Name _____ Class _____ Date _____

Momentum and Collisions

Section Quiz: Elastic and Inelastic Collisions

Write the letter of the correct answer in the space provided.

_____ **1.** Two cars collide, lock bumpers, and move together after the collision. What kind of collision is this?
  a. elastic collision
  b. inelastic collision
  c. perfectly elastic collision
  d. perfectly inelastic collision

_____ **2.** A tennis ball is dropped from 1.0 m, bounces off the ground, and rises to 0.85 m. What kind of collision occurred between the ball and the ground?
  a. elastic collision
  b. inelastic collision
  c. perfectly elastic collision
  d. perfectly inelastic collision

_____ **3.** In what kind of collision is kinetic energy always conserved?
  a. elastic collision
  b. inelastic collision
  c. perfectly elastic collision
  d. perfectly inelastic collision

_____ **4.** Most collisions in the everyday world are
  a. elastic collisions.
  b. inelastic collisions.
  c. perfectly elastic collisions.
  d. perfectly inelastic collisions.

_____ **5.** When an inelastic material is in a collision,
  a. the work done to deform the material is equal to the work done to return the material to its original shape.
  b. the work done to deform the material is equal to the work the material does to other objects in the collision.
  c. the work done to deform the material is equal to the increase in the system's total kinetic energy.
  d. some of the work done to deform the material is converted to other forms of energy.

_____ **6.** A helium atom collides with another helium atom in an elastic
collision. Which of the following is true?
   a. Both momentum and kinetic energy are conserved.
   b. Momentum is conserved but kinetic energy is not conserved.
   c. Kinetic energy is conserved but momentum is not conserved.
   d. Neither momentum nor kinetic energy is conserved.

_____ **7.** Two playground balls collide in an inelastic collision. Which of the
following is true?
   a. Both momentum and kinetic energy are conserved.
   b. Momentum is conserved, but kinetic energy is not conserved.
   c. Kinetic energy is conserved, but momentum is not conserved.
   d. Neither momentum nor kinetic energy is conserved.

_____ **8.** Which of the following is *not* evidence that kinetic energy has been
lost in a collision?
   a. The collision produces a sound.
   b. At least one of the objects is deformed after the collision.
   c. At least one of the objects increases in temperature as a result of
the collision.
   d. One of the objects is at rest after the collision.

9. Explain the difference between inelastic and perfectly inelastic collisions.

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10. A 0.16 kg billiard ball moving to the right at 1.2 m/s has a head-on elastic
collision with another ball of equal mass moving to the left at 0.85 m/s. The
first ball moves to the left at 0.85 m/s after the collision. Find the velocity of
the second ball after the collision, and verify your answer by calculating the
total kinetic energy before and after the collision.