

5 Lecture - PHY101

Important Subjective

What is Newton's first law of motion?

Answer: Newton's first law of motion states that an object at rest will remain at rest, and an object in motion will remain in motion at a constant velocity unless acted upon by an external force.

What is the law of inertia?

Answer: The law of inertia is another name for Newton's first law of motion, which states that an object will resist changes in its state of motion.

How do seat belts in cars demonstrate the first law of motion?

Answer: Seat belts in cars provide an external force that acts on passengers, preventing them from moving forward and reducing the risk of injury in a sudden stop.

What external forces are used to ensure the stability of skyscrapers?

Answer: Engineers use external forces, such as dampers and braces, to counteract the motion caused by wind and earthquakes and ensure the stability of skyscrapers.

What is Newton's second law of motion?

Answer: Newton's second law of motion states that the force acting on an object is equal to its mass multiplied by its acceleration ($F = ma$).

How is Newton's second law relevant in the sport of baseball?

Answer: The force applied by a pitcher to a baseball is determined by the mass of the ball and the desired acceleration, as described by Newton's second law.

What is the principle behind rocket propulsion?

Answer: The principle behind rocket propulsion is Newton's third law of motion, which states that for every action, there is an equal and opposite reaction.

How do jet engines operate based on Newton's third law of motion?

Answer: Jet engines operate by expelling exhaust gases at high speed in one direction, which propels the aircraft in the opposite direction, in accordance with Newton's third law.

How is Newton's third law relevant in the launch of spacecraft?

Answer: The force of the exhaust gases expelled from the rocket engine propels the spacecraft in the opposite direction, in accordance with Newton's third law.

What is the significance of Newton's laws of motion in daily life?

Answer: Newton's laws of motion are fundamental concepts in physics that have a wide range of applications in our daily lives, from the design of safety devices to the construction of buildings and the operation of vehicles and machinery.