Science
Year 5

Cycle B – Summer 1
Forces - I Will Survive

In this unit: Pupils will learn about different forces and their impact on objects. They will explore air resistance, water resistance and friction in more detail to overcome problems within 'The City of Ember' using their scientific knowledge.

Children should already know:

- that forces are pushed and pulls that change the motion of an object.
- that forces will make an object speed up, slow down or even stop.
- that forces act in opposite directions to each other.
- that friction acts to slow down an object when it moves across a surface.
- that some surfaces create more friction than others.
- that gravity acts to make objects move down towards the Earth.
- that magnets create a force which act upon certain materials.
- that the ends of magnets are called poles.
- that opposite poles attract and similar poles repel.

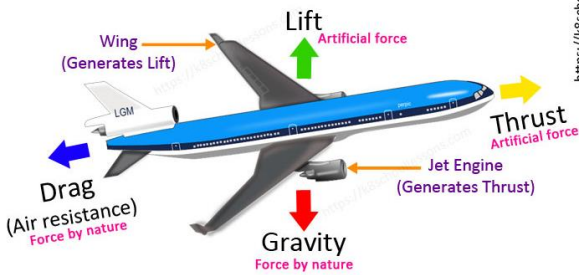
At the end of this unit, children will know:

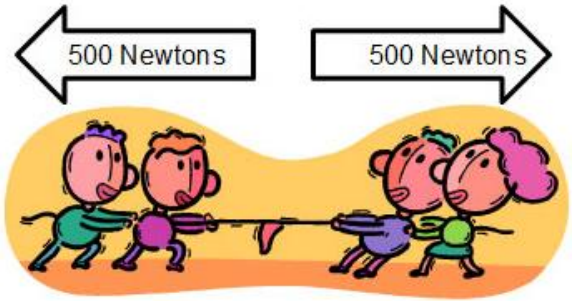
- that objects which are unsupported will fall towards the Earth.
- that gravity is force which gives weight to objects.
- the moon and other planets have different gravitational pulls to earth.
- that forces can make an object move faster, slow down, change direction, change shape or stop.
- that water resistance and air resistance are forms of friction.
- that pulleys can be used to make a small force lift a heavier load.
- that gears and cogs can be used to change the speed, force and direction of a motion.
- that levers can be used to make a small force lift a heavy load.
- that forces are measured using newtons.

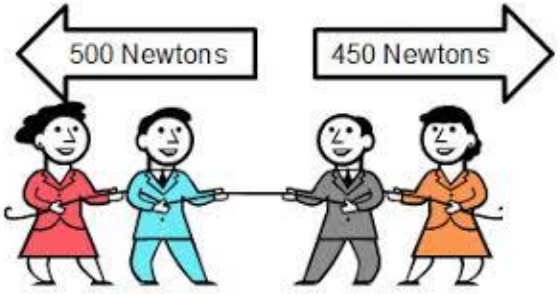
Pupils could investigate:

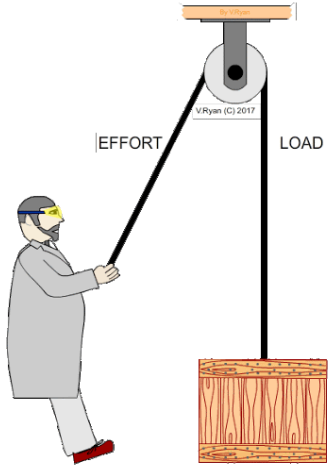
- how gravity changes on different planets and how that would affect our weight.
- the effect of air resistance, water resistance or friction on a moving object.
- the effect of cogs, levers and pulleys in moving heavy objects.

Forces acting on an Aeroplane









Key Vocabulary	
balanced force	when all the forces acting upon an object are equal
drive force	a force created by an object in the same direction of that it is moving
gears	a wheel with teeth that works with others to alter the speed of the force which creates the movement
gravitational pull	the strength of the pull made by gravity
gravity	the forces that attracts, pulls, something towards the centre of the Earth
levers	a rigid bar resting on a pivot that is used to move a heavy object
mass	how heavy an object is
mechanism	a system of parts working together in a machine
newtons	a unit of measure used when measuring the power of forces
pulley	a wheel with a grooved rim which changes the direction a force is applied to a cord or rope
resistance	a force which acts in the opposite direction which the object is moving
thrust	the force of a jet or rocket engine to move it forward
unbalanced force	when all the forces acting upon an object are not equal
unsupported	not held in place
weight	the mass or amount of matter

Key Questions:

- what is [force]?
- how are forces measured?
- what effect will friction have on a moving vehicle?
- what is a balanced force?
- what are newtons and what do they tell us?
- how can an heavy object be easily lifted?