Elastic and Inelastic Collisions Quiz PDF

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

◯ Elastic collision
◯ Inelastic collision
◯ Both A and B
◯ Neither A nor B

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

☐ Momentum is conserved
☐ Kinetic energy is conserved
☐ Objects stick together
☐ No energy is lost to heat

Which type of collision involves objects sticking together after impact?

◯ Elastic collision
◯ Inelastic collision
◯ Perfectly elastic collision
◯ Perfectly inelastic collision

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

◯ It is always conserved
◯ It increases
◯ It decreases
◯ It depends on the type of collision

What is conserved in both elastic and inelastic collisions?

◯ Kinetic energy
◯ Momentum

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◯ Potential energy
◯ Temperature

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

◯ Two cars crashing
◯ A ball of clay hitting the ground
◯ billiard balls colliding
◯ A rubber ball being dropped

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

◯ 0
◯ 0.5
◯ 1
◯ 2

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

◯ A ball bouncing off a wall
◯ A car crash
◯ A rubber band snapping
◯ A ball rolling on the ground

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

◯ Momentum conservation is not applicable in collisions.
◯ Momentum conservation can only be used in elastic collisions.
◯ Momentum conservation applies to all types of collisions.
◯ Momentum conservation is only theoretical and not practical.

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

◯ Elastic collisions conserve momentum and kinetic energy; inelastic collisions conserve momentum only.
◯ Elastic collisions lose energy; inelastic collisions conserve energy.
◯ Both types of collisions conserve kinetic energy.
◯ Inelastic collisions conserve kinetic energy; elastic collisions do not.

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

◯ It is irrelevant to collision analysis.

◯ It helps predict post-collision behavior.

◯ It only applies to elastic collisions.

◯ It is only theoretical and not used in practice.

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

◯ Perfectly elastic collisions are easily achieved in labs.

◯ Real-world factors prevent perfect elasticity.

◯ All collisions in labs are perfectly elastic.

◯ Friction has no effect on collisions.

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

◯ Sound generation

◯ Heat production

◯ Deformation

◯ Increase in kinetic energy

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

☐ It measures the elasticity of a collision

☐ A value of 0 indicates a perfectly elastic collision

☐ A value of 1 indicates a perfectly elastic collision

☐ 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)

☐ Sound production

☐ Heat generation

☐ Increase in potential energy

☐ Conservation of kinetic energy

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

◯ Momentum is only conserved in one direction.

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

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○ Momentum is conserved in both x and y directions.
○ Vector analysis is not needed for collision problems.

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

○ It increases
○ It decreases
○ It remains the same
○ It is converted to potential energy

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

☐ Momentum is conserved
☐ Kinetic energy is conserved
☐ Objects stick together
☐ All kinetic energy is lost

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

☐ Two cars colliding and crumpling
☐ A ball bouncing back to its original height
☐ A clay ball hitting the ground and sticking
☐ A bullet embedding into a block of wood

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

☐ Mass of the objects
☐ Velocity of the objects
☐ Surface texture
☐ External forces acting during the collision

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