



Frogs – Science KCV – Forces



Key facts to learn:

- Know that a force is measured in a unit called Newtons
- Know that Newton was undoubtedly one of the greatest scientists who ever lived, a genius who discovered a great deal about forces
- Know that the amount of matter (stuff) in an object is its mass
- Know that gravity is a force that acts between all objects in the universe
- Know that unsupported objects are pulled towards the Earth by the force of gravity
- Know that acceleration is a change in speed and that unbalanced forces acting on an object cause it to accelerate
- Know that air resistance is a force felt by an object as it moves through the air
- Know that a parachute's shape increases the air resistance that a falling object experiences, giving it a much lower terminal velocity
- Know that water resistance is a force felt by an object as it moves through water; it is caused by the object bumping into the water particles
- Know how to draw a force diagram with arrows representing the different forces acting on an object
- Know that gears, levers and pulleys are simple machines that are used to allow a smaller force to have a greater effect; they do this by moving a smaller force over a longer distance at one end of the machine, which the machine turns into a larger force over a small distance at the other end

Key skills to do:

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further tests.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

Words to know and spell (Tier 2 Vocabulary)

gravity	effect	lever
air resistance	move	spring
water resistance	stop	drag
friction	change direction	motion
surface	pulley	Newtons
force	gear	force meter

Words to understand and spell (Tier 3 Vocabulary)

acceleration	The increase in something's speed, or its ability to go faster
fulcrum	The point at which a bar, or something that is balancing, is supported or balanced
momentum	The force that keeps an object moving after it has started
upthrust	That forces that pushes an object up
mechanism	A part of a machine, or a set of parts that work together

Concept check questions. Test yourself:

- What is gravity and how do we know it exists?
- What is friction and where do you see it in everyday life?
- What is air resistance? When might it be a good thing or a bad thing?
- Why do some things float and some sink?

Opportunities for Investigation:

Fair Testing: Which shape of parachute takes the longest to fall to the ground?