

Our School Values- Science	
Love	We show love by fostering a joy of discovery.
Courage	We show courage by being brave, challenging thinking, asking questions and investigating new ideas. We show courage knowing that we won't always find the answer.
Unity	We show unity by working collaboratively to discover more.
Inspiration	We show inspiration by not giving up and thinking creatively to seek answers.



## Year 5 Science Forces



### NC Objectives

- 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

### Knowledge I already know

From Year 3:

- I know that a contact force occurs when two objects physically touch.
- I know that a non-contact force is a force that acts on an object without touching it.
- I know that forces act in opposite directions.
- I know that friction is the force that stops things from moving.
- I know that resistance is a force that slows down an object that is moving.
- I know that the type of surface changes how something moves.
- I know that magnets always have a north and south pole.
- I know that opposite poles of a magnet attract whilst similar poles repel.

### Knowledge I will learn

- I know that there are a number of different types of forces: simple contact, magnetism, friction, air resistance, water resistance, upthrust.
- I know that gravity is a force that pulls an object (or huge objects, such as the Moon) towards the centre of the Earth.
- I know that Earth's gravity pulls on the Moon and keeps it in orbit.
- I know the Sun's gravity pulls on the Earth and other planets to keep them in orbit

### Key Vocabulary

Word	Definition
Opposite	As different as possible from something
Reaction	Action as a result of something that has happened
Advantage	Quality of something that makes it better or more useful
Displace	Take the place of something
Weight	Force produced by gravity acting on an object.
Mass	Quantity of material that something contains
Pulley	Wheel(s) over which a rope or chain is pulled in order to lift or lower heavy objects
Gear	a mechanism to give a mechanical advantage
Pivot	a central point on which something turns or balances
Fulcrum	the point on which a lever turns or is supported
Lever	a device for moving a heavy load using a small force
Upthrust	force with which a liquid or gas pushes up against an object that is floating in it

When is friction helpful and when is it not?	What's the effect of air resistance?	What's the effect of water resistance?	Who was Galileo Galilei?	How do levers help us?	How do pulleys and gears help us?
Chopstick and ice-cube investigation.	Air resistance investigation.	Comparative test- floating investigation.	Written explanation as to why Galilei could only see 4 of Jupiter's moons.	Lever investigation	Research the history of pulleys and gears.
Challenge: how do sports reduce or increase friction to help?	Challenge: why are so many athletic records set at a higher altitude.	Challenge: how have sports developed to reduce water resistance (swimming and sailing)	Challenge: which of Galilei's discoveries do you think was most significant?	Challenge: draw a diagram to show the relationship between the weight and the fulcrum.	Challenge: true or false- Gears that are next to each other always turn in opposite directions.
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