Science - Year 3

Forces and Magnets – Block 3FM

Amazing Magnets

Session 2

Resource Pack

How to play Sporty Forces

This is a game for teams of 4-6 children. It will take 20-30 minutes to play and reinforce all the concepts learnt in Session 1 about forces – *i.e. that although forces act in many different ways, they can all be classified as pushes, pulls or sometimes both. Forces can start something moving, speed it up, slow it down, change its direction, change its shape or stop it.*

Resources

The Sporty Forces PowerPoint (this explains how to play the game)

A Sporty Forces Team Sheet (per Team)

A pencil or pen per team

A Sporty Forces Teacher's Score Sheet

How to play

1. Before the session watch the PowerPoint to ensure that you know what the game involves.
2. Once you have introduced the game, show the Sporty Forces PowerPoint.
3. Check that everyone understands what they have to do and answer questions if necessary.
4. Divide the class into teams of 4-6 children and give each team a Sporty Forces Team Sheet and a pencil or pen.
5. Allow 10 minutes for the task. During this time, support and encourage the groups as necessary. Some groups may need reminding that they are thinking of all the ways that pushes and pulls make things happen in their sport. If necessary, encourage the children through questioning, e.g. How does the bike/ ball/ water move? Children can make notes or draw pictures to remind them if they want to.
6. Give a warning when there are 2 minutes left.
7. Call out "**Time's up"** once the 10 minutes have elapsed.
8. Ask each group to come to the front in turn to act or mime for the others.
9. When the mime is over, encourage the other children to guess the sport. They can have more than one guess. You could set a limit on guesses, e.g. 3 or just give clues until each is guessed.
10. Award points for the mime and for a correct guess and note these on the Teacher's Score Sheet.
11. Now encourage the group to explain as many different ways that forces are at work in their sport as they possibly can.
12. Keep a tally and then note down the score for each group on the Sporty Forces Teacher's Score sheet.
13. Once each group has had their turn, announce the winning team and clap them.

Names:

Name of Sport -

Jot down below all the different ways that forces are working in this sport – one in each box.

Clues: wind, boat, people, water, gravity, rope

Names:

Name of Sport -

Jot down below all the different ways that forces are working in this sport – one in each box.

Clues: person, stick, ball, grass

Names:

Name of Sport –

Jot down below all the different ways that forces are working in this sport – one in each box.

Clues: person, paddle, boat, water

Names:

