

Key Vocabulary	
force	A push or pull that can change an object's speed, shape or direction of movement.
gear	A mechanism that is used to change the speed, force or direction of a motion.
gravity	A force that pulls things towards each other.
lever	A simple mechanism that is used to move a load with less effort.
machine	A piece of equipment with moving parts that works when given power such as electricity.
pendulum	A weight on a thread or stick that swings from side to side.
pulley	A mechanism that is used to lift a load with less effort.
air resistance	A force that acts on an object when it moves through the air, causing it to slow down.
Water resistance	Force that slows things down when they're moving through water
cam	A mechanism that changes one type of motion into another type of motion.
linkage	A mechanism that is used to direct force or motion where it is needed.
streamlined	Designed to move more easily through air or water.
friction	A force between 2 surfaces that rub together. Friction slows down a moving object.
centripetal force	A force that keeps an object moving in a circle at a constant speed.
oscillation	Move back and forth in a regular rhythm.
buoyancy	The ability of objects to float in water
Upthrust	Force that pushes objects in an upward direction

Knowledge

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 3 parts: a cam, slide and follower. Cams are found in car engines and steam trains.



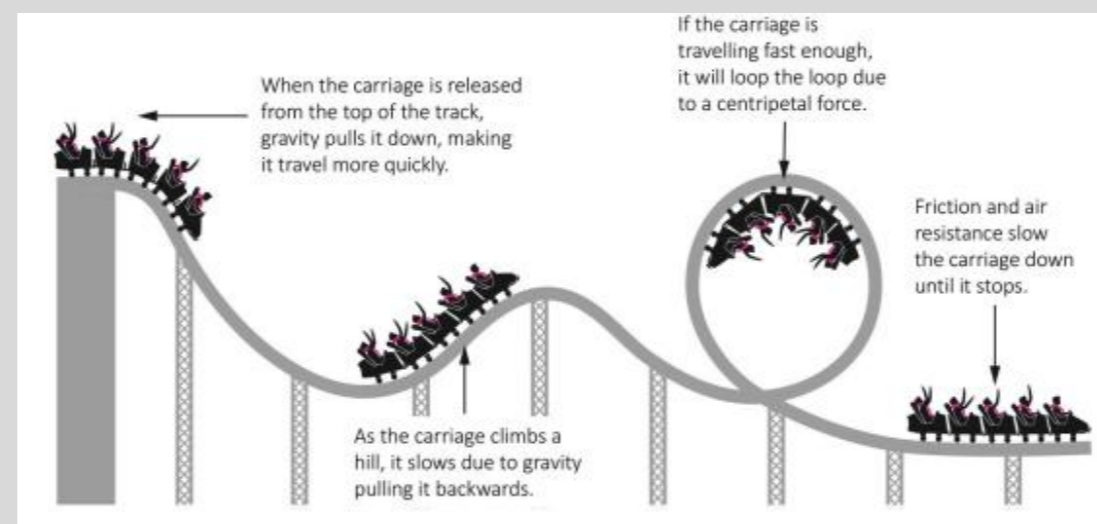
Gears are wheels with teeth that slot together. Gears are found in wind-up toys, clocks and bicycles.



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

• Forces

A force is a push or pull. To make an object move, such as a rollercoaster 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.



What I should already know

- Objects move differently on different **surfaces** depending on **texture**
- Most **forces** need **contact** between 2 objects
- A force is a **push** or **pull**
- Magnets create pushes and pulls based on their **poles** attracting and repelling

What I will know by the end of this unit

- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- Friction causes objects to slow down
- That air resistance and water resistance are types of friction that act between moving surfaces.
- Slippery surfaces can reduce friction
- Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.
- Forces at work in fairground rides
- Simple machines work by turning small forces into larger ones.
- Gears, levers, cams and pulleys can be used to help this.

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



swing ride



drop tower



log flume



pendulum ride



roller coaster



carousel

Useful Links

- <https://www.dkfindout.com/us/science/forces-and-motion/what-is-force/>
- <https://www.bbc.com/bitesize/topics/znmn39>
- <https://www.bbc.com/bitesize/articles/zxw6gdm>
- <https://kids.britannica.com/students/article/force/323538>
- <https://www.bbc.com/bitesize/articles/zxqrdxs>