

WJEC England GCSE Physics

3.1 - Forces and their Interactions

Flashcards

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What is a force?



What is a force?

A push or pull acting on an object due to an interaction with another object.



What are the two categories that all forces can be split into?



What are the two categories that all forces can be split into?

1. Contact forces (objects touching)
2. Non-contact forces (objects separated)



Give three examples of contact forces.



Give three examples of contact forces.

1. Friction
2. Air resistance
3. Tension



Give three examples of non-contact forces.



Give three examples of non-contact forces.

1. Gravitational forces
2. Electrostatic forces
3. Magnetic forces



What is weight?



What is weight?

The force that acts on an object due to gravity and the object's mass.



What quantities does weight depend on?



What quantities does weight depend on?

Weight = mass x gravitational field strength

- The object's mass
- The gravitational field strength at the given position in the field



What is the unit used for weight?



What is the unit used for weight?

The Newton (N).



What piece of equipment can be used to measure an object's weight?



What piece of equipment can be used to measure an object's weight?

A calibrated spring-balance or newton-meter.



What is the name given to the single force that is equivalent to all the other forces acting on a given object?



What is the name given to the single force that is equivalent to all the other forces acting on a given object?

The resultant force.



What does it mean if a force is said to do
'work'?



What does it mean if a force is said to do ‘work’?

The force causes an object to be displaced through a distance.



What is the equation used to calculate work done? Give appropriate units.



What is the equation used to calculate work done?
Give appropriate units.

$$\text{Work done} = \text{Force} \times \text{Distance}$$

Work done (Joules), Force (Newtons),
Distance (metres)



Under what circumstance is 1 joule of work done?



Under what circumstance is 1 joule of work done?

When a force of 1 Newton causes a displacement of 1 metre.



Explain the relationship between the force applied and the extension of an elastic object.



Explain the relationship between the force applied and the extension of an elastic object.

The extension is directly proportional to the force applied, provided that the limit of proportionality is not exceeded.



What is meant by an inelastic deformation?



What is meant by an inelastic deformation?

- A deformation which results in the object being permanently stretched.
- The object doesn't return to its original shape when the force is removed.
- Also known as **plastic** deformation.



State the equation relating force, spring constant and extension. Give appropriate units.



State the equation relating force, spring constant and extension. Give appropriate units.

Force = Spring Constant x Extension

Force (N), Spring Constant (N/m)

Extension (m)



What type of energy is stored in a spring when it is stretched?



What type of energy is stored in a spring when it is stretched?

Elastic potential energy.



What can extension be replaced with in the equation for spring force?



What can extension be replaced with in the equation for spring force?

Compression.

