

$$\Sigma F = m \cdot a \Rightarrow$$

$$\Rightarrow \Sigma F = m \cdot \frac{\Delta v}{\Delta t} \Rightarrow \boxed{\Sigma F = \frac{\Delta p}{\Delta t}}$$

$$\Sigma F_{ez} = 0 \Rightarrow \frac{\Delta p}{\Delta t} = 0 \Rightarrow \Delta p = 0 \Rightarrow \vec{p}_0 = \vec{p}_1 = \vec{p}_2$$

$$\boxed{A.D.U.} \quad \boxed{\vec{p} = m \cdot \vec{v}} \quad \leftarrow \begin{matrix} + \\ - \end{matrix}$$

$$1/\Sigma \epsilon 164 \quad m = 2.500 \text{ kg} \quad v = 72 \frac{\text{km}}{\text{h}} = \frac{72}{3,6} \frac{\text{m}}{\text{s}} = 20 \frac{\text{m}}{\text{s}}$$

$$p = mv = 2.500 \cdot 20 \text{ kg m/s} = 50.000 \text{ kg m/s}$$

$$2/\Sigma \epsilon 164 \quad F = ? \quad v_1 = 216 \frac{\text{km}}{\text{h}} = \frac{216}{3,6} \frac{\text{m}}{\text{s}} = 60 \frac{\text{m}}{\text{s}}$$

$$m = 10 \text{ kg} \quad \Delta t = 120 \text{ s} \quad v_2 = 0$$

$$F = \frac{\Delta p}{\Delta t} = \frac{p_2 - p_1}{\Delta t} = \frac{m(v_2 - v_1)}{\Delta t} = \frac{10^5 (0 - 60)}{120}$$

$$F = - \frac{60 \cdot 10^5}{120} \text{ N} \Rightarrow \boxed{F = -5 \cdot 10^4 \text{ N}} \quad \begin{matrix} \text{ANTI} \\ \text{FORA} \end{matrix}$$

$$3/\Sigma \epsilon 164 \quad v_0 = 0 \quad v_1 = 24 \text{ m/s} \quad m = 0,5 \text{ kg}$$

$$\Delta t = 0,03 \text{ s} \quad F = ? \quad F = \frac{\Delta p}{\Delta t} = \frac{p_1 - p_0}{\Delta t} = \frac{m(v_1 - v_0)}{\Delta t}$$

$$F = \frac{0,5 \cdot (24 - 0)}{0,03} \text{ N} \Rightarrow \boxed{F = 400 \text{ N}} \rightarrow (40 \text{ kg})$$

$$4/\Sigma \epsilon 164 \quad m = 90 \text{ kg} \quad \frac{\Delta p}{\Delta t} = ? \quad v_1 = ? \quad t = 1 \text{ s}$$

$$\Sigma F = B \Rightarrow B = \frac{\Delta p}{\Delta t} \Rightarrow \frac{\Delta p}{\Delta t} = B = m \cdot g = 90 \cdot 10 \text{ N}$$

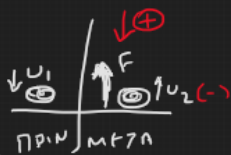
$$\frac{\Delta p}{\Delta t} = 900 \text{ N} \quad g = 10 \text{ m/s}^2 \rightarrow$$

$$g = 10 \text{ m/s}^2 \rightarrow \frac{\Delta v}{\Delta t} \quad \begin{matrix} t = 1 \text{ s} & t = 2 \text{ s} \\ v_1 = 10 \text{ m/s} & v_2 = 20 \text{ m/s} \end{matrix}$$

$$\alpha = \frac{\Delta v}{\Delta t} \quad \alpha = 4 \frac{\text{m}}{\text{s}^2} = 4 \frac{\text{m/s}}{\text{s}}$$

$$5/\Sigma \epsilon 164 \quad m = 0,5 \text{ kg} \quad v_0 = 0 \quad v_1 = 30 \frac{\text{m}}{\text{s}}$$

$$\Delta t = \frac{1}{4} \text{ s} \quad v_2 = 10 \frac{\text{m}}{\text{s}}$$



$$\Delta p = p_2 - p_1 = -m v_2 - m v_1 = -0,5 \cdot 10 - 0,5 \cdot 30 \text{ kg m/s} = -20 \frac{\text{kg m}}{\text{s}}$$

$$p_1 = 15$$

$$p_2 = -5$$

$$\boxed{\Delta p = -20}$$

$$m = 0,5 \text{ kg}$$

$$F = \frac{\Delta p}{\Delta t} \Rightarrow F = \frac{-20 \text{ kg m/s}}{\frac{1}{4} \text{ s}} \Rightarrow$$

$$\boxed{F = -80 \text{ N}}$$