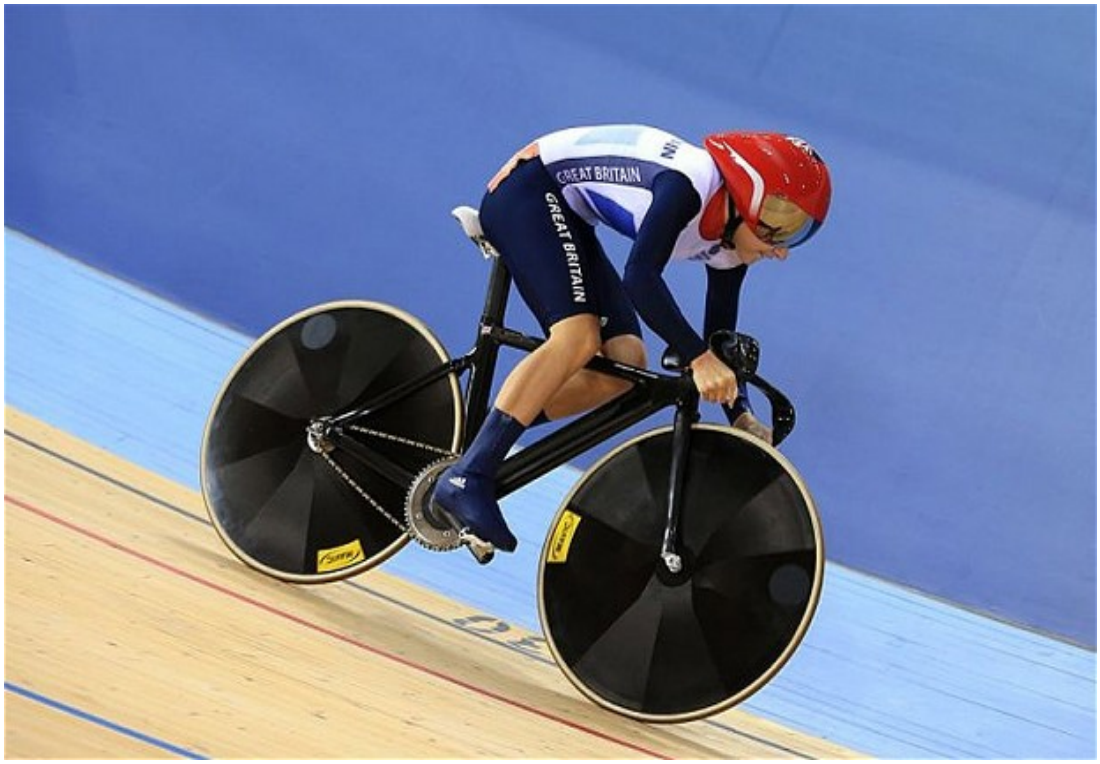
Name of Sport -

Jot down below all the different ways that forces are working in this sport – one in each box.

Clues: people, ball, net

Names:

Name of Sport -



Jot down below all the different ways that forces are working in this sport – one in each box.

Clues: person, pedals, handlebars/ steering, bike

Names:

Name of Sport -

Jot down below all the different ways that forces are working in this sport – one in each box.

Clues: person, bat, ball, stumps, grass

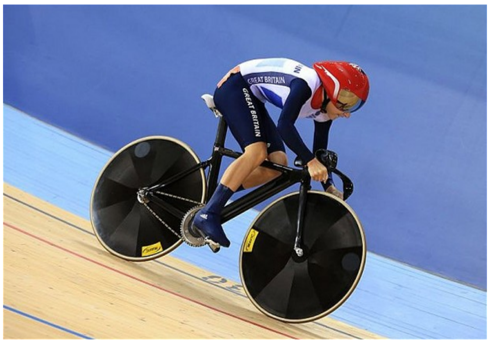
Sporty Forces Teacher's Score Sheet

<table>
<tr>
<td> 
Mime
Correct Guess
Tally of forces at work

Total Points</td>
<td> 
Mime
Correct Guess
Tally of forces at work

Total Points</td>
</tr>
<tr>
<td> 
Mime
Correct Guess
Tally of forces at work

Total Points</td>
<td> 
Mime
Correct Guess
Tally of forces at work

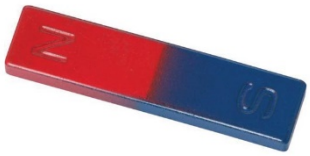
Total Points</td>
</tr>
<tr>
<td> 
Mime
Correct Guess
Tally of forces at work

Total Points</td>
<td> 
Mime
Correct Guess
Tally of forces at work

Total Points</td>
</tr>
</table>

Name

Our Results

Type of Magnet	
	
	
	
	
	

This shows that …

Name

Our Results

This shows that …

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*

Teachers' Notes for Session 2

Magnets and objects that are attracted to magnets

During this session the children will be introduced to magnetism as a force and they will explore its power to pull other objects without contact. 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. During the teaching PowerPoint the children will be challenged to ask questions about magnets, following a brief session

exploring with them earlier in the session. Write each question in large clear writing on a different A4 sheet of coloured paper or card. Using different colours will help all children (particularly those with dyslexia) distinguish easily between them. 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.

If any of the questions are about discovering either of these, keep them separate:

1. which materials are attracted to magnets and which are not
2. how magnets affect one another (e.g. poles, attraction and repulsion between two magnets)

Put these questions to one side and explain that they are great questions but we will come back to these in another session. Hopefully you will have some questions left that are about the strength of different magnets or the way they have the power to pull objects without contact. If not, do not worry because the PowerPoint suggests four different testable questions.

The PowerPoint also challenges the children to think of their own ways to test the strength of magnets but later suggests two methods that could be used.

In this way it is hoped that many children will be able to ask their own questions and generate their own methods of scientific enquiry to answer them but sufficient support is given to help all children succeed on the task.