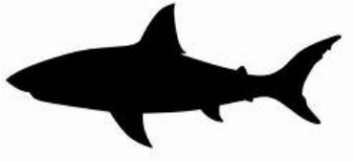


## Year 5 - Forces



### Intent:

- ✓ Who discovered the theory, 'whatever goes up must come down'?
- ✓ How does the size of a parachute effect the time it takes to land?
- ✓ Why are sharks torpedo shaped?
- ✓ Why do your hands get hot when you rub them together?
- ✓ Can a slide balance if the people on either side are a different mass?
- ✓ Can you pick up a box without touching it?
- ✓ Where do we see forces in action in the world around us?

### Key Vocabulary

air resistance  
contact  
non-contact  
drag  
force  
friction  
gears  
gravity  
levers  
material  
Newton  
pulleys  
surface  
water resistance



Isaac Newton

1643 - 1727



### Statutory requirements

Pupils should be taught to:

- 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.

### Notes and guidance (non-statutory)

Pupils should explore falling objects and raise questions about the effects of air resistance. They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. They should experience forces that make things begin to move, get faster or slow down. Pupils should 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. Pupils should explore the effects of levers, pulleys and simple machines on movement. Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.

Pupils might work scientifically by: exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.

### **Intent:**

- Explain why unsupported objects fall towards the earth.
- Identify the effect of air resistance.
- Identify the effect of water resistance.
- Identify the effect of friction.
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
- Give examples of where these forces occur in the world around us.
- Find out about Isaac Newton and how he developed the theory of gravity.

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