

Science - Year 3/4A Autumn 1

Forces and Magnets

Magnetic Fun and Games

Session 3

Resource Pack

Session 3 Teachers' Notes

Magnets and objects that are attracted to magnets

Last session some children explored a magnetic construction toy or similar and demonstrated the power of magnetism to pull an object without contact. During this session all the children will be introduced to magnetism as a force and they will be given time to freely explore its effects. You will need to have a good selection of different magnets including horseshoe, bar, ring, wand and ball magnets in sufficient quantity for a least one per pupil in total.



Warning: strong magnets can harm computers. Store magnets away from computer hardware and if necessary warn the children of the dangers of using the magnets near computers.

You will also need some items that are attracted to magnets. It is suggested that you use paperclips and metal bearings but anything that is made from iron or steel will do. The children will however be setting up their own fair tests so it is helpful to have large quantities of items that are the same size and shape.



Generating Scientific Questions

A key element of scientific method and thinking is to develop curiosity about the world around us and through this begin to ask questions. The next step is to seek answers through scientific enquiry, for example exploration, pattern seeking and the setting up of fair tests. Indeed in the 2014 National Curriculum, Working Scientifically section for the Lower Key Stage 2 the children are required to *ask relevant questions and using different types of scientific enquiries to answer them.*

Magnetism is a mysterious and fascinating phenomenon for children and therefore an ideal topic to help encourage them to ask their own scientific questions which can in turn be answered through a planned investigation. This session aims to encourage children to do just that. After exploration, the children will be challenged to ask questions about magnets and a child on each table will act as a scribe to record them. The questions will then be shared and you will write a master set of questions on different A4 sheets of coloured paper or card. If questions are long-winded, try to rephrase them (with the questioner's permission) so that they are as brief, simple and testable as possible. Stick each question

sheet to the whiteboard as you go. When all questions have been given, they will need to be sorted into 4 themes as described in the lesson plan. This session you will investigate questions about the strength of magnets or comparisons between different magnets, e.g.

- Which magnet is the strongest?
- Are big magnets stronger than small ones?
- Can magnets work through solid objects?
- Can magnets work through water?
- How many sheets of paper can different fridge magnets hold?

If questions are not forthcoming during the exploration session, you could facilitate them by moving between the groups say things like “That’s interesting how ...”, “I wonder why ...?” or “Do you think ...”

Exploration Resources

Provide a tray of resources for each table which should include:

- a selection of different magnets – ideally enough for at least one per child,
- some magnetic or partially magnetic objects, e.g. paper clips, scissors, ball bearings
- some coins
- some non-magnetic objects, e.g. rubbers, pencils, wooden rulers,
- some sheets of paper and card

We can plan and carry out a fair test to answer a question

Our question is

Are big magnets always stronger than small magnets?

To test this out we will

In this box write/draw what you will do to test out your question

It will be a fair test because

Our prediction:

We think that

Our Results:

Type of Magnet (<i>Draw</i>)	Strength
Large	
Medium	
Small	

We found that - *Can you answer your question? Was your prediction correct?*

Names:

We can plan and carry out a fair test to answer a question

The question we want to answer is

To test this out we will

In this box write/draw what you will do to test out your question

It will be a fair test because

Our prediction

We think that

Our Results

If possible put your results into a results table then think about what you have found out.

We found out that

Can you answer your question?

Was your prediction right?

Now we would like to know

Now you have done your test you may have some new questions. Write them in this box

Name

Our Results

This shows that ...