

Objective	Milestone Indicators	Basic Activities	Advanced Activities	Deep Activities	Resources
To understand movement, forces and magnets.	<p>Milestone 3</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p>	<p>In groups, children are to measure the craters caused by dropping objects of different weights into a tray of flour as described in the slides. On Worksheet 1A, they are to record their observations, draw conclusions and circle the correct words in the statements that explain the causal links between the weight of the objects and the shape/size of the craters they create.</p>	<p>In groups, children are to measure the craters caused by dropping objects of different weights into a tray of flour as described in the slides. They are to record their observations, draw conclusions and explain causal links between the weight of the objects and the shape/size of the craters they create.</p>	<p>Children use books and the internet to research the life and work of Galileo Galilei and Isaac Newton, with particular reference to their contribution to our understanding of gravity. With reference to the provided challenge cards, pairs present their findings by creating slide shows, posters, displays or other presentations. Challenge children to make links between the work of the two scientists as well as other scientific evidence in order to show the degree of trust we can have in their findings.</p>	<p>Slides Worksheet 1A Large trays, flour, cocoa/chocolate powder, marbles, ball bearings, golf balls etc. Challenge cards Books, internet</p>

<p>To understand movement, forces and magnets.</p>	<p>Milestone 3</p> <p>Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.</p>	<p>Provide children with a weighted container (e.g. margarine tub with a bean bag inside) and a forcemeter and ask them to follow the direction on Worksheet 2A to complete the experiment to find out which surface made moving the object the most difficult. Children to record the results on the worksheet and then complete the sentences to show what they found out.</p>	<p>On Worksheet 2B, children to plan their experiment. Provide children with a weighted container (e.g. margarine tub with bean bag inside) and a forcemeter, and ask them to carry out their experiment. Children to record the results and conclusion on the worksheet.</p>	<p>Children to plan their own experiment to find out how the friction between an object and a surface differs when the surfaces are different. Children to plan their experiment and then carry it out using the relevant equipment. Challenge children to present their results as a bar graph.</p>	<p>Slides Worksheets 2A/2B Forcemeters Variety of surfaces to test</p>
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<p>To understand movement, forces and magnets.</p>	<p>Milestone 3</p> <p>Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.</p>	<p>In groups, children are to discuss how best to plan, carry out and evaluate an experiment to see if the size of the parachute affects how long it takes to fall. They are then to complete the plan on Worksheet 3A and carry out the experiment by following the instructions on the Plastic Bag Parachute sheet and testing the speed at which different sized parachutes fall.</p>	<p>In groups, children are to discuss how best to plan, carry out and evaluate an experiment to see if the size of a parachute affects how long it takes to fall. They are then to complete the plan on Worksheet 3C and carry out the experiment, testing the speed at which different sized parachutes fall. Children must repeat each test and find the average times.</p>	<p>Tell children that today they will be investigating spinners made from paper and paper clips. What different questions could we investigate? (e.g. How does the number of paper clips affect the time the spinner takes to fall? How does the height a spinner is dropped from affect the time it takes to fall?). Children to choose which question they would like to investigate and plan their experiment. Children to then decide how to gather the results and present them.</p>	<p>Slides Worksheets 3A/3C Plastic Bag Parachute Sheet Plastic bags, string/wool, paper clips, rubber bands</p>
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<p>To understand movement, forces and magnets.</p>	<p>Milestone 3</p> <p>Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.</p>	<p>In a small groups, children to work from Worksheet 4A to carry out the experiment, using a cylinder of water and a piece of plasticine. Support children with carrying out the experiment, recording the results and establishing a conclusion.</p>	<p>Children to finish planning the experiment on Worksheet 4B and then carry out the experiment with a cylinder of water and a piece of plasticine, recording the results and conclusion on the worksheet.</p>	<p>Children to plan the experiment themselves to answer the question: The flatter the object, the less water resistance there will be. Children to think whether they agree with this statement or not and how they will prove or disprove it. Children to then carry out the experiment and record results and conclusion.</p>	<p>Slides Worksheets 4A/4B Measuring cylinders or equivalent Water Plasticine Stopwatches</p>
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<p>To understand movement, forces and magnets.</p>	<p>Milestone 3</p> <p>Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>On Worksheet 5A, children are to try each of the methods of lifting a bottle using pulleys as instructed. They are then to record the results on the table provided, ranking the different pulleys in order of force required.</p>	<p>On Worksheet 5C, children are to try each of the methods of lifting a bottle using pulleys as instructed. They are then to draw and fill out a table to show what they have learned.</p>	<p>Explain that today we will be making and testing model catapults! It is important that they test and refine their model; can they think of ways of testing the catapult's throwing distance, power and accuracy? In groups, children are to discuss and agree on some simple tests, then follow the instructions on the Lolly Stick Catapult sheet to make their own catapults. They are then to test their catapults as they have planned and modify their designs based on their results. Once children have refined their designs, they 'battle' each other! They build towers using playing cards.</p>	<p>Slides Worksheets 5A/5C Lollipop sticks, rubber bands Lolly Stick Catapult sheet Milk/water bottles with handles String, cord or thin rope Broomsticks or thick dowel rods</p>
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