

ACT

What physical quantities are conserved in the above collision?

- A. Only momentum is conserved ← CORRECT
- B. Only total mechanical energy is conserved
- C. Both are conserved
- D. Neither are conserved

Mechanical Energy = Kinetic Energy + Potential $E = \frac{1}{2} m v^2 + 0$

$$K_{\text{initial}} = \frac{1}{2} m v^2$$

$$K_{\text{final}} = \frac{1}{2} m (v/2)^2 + \frac{1}{2} m (v/2)^2 = \frac{1}{4} m v^2$$

- Elastic Collisions: collisions that conserve mechanical energy
- Inelastic Collisions: collisions that do not conserve mechanical energy
 - * Completely Inelastic Collisions: objects stick together