

Levers allow us to do heavy work with less effort. For example, trying to pick up a large heavy box is difficult, however if a lever is used it becomes much easier to move it.



FORCES

Pulleys also allow us to do heavy work – objects are attached to ropes and pulley wheels, and so instead of lifting heavy object upwards, we can pull on the pulley rope downwards.



Gears are toothed wheels. Their 'teeth' can fit into each other so that when the first wheel turns, so does the next one. This allows forces to move across a surface.



Key vocabulary	Definition
Force	A pushing or pulling effect that something has on something else.
Gravity	Really large objects (stars, planets and moons) attract other objects.
Mass	How much 'stuff' there is in an object.
Weight	The measure of the force of gravity on an object.
Friction	Resistance to motion when one object rubs against another.
Resistance	Going against something.
Aerodynamic	Having a thin, pointy shape to reduce drag.
Streamlined	Having a thin, pointy shape to reduce drag.
Buoyancy	Whether an object floats or sinks depends on its buoyancy.
Upthrust	A force that pushes up, usually in water.
Lever	A basic tool to lift heavy things or open things.
Pulley	A wheel with a groove that makes it easier to lift heavy things.
Gear	Part of a machine with teeth that lock with teeth on another part to make it move.

Key Knowledge and Understanding:

Know that there are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity).

Identify objects that need friction and objects that need friction reduced.

Explore, identify and describe areas of friction on a bike.

Be able to say how friction keeps us safe.

Carry out some simple friction experiments and activities.

Imagine what would happen if friction in the world was reduced to nothing.

Know that objects are attracted to the Earth because of the force of gravity acting between the Earth and the falling object.

Know that gravity can act without direct contact between the Earth and an object.

Know about air resistance affecting the fall of an object. Including in a vacuum and on the moon.

Give examples of air resistance being useful or a hindrance.

Investigate autogyros to see how air resistance can be increased and reduced.

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

Investigate the effects of different mechanisms.

Be able to say that friction, air resistance and water resistance are forces which slow down moving objects.

Give example of ways that friction, air resistance and water resistance can be useful or unwanted.

Give simple ways that friction, air resistance and water resistance can be reduced.

Know that more than one force can act on an object simultaneously.

Research the impact that Galileo Galilei and Isaac Newton had on our understanding of forces.

Be able to give some simple mechanisms that are useful in daily life.

