

Solutions

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

2.1

- $J = \Delta p = m \Delta v = 2.0 \times 3.0 = 6.0 \text{ N s}$

2.2

- $J = F \Delta t = 6.0 \times 0.50 = 3.0 \text{ N s}$

2.3

- A longer time for the same momentum change means a smaller average force, since $F = \Delta p / \Delta t$; a smaller force means less injury

2.4

- $\Delta p = 0.10(-6.0) - 0.10(+8.0) = -1.4 \text{ N s}$

3.1 A

3.2 C

3.3

(a)

- $J = \Delta p = 0.058 \times 50 = 2.9 \text{ N s}$

(b)

- $F = \frac{J}{\Delta t} = \frac{2.9}{5.0 \times 10^{-3}} = 580 \text{ N}$