Autumn 1: Science Knowledge Organiser – Forces – Unbalanced forces



George Cayley was an English engineer, inventor and aviator. He is one of the most important people in the history of aeronautics (things that fly). He identified for four aerodynamic forces of flight: weight, lift, drag and thrust.

Question for Learning: **What is gravity?** • Gravity is a non-contact force that pulls objects towards each other • Gravity cannot be seen or touched • The earth's gravity keeps us on the ground, making things fall when dropped	 Identifying, grouping and classifying
Question for Learning: **What is air resistance and what are its effects?** • Air resistance is a contact force and is a type of friction • It is a force that exerts against a moving object, acting in the opposite direction through the air • The faster something moves the greater the air resistance it experiences	 Comparative testing
Question for Learning: **What is water resistance and what are its effects?** • Water resistance is a contact force and a type of friction • It is a force what opposes motions to slow or stop objects moving through the water • The faster an object moves in water, the more water resistance it encounters	 Pattern Seeking
Question for Learning: **How does friction affect moving objects?** • Friction occurs when two surfaces touch each other and is a contact force that acts in the opposite direction of motion • Friction slows down or stops moving objects • Rough surfaces create more friction and smooth surfaces have less friction	 Pattern Seeking
Question for Learning: **What effects do levers, pulleys and simple machines have on movement?** • Levers help lift or move objects more easily by applying force (effort) at one end to lift a load at the other around a fixed pivot called a fulcrum • A pulley is a wheel with a groove around it for a rope, making it easier to lift heavy things by pulling down on the rope • A gear is a wheel with teeth that fits into another gear to change the speed or direction of movement	 Pattern Seeking
Question for Learning: **What is the relationship between lever length and effort?** • The longer the effort arm of a lever, the less effort is required to move the load	 Pattern Seeking

Key Words

Air resistance	This is a frictional force that opposes (works against) an object's motion through the air
Contact force	This is any force that occurs as a result of two objects contacting each other
Friction	The resistance that one surface or object encounters when moving over another
Gravity	The force that attracts objects towards one another, especially the force that makes things fall to the ground
Lever	A rigid bar resting on a pivot, used to move a heavy or firmly fixed load with one end
Aerodynamics	The study of the properties of moving air and the interaction between the air and solid bodies moving through it.