

# Forces: Marvellous Mechanisms



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<p><b>Aim:</b> To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect by exploring and designing a simple mechanism.</p> <p>To explore and design mechanisms.</p>	<p><b>Success Criteria:</b> I can explain how different mechanisms work. I can investigate a simple mechanism. I can design my own mechanism for a given purpose.</p>	<p><b>Resources:</b> Lesson Pack</p>
	<p><b>Key/New Words:</b> Mechanism, lever, gear, cog, pulley, machine, force.</p>	<p><b>Preparation:</b> <b>Mechanism Facts Activity Sheet</b> - one per group, pre-cut into jigsaw pieces and mixed up <b>Machine Aim Cards Activity Sheet</b> - one per group, pre-cut <b>Mechanisms Jigsaw Activity Sheet</b> - one per child Differentiated <b>Marvellous Machines Activity Sheet</b> - one per child You may wish to look for a video clip of a machine working for the children to watch.</p>

**Prior Learning:** The children will have learnt about forces in Lesson 1.

## Learning Sequence

	<p><b>Talk about It:</b> Display the images of different mechanisms on the <b>Lesson Presentation</b>. In pairs, children discuss anything that they might already know about these mechanisms and how they might be related to the topic of forces.</p>	
	<p><b>What Are Mechanisms?</b> Using the <b>Lesson Presentation</b>, briefly explain what a mechanism is. Organise the children into groups of three. These three children will work together to find out about three different sorts of mechanisms. Give each group a set of pre-cut jigsaw pieces from the <b>Mechanism Facts Activity Sheet</b>. Ask one child in each group of three to find the jigsaw pieces about levers, one child to look for gears and the third child in the group to look for the pulleys jigsaw pieces. Children read the facts and piece their jigsaw back together, making notes on their <b>Mechanisms Jigsaw Activity Sheet</b>. They then work together to teach the rest of their group what they have found out. As they share their findings, they complete the other sections of their activity sheet with the new information from their group members. <i>Can children explain how different mechanisms work?</i></p>	
	<p><b>Identifying Mechanisms:</b> Children identify the type of mechanisms used in the objects shown on the <b>Lesson Presentation</b>. Share the answers with the children.</p>	
	<p><b>Cracking Contraptions:</b> Discuss the different machines shown on the <b>Lesson Presentation</b>. Point out that the machines use many different mechanisms to achieve a simple purpose. If you wish, children could watch a video clip of a machine working at this point in the lesson.</p>	
	<p><b>Marvellous Machines:</b> Children design their own crazy machine that uses many different mechanisms to achieve a simple aim. Children can choose a card from the pre-cut <b>Machine Aim Cards Activity Sheet</b> to select an aim for their machine or they can think of their own aim. Children draw and explain their designs on the differentiated <b>Marvellous Machines Activity Sheet</b>. <i>Can children include some of the mechanisms they have investigated in their own machine designed for a given purpose?</i></p> <p> Children use the sentence starters and key words to structure and scaffold their explanation and evaluation.  Children explain and evaluate independently.</p>	
	<p><b>Time to Evaluate:</b> Children share their machine designs with a partner of similar ability. They then swap activity sheets and write an evaluation of each other's machines.</p>	

## Taskit

Set up an investigation about levers. Use a ruler, two erasers and some weights of different sizes. Place one eraser on the end of the ruler and use the other eraser as a pivot. Place the ruler on the pivot and place a weight on the other end of the ruler to push it down, causing the ruler to lift the eraser. Experiment with the position of the pivot, moving it nearer to or farther away from the weight that is pushing the ruler down. What is the smallest weight you can use to make the ruler lift the eraser? How does the position of the pivot affect this?



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