



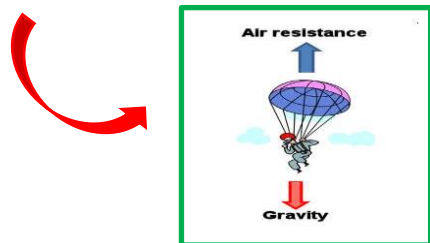
## Forces and Motion

### We will learn...

Forces are pushes and pulls. These forces change the motion of an object. They will make it start to move or speed up, slow it down or even make it stop. For example, when a cyclist pushes down on the pedals of a bike, it begins to move. The harder the cyclist pedals, the faster the bike moves. When the cyclist pulls the brakes, the bike slows down and eventually stops.

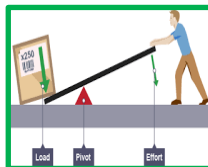
Friction is a force. It is the resistance of motion when one object rubs against another. Other forces that create resistance of motion include water resistance and air resistance.

Gravity is the force that pulls objects to the centre of the Earth. Air resistance pushes up on the parachute, opposing the force of gravity. This parachutes land more slowly.



Water resistance is the friction that is created between water and an object that is moving through it. Some objects can move through water with less resistance if they are streamlined.

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.



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.

Springs can be stretched by pulling them or squashed by pushing them. The greater the force pulling or pushing the spring, the greater the force the spring uses to move back to its normal shape.

**Inspirational Scientist:** Archimedes- Greek inventor and mathematician who explained how levers worked.

**Working scientifically:** In science this term we will learn the following practical skills:

- ✓ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- ✓ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

### Key vocabulary:

<b>attract</b>	If one object attracts another object, it causes the second object to move towards it.
<b>repel</b>	When a magnetic pole repels another magnetic pole, it gives out a force that pushes the other pole away.
<b>friction</b>	The resistance of motion when one object rubs against another.
<b>force</b>	The resistance of motion when one object rubs against another.
<b>gravity</b>	The force which causes things to drop to the ground.
<b>resistance</b>	A force which slows down a moving object or vehicle.

### Investigate:

- Draw diagrams to show how objects move down ramps, through the air and through water. Use arrows to show the direction of the forces.
- Make parachutes to investigate how air resistance works.