

### Gravity and weight

A force that pulls an object (or huge objects, such as the Moon) towards the centre of the Earth.

Earth's gravity pulls on the Moon and keeps it in orbit.



The Sun's gravity pulls on the Earth and other planets to keep them in orbit.



### Significant individuals

#### Galileo Galilei



**Occupation:** Scientist, mathematician, and Astronomer

**Born:** February 15, 1564 in Pisa, Italy

**Died:** January 8, 1642 Tuscany, Italy

**Best known for:** Improving the telescope to be used to study the planets and stars

#### Sir Isaac Newton



**Occupation:** Scientist, mathematician, and astronomer

**Born:** January 4, 1643 in Woolsthorpe, England

**Died:** March 31, 1727 in London, England

**Best known for:** Defining the three laws of motion and universal gravitation

### Forces Push and pull



#### Friction

A force between two surfaces



#### Air resistance

A friction that occurs between air and another object – opposes movement – the object is affected by its surface area



#### Water resistance

Push occurs when an object moves through water



### Weight

How much gravity pulls on an object. This is measured in Newtons (N)

### Mass

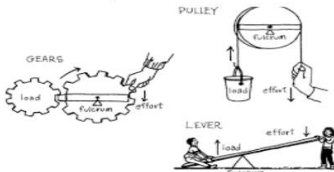
The amount of material in an object. This is measured in grams (g) or kilograms (kg)

### TYPES OF MECHANISMS

**Pulleys** – they are used to reduce the amount of force needed to lift a load. The more wheels in a pulley the less force is needed to lift the weight.

**Gears or cogs** – are used to change speed, direction or force of a motion. When 2 gears are connected they always turn in the opposite direction to one another.

**Lever** – can be used to make a small force lift a lighter load. A lever always rests on a pivot or fulcrum.



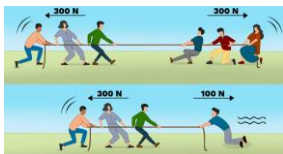
**Upthrust** – force acts upwards on objects in liquid or gas

**Floating** – when an object's weight is equal to the Upthrust of the liquid

**Sinking** – when an object's weight is greater than the upthrust of a liquid

**Streamlined** - when an object is shaped to minimise the effects of air or water resistance

### Forces – Balanced and unbalanced forces



### Vocabulary Tier 2

Floating  
Sinking  
Streamlined  
Balanced  
Unbalanced

### Vocabulary Tier 3

Force  
Gravity  
Weight  
Mass  
Mechanism  
Pulley  
Gear  
Lever  
Friction  
Air resistance  
Water resistance  
Upthrust

