Collisions Quiz PDF

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Discuss the role of impulse in changing the momentum of an object during a collision.

Which of the following is true for an elastic collision?

- ◯ Only momentum is conserved.
- ◯ Only kinetic energy is conserved.
- ◯ Both momentum and kinetic energy are conserved.
- ◯ Neither momentum nor kinetic energy is conserved.

Which real-world applications involve the principles of collisions? (Select all that apply)

- ☐ Car crash safety design
- ☐ Sports equipment design
- ☐ Space spacecraft docking
- ☐ Cooking recipes

Which principle states that the total momentum of a closed system remains constant?

- ◯ Conservation of Energy
- ◯ Conservation of Mass
- ◯ Conservation of Momentum
- ◯ Conservation of Force

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

- ◯ 0
- ◯ 0.5
- ◯ 1
- ◯ Greater than 1

Explain why kinetic energy is not conserved in an inelastic collision and what happens to the 'lost' energy.

What is the primary cause of energy loss in an inelastic collision?

- ◯ Sound
- ◯ Heat
- ◯ Light
- ◯ Kinetic Energy

Which of the following is NOT a characteristic of a perfectly inelastic collision?

- ◯ Objects stick together.
- ◯ Maximum kinetic energy is lost.
- ◯ Momentum is not conserved.
- ◯ It results in a single combined mass.

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

- ◯ They bounce off each other.
- ◯ They stick together.
- ◯ They explode apart.
- ◯ They pass through each other.

Which of the following are characteristics of an inelastic collision? (Select all that apply)

- ☐ Momentum is conserved.
- ☐ Kinetic energy is conserved.

- [ ] Objects may deform.
- [ ] Coefficient of restitution is less than 1.

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

In which scenarios is the conservation of momentum applicable? (Select all that apply)

- [ ] Elastic collisions
- [ ] Inelastic collisions
- [ ] Explosions
- [ ] Perfectly inelastic collisions

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

- [ ] Mass of the objects
- [ ] Velocity of the objects
- [ ] Surface texture of the objects
- [ ] External forces acting on the system

What are the possible outcomes of a perfectly inelastic collision? (Select all that apply)

- [ ] Objects stick together.
- [ ] Total system momentum is conserved.
- [ ] Kinetic energy is fully conserved.
- [ ] Maximum kinetic energy is lost.

Explain how the conservation of momentum is applied in a car crash analysis.

In what ways can understanding collision dynamics improve sports performance and equipment design?

In a collision, what does impulse equal?

- ◯ Change in velocity
- ◯ Change in momentum
- ◯ Change in energy
- ◯ Change in mass

Which type of collision conserves both momentum and kinetic energy?

- ◯ Elastic Collision
- ◯ Inelastic Collision
- ◯ Perfectly Inelastic Collision
- ◯ None of the above

What are the characteristics of an elastic collision? (Select all that apply)

- ☐ Objects do not stick together.
- ☐ Kinetic energy is conserved.
- ☐ Momentum is conserved.
- ☐ Coefficient of restitution is zero.

How does the coefficient of restitution affect the outcome of a collision? Provide an example.