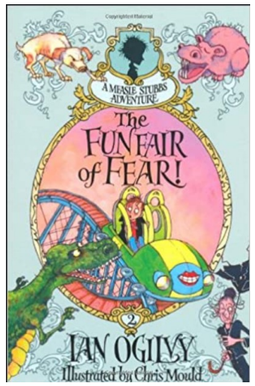
Knowledge Organiser—Scream Machine

Subject Specific Vocabulary

Air Resistance	A force that acts upon an object when it moves through the air, causing it to slow down.	Pendulum	A weight on a thread or stick that swings from side to side.
Water Resistance	A force that acts upon an object when it moves through water, causing it to slow down.	Pulley	A mechanism that is used to lift a load with less effort.
Up-thrust	A force that pushes a solid object through the air or makes it float in water.	Streamlined	Designed to move more easily through air or water.
Friction	The resistance of motion when one object rubs against another.	Centrifugal	A moving force away from a central point.
Magnetism	The force of attraction or repulsion between substances made of materials such as iron and steel.	Centripetal	A moving force towards a central point.
Cam	A mechanism that changes one type of motion into another type of motion.	Gravity	The force which pulls everything towards the centre of the Earth.
Force	A push, pull or twist that can change an object's speed, force or direction of movement.	Newtons	The unit of measures by which forces are measured (N).
Gear	A mechanism that is used to change the speed, force or direction of a motion.	Force meter/ Newton meter	The equipment used to measure force (in Newtons).
Lever	A simple mechanism that is used to move a load with less effort.		

Exciting Book



Sticky knowledge

Pushes, pulls and twists are types of force. Gravity is the largest force that keeps us on the Earth and not floating up into space.

Cams and gears can change the speed or direction of a motion or movement.

Magnets are only attracted to or repelled from materials containing iron or steel.

Mechanisms

A mechanism is a part of a machine or several parts that work together to create movement.

A lever is a long, rigid arm balanced on a fulcrum. Levers are found in seesaws, wheelbarrows and crowbars.

A linkage is made up of several rigid lever arms connected by joints. Linkages are found in extending platforms, extending mirrors and diggers.

A cam mechanism is made up of three parts: a cam, slide and follower. Cams are found in car engines and steam trains.

Gears are wheels with teeth that slot together. Gears are found in wind-up toys, clocks and bicycles.

A pulley is a rope looped around one or more wheels. Pulleys are found in lifts, roller coaster rides and attached to the sails of boats.

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Scream Machine

Amusement rides

There are many types of amusement ride that use different forces and mechanisms.

swing ride

drop tower

pendulum ride

roller coaster

carousel

log flume

Forces

A force is a push or a pull. To make an object move, such as a roller coaster carriage, a force must be applied to the object. Nothing will move without a force pushing or pulling. Roller coaster carriages don't have engines so they rely on forces to keep them moving.

Gravity

Gravity is a force that pulls objects toward each other. On Earth, gravity pulls all objects towards its centre. On a roller coaster ride, gravity pulls the carriage faster on a downhill slope and slows the carriage down as it climbs uphill parts of the ride.

Friction

Friction is a force between two surfaces that rub together. Friction slows down a moving object and produces heat. The amount of friction depends on the types of materials that rub together. Using a smooth mat on a helter-skelter slide creates less friction than using a rough mat so the rider would travel faster.

Water and air resistance

Water and air resistance are types of friction. Water and air push against objects moving through them and slow the objects down. Many roller coaster carriages are streamlined, meaning they are designed to reduce air resistance.

Centripetal force

Centripetal force keeps an object moving in a circle at a constant speed. On a swing ride, the chains of the swings exert a centripetal force on the swing seat and the rider, keeping them travelling at a constant speed in a circle.