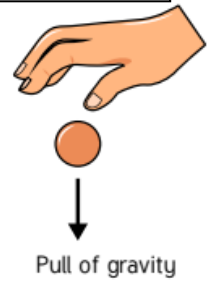


Y5: 'Forces' Science knowledge organiser

A **force** is a push or pull that makes something move, change speed or change shape.



Gravity is a force which acts at a distance. It is a pull force that pulls objects towards the centre of the Earth. The planets and the Sun do not touch, yet the planets stay in orbit around the Sun due to the force of gravity.



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).

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.



Friction is in all places where two surfaces meet. It acts in the opposite direction to movement and **always slows an object down**. Friction can be **increased** by adding tread patterns to tyres and the soles of shoes. Friction can be **decreased** by smoothing surfaces or using a lubricant, such as oil.

Forces in action

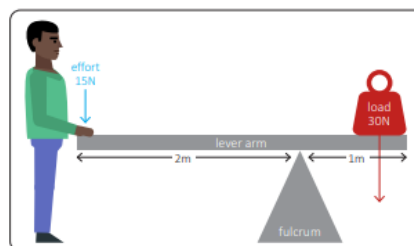


Air resistance helps the skydiver from hitting the ground at high speed.

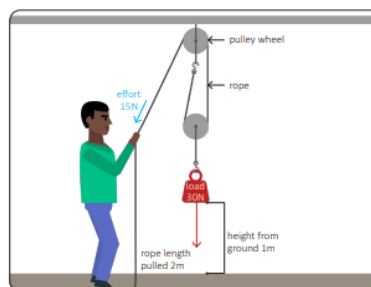
Submarines are **streamlined** to reduce **water resistance**.



Buoyancy



Levers can be used to make a small **force** lift a heavier load. A lever always rests on a **pivot**.



The more wheels in a **pulley**, the less **force** is needed to lift the **weight**.



Gears or **cogs** are used to change the speed, force or direction of movement.

Connected **cogs** turn \rightleftarrows