Energy and Momentum of Rotating Systems

AP Physics 1 · Vocabulary in context

Word	Example
rotational kinetic energy /rəʊˈteɪʃənl kɪˈnetɪk ˈenədʒi/	A spinning wheel stores **rotational kinetic energy**.
translational kinetic energy /trænˈsleɪʃənl kɪˈnetɪk ˈenədʒi/	A moving particle has **translational kinetic energy**.
centre-of-mass	Find the **centre-of-mass** of the two balls.
work /wɜːk/	You do **work** when you push a box across the floor.
work–energy theorem /wɜːk ˈenədʒi ˈθɪərəm/	The **work–energy theorem** says work changes kinetic energy.
flywheel	A **flywheel** stores energy by spinning.
Angular momentum /ˈæŋgjʊlə məʊˈmentəm/	**Angular momentum** stays constant without outside torque.
rigid body /ˈrɪdʒɪd ˈbɒdi/	A wheel can be treated as a **rigid body**.
angular impulse /ˈæŋgjʊlə ˈɪmpʌls/	A push on a door gives it an **angular impulse**.
impulse–momentum theorem /ˈɪmpʌls məʊˈmentəm ˈθɪərəm/	The **impulse–momentum theorem** says impulse equals the change in momentum.
net external torque	With no **net external torque**, angular momentum is conserved.
conserved /kənˈsɜːvd/	Energy is **conserved**: the total stays the same.

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collisions /kəˈlɪʒnz/	More **collisions** between enzyme and substrate speed up the reaction.
explosions /ekˈspləʊʒnz/	In **explosions**, the total momentum stays the same.
inversely proportional /ɪnˈvɜːsli prəˈpɔːʃənl/	Pressure is **inversely proportional** to volume.
Rolling without slipping /ˈrəʊlɪŋ wɪˈðaʊt ˈslɪpɪŋ/	**Rolling without slipping** means the contact point does not slide.
• **contact point**	The **contact point** touches the ground.
incline /ɪnˈklaɪn/	The block slides down an **incline**.
shape factor	The **shape factor** tells how mass is spread in a rolling object.
satellite /ˈsætəlaɪt/	The **satellite** goes round the Earth.
orbit /ˈɔːbɪt/	The Moon's **orbit** takes about 27 days.
free fall /friː fɔːl/	A stone dropped from a bridge is in **free fall**.
centripetal force /senˈtrɪpɪtl fɔːs/	The string gives the **centripetal force** to the spinning ball.
mechanical energy /mɪˈkænɪkl ˈenədʒi/	A swinging pendulum keeps its total **mechanical energy** if there is no friction.
elliptical	Planets move in **elliptical** orbits.
Escape velocity /eˈskeɪp vəˈlɒsɪti/	**Escape velocity** is the speed needed to leave a planet forever.

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