

Conservation of Momentum Quiz Answer Key PDF

Conservation Of Momentum Quiz Answer Key PDF

Disclaimer: The conservation of momentum quiz answer key pdf was generated with the help of StudyBlaze AI. Please be aware that AI can make mistakes. Please consult your teacher if you're unsure about your solution or think there might have been a mistake. Or reach out directly to the StudyBlaze team at max@studyblaze.io.

In which type of collision is kinetic energy conserved?

- A. Inelastic
- B. Elastic ✓**
- C. Perfectly inelastic
- D. Explosive

In a perfectly inelastic collision, what happens to the colliding objects?

- A. They bounce off each other
- B. They stick together ✓**
- C. They explode
- D. They stop moving

Which of the following is a vector quantity?

- A. Mass
- B. Speed
- C. Momentum ✓**
- D. Temperature

What is the main condition for the conservation of momentum to hold true?

- A. Constant velocity
- B. Closed system with no external forces ✓**
- C. Constant acceleration
- D. Zero net force

Explain how the conservation of momentum applies to a rocket launching into space.

The rocket expels gas downwards, and by conservation of momentum, the rocket itself moves upwards. The momentum of the expelled gas and the rocket are equal and opposite, ensuring total momentum is conserved.

Describe the differences between elastic and inelastic collisions in terms of energy conservation.

In elastic collisions, both momentum and kinetic energy are conserved. In inelastic collisions, momentum is conserved, but kinetic energy is not; some is transformed into other forms like heat or sound.

How does Newton's Third Law relate to the conservation of momentum in a collision?

Newton's Third Law states that for every action, there is an equal and opposite reaction. This implies that forces between colliding objects are equal and opposite, leading to conservation of momentum.

Provide an example of a real-world scenario where momentum is conserved and explain the factors involved.

In a game of billiards, when one ball strikes another, the total momentum before and after the collision is conserved, assuming no external forces like friction are acting significantly.

Which concepts are related to impulse? (Select all that apply)

- A. Change in momentum ✓
- B. Force applied over time ✓
- C. Constant velocity
- D. Energy conservation

What factors affect the momentum of an object? (Select all that apply)

- A. Mass ✓
- B. Velocity ✓
- C. Acceleration
- D. Force

In which scenarios is momentum conserved? (Select all that apply)

- A. A car accelerating on a highway

B. Two ice skaters pushing off each other ✓

C. A ball falling freely under gravity

D. A rocket launching into space ✓

Why is momentum considered a vector quantity, and how does this affect calculations in physics problems?

Momentum is a vector because it has both magnitude and direction, determined by the velocity vector. This affects calculations as vector addition must be used to determine total momentum in systems.

Discuss the role of external forces in determining whether momentum is conserved in a system.

External forces can change the total momentum of a system. If no external forces act, momentum is conserved. If external forces are present, they can add or remove momentum from the system.

Which of the following are true about elastic collisions? (Select all that apply)

A. Momentum is conserved ✓

B. Kinetic energy is conserved ✓

C. Objects stick together

D. No deformation occurs ✓

What is the formula for momentum?

A. $F = ma$

B. $p = mv$ ✓

C. $E = mc^2$

D. $v = u + at$

What is the unit of momentum in the International System of Units (SI)?

A. Newton

B. Joule

C. Kilogram meter per second ✓

D. Watt

Which law is directly related to the conservation of momentum?

- A. Newton's First Law
- B. Newton's Second Law
- C. Newton's Third Law ✓**
- D. Law of Universal Gravitation

What happens to the total momentum of a system when two objects collide in a closed system?

- A. It increases
- B. It decreases
- C. It remains constant ✓**
- D. It becomes zero

Which of the following statements are true about inelastic collisions? (Select all that apply)

- A. Momentum is conserved ✓**
- B. Kinetic energy is conserved
- C. Some kinetic energy is transformed into other forms ✓**
- D. Objects always stick together

What is required for a system to be considered closed? (Select all that apply)

- A. No external forces ✓**
- B. Constant temperature
- C. No mass entering or leaving ✓**
- D. Constant volume