they are affected by each other's magnetism. When two different sides of a magnet are brought together, they are attracted to each other. When two of the same sides of a magnet are brought



together, they are repel (push away) each other.

Examples of materials that are magnetic include Steel, Iron, Cobalt and Nickel.

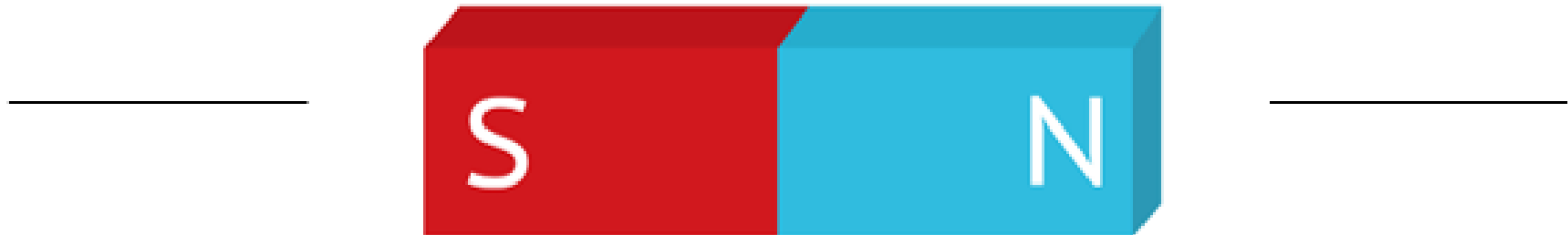


Give two examples of materials that are magnetic:





Use bar magnets to investigate how the magnetic force acts

You are going to use a magnet called a **BAR MAGNET**. Label each side with 'north' or 'south'.



Bring the magnets together in each of the following ways and write down what you observe:

<p>Place the north side and the south side together</p>  <p>The image shows two bar magnets. The left magnet has a red South (S) pole on the left and a blue North (N) pole on the right. The right magnet has a red South (S) pole on the left and a blue North (N) pole on the right. They are positioned so that the South pole of the first magnet is facing the South pole of the second magnet.</p>	<p>How does it feel?</p> <hr/> <hr/>
<p>Place the south side and the north side together</p>  <p>The image shows two bar magnets. The left magnet has a blue North (N) pole on the left and a red South (S) pole on the right. The right magnet has a blue North (N) pole on the left and a red South (S) pole on the right. They are positioned so that the North pole of the first magnet is facing the North pole of the second magnet.</p>	<p>How does it feel?</p> <hr/> <hr/>

Place the north side and the north side together



How does it feel?

Place the south side and the south side together



How does it feel?

Place a compass near the north side and then the south side



How does it feel?

Place some paper clips on either side of the compass



How does it feel?

Finish the conclusion below using the words in the box:

attract | north | both | repel | south

When two of the same side of a magnet are brought together, they _____.

When two different sides of a magnet are brought together, they _____.

The north side of the compass was attracted to the _____ pole of the magnet. The south side of the compass was attracted to the _____ pole of the magnet.

Paperclips were attracted to _____ sides of the magnet.



Use bar magnets and paper clips to test the strength of the magnet

Method:

1 bar magnet

- 1) Pick up 1 bar magnet
- 2) Hold it upright with the south pole facing downwards
- 3) Add one paperclip so that it is hanging from the south pole of the magnet
- 4) Add another paperclip to the bottom of the first paperclip
- 5) Continue adding paper clips until they will no longer stick to the magnet



2 bar magnets

- 1) Remove all the paperclips from your magnet
- 2) Add a second magnet above the first magnet so that the south pole of the top magnet is connected to the north pole of the first magnet
- 3) Repeat the steps above to see how many paperclips the two magnets together will now hold



Write down your results in the sentence below:

When we used one magnet, we found that _____ paperclips stuck to the bottom of the magnet.

When we used two magnets, we found that _____ paperclips stuck to the bottom of the lower magnet.

Complete a conclusion to explain your answers:

We found that _____

I think the reason this happened was because _____



How might you make the strongest magnet possible?