Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_

**Post Test Questions for Conservation of Momentum**

1. Two carts of different masses are permanently attached together by a spring. The two carts are compressed together initially and remain at rest. The carts are then released simultaneously.

When the heavier cart instantaneously comes to a rest, the velocity of the lighter cart is

**A** zero.

**B** in the same direction as the initial velocity.

**C** in the opposite direction of the initial velocity.

**D** cannot be determined because of insufficient data.

2. A cart moving at speed *v* collides with an identical stationary cart on an airtrack, and the two stick together after the collision. What is their velocity after colliding?

**A** *v*

**B** 0.5 v

**C** zero

**D** – 0.5 v

3. A golf ball is fired at a bowling ball initially at rest and bounces back elastically. Compared to the bowling ball, the golf ball after the collision has

**A** more momentum but less kinetic energy.

**B** more momentum and more kinetic energy.

**C** less momentum and less kinetic energy.

**D** less momentum but more kinetic energy.

4. If all three collisions in the figure shown here are totally inelastic, which bring(s) the car on the left to a halt?

**A** I

**B** I, III

**C** II, III

**D** I, II, III

5. Two spheres A and B of the same mass collided head-on as shown below in a perfectly inelastic collision, whereby kinetic energy is not conserved and the object stick together after collision, with a speed of 4 m s-1 and 6 m s-1 respectively.

B

A

4 m s-1

6 m s-1

Taking leftwards as positive, what will be the velocity of mass A after the collision?

1. 1 m s-1
2. -1 m s-1
3. 2 m s-1
4. -2 m s-1

7. Two spheres X and Y collided head-on as shown below in an elastic collision, whereby kinetic energy is conserved, with a speed of 4 m s-1 and 6 m s-1 respectively.

X

Y

6 m s-1

4 m s-1

Taking rightwards as positive, which velocity pair of mass X and mass Y is not possible after the collision?

Y X

1. 11 m s-1 1 m s-1
2. 9 m s-1 -1 m s-1
3. 6 m s-1 2 m s-1
4. 6 m s-1 4 m s-1