

**Staplegrove Church School**  
**Knowledge and Skills Progression in Science**  
**Forces and Magnets**

Year group	Knowledge	Skills	Unit
1			
2			
3	<p>Friction is a <b>force</b> between two surfaces as they move over each other. Friction <b>slows down</b> a moving object. Smooth surfaces usually generate less friction than rough surfaces.</p> <p>Magnets have <b>two poles (north and south)</b>. Opposite poles (north and south) <b>attract</b> each other, while like poles (north and north, or south and south) <b>repel</b> each other.</p> <p>Some materials have <b>magnetic properties</b>. Magnetic materials are attracted to magnets. All magnetic materials are metals but not all metals are magnetic. Iron is a magnetic metal.</p> <p>An object will not move unless a <b>pushing or pulling</b> force is applied. Some forces require direct contact, whereas other forces can act at a distance, such as magnetic force.</p>	<p>Compare how objects move over surfaces made from different materials.</p> <p>Investigate and compare a range of magnets (bar, horseshoe and floating) and explain that magnets have two poles (north and south) and that opposite poles attract each other, while like poles repel each other.</p> <p>Compare and group materials based on their magnetic properties.</p> <p>Explain that an object will not move unless a push or pull force is applied, describing forces in action and whether the force requires direct contact or whether the force can act at a distance (magnetic force).</p>	Forces and Magnets
4			
5	<p><b>Mechanisms</b>, such as <b>levers, pulleys and gears</b>, give us a mechanical advantage. A <b>mechanical advantage</b> is a measurement of how much a simple machine multiplies the force that we put in. The bigger the mechanical advantage, the less force we need to apply.</p>	<p>Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects.</p>	

	<p>Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects. These forces can be useful, such as bike brakes and parachutes, but sometimes we need to minimise their effects, such as streamlining boats and planes to move through water or air more easily, and using lubricants and ball bearings between two surfaces to reduce friction.</p> <p>Gravity is a force of attraction. Anything with a mass can exert a gravitational pull on another object. The Earth's large mass exerts a gravitational pull on all objects on Earth, making dropped objects fall to the ground.</p>	<p>Compare and describe, using a range of toys, models and natural objects, the effects of water resistance, air resistance and friction.</p> <p>Explain that objects fall to Earth due to the force of gravity.</p>	<p>Forces and Magnets</p>
<p>6</p>			