

PP/203

$$m = 1.5 \text{ kg}$$

$$\Delta d = -1.75 \text{ m}$$

$$\vec{J} = ?$$

(floor on the book)

① Find the velocity when the book hits the floor:

$$v_1 = 0$$

$$v_2 = ?$$

$$\Delta d = -1.75 \text{ m}$$

$$a = -9.81 \text{ m/s}^2$$

$$v_2^2 = v_1^2 + 2a\Delta d$$

$$v_2^2 = 2(-9.81 \text{ m/s}^2)(-1.75 \text{ m})$$

$$v_2 = \pm 5.86 \text{ m/s}$$

$$\text{use: } v_2 = \ominus 5.86 \text{ m/s}$$

↑  
down

② When the book stops

$$v_1 = -5.86 \text{ m/s}$$

$$v_2 = 0$$

$$m = 1.5 \text{ kg}$$

$$\vec{J} = ?$$

$$\vec{J} = \Delta \vec{p}$$

$$\vec{J} = m \Delta \vec{v}$$

$$\vec{J} = m(\vec{v}_2 - \vec{v}_1)$$

$$\vec{J} = 1.5 \text{ kg}(0 - (-5.86 \text{ m/s}))$$

$$\vec{J} = +8.79 \text{ kg} \cdot \text{m/s}$$

$$\vec{J} = 8.79 \text{ kg} \cdot \text{m/s} [\text{up}]$$

The impulse of the table on the book.