

SUBJECT:

UNIT: Year 8: Forces and pressure



While you were away.

Lesson one: Contact and non-contact forces

1. Give an example of a contact force
2. Give an example of a non-contact force

Lesson two: Balanced and unbalanced forces

1. What is a balanced force?
2. Describe the movement of an object if the forces are unbalanced

Lesson three: Drag forces

1. Give an example of a drag force
2. What happens to the size of a drag force when a parachute opens?

Lesson four: Stretching and squashing

1. What unit is force measured in?
2. What apparatus is used to measure force?

Lesson five: Turning forces

1. What is a moment
2. Give an example of a moment

Lesson six: Friction

1. Give an example of friction
2. What can reduce friction

SUBJECT: Science

UNIT: Y8 Forces and pressure



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 objects 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

Measuring forces

Forces are measured in Newtons (N).

Forces are measured using a Newton meter.

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.

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.

Ambitious Vocabulary

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

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.

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.

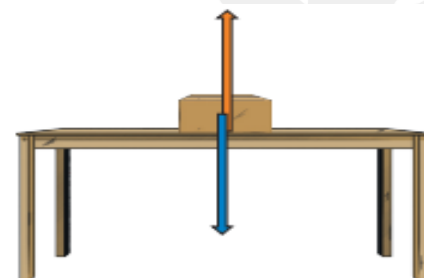
Having a smaller surface area in contact with a surface can also reduce friction.

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

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.

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

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

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 = $\frac{\text{force}}{\text{area}}$