

AP Physics 1

Impulse and Momentum Problem Answers

- 1.) a.) $J = -10.94 \text{ N} \cdot \text{s}$ b.) $F = -13,680 \text{ N}$ 2.) $F = 240 \text{ N}$
- 3.) $J = 3.75 \text{ N} \cdot \text{s}$ 4.) a.) $\Delta p = -2.76 \frac{\text{kg} \cdot \text{m}}{\text{s}}$ b.) $F = -138 \text{ N}$ 5.) $t = 30 \text{ s}$
- 6.) $v_f = -50 \frac{\text{m}}{\text{s}}$ 7.) $F = -6000 \text{ N}$ 8.) a.) $J = 9.6 \text{ N} \cdot \text{s}$ b.) $F = 1920 \text{ N}$
- 9.) $J = 19.2 \text{ N} \cdot \text{s}$ 10.) a.) $v_{2f} = 5.0 \frac{\text{m}}{\text{s}}$ b.) $KE_f = 41 \text{ J}$
- 11.) a.) $v_f = 3.2 \frac{\text{m}}{\text{s}}$ b.) $\Delta KE = -5.4 \text{ J}$ or 5.4 J lost
- 12.) $v_{1i} = 12.5 \frac{\text{m}}{\text{s}}$ 13.) $\Delta KE = -1.2 \times 10^6 \text{ J}$ 14.) $v_{2f} = -8 \frac{\text{m}}{\text{s}}$ or $8 \frac{\text{m}}{\text{s}}$ moving west
- 15.) $v_{2i} = -23 \frac{\text{m}}{\text{s}}$ or $23 \frac{\text{m}}{\text{s}}$ moving west 16.) a.) $v_{1f} = 2 \frac{\text{m}}{\text{s}}$ b.) inelastic since $\Delta KE = -75 \text{ J}$
- 17.) $v_{1f} = -3 \frac{\text{m}}{\text{s}}$ and $v_{2f} = 4 \frac{\text{m}}{\text{s}}$ 18.) $v_{1f} = 1 \frac{\text{m}}{\text{s}}$ and $v_{2f} = 5 \frac{\text{m}}{\text{s}}$
- 19.) $v_{1f} = -4 \frac{\text{m}}{\text{s}}$ and $v_{2f} = 6 \frac{\text{m}}{\text{s}}$ 20.) $v_{1f} = 3 \frac{\text{m}}{\text{s}}$ and $v_{2f} = 6 \frac{\text{m}}{\text{s}}$