




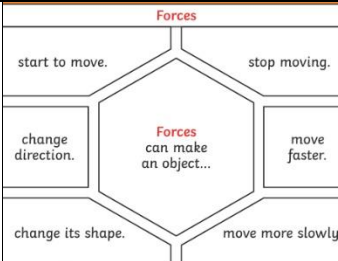

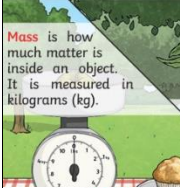
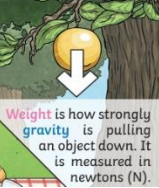





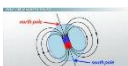








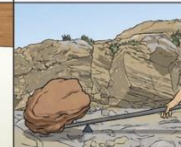


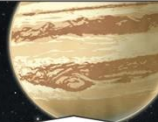


Year 5 Autumn 1- Forces- Is gravity the greatest force of them all?

Key Vocabulary		Prior knowledge	Sticky Knowledge	
Forces 	Pushes or pulls	<p>In Year 3, during the 'Forces and Magnets' topic we:</p> <ul style="list-style-type: none"> - Compared how things move on different surfaces - Noticed that some forces need contact between two objects, but magnetic forces can act at a distance - Described magnets as having two poles. - Observed how magnets attract or repel each other and attract some materials and not others. - Compared and grouped together a variety of everyday materials on the basis of whether they are attracted to a magnet and identified some magnetic materials. <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; background-color: #00a651; color: white; margin: 0;">Magnetic ✓</p>  <p style="font-size: small; text-align: center;">These objects contain iron, nickel or cobalt. Not all metals are magnetic.</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; background-color: #00a651; color: white; margin: 0;">Non-magnetic ✗</p>  <p style="font-size: small; text-align: center;">These objects do not contain iron, nickel or cobalt.</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; background-color: #00a651; color: white; margin: 0;">Pushes</p>  </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; background-color: #00a651; color: white; margin: 0;">Pulls</p>  </div> </div> <p style="text-align: center; font-size: small; margin-top: 5px;">Forces will change the motion of an object. They will either make it start to move, speed up, slow it down or even make it stop.</p>	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> <div style="width: 45%; text-align: center;"> <p style="color: red; font-weight: bold; font-size: small;">Forces</p>  </div> <div style="width: 45%; text-align: center;"> <p style="color: red; font-weight: bold; font-size: small;">Isaac Newton</p>  </div> </div> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> <div style="width: 45%; font-size: x-small;"> <p style="color: red; font-weight: bold; margin: 0;">Mass is how much matter is inside an object. It is measured in kilograms (kg).</p>  </div> <div style="width: 45%; font-size: x-small;"> <p style="color: red; font-weight: bold; margin: 0;">Weight is how strongly gravity is pulling an object down. It is measured in newtons (N).</p>  </div> </div> <p style="font-size: x-small; margin-bottom: 5px;">Examples of forces in action:</p> <div style="display: flex; justify-content: space-around; font-size: x-small;"> <div style="text-align: center;">  <p>swimmer's force</p> <p style="color: blue; font-size: x-small;">water resistance</p> </div> <div style="text-align: center;">  <p>gravity</p> <p style="color: red; font-size: x-small;">air resistance</p> </div> <div style="text-align: center;">  <p>cyclist's driving force</p> <p style="color: green; font-size: x-small;">friction</p> </div> </div> <p style="font-size: x-small; margin-top: 5px;">Water resistance and air resistance are forms of friction. Friction is sometimes helpful and sometimes unhelpful. For example, air resistance is helpful as it stops the skydiver hitting the ground at high speed. Friction on a bike chain can make the bike harder to pedal so it is unhelpful.</p>	
Magnet 	An object which produces a magnetic force that pulls certain objects towards it.			
Magnetic field 	The area around a magnet where there is a magnetic force which will pull magnetic objects towards it.			
Poles 	North and south poles are found at different ends of a magnet.			
Repel 	Repulsion is a force that pushes objects away.			
Attract 	Attraction is a force that pulls objects together.			
Magnetic 	Objects which are attracted to a magnet are magnetic.			
Friction 	A force that acts between two surfaces or objects that are moving, or trying to move, across each other.			
Surface 	The top layer of something.			
Metal 	Minerals like iron or lead that are found underground in rocks.			
		<p style="font-weight: bold; font-size: small;">Knowledge and Assessment</p> <ul style="list-style-type: none"> - 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. 	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> <div style="width: 30%; text-align: center;"> <p style="font-size: x-small; margin: 0;">Pulleys</p>  <p style="font-size: x-small; margin-top: 5px;">Pulleys can be used to make a small force lift a heavier load. The more wheels in a pulley, the less force is needed to lift a weight.</p> </div> <div style="width: 30%; text-align: center;"> <p style="font-size: x-small; margin: 0;">Gears/Cogs</p>  <p style="font-size: x-small; margin-top: 5px;">Gears or cogs can be used to change the speed, force or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.</p> </div> <div style="width: 30%; text-align: center;"> <p style="font-size: x-small; margin: 0;">Levers</p>  <p style="font-size: x-small; margin-top: 5px;">Levers can be used to make a small force lift a heavier load. A lever always rests on a pivot.</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%; font-size: x-small;"> <p style="margin: 0;">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 style="margin-top: 5px;">This shark is streamlined. It does not create much water resistance so it can move through the water quickly.</p> </div> <div style="width: 45%; font-size: x-small;"> <p style="margin: 0;">The Moon has a smaller mass than Earth so the gravitational pull on the Moon is smaller than it is on Earth.</p>  <p style="margin-top: 5px;">Jupiter has a greater mass than Earth so the gravitational pull on Jupiter is stronger than on Earth.</p>  </div> </div>	