

Bomere and the XI Towns Federation Knowledge Organiser—Forces

Topic:- Science—Forces

Class/Year Groups: Stiperstones

Term: Spring

What you already know?

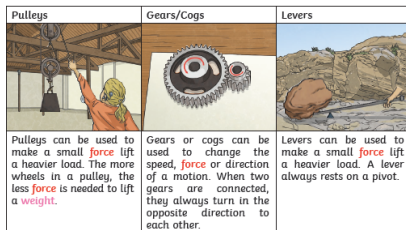
Pupils studied friction in Year 3 and should know that friction is a force and that it acts against movement. They should know that forces can change the shape, speed and direction of objects.

What you will learn

Examples of **forces** in action:



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.



Forces

start to move.

stop moving.

change direction.

Forces
can make
an object...

move faster.

change its shape.

move more slowly.

Isaac Newton

Isaac Newton is famously thought to have developed his theory of gravity when he saw an apple fall to the ground from an apple tree.

Mass is how much matter is inside an object. It is measured in kilograms (kg).

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

It has a pointed nose to cut through the water, and a smooth, low, curved back to allow the water to flow over and around it.

This shark is **streamlined**.

It does not create much **water resistance** so it can move through the water quickly.

Vocabulary

| | |
|----------------------------|--|
| Forces | Pushes or pulls. |
| Gravity | A pulling force exerted by the Earth (or anything else which has a mass) |
| Friction | A force that acts between two surfaces or objects that are moving, or trying to move, across each other. |
| Weight | The measure of the force of gravity on an object. |
| Mass | A measure of how much matter (or 'stuff') is inside an object. |
| 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. |



National Curriculum Objectives:

- Explain unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- Identify the effects of air resistance, water resistance and friction, that act that between moving surfaces
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

