

## PHYSICS IN CONCERT

### MAGNETS

Take a magnet

Make a table in your jotter.

Magnetic	Non Magnetic

Find out which materials are magnetic.  
Do not remove the materials from the bag Record your answers in your table

### Conclusion

Iron, nickel and cobalt are magnetic  
other metals are non-magnetic

Use the netbooks and see if you  
can find anything out about  
magnets.

Write your findings in your jotter

When you use a magnet there is a force  
acting. The magnet does not need to be in  
contact with the magnetic material and  
yet it can move.

What happens when you bring 2  
magnets near each other?

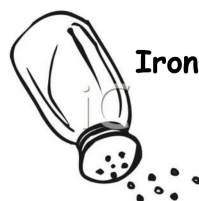
Try it and see

Turn over one of the magnets and  
try again



We can find out about the patterns  
around magnets with iron fillings

FOR THIS ACTIVITY the magnet  
must be covered or in a plastic bag.



Iron Filings



**GENTLY** sprinkle the iron filings on the paper. The magnet should be underneath. Draw the pattern you see



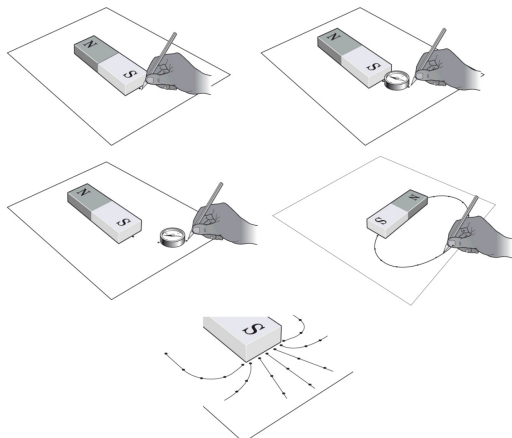
Carefully place another magnet by the side of the first and repeat



**MAKE SURE YOU RETURN THE IRON FILINGS TO THE PEPPER POT.**

-> think how to do this using sellotape over the pot is a good idea

### An alternative Method



<http://lgfl.skool.co.uk/content/keystage3/Physics/p/c/learningsteps/USMLC/launch.html>

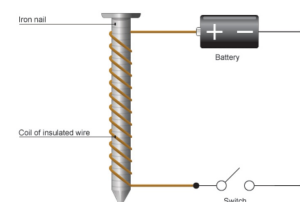
Now you've explored a little bit about magnets try to write a sentence about what you know.

Let's put our knowledge to the test

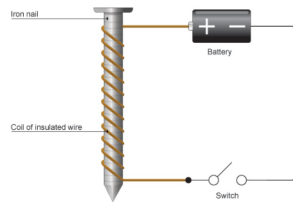
Make a race track for your magnet! Try to base your track on one of the Formula 1 circuits (check out [www.formula1.com](http://www.formula1.com))

Take it in turns to time how long it takes to complete the circuit

### Electromagnets



An electromagnet is a magnet that needs an electric current to work.



Unlike a permanent magnet, the strength of an electromagnet can easily be changed by changing the amount of electric current through it.

The poles of an electromagnet can even be reversed by reversing the flow of

 [BBC Clip on electromagnetism](#)

 [Electromagnet game](#)

## Investigate!

### Investigate magnets

Can you make an electromagnet stronger?

What could you investigate in your groups?

**PLAN, CHECK, DO!**

So what has this to do with **SOUND**

Bells  
Loudspeakers  
Microphones

use electromagnets to work



[electric bell animations](#)

[How a loudspeaker works](#)

Motor applets

<http://www.walter-fendt.de/ph14e/electricmotor.htm>

<http://www.youtube.com/watch?v=Q2mShGuG4RY&feature=related>

<http://www.walter-fendt.de/ph14e/electricmotor.htm>

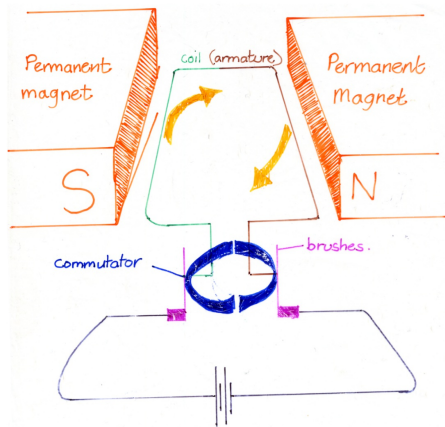
[http://www.edumedia-sciences.com/a182\\_j2-dc-motor.html](http://www.edumedia-sciences.com/a182_j2-dc-motor.html)

<http://www.walter-fendt.de/ph11e/electricmotor.htm>

<http://www.physclips.unsw.edu.au/jw/electricmotors.html>

<http://www.youtube.com/watch?NR=1&v=yPeKC9a3WzE>

<http://www.youtube.com/watch?v=MFGqf6AfDB0&feature=related>



Too hard or are you up for tackling this?

## GENERATING ELECTRICITY



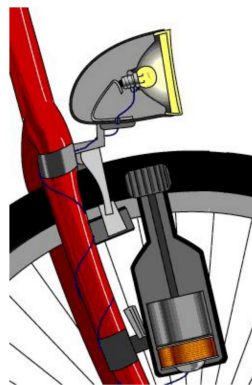
If we can use electricity to make a motor turn, maybe we can turn something to make electricity!

How might we do this?



Let's give it a try

Let's write down what we found out.



Not much electricity there though

Can we make more?



Try out some ideas

- Speed
- Direction
- Strength of magnet
- Number of coils

\\LCKA-HD1\\ALL  
DeskTools\$\\Physics\\Virtual  
Int 2 Physics\\Electricity  
and Electronics.exe

So let's move on....

**SOUND!**