Ponavljanje – listić sa sata

1 a) $m = 11\,kg$, $g = 10\,N/kg$, $G = ?$

$G = m \cdot g$

$G = 11\,kg \cdot 10\,\frac{N}{kg}$

$G = 110\,N$

b) $m = 75\,dag = 0{,}75\,kg$, $G = ?$

$G = m \cdot g$

$G = 0{,}75\,kg \cdot 10\,\frac{N}{kg}$

$G = 7{,}5\,N$

c) $m = 5\,t = 5000\,kg$, $G = ?$

$G = m \cdot g$

$G = 5000\,kg \cdot 10\,\frac{N}{kg}$

$G = 50000\,N$

2 $m = 450\,g = 0{,}45\,kg$, $g = 10\,\frac{N}{kg}$

$F_g = m \cdot g$

$F_g = 0{,}45\,kg \cdot 10\,\frac{N}{kg}$

$F_g = 4{,}5\,N$

3 $G = 2{,}5\,N$, $m = ?$

$m = \frac{G}{g}$

$m = \frac{2{,}5\,N}{10\,\frac{N}{kg}}$

$m = 0{,}25\,kg$

$m = 25\,dag = 250\,g$

4 $G = 18{,}5\,N$, $m = 5\,kg$

$g = \frac{G}{m}$

$g = \frac{18{,}5\,N}{5\,kg}$

$g = 3{,}7\,\frac{N}{kg}$

5 $G = 10\,000\,N$, $\mu = 4\,\% = 0{,}04$

$F_V = ?$

$F_V = F_{tr}$

$F_{tr} = \mu \cdot G$

$F_{tr} = 0{,}04 \cdot 10\,000\,N$

$F_{tr} = 400\,N$

$F_V = 400\,N$

6 $F = 200\,N$, $\mu = 25\,\% = 0{,}25$, $G = ?$

$F_{tr} = F = 200\,N$

$G = \frac{F_{tr}}{\mu}$

$G = \frac{200\,N}{0{,}25}$

$G = 800\,N$

7 $G = 500\,N$, $F = F_{tr} = 10\,N$, $\mu = ?$

$\mu = \frac{F_{tr}}{G}$

$\mu = \frac{10\,N}{500\,N}$

$\mu = 0{,}02$

8) $m = 5\,kg$
$F_v = F_{tr} = 4\,N$
$\mu = ?$

$G = m \cdot g$
$G = 5\,kg \cdot 10\,\frac{N}{kg}$
$G = 50\,N$

$\mu = \frac{F_{tr}}{G}$
$\mu = \frac{4\,N}{50\,N}$
$\mu = 0{,}08$

9) $m = 560\,kg$
$F_{tr} = 1400\,N$
$\mu = ?$

$G = m \cdot g$
$G = 560\,kg \cdot 10\,\frac{N}{kg}$
$G = 5600\,N$

$\mu = \frac{F_{tr}}{G}$
$\mu = \frac{1400\,N}{5600\,N}$
$\mu = 0{,}25$

10) $F_v = F_{tr} = 500\,N$
$\mu = 5\% = 0{,}05$

$G = \frac{F_{tr}}{\mu}$
$G = \frac{500\,N}{0{,}05}$
$G = 10000\,N$

11) $F_1 = 20\,N$
$l_1 = ?$
$F_2 = 8\,N$
$l_2 = 25\,cm$

$F_1 l_1 = F_2 l_2$
$20\,N \cdot l_1 = 8\,N \cdot 25\,cm$
$20\,N \cdot l_1 = 200\,Ncm \;/:20\,N$
$l_1 = 10\,cm$

12) $l = 2{,}7\,m$
$l_1 = 120\,cm = 1{,}2\,m$
$F_1 = 400\,N$
$F_2 = ?$

$l_2 = l - l_1 = 2{,}7 - 1{,}2 = 1{,}5\,m$

$F_1 l_1 = F_2 l_2$
$400\,N \cdot 1{,}2\,m = F_2 \cdot 1{,}5\,m$
$480\,Nm = F_2 \cdot 1{,}5\,m \;/:1{,}5\,m$
$F_2 = 320\,N$

13) $m_1 = 10\,kg$
$l_1 = 80\,cm$
$m_2 = 16\,kg$
$l_2 = ?$

$F_1 = G_1 = m_1 \cdot g$
$F_1 = 10\,kg \cdot 10\,\frac{N}{kg}$
$F_1 = 100\,N$

$F_2 = G_2 = m_2 \cdot g$
$F_2 = 16\,kg \cdot 10\,\frac{N}{kg}$
$F_2 = 160\,N$

$F_1 \cdot l_1 = F_2 \cdot l_2$
$100\,N \cdot 80\,cm = 160\,N \cdot l_2$
$8000\,Ncm = 160\,N \cdot l_2$
$l_2 = \frac{8000\,Ncm}{160\,N}$
$l_2 = 50\,cm$

14) $m_1 = 2\,kg$
$l_1 = 1\,m$
$l_2 = 4\,dm = 0{,}4\,m$
$F_2 = ?$

$F_1 = G_1 = m_1 \cdot g$
$F_1 = 2\,kg \cdot 10\,\frac{N}{kg}$
$F_1 = 20\,N$

$F_1 l_1 = F_2 l_2$
$20\,N \cdot 1\,m = F_2 \cdot 0{,}4\,m$
$20\,Nm = F_2 \cdot 0{,}4\,m$
$F_2 = \frac{20\,Nm}{0{,}4\,m}$
$F_2 = 50\,N$

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$m_1 = 4kg$
$l_1 = 3cm$
$m_2 = 2kg$
$l_2 = 2cm$
$l_3 = 2cm$
$F_3 = ?$

