



# Newton's Laws of Motion

## Real Life Application

1. A book rests on a table. The table exerts an upward force on the book that balances the downward gravitational force. Which of Newton's laws explains why the book remains at rest?
  - Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
  
2. A car accelerates from rest when the driver steps on the gas pedal. Which of Newton's laws explains the car's acceleration?
  - Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
  
3. A rocket propels itself forward by expelling gas out the back at high speed. Which of Newton's laws explains the rocket's motion?
  - Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
  
4. You push a shopping cart, and it accelerates in the direction of the applied force. The harder you push, the faster it accelerates. Which of Newton's laws explains this relationship?
  - Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)

5. A person jumps off a diving board. As they push down on the board, the board pushes them upwards into the air. Which of Newton's laws explains this action?
- Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
6. A car moving at a constant velocity on a straight road requires no additional force to maintain its speed. Which of Newton's laws explains why the car continues moving without the need for additional force?
- Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
7. Two ice skaters push off each other while standing on ice. Both skaters move in opposite directions. Which of *Newton's laws* explains this interaction?
- Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
8. A soccer ball is at rest until a player kicks it. The ball then accelerates in the direction of the kick. Which of Newton's laws explains this motion?
- Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
9. A spacecraft in space continues moving in a straight line at a constant speed without any need for propulsion. Which of Newton's laws explains the spacecraft's motion?
- Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)
10. When a horse pulls a cart, the cart pulls back on the horse with an equal but opposite force. Which of Newton's laws explains this interaction?
- Newton's First Law (Law of Inertia)
  - Newton's Second Law ( $F=ma$ )
  - Newton's Third Law (Action-Reaction)