40/2

$m = 1500\ kg$

$F = 1950\ N$

$a = ?$

$F = ma$

$a = \frac{F}{m}$

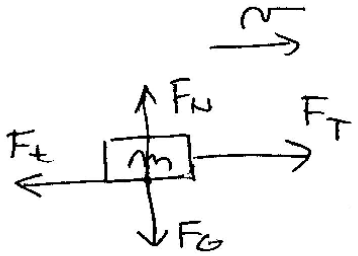
$a = \frac{1950}{1500} = 1{,}3\ m.s^{-2}$

42/3

$F_G = 2\ N$

$F_T = 0{,}4\ N$

$f = ?$



F_t – TŘECÍ SÍLA , F_N – NORMÁLOVÁ SÍLA

$F_t = F_N \cdot f$ ZDE $F_N = F_G$

PROTOŽE $v = konst$ PLATÍ

$F_t = F_T$

$F_G \cdot f = F_T \Rightarrow f = \frac{F_T}{F_G}$

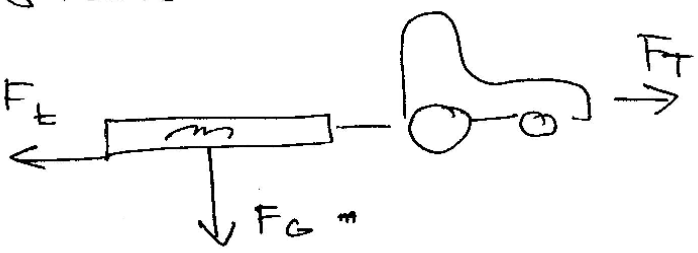
$f = \frac{0{,}4}{2} = 0{,}2$

42/4

$F_T = 8{,}7\ kN = 8700\ N$

$f = 0{,}6$

$m = ?$



PLATÍ $F_t = F_T$

$F_G \cdot f = F_T \quad ; \quad F_G = mg$

$mgf = F_T \Rightarrow m = \frac{F_T}{gf}$

$m = \frac{8700}{10 \cdot 0{,}6} = 1450\ kg$

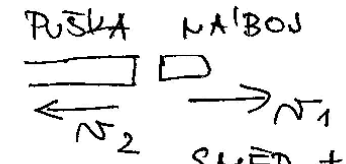
48/1

$m_2 = 5\ kg$

$v_1 = 600\ m \cdot s^{-1}$

$m_1 = 5\ g = 0{,}005\ kg$

$v_2 = ?$



PLATÍ ZÁKON ZACHOVÁNÍ HYBNOSTI

PŘED VÝSTŘELEM JE CELKOVÁ HYB. = 0

POVÝSTŘELU SE CELKOVÁ HYB. = 0 TAKÉ

$p = m \cdot v$

$m_1 v_1 - m_2 v_2 = 0$

$m_1 v_1 = m_2 v_2$

$v_2 = \frac{m_1 v_1}{m_2} = \frac{0{,}005 \cdot 600}{5} = 0{,}6\ m \cdot s^{-1}$

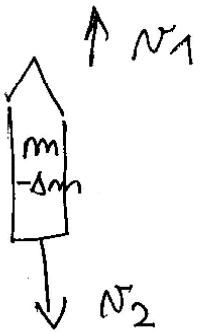
48/2

$m = 50\ kg$

$\Delta m = 10\ kg$

$v_1 = 30\ m \cdot s^{-1}$

$v_2 = ?$



PŘED STARTEM JE $v_c = 0$ (CELKOVÁ HYBNOST)

PO VYHOŘENÍ PALIVA — HMOTNOST PLYNŮ

$$(m - \Delta m) v_1 - \Delta m v_2 = 0$$

$$(m - \Delta m) v_1 = \Delta m v_2$$

$$\frac{(m - \Delta m) v_1}{\Delta m} = v_2$$

$$\frac{40 \cdot 30}{10} = 120\ m \cdot s^{-1}$$

48/3

$v = 12\ m \cdot s^{-1}$

$t = 0{,}03\ s$

$m = 700\ g = 0{,}7\ kg$

$F = ?$

PLATÍ II. NPZ

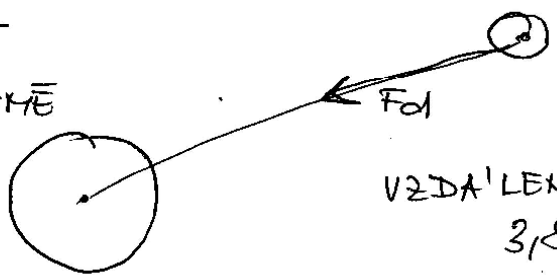
$F = ma$

$a = \frac{v}{t}$

$F = m \cdot \frac{v}{t}$

$$F = 0{,}7 \cdot \frac{12}{0{,}03} = 280\ N$$

50/2



VZDÁLENOST Z-M
$3{,}84 \cdot 10^8$ m

HMOTNOST MĚSÍCE
$7{,}35 \cdot 10^{22}$ kg

$F_d = m r \omega^2$

DOBA OBLETU MĚSÍCE KOLE ZEMĚ 28 dní

$$\omega = \frac{\varphi}{t} = \frac{2\pi}{t}$$

$t = 28 \cdot 24 \cdot 60 \cdot 60 = \underline{2\,419\,200\ s}$

$$F_d = 7{,}35 \cdot 10^{22} \cdot 3{,}84 \cdot 10^8 \cdot \left(\frac{2\pi}{2\,419\,200}\right)^2$$

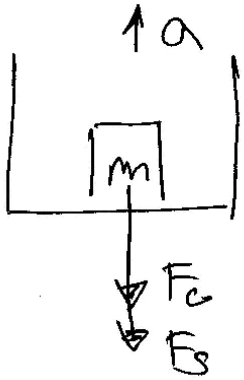
$F_d \doteq \underline{1{,}9 \cdot 10^{20}\ N}$

52/2

$m = 70\ kg$

$a = 0{,}5\ m \cdot s^{-2}$

$F_{TL} = ?$



ČLOVĚK PŮSOBÍ NA PODLAHU SVOU VLASTNÍ TÍHOU + SÍLOU SETRVAČNOU

$$F_{TL} = F_g + ma$$

$$F_{TL} = m \cdot g + m a = 70 \cdot 10 + 70 \cdot 0{,}5$$

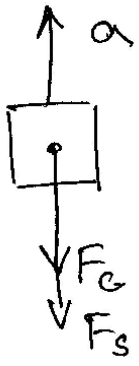
$$F_{TL} = \underline{735\ N}$$

52/3

$F_p = 4400\ N$

$m = 400\ kg$

$a = ?$



$$F_p = \underbrace{mg}_{F_g} + \underbrace{ma}_{F_s}$$

$$\frac{F_p - mg}{m} = a = \frac{4400 - 400 \cdot 10}{400}$$

$$a = \underline{1\ m \cdot s^{-2}}$$