Forces and Magnets Knowledge Planner

What should I already know?

- The materials everyday objects are made from.
- Some simple physical properties of a variety of everyday materials – being able to group these together on the basis of their characteristics.
- How to identify and classify, and how to use observations to suggest answers to questions.
- How to observe using simple equipment and perform simple tests.
- How to gather and record data to answer simple questions.
- That question can be answered in a variety of ways.

Friction

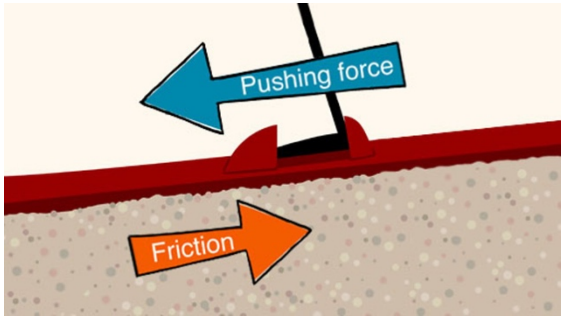
It is easier to push or pull something along a smooth surface than a bumpy surface. Ice skates move easily on smooth ice. It takes more force to move on rough ground. When two surfaces slide together, a force called friction makes them stick very slightly together. Smooth surfaces have less friction than bumpy surfaces.

Key Vocabulary	
Force	The scientific word for the pulling or pushing effect that something has on something else
Friction	The resistance of motion when there is contact between two surfaces
Motion	Moving from one place to another
Gravity	the force which causes things to drop to the ground
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
Accelerate	Speeding up
Decelerate	Slowing down
Balanced force	When two forces are equal and there is no motion
Magnet	A piece of iron or other material which attracts some metals towards it.
Magnetic Field	The area around a magnet where the magnetic forces work.
Poles	North and South end of a magnet.
Attract/Attraction	The force of one object pulling another object towards it.
Repel/Repulsion	The force of one object pushing another object away from it.

Forces

A force is a push of pull on an object.
A force can cause something to:

- Speed up
- Slow down
- Change shape
- Change direction



Magnets

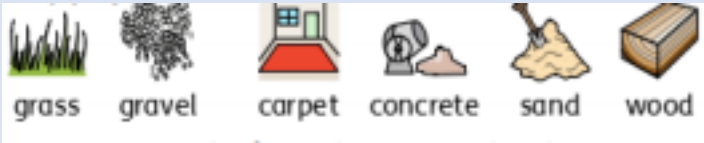
Magnets are objects that pull or push things with an invisible force called magnetism, which pulls on some metals such as iron and nickel. Magnets cannot pull anything made of wood or plastic, or metals such as copper or gold. Objects that are pulled by magnets are said to be magnetic. Objects that are not pulled by magnets are said to be non-magnetic.

How do magnets work?

- Magnets produce an area of force around them called a magnetic field.
- When objects enter this magnetic field, they will be attracted to or repelled from the magnet if they are magnetic.
- When magnets repel, the push each other away
- When magnets attract, they pull together

How do different surfaces affect the motion of an object?

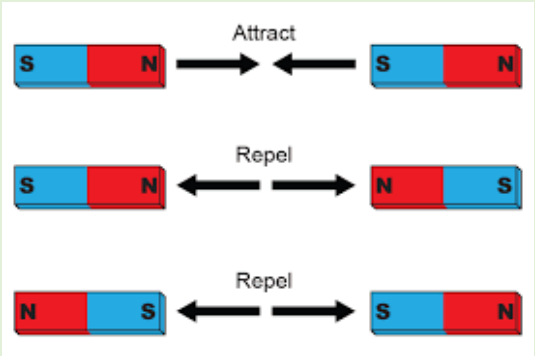
- Forces act in opposite directions to each other.
- When an object moves across a surface, friction acts as an opposite force.
- Friction is a force that holds back the motion of an object.
- Some surfaces create more friction than others which means that objects move across them slower.



- On a ramp, the force that causes the object to move downwards is gravity.
- Objects move differently depending on the surface of the object itself and the surface of the ramp.

How do magnetic poles work?

- The ends of a magnet are called poles.
- One end is called the north pole and the other end is called the south pole.
- Opposite poles attract, similar poles repel.
- 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.



Magnetic Materials

Iron
Steel
Nickel

Non-Magnetic Materials

Aluminium
Copper
Gold
Silver
Wood
Plastic
Fabric
Rubber