

## Willerby Carr Lane Primary School - Science

**Topic: Forces and Motion**

**Year: 3**

**Strand: Physics**

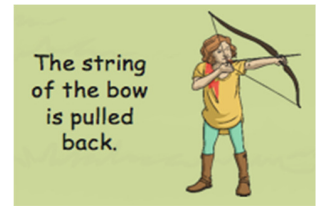
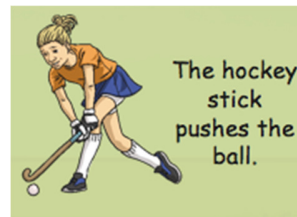
### What should I already know?

- The shape of some materials can be changed when they are stretched, twisted, bent and squashed.
- Know how different toys move.  
Know what a force is and be able to explain that a push and pull are types of forces.
- That when forces are applied to an object, they allow them to move or stop moving.
- The strength of the force determines how far and fast an object moves

- If you place two magnets so the south pole of one faces the north pole of the other, the magnets will move towards each other. This is called attraction.
- If you place the magnets so that two of the same poles face each other, the magnets will move away from each other. They are repelling each other.

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

What are forces?	<ul style="list-style-type: none"> <li>• Forces are pushes and pulls.</li> <li>• These forces change the motion of an object.</li> <li>• They will make it start to move or speed up, slow it down or even make it stop.</li> <li>• For example, when a cyclist pushes down on the pedals of a bike, it begins to move. The harder the cyclist pedals, the faster the bike moves.</li> <li>• When the cyclist pulls the brakes, the bike slows down and eventually stops.</li> </ul>
How do different surfaces affect the motion of an object?	<ul style="list-style-type: none"> <li>• Forces act in opposite directions to each other.</li> <li>• When an object moves across a surface, friction acts as an opposite force.</li> <li>• Friction is a force that holds back the motion of an object.</li> <li>• Some surfaces create more friction than others which means that objects move across them slower.</li> <li>• On a ramp, the force that causes the object to move downwards is gravity.</li> <li>• Objects move differently depending on the surface of the object itself and the surface of the ramp.</li> </ul>
How do magnets work?	<ul style="list-style-type: none"> <li>• Magnets produce an area of force around them called a magnetic field.</li> <li>• When objects enter this magnetic field, they will be attracted to or repelled from the magnet if they are magnetic.</li> <li>• When magnets repel, they push each other away</li> <li>• When magnets attract, they pull together</li> </ul>
Which materials are magnetic?	<ul style="list-style-type: none"> <li>• Objects that are magnetic, are attracted to magnets.</li> <li>• Iron and steel are magnetic.</li> <li>• Aluminium and copper are non-magnetic</li> </ul>
How do magnetic poles work?	<ul style="list-style-type: none"> <li>• The ends of a magnet are called poles.</li> <li>• One end is called the north pole and the other end is called the south pole.</li> <li>• Opposite poles attract, similar poles repel.</li> </ul>



Vocabulary	
attract	if one object attracts another object, it causes the second object to move towards it
force	the pulling or pushing effect that something has on something else
friction	the resistance of motion when there is contact between two surfaces
gravity	the force which causes things to drop to the ground
magnet	a piece of iron or other material which attracts magnetic materials towards it
magnetic field	an area around a magnet, or something functioning as a magnet, in which the magnet's power to attract
metal	a hard substance such as iron, steel, gold, or lead
motion	the activity of changing position or moving from one place to another

nonmagnetic	an object that is not magnetic
opposite	opposite is used to describe things of the same kind which are completely different in a particular way.
position	the position of someone or something is the place where they are in relation to other things
pull	when you pull something, you hold it firmly and use force in order to move it towards you or away from its
push	when you push something, you use force to make it move away from you or away from its previous position
resistance	a force which slows down a moving object or vehicle
stretchy	slightly elastic
surface	the flat top part of something or the outside of it

#### Investigate!

- Investigate the amount of friction created by different surfaces. Use measures (such as length and time) to show how far or fast and object travels
- Magnet strength investigation, measuring the strengths of a range of magnets include bar magnets and horseshoe magnets (using chains of paper clips of varying lengths)  
Observe how a magnetic field attracts iron filings by using a bar magnet.
- Identifying materials and objects around the classroom that are magnetic and non-magnetic
- Investigate if all metals are magnetic.
- Observe what happens when magnets with similar poles are placed next to each. Repeat this for when the poles are different.

#### Common misconceptions

Some children may think:

- the bigger the magnet the stronger it is
- all metals are magnetic.

