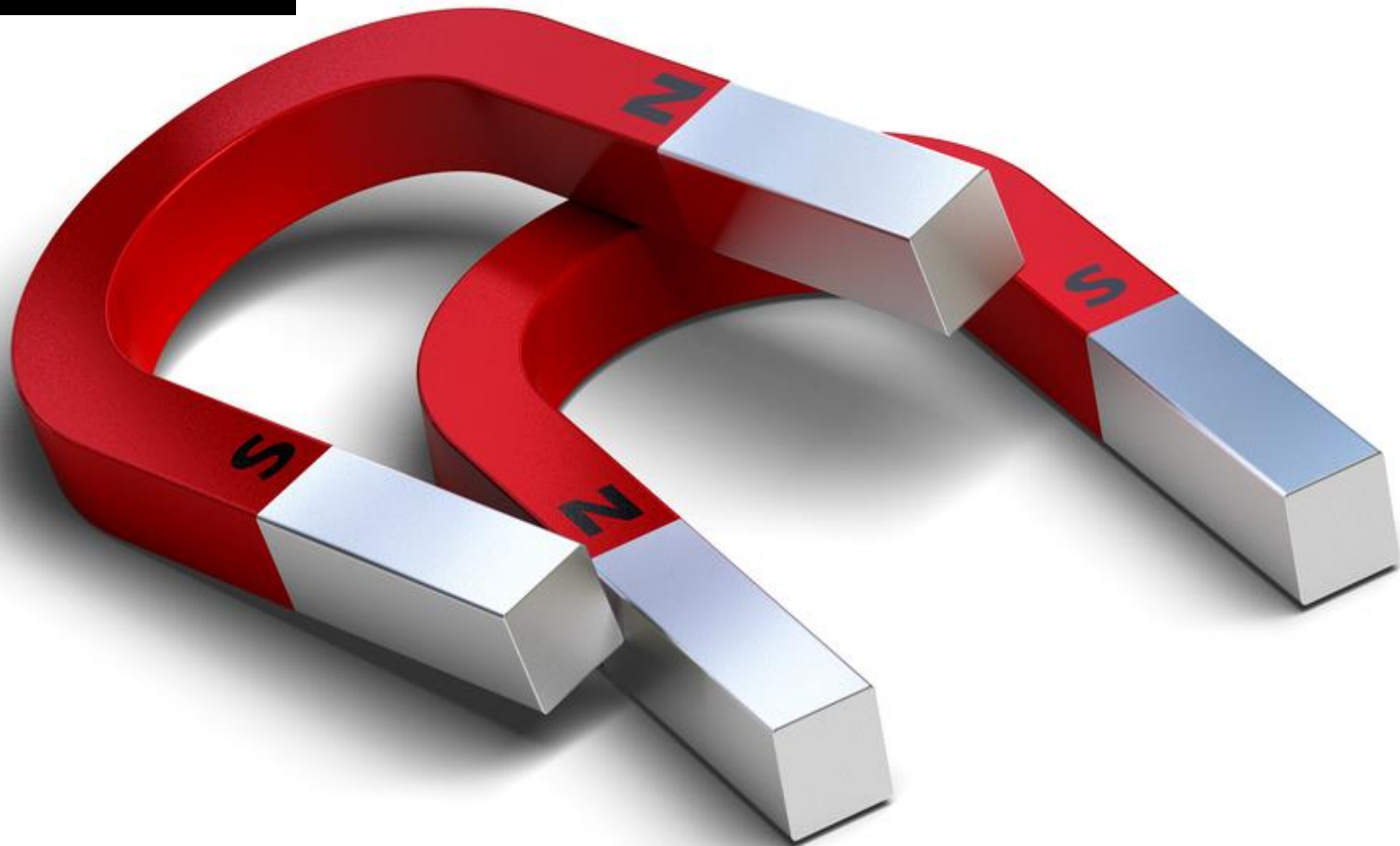


Magnetism

YEAR 5

Spring 1



LESSON 6

What are some uses of magnetic materials?



Do Now – Retrieval

1) What are three examples of materials that are magnetic:

- a) I _____
- b) S _____
- c) N _____

2) For each of the examples below, state whether the objects will 'attract', 'repel' or if there will be 'no effect'

