

P. 226 #1, 2

- 1. $\vec{F} = 250 \text{ N [F]}$
- $\Delta t = 0.0030 \text{ s}$
- $m = 180 \text{ g}$
 $= 0.180 \text{ kg}$
- $v_i = 0 \text{ m/s}$

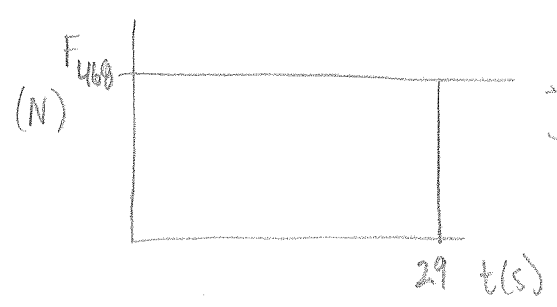
a) $\vec{J} = ?$

$$\begin{aligned} \vec{J} &= \vec{F} \Delta t \\ &= (250 \text{ N [F]})(0.0030 \text{ s}) \\ &= 0.75 \text{ N}\cdot\text{s [F]} \end{aligned}$$

b) $\vec{v}_2 = ?$

$$\begin{aligned} \vec{J} &= m(\vec{v}_2 - \vec{v}_i) \\ \vec{v}_2 &= \frac{\vec{J}}{m} + \vec{v}_i \\ &= \frac{(0.75 \text{ N}\cdot\text{s [F]})}{0.180 \text{ kg}} + 0 \text{ m/s} \\ &= 4.2 \text{ m/s [F]} \end{aligned}$$

- 2. $\Delta t = 2.9 \text{ s}$
- $F = 468 \text{ N}$



$$\begin{aligned} \vec{J} &= A = LW = (468 \text{ N})(2.9 \text{ s}) \\ &= 1357.2 \text{ N}\cdot\text{s} \\ &= 1.4 \times 10^3 \text{ N}\cdot\text{s} \end{aligned}$$