

# Year 2 Science – Space and Forces

## Knowledge and skills:

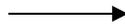
To know the name of the major planets in the solar system  
To know the key features of the major planets in the solar system  
To the order the planets  
To understand that the sun's gravity keeps the planets in orbit  
To understand gravity as a force that is acting on objects on Earth  
To understand magnetism as a force that acts on different objects

## Vocabulary

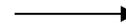
Space  
Planets  
Orbit  
Gravity  
Magnetism  
Gas  
Magnetic  
Forces,  
"Acting on"  
Solar system  
Predict  
Experiment  
Test  
Evaluate  
Oppose

## Snapshot overview

To know the name and the order of the major planets in our solar system.  
To know the key features of the major planets.



To know the name and the order of the major planets in our solar system.  
To know the key features of the major planets.  
(Presentation lesson)



To know the name and the order of the major planets in our solar system.  
To know the key features of the major planets.  
(Planet order lesson)



Introduce gravity and planets orbiting the sun.  
Gravity is a force that acts upon the planets.

Compare and contrast gravity and magnetism.  
The inside of the Earth is like a magnet pulling people/ acting as a force  
Investigate forces that oppose gravity ie, if you throw/kick an object you add a force to it that opposes gravity, then when the force is gone, gravity pulls it back to Earth. Go outside and experiment.



Demonstrate experiment with magnets and paper clips.  
Introduce to the children what might happen if:  
a) The string was a different length,  
b) The tower was a different height  
c) The paper clips were bigger  
d) Barrier between the paper clip and the magnet

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## Medium Term Planning

**Year Group:** 2      **Term:** Autumn 1      **Topic:** Solar system and forces

	<b>Learning Objective</b>	<b>Input (including key questions and vocabulary)</b>
Session 1	<p>To know the name and the order of the major planets in our solar system.</p> <p>To know the key features of the major planets.</p>	<p>Split children into small groups of 3 and ask them to write down what they know about the planets- feed this back to whole class- TA to record on a piece of circular paper for each planet- display</p> <p>Use clips from BBC learning zone class clips- look at all the clips which tell you about the 9 planets.</p> <p>TA to record what they find out from clips and add on to children info from earlier- display.</p> <p>Split the children into 9 expert groups- True/False cards.</p> <p>Each group has one planet and true/false cards. Read the information and decide if it is true/false relating to that planet and place the true info on the picture of the planet.</p> <p>Visit the other tables and evaluate true/false statements.</p> <p>Plenary- feedback one fact you have learnt.</p>

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Session 2	<p>To know the name and the order of the major planets in our solar system.</p> <p>To know the key features of the major planets.</p>	<p>Recall learning from the previous week. Give them their work to continue.</p> <p>Tell them they will give a short presentation to feedback to the rest of the class on their given planet. Will they need a picture? Organise who will say what? They will describe their planet and identify key features.</p> <p>Each group to feedback for 2 to 3 minutes- TA to add their info to the info already gathered. Other children to question and give feedback on the effectiveness of presentation and reflect on the positive aspects.</p> <p>Finish with a planets quiz.</p>
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Session 3	<p>To know the name and the order of the major planets in our solar system.</p> <p>To know the key features of the major planets.</p>	<p>Recap previous learning.</p> <p>Take children outside and use <b>Playground solar system bibs</b>. Who can put the planets in order? What is this called? Does the sun orbit each planet for exactly the same amount of time? Why is it different?</p> <p>Planet clues- Work in pairs to read the <b>planet clues</b> (in resource file). Use this information to cut out and order the planets in your book. Add some key facts to each planets drawing on what they have learnt from the previous lessons.</p> <p>Extension- Can you make a quiz for your partner using planet clues. E.g. Which planet is the furthest away? Which planet is the coldest?</p>
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Session 4	<p>I can understand that gravity is a force that acts upon the planets orbiting the sun.</p>	<p>Recap previous learning.</p> <p>Take children outside. Give 8 children a planet to hold and 1 child the sun. discuss how they should be arranged and discuss how they move around the sun. First start with Earth – how do you think it moves?</p> <p>Show how the sun's gravitational pull keeps the planets on orbit. You could use a skipping rope to demonstrate the sun acting as a pull force on the planets one by one. Allow all children to have a go.</p>
Session 5	<p>I can understand that gravity is a force that acts upon objects on Earth.</p>	<p><a href="https://theskylive.com/3dsolarsystem">https://theskylive.com/3dsolarsystem</a></p> <p>Show children the above simulator of solar system orbit. Discuss how planets are kept in orbit by gravity. Ask how gravity affects us on earth. Key question: what would happen if we didn't have gravity? Children to discuss in groups and gather ideas.</p> <p>Compare and contrast gravity and magnetism. The inside of the Earth is like a magnet pulling people/ acting as a force</p> <p>Investigate forces that oppose gravity ie, if you throw/kick an object you add a force to it that opposes gravity, then when the force is gone, gravity pulls it back to Earth. Go outside and experiment using different objects/activities e.g. bouncing a ball, throwing a hoop, dropping heavy and light objects, jumping up and down.</p> <p>Plenary: Gather children's observations on sugar paper.</p>

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Session 6	I can experiment with the forces of gravity and magnetism.	 <p><a href="https://buggyandbuddy.com/gravity/">https://buggyandbuddy.com/gravity/</a></p> <p>Demonstrate the above experiment with magnets and paper clips, linking it to the forces of magnetism and gravity. Question children; how are the forces acting on the objects?</p> <p>Introduce variables to the children: what might happen if:</p> <ol style="list-style-type: none"><li>The string was a different length?</li><li>The tower was a different height?</li><li>The paper clips were bigger?</li><li>Barrier between the paper clip and the magnet?</li></ol> <p>Children to verbally predict what they think.</p> <p>Set up 4 different tables where 4 different groups can test these variables and record their findings.</p> <p>Take photos for books.</p>
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# Year 2 Science – Space and Forces

## All children should:

- Know the names of the major planets in the solar system
- Know the key features of the major planets in the solar system
- Be able to order the planets
- Understand that the sun's gravity keeps the planets in orbit
- Understand gravity as a force that is acting on objects on Earth
- Understand magnetism as a force that acts on different objects<sup>3</sup>