



Be the Best We Can

Topic: Forces Subject : Science Year: 5 Term:

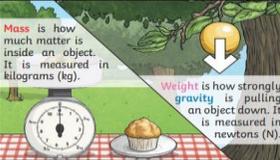
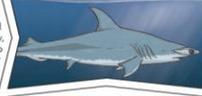
# Buglawton Primary School

## What should I already know?

- Compare how things move on different surfaces. (Y3 - Forces and magnets)
- Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)
- Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets)
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. (Y3 - Forces and magnets)
- Describe magnets as having two poles. (Y3 - Forces and magnets)
- Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets)

## What will I know by the end of the unit?

- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- Identify the effects of air resistance, water resistance and friction that act between moving surfaces.
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Key Vocabulary		Key Knowledge	
<b>forces</b>	Pushes or pulls.	<b>Forces</b>	Isaac Newton
<b>gravity</b>	A pulling <b>force</b> exerted by the Earth (or anything else which has <b>mass</b> ).	start to move.	stop moving.
<b>Earth's gravitational pull</b>	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's <b>gravitational pull</b> which keeps us on the ground.	change direction.	move faster.
<b>weight</b>	The measure of the <b>force of gravity</b> on an object.	change its shape.	move more slowly.
<b>mass</b>	A measure of how much matter (or 'stuff') is inside an object.		
<p>The Moon has a smaller <b>mass</b> than Earth so the <b>gravitational pull</b> on the Moon is smaller than it is on Earth.</p>  <p>Jupiter has a greater <b>mass</b> than Earth so the <b>gravitational pull</b> on Jupiter is stronger than on Earth.</p> 		 <p><b>Mass</b> is how much matter is inside an object. It is measured in kilograms (kg).</p> <p><b>Weight</b> is how strongly <b>gravity</b> is pulling an object down. It is measured in newtons (N).</p>	
<p>Isaac Newton is famously thought to have developed his theory of <b>gravity</b> when he saw an apple fall to the ground from an apple tree.</p> 			
Key Vocabulary		Key Knowledge	
<b>friction</b>	A <b>force</b> that acts between two surfaces or objects that are moving, or trying to move, across each other.	Examples of <b>forces</b> in action:	
<b>air resistance</b>	A type of <b>friction</b> caused by air pushing against any moving object.	swimmer's <b>force</b>	water <b>resistance</b>
<b>water resistance</b>	A type of <b>friction</b> caused by water pushing against any moving object.	gravity	air <b>resistance</b>
<b>buoyancy</b>	An upward <b>force</b> that a liquid applies to objects.	cyclist's <b>driving force</b>	<b>friction</b>
<b>streamlined</b>	When an object is shaped to minimise the effects of <b>air</b> or <b>water resistance</b> .	Water resistance and <b>air resistance</b> are forms of <b>friction</b> . <b>Friction</b> is sometimes helpful and sometimes unhelpful. For example, <b>air resistance</b> is helpful as it stops the skydiver hitting the ground at high speed. <b>Friction</b> on a bike chain can make the bike harder to pedal so it is unhelpful.	
<b>mechanism</b>	Parts which work together in a machine. Examples of mechanisms are pulleys, gears and levers.	<b>Pulleys</b>	<b>Gears/Cogs</b>
	<p>This shark is <b>streamlined</b>.</p>  <p>It has a pointed nose to cut through the water, and a smooth, low, curved back to allow the water to flow over and around it.</p> <p>It does not create much water resistance so it can move through the water quickly.</p>	<p>Pulleys can be used to make a small <b>force</b> lift a heavier load. The more wheels in a pulley, the less <b>force</b> is needed to lift a <b>weight</b>.</p>	<p>Gears or cogs can be used to change the speed, <b>force</b> or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.</p>
		<b>Lever</b>	
		<p>Levers can be used to make a small <b>force</b> lift a heavier load. A lever always rests on a pivot.</p>	

<p><b>What will I be able to do by the end of the unit?</b></p> <ul style="list-style-type: none"> <li>• Can demonstrate the effect of gravity acting on an unsupported object</li> <li>• Can give examples of friction, water resistance and air resistance</li> <li>• Can give examples of when it is beneficial to have high or low friction, water resistance and air resistance</li> <li>• Can demonstrate how pulleys, levers and gears work</li> <li>• Can explain the results of their investigations in terms of the force, showing a good understanding that as the object tries to move through the water or air or across the surface the particles in the water, air or on the surface slow it down</li> <li>• Can demonstrate clearly the effects of using levers, pulleys and gears</li> </ul>	
<p><b>Agreed Real-life Outcome</b></p> <ul style="list-style-type: none"> <li>• Research how the work of scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</li> </ul>	

**Assessment:**

Assessment:  
 Cold task: go through vocabulary: What do they know?  
 Record on post it notes and add to group books  
 Hot task: update what they know regarding the vocabulary.  
 Complete Headstart topic test and add in a pocket of group books.  
 Complete Headstart term tests: end of Autumn, Spring and Summer. Add data to DC PRO

