Enriching lives every day; enabling our school community to learn, achieve and flourish through living 'life in all its fullness'

Sustainability

Subject: Science

Year group: 5

Term: Spring

Unit name: Forces

Prior Knowledge - Compare how things move on different surfaces. (Y3 - Forces and magnets)
Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)
Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets)
Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. (Y3 - Forces and magnets)
Describe magnets as having two poles. (Y3 - Forces and magnets) Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets)

Scientific enquiry	
Classifying	Gear trains
Observing over time	Not relevant
Pattern seeking	Forces that make things begin to move, get faster or slow down Explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. Levers and fulcrums Relationship between weight in grams and Newtons
Comparative/fair testing	Falling objects – making parachutes Resistance in water – making boats
Researching	Using a force meter

National curriculum:

- Explain that 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 between moving surfaces.
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Working Scientifically:

- Raise different kinds of questions about scientific phenomena.
- Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision.
- Set up comparative and fair tests and begin to decide which variables to control.
- Make and explain predictions.
- Begin to report and present findings from enquiries using scientific language.
- Begin to use evidence to justify ideas and conclusions.

Assessment for learning

Recapping prior knowledge- beginning of unit- what do children already know?
Beginning of each lesson- focus on recall of previous learning (quick quizzes)

Respect	Integrity
Do for other people the same things you want them to do for you. Matthew 7:12	An honest witness tells the truth. But a dishonest witness tells lies. Proverbs 12:17

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Key Learning- what will the children know by the end of the unit?	
To answer the question: what is gravity?	A force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.
To explore a range of contact forces: • **Air resistance** • **Water resistance** • **Friction** ***(Use scientific enquiry to explore each if these concepts. Either one lesson per force or look into one contact force in greater detail)***	Air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water, or the air and water may be moving over a stationary object.
Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover. Pulleys, levers and gears are all mechanisms, also known as simple machines.