

## Elastic and Inelastic Collisions Quiz Answer Key PDF

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**In which type of collision is some kinetic energy converted into other forms of energy?**

- A. Elastic collision
- B. Inelastic collision ✓**
- C. Both A and B
- D. Neither A nor B

**Which of the following are true for an elastic collision? (Select all that apply)**

- A. Momentum is conserved ✓**
- B. Kinetic energy is conserved ✓**
- C. Objects stick together
- D. No energy is lost to heat ✓**

**Which type of collision involves objects sticking together after impact?**

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

**What happens to the total momentum of a system during a collision?**

- A. It is always conserved ✓**
- B. It increases
- C. It decreases
- D. It depends on the type of collision

**What is conserved in both elastic and inelastic collisions?**

- A. Kinetic energy
- B. Momentum ✓**
- C. Potential energy
- D. Temperature

**Which of the following is an example of an elastic collision?**

- A. Two cars crashing
- B. A ball of clay hitting the ground
- C. billiard balls colliding ✓**
- D. A rubber ball being dropped

**What is the coefficient of restitution for a perfectly elastic collision?**

- A. 0
- B. 0.5
- C. 1 ✓**
- D. 2

**Describe a real-world scenario where an inelastic collision occurs and explain the energy transformations involved.**

- A. A ball bouncing off a wall
- B. A car crash ✓**
- C. A rubber band snapping
- D. A ball rolling on the ground

**How can the concept of momentum conservation be used to solve collision problems in physics? Provide an example.**

- A. Momentum conservation is not applicable in collisions.
- B. Momentum conservation can only be used in elastic collisions.
- C. Momentum conservation applies to all types of collisions. ✓**
- D. Momentum conservation is only theoretical and not practical.

**Explain the difference between elastic and inelastic collisions in terms of energy conservation.**

**A. Elastic collisions conserve momentum and kinetic energy; inelastic collisions conserve momentum only.** ✓

B. Elastic collisions lose energy; inelastic collisions conserve energy.

C. Both types of collisions conserve kinetic energy.

D. Inelastic collisions conserve kinetic energy; elastic collisions do not.

**Discuss the significance of the coefficient of restitution in analyzing collision outcomes.**

A. It is irrelevant to collision analysis.

**B. It helps predict post-collision behavior.** ✓

C. It only applies to elastic collisions.

D. It is only theoretical and not used in practice.

**What are the challenges in achieving a perfectly elastic collision in a laboratory setting?**

A. Perfectly elastic collisions are easily achieved in labs.

**B. Real-world factors prevent perfect elasticity.** ✓

C. All collisions in labs are perfectly elastic.

D. Friction has no effect on collisions.

**Which of the following is not typically a result of an inelastic collision?**

A. Sound generation

B. Heat production

C. Deformation

**D. Increase in kinetic energy** ✓

**Which of the following are true about the coefficient of restitution? (Select all that apply)**

**A. It measures the elasticity of a collision** ✓

B. A value of 0 indicates a perfectly elastic collision

**C. A value of 1 indicates a perfectly elastic collision** ✓

**D. It is the ratio of relative velocity after to before collision** ✓

**Which of the following can occur during an inelastic collision? (Select all that apply)**

**A. Sound production** ✓

**B. Heat generation** ✓

**C. Increase in potential energy ✓**

D. Conservation of kinetic energy

**How does the conservation of momentum apply in a two-dimensional collision scenario? Provide a brief explanation.**

A. Momentum is only conserved in one direction.

B. Momentum conservation does not apply to two-dimensional collisions.

**C. Momentum is conserved in both x and y directions. ✓**

D. Vector analysis is not needed for collision problems.

**In an elastic collision, what happens to the total kinetic energy of the system?**

A. It increases

B. It decreases

**C. It remains the same ✓**

D. It is converted to potential energy

**In a perfectly inelastic collision, which of the following statements are true? (Select all that apply)**

**A. Momentum is conserved ✓**

B. Kinetic energy is conserved

**C. Objects stick together ✓**

D. All kinetic energy is lost

**Which scenarios are examples of inelastic collisions? (Select all that apply)**

**A. Two cars colliding and crumpling ✓**

B. A ball bouncing back to its original height

**C. A clay ball hitting the ground and sticking ✓**

**D. A bullet embedding into a block of wood ✓**

**What factors can affect the outcome of a collision? (Select all that apply)**

**A. Mass of the objects ✓**

**B. Velocity of the objects ✓**

**C. Surface texture ✓**

#### **D. External forces acting during the collision ✓**