

Solutions

Each answer shows the steps, then the **result**.

2.1

- Momentum

2.2

- Kinetic energy

2.3

- They stick together and move as one

2.4

- Into heat, sound, and deformation

3.1 B

- momentum only (kinetic energy is lost)

3.2 B

- sticking together is perfectly inelastic

3.3

(a)

- Inelastic (KE decreased)

(b)

- $50 - 32 = 18$ J lost, converted to heat/sound/deformation

3.4

(a)

- $2(6) = 12 = 4v \Rightarrow v = 3 \text{ m s}^{-1}$

(b)

- Before: $\frac{1}{2}(2)(6)^2 = 36$ J; after: $\frac{1}{2}(4)(3)^2 = 18$ J — not conserved