$F_1 = G_1 = m_1 \cdot g$
$F_1 = 4kg \cdot 10\frac{N}{kg}$
$F_1 = 40N$

$F_2 = G_2 = m_2 g$
$F_2 = 2kg \cdot 10\frac{N}{kg}$
$F_2 = 20N$

$F_1 l_1 + F_2 l_2 = F_3 l_3$

$40N \cdot 3cm + 20N \cdot 2cm = F_3 \cdot 2cm$
$120Ncm + 40Ncm = F_3 \cdot 2cm$
$160Ncm = F_3 \cdot 2cm \quad /:2cm$
$F_3 = 80N$

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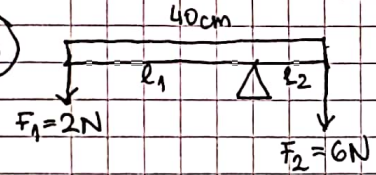

$l_1 + l_2 = 40cm$
$l_2 = 40 - l_1$

$F_1 l_1 = F_2 l_2$
$2 \cdot l_1 = 6(40 - l_1)$
$2l_1 = 240 - 6l_1$
$2l_1 + 6l_1 = 240$
$8l_1 = 240$
$l_1 = 30cm$

$l_2 = 40 - 30 = 10cm$

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(a) 2500 Pa (b) 40000000 Pa
(c) 150000 Pa (d) 3000 Pa
(e) 40000 Pa

18

$F = G = 200N$
$A = 2m^2$

$p = ?$
$p = \frac{F}{A}$
$p = \frac{200N}{2m^2}$
$p = 100Pa$

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$A = 40cm^2 = 0{,}004m^2$
$p = 500Pa$

$F = ?$
$F = p \cdot A$
$F = 500 \cdot 0{,}004$
$F = 2N$

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$m = 22kg$
$A = 44000cm^2 = 4{,}4m^2$

$F = G = m \cdot g$
$F = 22kg \cdot 10\frac{N}{kg}$
$F = 220N$

$p = ?$
$p = \frac{F}{A}$
$p = \frac{220N}{4{,}4m^2}$
$p = 50Pa$

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$A = 30cm^2 = 0{,}003m^2$
$p = 200Pa$
$F = ?$

$F = p \cdot A$
$F = 200Pa \cdot 0{,}003m^2$
$F = 0{,}6N$

(22) $m = 4kg$

$p = 8kPa = 8000Pa$

$A = ?$

$A = \frac{F}{p}$

$F = G = m \cdot g$

$F = 4kg \cdot 10\frac{N}{kg}$

$F = 40N$

$A = \frac{40N}{8000Pa}$

$A = 0,005m^2$

(23) (a) $m = 50kg$

$A = 2cm^2 = 0,0002m^2$

$p = ?$

$F = G = m \cdot g$

$F = 50kg \cdot 10\frac{N}{kg}$

$F = 500N$

$p = \frac{F}{A}$

$p = \frac{500N}{0,0002m^2}$

$p = 2500000Pa$

(b) $m = 1500kg$

$A = 150cm^2 = 0,015m^2$

$p = ?$

$F = G = m \cdot g$

$F = 1500kg \cdot 10\frac{N}{kg}$

$F = 15000N$

$p = \frac{F}{A}$

$p = \frac{15000N}{0,015m^2}$

$p = 1000000Pa$

(c) dziewojka

(24) $A = 8cm^2 = 0,0008m^2$

$m_1 = 4kg$

$m_2 = 56kg$

(a) $F_1 = G_1 = m_1 \cdot g$

$F_1 = 4kg \cdot 10\frac{N}{kg}$

$F_1 = 40N$

$p = \frac{F_1}{A}$

$p = \frac{40N}{0,0008m^2}$

$p = 50000Pa$

(b) $F = G = (m_1 + m_2) \cdot g$

$F = 60kg \cdot 10\frac{N}{kg}$

$F = 600N$

$p = \frac{F}{A}$

$p = \frac{600N}{0,0008m^2}$

$p = 750000Pa$

(25) $a = 10cm$

$p = 7kPa = 7000Pa$

c) $V = a \cdot a \cdot a$

$V = 1000cm^3$

$V = 0,001m^3$

$m = 7kg$

$\rho = \frac{m}{V}$

$\rho = \frac{7kg}{0,001m^3}$

$\rho = 7000\frac{kg}{m^3}$

$A = a \cdot a$

a) $A = 10cm \cdot 10cm$

$A = 100cm^2 = 0,01m^2$

$F = G = p \cdot A$

$F = 7000 \cdot 0,01$

$F = 70N$

$G = 70N$

b) $m = ?$

$m = \frac{G}{g}$

$m = \frac{70N}{10\frac{N}{kg}}$

$m = 7kg$

(26) $a = 5cm$

$p = 400Pa$

$F = G = ?$

$A = a \cdot a$

$A = 25cm^2$

$A = 0{,}0025m^2$

$F = p \cdot A$

$F = 400Pa \cdot 0{,}0025m^2$

$F = 1N$

(27) $a = 1m$

$b = 0{,}5m$

$c = 0{,}2m$

$\rho = 7800\ kg/m^3$

$V = a \cdot b \cdot c$

$V = 1 \cdot 0{,}5 \cdot 0{,}2$

$V = 0{,}1\ m^3$

$A = a \cdot b$

$A = 1m \cdot 0{,}5m$

$A = 0{,}5\ m^2$

$m = \rho \cdot V$

$m = 7800 \frac{kg}{m^3} \cdot 0{,}1\ m^3$

$m = 780\ kg$

$F = G$

$G = m \cdot g$

$G = 780kg \cdot 10 \frac{N}{kg}$

$F = G = 7800N$

$p = \frac{F}{A}$

$p = \frac{7800\ N}{0{,}5\ m^2}$

$p = 15600Pa$