



Saint Elizabeth's Knowledge Mat

Year: 5

Subject: Science

Topic: Forces



1. What I Know Already

Notice and describe how things move, using simple comparisons such as faster and slower. (KS1)
Describe magnets as having two poles.
Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3)
Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3)

2. Key Concepts- What I'll Learn

As seen in Image A, there are 6 potential outcomes of **forces** upon an object. They can make an object: start to move, change direction, change shape, stop moving, move faster or move more slowly.

Isaac Newton discovered his theory of **gravity** in 1687, when he saw an apple fall from a tree.

Mass is a measure of 'matter' inside an object. **Weight** is a measure of the strength of gravity acting upon an object, measured in newtons. An object's mass will always stay the same, but an object's weight can change depending on the location's **gravitation pull**.

A **variable** is an element of an experiment that can be changed.

Pulleys, levers and gears are all example of simple mechanisms. They help make jobs easier through a transfer of motion or force. A **lever** can be used to make a small force lift a heavy load. A lever always rests on a pivot (fulcrum), like a seesaw.

Streamlined objects are made/ designed to travel quicker through water and air, such as sharks and airplanes.

Image A- showing the different outcomes of forces.

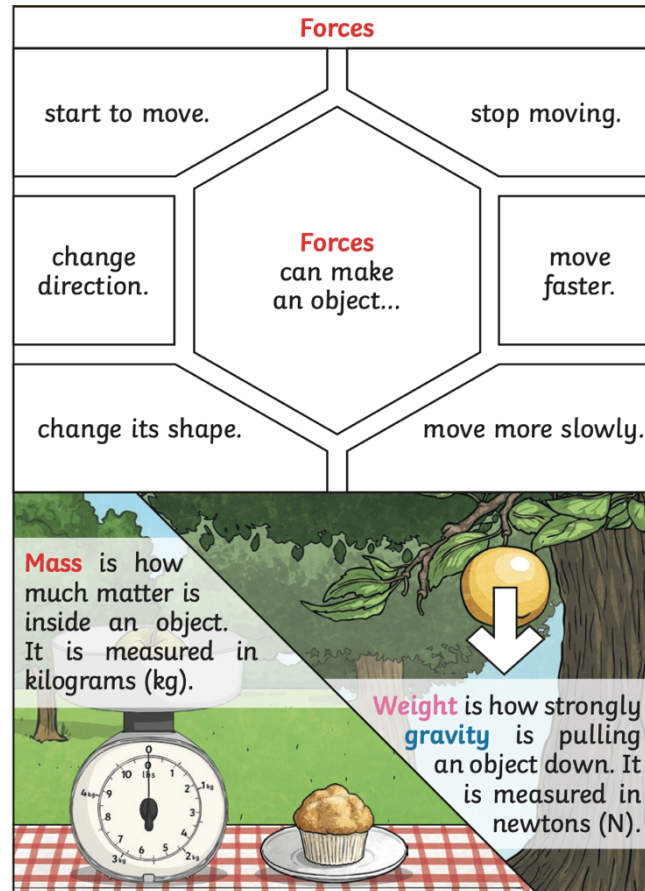
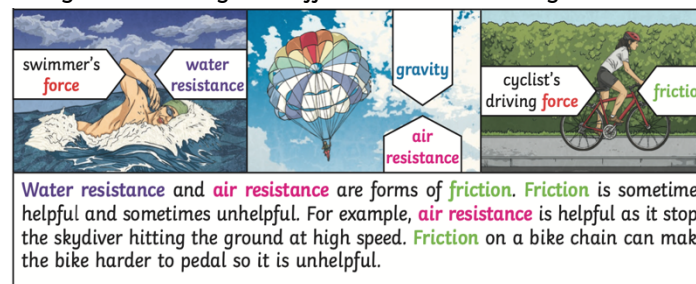


Image B- showing the difference between weight and mass.



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.

Image C- examples of forces in action.

3. Key Vocabulary

forces	Pushes or pulls.
gravity	A pulling force exerted by the Earth (or anything else which has mass).
friction	A force that acts between two surfaces or objects that are moving, or trying to move, across each other.
air resistance	A type of friction caused by air pushing against any moving object.
water resistance	A type of friction caused by water pushing against any moving object.
buoyancy	An object is buoyant if it floats. This is because the weight of the object is equal to the upthrust.
upthrust	A force that pushes objects up, usually in water.
streamlined	When an object is shaped to minimise the effects of air or water resistance.
mechanism	Mechanisms are simple machines with moving parts that change input forces and movement into a set of useful output forces. Examples of mechanisms are pulleys, gears and levers.
Earth's gravitational pull	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's gravitational pull which keeps us on the ground.
weight	The measure of the force of gravity on an object. Weight can change, depending on gravity!
mass	A measure of how much matter (or 'stuff') is inside an object.