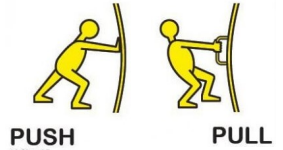


Key vocabulary

forces	Pushes or pulls.
gravity	A pulling force exerted by a planet that draws objects towards its centre.
mass	A measure of how much matter is inside an object. (kg)
friction	A force that acts between two surfaces or objects that are moving across each other.
Air resistance	A type of friction caused by air pushing against any moving object.
Water re- sistance	A type of friction caused by water pushing against any moving object.
streamlined	When an object is shaped to minimise the effects of air or water resistance.
Mechanisms	Parts which work together in a machine (e.g. pulleys, gears and levers)

Forces are pushes and pulls which make things move and stop moving. Most forces need contact between objects but magnets can act at a distance. When forces are unbalanced, objects can speed up, slow down or change direction.

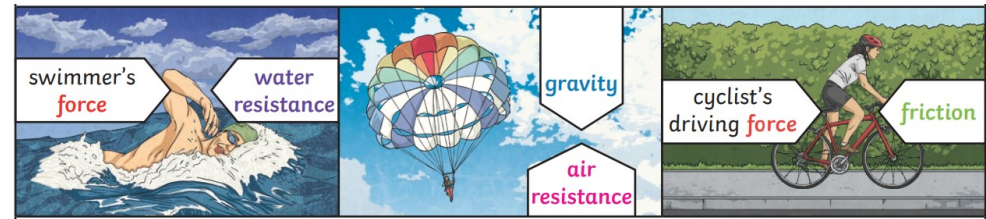


Examples of forces

There are lots of different forces , as well as gravity, that affect our daily lives.

Friction is a 'sticking' force that occurs when an object moves another. Friction both stops and makes things move. It causes things to stick and rub against each other and also causes slipping and sliding.

Air resistance is a type of friction force that pulls against an object travelling through the air. Water resistance is the friction force on objects floating or moving in water. Objects that are more streamlined will have less water/ air resistance so can move more quickly (e.g. a shark).



Gravity

Isaac Newton discovered gravity around 300 years ago when he saw an apple fall to the ground from an apple tree.

The bigger an object's mass, the more gravity it will have.



Weight is how strongly gravity is pulling an object down. It is measured in newtons(N).

Without gravity we would fly right off the Earth! The Sun's gravity keeps all the planets in orbit around the Sun.



Mechanisms

Machines have mechanisms, including pulleys, gears and levers, that allow a small force to have a greater effect. This means that we can use these machines to achieve things more easily.

Pulleys are wheels and ropes that work together to lift a heavier load.



Gears are different sized cogs that work together to give a machine extra force. When two gears are connected, they always turn in the opposite direction to each other.



Levers give us extra pushing or pulling force to help us lift heavier weights. A lever always rests on a pivot.



Knowledge objective

Self- assessment (✓)

I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

I can identify the effects of air resistance.

I can identify the effects of water resistance.

I can identify the effects of friction that acts between moving surfaces.

I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.