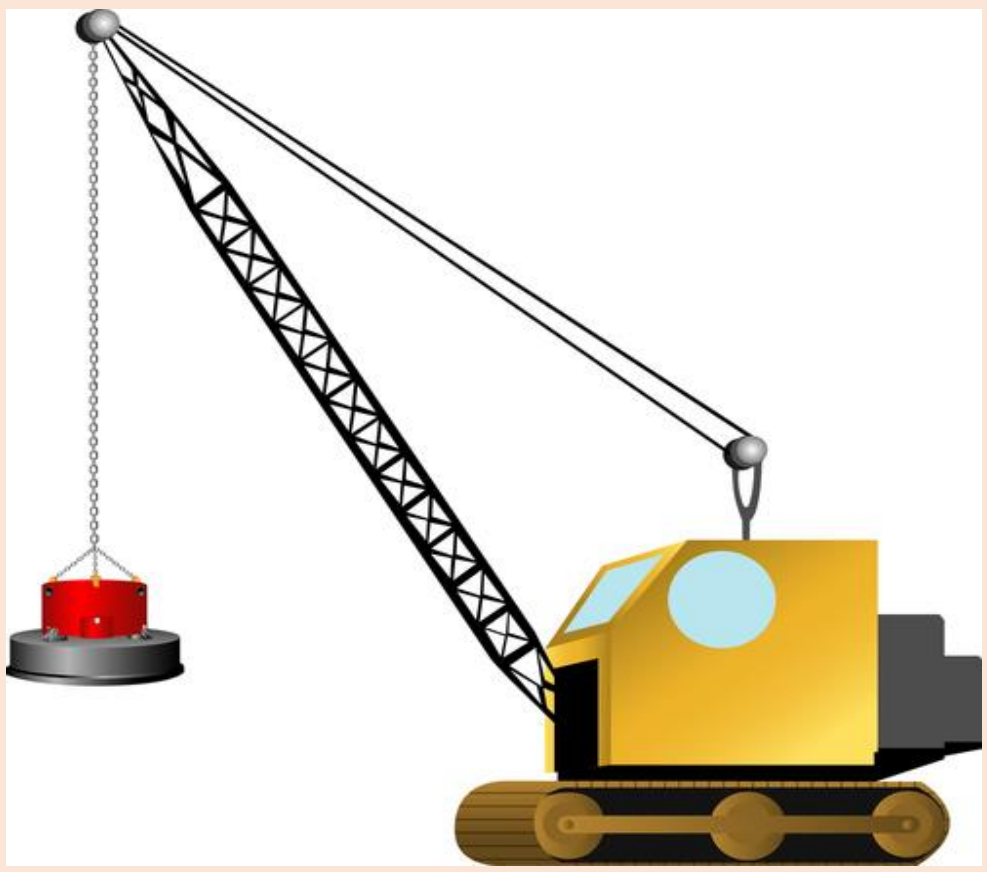
Example	Attract, repel or no effect?
North pole and Iron (not magnetised) S █ █ N █ IRON █	
Iron and Iron (neither magnetised) IRON █ IRON █	
Iron (not magnetised) and south pole IRON █ S █ █ N █	
North pole and plastic S █ █ N █ PLASTIC █	
Iron (not magnetised) and Plastic IRON █ PLASTIC █	

From previous learning:

1) What is a chemical change?

A chemical change has taken place when _____

2) Give an example of a situation when a chemical change is taking place





Watch the [demonstration](#) of an electromagnet shown by your teacher.

What are the things that you need to make an electromagnet?

- 1) W_____
- 2) l_____ n_____
- 3) B_____
- 4) Magnetic objects to pick up



Read the following passage about electromagnets

Last lesson, we began to see ways in which magnets can be useful but it would be particularly useful to be able to switch the magnetism on and off. If you build an electromagnet, it is possible to create a magnet that can be turned on and turned off.



What can you do with an electromagnet that can't be done with a normal magnet?

It is possible to turn an electromagnet on and off.

It is possible to create a magnetic field by making electricity flow through coils of wire but if you use a piece of iron, the magnetic field can be channelled through iron to become stronger. Therefore, all you need to make an electromagnet is a coil of wire, a piece of iron, a supply of electricity and a switch.



What are the 4 things you need to make an electromagnet?

- a) c _____
- b) p _____
- c) s _____
- d) s _____

This is particularly helpful in uses such as an electric lock and for a crane at scrapyards transport magnetic materials.



What are the 2 uses of electromagnets?

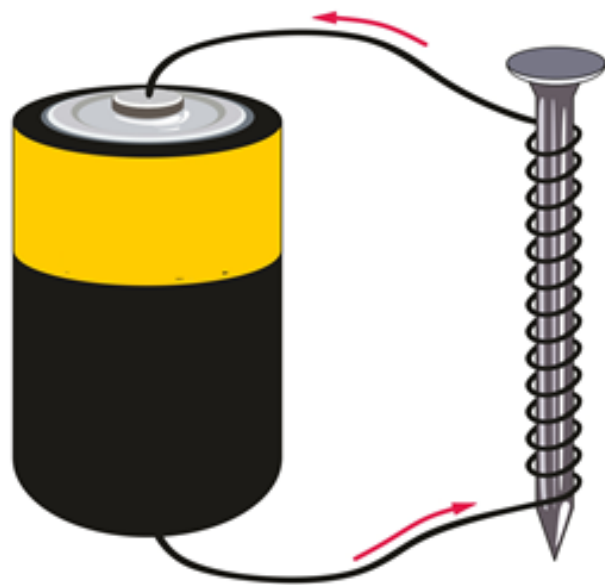
- a) _____
- b) _____



Label the parts of the electromagnet in the picture below:

Wires connected to the battery

B_____



l_____ n_____

Wires are c_____ around the nail



Complete an investigation to build an electromagnet

Your challenge when you make this electromagnet is – who can pick up the most paper clips with their electromagnetic?

Equipment:

- Electrical wire
- Iron nail
- Metal paper clips
- Battery with battery holder
- A switch

Follow instructions from your teacher to make your electromagnet. Try and make it as strong as possible so that it can pick up the most paperclips.

Conclusion:

Who managed to pick up the most paperclips? _____

What did they do with their equipment to pick up the most? _____

_____.



Match up the application of the electromagnet to the explanation

Electronic locks: Electronic locks can use electromagnets to...

...spin the fan when they are switched on.

Scrapyard cranes: Scrapyard cranes can use electromagnets to...

...open and close the bolt when a switch is pressed.

A hair dryer: Hair dryers can use electromagnets to...

...pick up and move magnetic objects before dropping them.



**Why might it be difficult to use a permanent magnet on an electronic lock?
What would you use instead?**