Background pattern

Description automatically generated

**Balanced forces**

When the forces acting on an object are balanced, they are the same size but act in opposite directions. The object is at a state of equilibrium. There will be no change in motion. A stationary object will remain stationary and a moving object will continue at the same speed in the same direction.

**Pressure**

Pressure is the amount of force exerted over a given area. Pressure happens in solids, liquids and gases and is calculated using the equation:

Pressure = force

area

**Moments**

A moment is a turning force that acts across a pivot. The moment of a force is determined using the force multiplied by the distance.

**Moments = force x distance**

For example; levers, gears and force multipliers

**Changing shape**

Elastic objects can be compressed or stretched by forces.

The extension of some elastic objects can be described by Hooke’s Law.

Where:

**Force = spring constant x extension**

**Changing speed**

If the driving force on an object is bigger than the resistive forces, an object will speed up.

If the resistive forces on an object are larger than the driving force, the object will slow down.

**Interaction pairs**

Forces always act in pairs. For example; when a person sits on a chair, their weight pushes down on the chair. The reaction force from the chair pushes the person up.

**Measuring forces**

Forces are measured in Newtons (N).

Forces are measured using a Newton meter.

**Key Vocabulary**

**Contact force**

Forces that act between objects that are physically touching

**Non-contact force**

A force that acts at a distance

**Friction**

A force that opposes motion of two object that are in contact with each other

**Air resistance**

A force that acts in the opposite direction to an object as it moves through air. Also known as drag.

**Reaction**

The force that supports an object on a solid surface

**Tension**

The force transmitted through a rope, spring or wire when a pulling force acts on each end.

**Balanced forces**

When forces acting on an object are the same size but act in opposite directions.

**Unbalanced forces**

Forces that act in opposite directions that are not the same size

**Elastic**

Objects that can be compressed or stretched by forces

**Moments**

A turning effect caused by a force

**Force diagrams**

You can’t see forces but you can see their effects.

We add force arrows to a diagram to show the size of the force and direction it is acting. The bigger the arrow, the bigger the force.

**Air resistance or drag**

Air resistance is the force acting in the opposite direction to motion when moving through air.

Drag forces can be reduced by making objects more streamlined

**Friction**

Friction is the force between two surfaces that are sliding, or trying to slide past each other. Different surfaces can cause different amounts of friction.

Friction can be reduced using lubrication – a substance that helps two surfaces move past each other. For example; oil and grease.

Having a smaller surface area in contact with a surface can also reduce friction.

**Unbalanced forces**

Unbalanced forces act in opposite directions and they are not the same size. One force is greater than the other. If forces are unbalanced, there will be a change in motion. It may speed up, slow down or change direction.

**Ambitious Vocabulary**

Lubricant, Directly Proportional, Streamlined, Deformed, Extension, Equilibrium

**Y8 Forces and pressure**

**Science**