

1. $k = 400 \text{ N/m}$
 $\Delta l = 1 \text{ cm} = 0,01 \text{ m}$

$F = ?$

$F = k \cdot \Delta l$

$F = 400 \frac{\text{N}}{\text{m}} \cdot 0,01 \text{ m}$

$F = 4 \text{ N}$

2. $k = 150 \text{ N/m}$
 $F = 24 \text{ N}$

$\Delta l = ?$

$\Delta l = \frac{F}{k}$

$\Delta l = \frac{24 \text{ N}}{150 \frac{\text{N}}{\text{m}}}$

$\Delta l = 0,16 \text{ m}$

3. $F = 12 \text{ N}$
 $\Delta l = 8 \text{ cm} = 0,08 \text{ m}$

$k = ?$

$k = \frac{F}{\Delta l}$

$k = \frac{12 \text{ N}}{0,08 \text{ m}}$

$k = 150 \text{ N/m}$

4. $F_1 = 1,2 \text{ N}$
 $\Delta l_1 = 2 \text{ cm} = 0,02 \text{ m}$
 $F_2 = ?$
 $\Delta l_2 = 3 \text{ cm} = 0,03 \text{ m}$

$k = \frac{F_1}{\Delta l_1}$

$k = \frac{1,2 \text{ N}}{0,02 \text{ m}}$

$k = 60 \text{ N/m}$

$F_2 = k \cdot \Delta l_2$

$F_2 = 60 \frac{\text{N}}{\text{m}} \cdot 0,03 \text{ m}$

$F_2 = 1,8 \text{ N}$

5. (a) $\Delta l = 4 \text{ cm}$
 (b) $F = 12 \text{ N}$
 (c) Odabiremo 1 istaknutu točku:
 $\Delta l = 5 \text{ cm} = 0,05 \text{ m}$
 $F = 10 \text{ N}$

$k = ?$

$k = \frac{F}{\Delta l}$

$k = \frac{10 \text{ N}}{0,05 \text{ m}}$

$k = 200 \frac{\text{N}}{\text{m}}$

6. (a) Elasticnija je opruga A, jer se uz jednaku silu npr. 6N, više produžji (24cm) za razliku od opruge B koja se manje produžji (12cm).

(b) A) $F = 6 \text{ N}$
 $\Delta l = 24 \text{ cm} = 0,24 \text{ m}$

$k_A = \frac{F}{\Delta l}$

$k_A = \frac{6 \text{ N}}{0,24 \text{ m}}$

$k_A = 25 \frac{\text{N}}{\text{m}}$

B) $F = 6 \text{ N}$
 $\Delta l = 12 \text{ cm} = 0,12 \text{ m}$

$k_B = \frac{F}{\Delta l}$

$k_B = \frac{6 \text{ N}}{0,12 \text{ m}}$

$k_B = 50 \frac{\text{N}}{\text{m}}$

7. $m = 200 \text{ g} = 0,2 \text{ kg}$
 $k = 50 \text{ N/m}$

$\Delta l = ?$

$F = G = m \cdot g$

$G = 0,2 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$

$G = 2 \text{ N}$

$F = 2 \text{ N}$

$\Delta l = \frac{F}{k}$

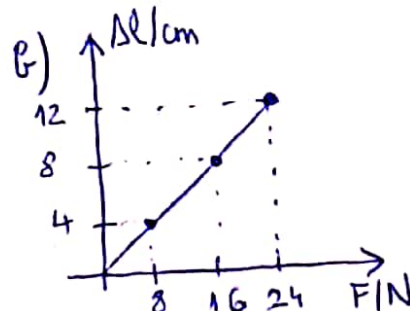
$\Delta l = \frac{2 \text{ N}}{50 \frac{\text{N}}{\text{m}}}$

$\Delta l = 0,04 \text{ m}$

8.

a)

F / N	0	8	16	24
l / cm	12	16	20	24
Δl / cm	0	4	8	12

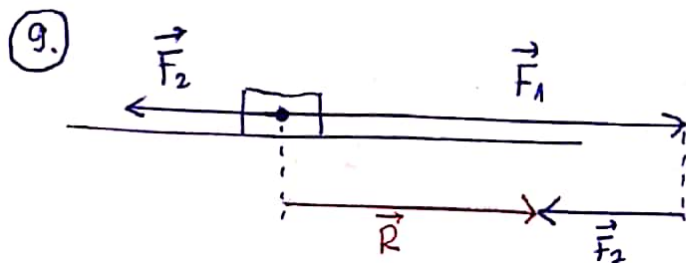


c) $F = 8 \text{ N}$
 $\Delta l = 4 \text{ cm} = 0,04 \text{ m}$

$k = \frac{F}{\Delta l}$

$k = \frac{8 \text{ N}}{0,04 \text{ m}}$

$k = 200 \text{ N/m}$



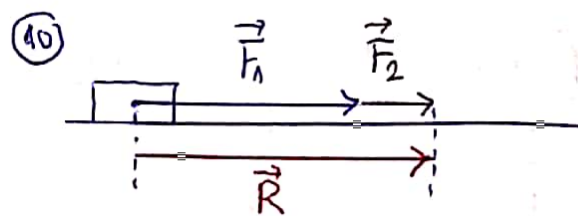
$$F_1 = 55 \text{ N}$$

$$F_2 = 20 \text{ N}$$

$$R = F_1 - F_2$$

$$R = 55 \text{ N} - 20 \text{ N}$$

$$R = 35 \text{ N}$$



$$F_1 = 600 \text{ N}$$

$$F_2 = 200 \text{ N}$$

$$R = F_1 + F_2$$

$$R = 600 \text{ N} + 200 \text{ N}$$

$$R = 800 \text{ N}$$

11. $m = 4.5 \text{ kg}$
 $G = ?$
 $g = 10 \frac{\text{N}}{\text{kg}}$

$$G = m \cdot g$$

$$G = 4.5 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$$

$$G = 45 \text{ N}$$

12. $m = 25 \text{ dag} = 0.25 \text{ kg}$
 $g = 10 \frac{\text{N}}{\text{kg}}$
 $G = ?$

