



Forces

Year 5 Learning:

Prior Year 3 Learning:

In Year 3, we learned to:

- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing

Gravity



Gravity is a non-contact force, which acts at a distance. It is a pull force and causes objects to fall towards the centre of the Earth.

Friction

Friction is a force created when two surfaces rub together. This creates heat and slows an object down. Rough surfaces create more friction than smooth surfaces.

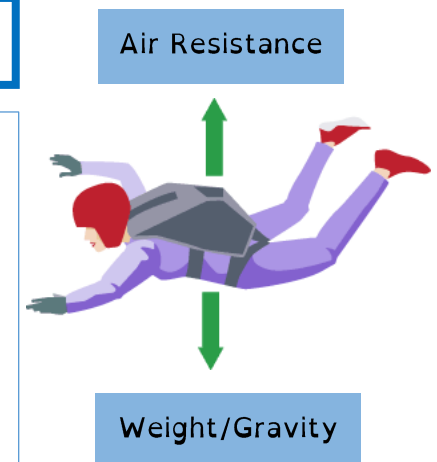
In this unit we will learn to:

- Explain how unsupported objects fall towards the Earth owing to the force of gravity acting between the Earth and the falling object
- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- Recognise how mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect

A force is a push or pull that acts upon an object. We can't see forces, but they are an important part of our everyday lives. When we push or pull, we can move the object, change the shape of the object or make the object change direction.

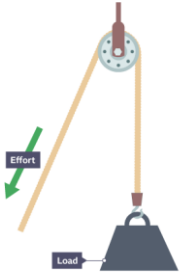
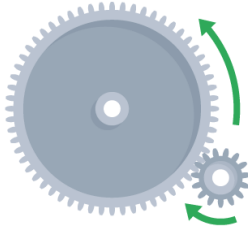
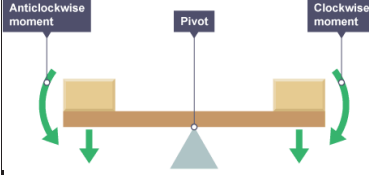



Air Resistance

Air resistance moves in the opposite way to gravity. It acts between the object and the air molecules, which slows an object moving through the air down. It is a type of friction. Parachutes are used to increase air resistance and slow down for a safe landing.



Key Vocabulary

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|------------------|--|
| Gravity | A force exerted by the Earth, it attracts objects towards the centre of the Earth. |
| Air resistance | A type of friction caused by air pushing against any moving object. |
| Friction | A force that acts between two surfaces or objects that are moving, or trying to move, across each other. |
| Drag | The action of pulling something <u>forcefully</u> |
| Water resistance | A type of friction caused by water pushing against any moving object. |
| Gears | Gears or cogs are used to change speed, direction or force of a motion. When 2 gears are connected they always turn in the opposite direction to one another |
| Pulley | Pulleys are used to reduce the amount of force needed to lift a load. The more wheels in a pulley the less force is needed to lift the weight. |
| Levers | Levers can be used to make a small force lift a lighter load. A lever always rests on a pivot or fulcrum. |

| Pulleys | Gears/Cogs | Levers |
|---|---|---|
|  |  |  |
| <p>Pulleys can be used to make a small force lift a heavier load. The more wheels in a pulley, the less force is needed to lift a weight.</p> | <p>Gears or cogs can be used to change the speed, force or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.</p> | <p>Levers can be used to make a small force lift a heavier load. A lever always rests on a pivot.</p> |
| Every day uses: | | |
|  |  |  |
| <p>Window blinds Elevators Flag poles Water wells</p> | <p>Bikes Moving toys Watches Cars</p> | <p>Scissors Wheelbarrow Spades See saw</p> |