

$$\Rightarrow v = \frac{I}{m} = \frac{2,475 \text{ N}\cdot\text{s}}{36 \cdot 10^{-3} \text{ kg}} = 68,75 \frac{\text{m}}{\text{s}} \approx \underline{69 \frac{\text{m}}{\text{s}}}$$

Luom. 1° NII: $\sum \vec{F} = m\vec{a} \Rightarrow F = ma = m \frac{\Delta v}{\Delta t} = m \frac{v - v_0}{\Delta t} = m \frac{v}{\Delta t}$

F ei pysty rekursio \Rightarrow ei onnistu!

2° Mekaaninen energiaperiaate:

$$E_{p1} + E_{k1} + W = E_{p2} + E_{k2}$$

$$\Rightarrow 0 + 0 + Fx = 0 + \frac{1}{2}mv^2$$

Kokoo x ei tiedetä \Rightarrow ei onnistu!

15.10

$m = 24 \text{ g}$
 $v_0 = -27 \frac{\text{m}}{\text{s}}$
 $v = 41 \frac{\text{m}}{\text{s}}$
 $\Delta t = 3,0 \text{ ms}$
 $F = ?$

Impulssienergia: $\vec{I} = \Delta \vec{p}$

$$\Rightarrow \vec{F} \Delta t = \vec{p} - \vec{p}_0 = m\vec{v} - m\vec{v}_0 \quad | : \Delta t$$

$$\Rightarrow F = \frac{mv - mv_0}{\Delta t} = \frac{24 \cdot 10^{-3} \text{ kg} (41 \frac{\text{m}}{\text{s}} - (-27 \frac{\text{m}}{\text{s}}))}{3,0 \cdot 10^{-3} \text{ s}} = 544 \text{ N} \approx \underline{540 \text{ N}}$$

TITAI: NII: $\sum \vec{F} = m\vec{a}$

$$\Rightarrow F = ma = m \frac{\Delta v}{\Delta t} = m \frac{v - v_0}{\Delta t} = \dots = 544 \text{ N} \approx 540 \text{ N}$$

15.13

$m = 2,5 \text{ g}$, $F = 0,38 \text{ N}$, $\Delta t = 19 \text{ ms}$

NII: $\sum \vec{F} = m\vec{a}$

$$\Rightarrow F = ma = m \frac{\Delta v}{\Delta t} = m \frac{v_1 - v_0}{\Delta t} = m \frac{v_1}{\Delta t} \quad | \cdot \frac{\Delta t}{m}$$

$$\Rightarrow v_1 = \frac{F \Delta t}{m} = \frac{0,38 \text{ N} \cdot 19 \cdot 10^{-3} \text{ s}}{2,5 \cdot 10^{-3} \text{ kg}} = 2,888 \frac{\text{m}}{\text{s}}$$