The Blue Coat Church of England (Aided) Junior School
Believing, Celebrating, Succeeding

Forces

KNOWLEDGE ORGANISER

Year 5

What I need to know

- Forces cause an object to start moving, stop moving, speed up, slow down or change direction.
- Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.
- Air resistance, water resistance and friction are forces that occur through touch. They act between moving surfaces.
- A mechanism is a device that allows a small force to be increased to a larger force. The small force moves a long distance and the resulting large force moves a small distance. E.g. a bottle top remover.
- Pulleys, levers and gears are all mechanisms.

Key Vocabulary

Force	A push or pull upon an object resulting in the object's interaction with another object.
Friction (seen in Year 3)	The force between two objects that causes them to slow down or stop.
Resistance	A force that opposes a or slows down another force.
Air resistance	A type of friction force that pulls against an object travelling through the air.
Water resistance	A type of friction force that acts upon objects floating or moving in water.
Gravity	An invisible force that pulls objects towards each other.
Mechanism	A device that allows a small force to be increased to a larger force.

Gravity

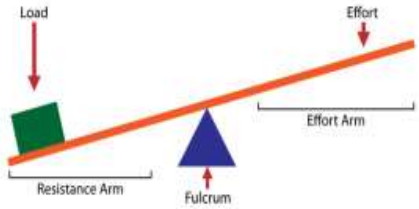
- Gravity is the force that hold things to the Earth's surface and prevents things from floating into the atmosphere. It ensures unsupported objects fall back down to earth.
- The bigger an object's mass, the more gravity it will have. The smaller the object's mass, the less gravity it will have.
- Sir Isaac Newton discovered gravity around 300 years ago. The story says he saw an apple fall from a tree and wondered what made it fall to the ground.

Air resistance

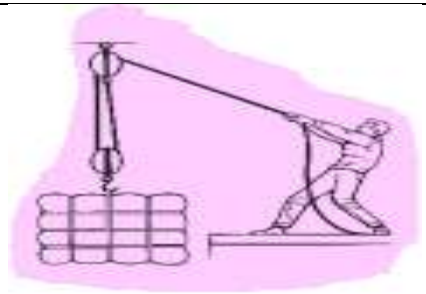
The air by touching the plane acts upon the plane and slows them down. You feel air resistance when you ride your bike. Planes are designed to reduce air resistance so they fly more quickly.

Water resistance

The water by touching the swimmer acts upon them and makes it harder for the swimmer to move through water. A fish has a body designed to make it move through water more easily.



Levers: levers are bars that help to lift heavy weight using less effort. The longer the lever, the easier it is to lift. The fulcrum is where the lever makes contact and helps lift the load. Scissors are an example of a lever.



Pulleys: pulleys are wheels and roped that help to lift heavy objects. You can lift heavier objects. Pulling down on one end of the rope creates an upward pull at the other end.

Gears: gears are different sized cogs that fit together to give something extra force. When one gear is turned, the other gear turns as well. The smaller gear turns more quickly, but with less force, while the bigger one turns more slowly with more force. Bikes are an example of gears in action.

Forces

Hi there! I am Rafsan Chowdhury - a mechanical engineer

Where do I work?

I work for Rolls-Royce. We provide power for planes, helicopters, trains, boats, submarines and more!

What did I like doing when I was at school?

I loved analytical, creative subjects. For D.T. we would make toy cars out of wood and I was the only one that made a three-wheeled car!

What do I like doing in my spare time?

I volunteer with the Institute of Mechanical Engineers and I am a school governor. I also love travelling around the world in planes made of Rolls-Royce engines.