$$G = m \cdot g$$

$$G = 0.25 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$$

$$G = 2.5 \text{ N}$$

13. $G = 230 \text{ N}$
 $g = 10 \frac{\text{N}}{\text{kg}}$
 $m = ?$

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

$$m = \frac{230 \text{ N}}{10 \frac{\text{N}}{\text{kg}}}$$

$$m = 23 \text{ kg}$$

14. $m = 80 \text{ kg}$
 $g_H = 1.6 \frac{\text{N}}{\text{kg}}$
 $G_M = ?$

$$G_M = m \cdot g_M$$

$$G_M = 80 \text{ kg} \cdot 1.6 \frac{\text{N}}{\text{kg}}$$

$$G_M = 128 \text{ N}$$

15. $m_1 = 50 \text{ g} = 0.05 \text{ kg}$
 $F = 2 \text{ N}$
 $g = 10 \frac{\text{N}}{\text{kg}}$

$$n = ?$$

$$G_1 = m_1 \cdot g$$

$$G_1 = 0.05 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$$

$$G_1 = 0.5 \text{ N}$$

$$m = \frac{F}{G_1}$$

$$n = \frac{2 \text{ N}}{0.5 \text{ N}}$$

$$n = 4$$

16. $V = 2 \text{ l} = 2 \text{ dm}^3 = 0.002 \text{ m}^3$
 $g = 10 \frac{\text{N}}{\text{kg}}$
 $\rho = 1000 \text{ kg/m}^3$
 $G = ?$

$$m = \rho \cdot V$$

$$m = 1000 \frac{\text{kg}}{\text{m}^3} \cdot 0.002 \text{ m}^3$$

$$m = 2 \text{ kg}$$

$$G = m \cdot g$$

$$G = 2 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$$

$$G = 20 \text{ N}$$

17. $G = 135 \text{ N}$
 $\mu = 0.24$
 $F_{\text{tr}} = ?$

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

$$F_{\text{tr}} = 0.24 \cdot 135 \text{ N}$$

$$F_{\text{tr}} = 32.4 \text{ N}$$

18. $G = 25 \text{ N}$
 $\mu = 30\% = 0.3$
 $F_v = ?$

$$F_v = F_{\text{tr}}$$

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

$$F_{\text{tr}} = 0.3 \cdot 25 \text{ N}$$

$$F_{\text{tr}} = 7.5 \text{ N}$$

$$F_v = 7.5 \text{ N}$$

19. $F_v = 200 \text{ N}$
 $\mu = 0.25$
 $G = ?$

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

$$G = \frac{200 \text{ N}}{0.25}$$

$$G = 800 \text{ N}$$

20. (a) $\mu = 0,05$
 $F_v = F_{fr} = 250 \text{ N}$
 $G = ?$

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

$$G = \frac{250 \text{ N}}{0,05}$$

$$G = 5000 \text{ N}$$

(b) $m = ?$
 $G = 5000 \text{ N}$
 $g = 10 \frac{\text{N}}{\text{kg}}$

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

$$m = \frac{5000 \text{ N}}{10 \frac{\text{N}}{\text{kg}}}$$

$$m = 500 \text{ kg}$$

21. $m = 50 \text{ kg}$
 $F_v = 100 \text{ N}$
 $\mu = ?$

$$F_v = F_{fr}$$

$$G = m \cdot g$$

$$G = 50 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$$

$$G = 500 \text{ N}$$

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

$$\mu = \frac{100 \text{ N}}{500 \text{ N}}$$

$$\mu = 0,2$$

22. $a = 15 \text{ cm}$
 $b = 85 \text{ mm} = 8,5 \text{ cm}$
 $c = 0,05 \text{ m} = 5 \text{ cm}$
 $\rho = 0,75 \frac{\text{g}}{\text{cm}^3}$ $\mu = 0,6$
 $G = ?$ $F_{fr} = ?$

$$V = abc$$

$$V = 15 \cdot 8,5 \cdot 5$$

$$V = 637,5 \text{ cm}^3$$

$$m = \rho \cdot V$$

$$m = 0,75 \frac{\text{g}}{\text{cm}^3} \cdot 637,5 \text{ cm}^3$$

$$m = 478,125 \text{ g} = 0,478125 \text{ kg} \approx 0,48 \text{ kg}$$

$$G = m \cdot g$$

$$G = 0,48 \text{ kg} \cdot 10 \frac{\text{N}}{\text{kg}}$$

$$G = 4,8 \text{ N}$$

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

$$F_{fr} = 0,6 \cdot 4,8 \text{ N}$$

$$F_{fr} = 2,88 \text{ N}$$