Science – Year 5 – Forces

Topic Overview

In this unit, we will explore some of the different forces that exist in our world. We carry out investigations on friction, air resistance and water resistance as well as buoyancy.

Key Knowledge

Forces can be both helpful and unhelpful. For example, air resistance helps a plane stay in the air but it also slows the plane down.

Parachutes use air resistance to slow falling objects or people.

Bicycle brakes use friction to slow the bike down. Friction on a bike chain can make it harder to pedal.

Sir Isaac Newton was a scientist who developed the first description of the force of gravity. Newton said that he started thinking about gravity after watching an apple fall from a tree but it did not actually hit him on the head, as it is often claimed!

An apple falls to Earth because of gravity.

The Moon has a smaller mass than Earth so the gravitational pull on the Moon is smaller than it is on Earth.

Water resistance slows us down when we move or swim in water.

Streamlined shapes have a pointed front and a low, curved back to allow them to cut through air or water more efficiently, enabling faster movement.

A shark is streamlined. It has a pointed nose to cut through the water. It has a smooth, curved back to help the water flow over and around it.

Important Vocabulary

Independent Variable	What a scientist changes.
Dependent Variable	What a scientist measures.
Fair testing	Only changing one variable.
Force	A force is a push or pull. It can cause an object to start or stop moving or change its speed, direction or shape.
Gravity	A pulling force exerted by the Earth (or any object with mass).
Newton	A measurement used to measure force, named after Sir Isaac Newton.
Weight	The measure of the force of gravity on an object. It is measured in newtons (N).
Mass	A measure of how much matter an object is made up of. It is measured in kilograms (kg).
Friction	A contact force that occurs between two touching surfaces.
Air resistance (Drag)	A type of friction that occurs between air particles and an object moving through it. It acts in the opposite direction to motion.
Water resistance	A type of friction that occurs when an object pushes through water.
Buoyancy	An object is buoyant if it floats.
Upthrust	A force that pushes objects up, usually in water or air.
Streamlined	A shape that moves more efficiently through air or water.
Mechanisms	Simple machines with moving parts that change input forces into useful output forces. Pulleys, gears and levers are mechanisms.

Assessment

I can explain that unsupported objects fall towards Earth because of gravity.	I can explain what friction, air and water resistance are.	I can know that friction, air and water resistance can be useful or unwanted and can give examples.	I know that forces can be contact or non-contact and can give examples.	I know that friction, air and water resistance can be reduced or increased and can give examples.