

What should I already know?

Metal is a material from which objects can be made. The shape of some materials can be changed when they are stretched, twisted, bent and squashed. Different toys move in different ways. A push and pull are types of forces. 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.

Vocabulary

Attract

If one object attracts another object, it causes the second object to move towards it.

Repel

A force that pushes something away.

Friction

The resistance of motion when there is contact between two surfaces.

Diagrams

**MAGNETISM** **KEY**

Opposite poles attract

Like poles repel

Magnets ONLY stick to:  
Steel  
Iron  
Nickel  
Cobalt

**GRAVITY**

Gravity pulls to the center of the earth

**FRICTION**

a force that slows or stops motion when objects rub together. The rougher the surfaces are, the harder they push together, the more friction there will be.

rough smooth  
more FRICTION less FRICTION

**PUSH**

5N → 4N  
 movement?  
 Net force = 1N

examples of push:  
 writing with pencil  
 bulldozer  
 close locker  
 door  
 sweep

**Force is a**  
push  
 or a  
pull  
 measured in  
newtons

**PULL**

examples of pull:  
 pulling a wagon  
 opening locker  
 brushing hair  
 picking up books

5N ← 3N  
 movement?  
 Net force = 2N

All magnets have two **poles** - a South pole and a North pole. You can see them marked on these pictures.

Unlike **poles attract** and pull in the direction of the arrows.

Like **poles repel** and push away from each other in the direction of the arrows.

These metal objects are attracted to this **horseshoe magnet**.

Not all metals are **magnetic**. Do you know which metals are?

Vocabulary

Force

The pulling or pushing effect that something has on something else.

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 things is felt.

Motion

The activity of changing position or moving from one place to another.

Non-magnetic

An object that is not magnetic.

Magnetic poles

The ends of a magnet are called poles. One end is called the north pole and the other end is called the south pole.

The Big Picture	By the end of our project we will know that
<p data-bbox="107 212 197 240"><u>Physics</u></p> <p data-bbox="107 248 1146 277">P1: The universe follows unbreakable rules that are all about forces, matter and energy.</p> <p data-bbox="107 288 1451 359">P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.</p> <p data-bbox="107 370 1435 440">P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p>	<p data-bbox="1482 173 2139 722">A force can be thought of as a push or a pull. There are three types of contact force: impact forces (when two surfaces collide), frictional forces (when two surfaces are already in contact) and strain forces (when an elastic material is stretched or squashed). Objects move differently on rough and smooth surfaces; objects resist movement more on rough surfaces because there is higher friction as the object moves. There are also non-contact forces that can act between objects without them touching and that magnetism is an example of a non-contact force. Magnets have two poles called north and south. Know that like poles (south-south and north-north) of two magnets repel each other and that opposite poles of two magnets (north-south) attract each other. There is a magnetic field around a magnet which is strongest at each pole. Some materials are magnetic, meaning that they are attracted to a magnet, while other materials are non-magnetic.</p>