Mechanics

A-Level Mathematics · Vocabulary in context

Word	Example
Mechanics /mɪˈkænɪks/	**Mechanics** studies forces and motion.
force /fɔːs/	You use a **force** to push a door open.
components /kəmˈpəʊnənts/	Split the velocity into horizontal and vertical **components**.
resultant /rɪˈzʌltənt/	The **resultant** of two forces is the single force that has the same effect as both together.
equilibrium /ˌiːkwɪˈlɪbrɪəm/	The book is in **equilibrium** because the forces balance.
contact force /ˈkɒntækt fɔːs/	The normal force is a **contact force** from the table.
normal reaction /ˈnɔːml rɪˈækʃn/	A book on a table feels a **normal reaction** pushing up from the table.
friction /ˈfrɪkʃn/	**Friction** between the tyres and the road stops the car sliding.
limiting friction /ˈlɪmɪtɪŋ ˈfrɪkʃn/	The box starts to slide when friction reaches **limiting friction**.
coefficient of friction /ˌkəʊɪˈfɪʃənt ɒv ˈfrɪkʃn/	The **coefficient of friction** μ shows how rough two surfaces are. μ
Newton's third law /ˈnjuːtnz θɜːd lɔː/	**Newton's third law** says forces come in equal and opposite pairs.
distance /ˈdɪstəns/	The **distance** from home to school is 2 km. 2 km

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speed /spiːd/	The bus moves at a **speed** of 15 m/s. 15 m/s
displacement /dɪˈspleɪsmənt/	After walking 3 km east, your **displacement** is 3 km east. 3 km 3 km
velocity /vəˈlɒsɪti/	The ball's **velocity** is 5 m/s to the left. 5 m/s
acceleration /əkˌseləˈreɪʃn/	The car speeds up quickly, so its **acceleration** is large.
velocity-time graph /vəˈlɒsɪti taɪm græf/	The slope of a **velocity-time graph** gives the acceleration.
constant acceleration /ˈkɒnstənt əkˌseləˈreɪʃn/	A falling stone has **constant acceleration** of about 9.8 m/s^2. 9.8 m/s^2
momentum /məʊˈmentəm/	A heavy truck has a lot of **momentum**.
conservation of momentum /ˌkɒnsəˈveɪʃn ɒv məʊˈmentəm/	**Conservation of momentum** means the total momentum stays the same.
Newton's laws of motion /ˈnjuːtnz lɔːz ɒv ˈməʊʃn/	**Newton's laws of motion** link force, mass and acceleration.
mass /mæs/	The **mass** of this bag of rice is 5 kg. 5 kg
weight /weɪt/	Your **weight** is the pull of the Earth on you.
tension /ˈtenʃn/	The **tension** in the rope holds up the lamp.
inclined plane /ɪnˈklaɪnd pleɪn/	A box slides down an **inclined plane**.
connected particles /kəˈnektɪd ˈpɑːtɪklz/	Two blocks joined by a string are **connected particles**.

Word	Example
work done /wɜːk dʌn/	**Work done** is force times distance moved.
kinetic energy /kɪˈnetɪk ˈenədʒi/	A fast car has a lot of **kinetic energy**.
gravitational potential energy /ˌgrævɪˈteɪʃənl pəˈtenʃl ˈenədʒi/	A book on a high shelf has more **gravitational potential energy**.
conservation of energy /ˌkɒnsəˈveɪʃn ɒv ˈenədʒi/	**Conservation of energy** means energy is never made or destroyed.
power /ˈpaʊə/	A 60 W lamp has a **power** of 60 watts. 60 W 60
limiting equilibrium /ˈlɪmɪtɪŋ ˌiːkwɪˈlɪbrɪəm/	In **limiting equilibrium**, the box is just about to slide.
deceleration /dɪˌseləˈreɪʃn/	The car brakes with a **deceleration** of 4 $\mathrm{m/s^2}$. 4 $\mathrm{m/s^2}$
thrust /θrʌst/	The rocket engine gives an upward **thrust**.
air resistance /eə rɪˈzɪstəns/	**Air resistance** slows down a falling leaf.

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