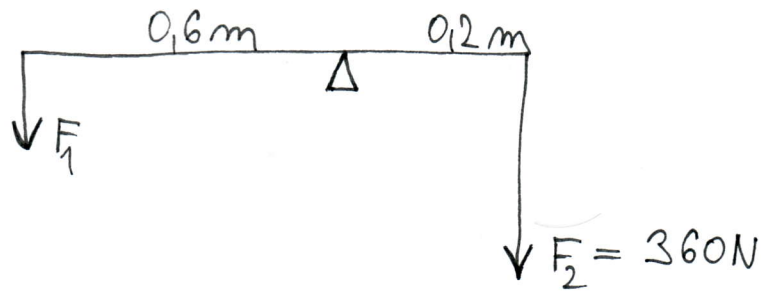


Str. 59 / cv. 300

a)



$$F_1 = ? [\text{N}]$$

$$a_1 = 0,6\text{ m}$$

$$F_2 = 360\text{ N}$$

$$a_2 = 0,2\text{ m}$$

Řešení 1.

$$M_1 = M_2$$

$$F_1 \cdot a_1 = F_2 \cdot a_2$$

$$F_1 = \frac{F_2 \cdot a_2}{a_1}$$

$$F_1 = \frac{360 \cdot 0,2}{0,6}$$

$$\underline{\underline{F_1 = 120\text{ N}}}$$

Řešení 2.

$$\boxed{M_1 = M_2}$$

$$\boxed{M_1 = F_1 \cdot a_1}$$

$$F_1 = \frac{M_1}{a_1}$$

$$F_1 = \frac{72}{0,6}$$

$$\underline{\underline{F_1 = 120\text{ N}}}$$

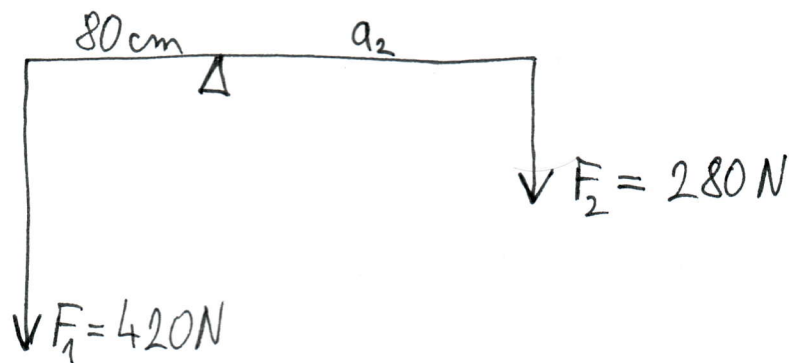
$$M_2 = F_2 \cdot a_2$$

$$M_2 = 360 \cdot 0,2$$

$$\underline{\underline{M_2 = 72\text{ Nm}}}$$

Síla  $F_1$  má velikost  $120\text{ N}$ .

b)



$$a_1 = 80\text{ cm} = 0,8\text{ m}$$

$$F_1 = 420\text{ N}$$

$$a_2 = ? [\text{m}]$$

$$F_2 = 280\text{ N}$$

Řešení 1.

$$M_1 = M_2$$

$$F_1 \cdot a_1 = F_2 \cdot a_2$$

$$a_2 = \frac{F_1 \cdot a_1}{F_2}$$

$$a_2 = \frac{420 \cdot 0,8}{280}$$

$$\underline{\underline{a_2 = 1,2\text{ m}}}$$

Řešení 2.

$$\boxed{M_1 = M_2}$$

$$M_1 = F_1 \cdot a_1$$

$$M_1 = 420 \cdot 0,8$$

$$\underline{\underline{M_1 = 336\text{ Nm}}}$$

$$\boxed{M_2 = F_2 \cdot a_2}$$

$$a_2 = \frac{M_2}{F_2}$$

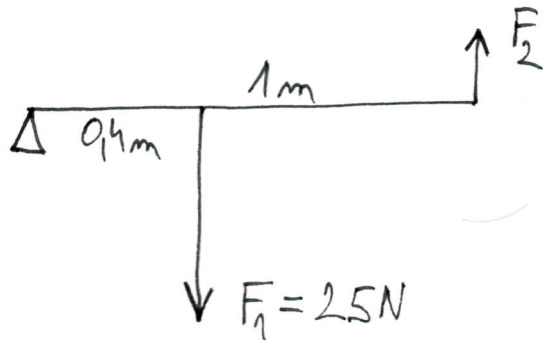
$$a_2 = \frac{336}{280}$$

$$\underline{\underline{a_2 = 1,2\text{ m}}}$$

Rameno  $a_2$  je dlouhé 1,2 m.

str. 59 / cv. 300

c)



$$F_1 = 25\text{ N}$$

$$a_1 = 0.4\text{ m}$$

$$F_2 = ? [\text{N}]$$

$$a_2 = 1\text{ m}$$

Řešení 1.

$$M_1 = M_2$$

$$F_1 \cdot a_1 = F_2 \cdot a_2$$

$$\frac{F_1 \cdot a_1}{a_2} = F_2$$

$$F_2 = \frac{F_1 \cdot a_1}{a_2}$$

$$F_2 = \frac{25 \cdot 0.4}{1}$$

$$\underline{\underline{F_2 = 10\text{ N}}}$$

Řešení 2.

$$\boxed{M_1 = M_2}$$

$$M_1 = F_1 \cdot a_1$$

$$M_1 = 25 \cdot 0.4$$

$$\underline{\underline{M_1 = 10\text{ Nm}}}$$

$$\boxed{M_2 = F_2 \cdot a_2}$$

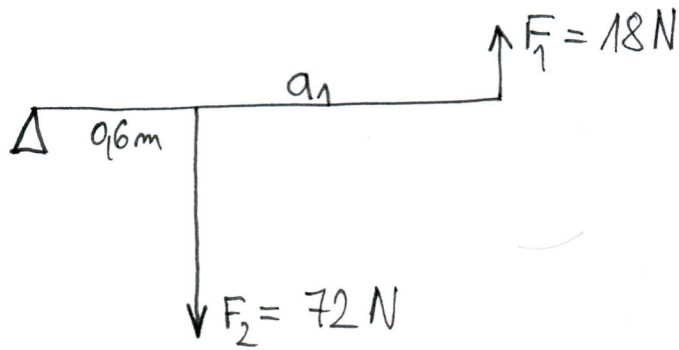
$$F_2 = \frac{M_2}{a_2}$$

$$F_2 = \frac{10}{1}$$

$$\underline{\underline{F_2 = 10\text{ N}}}$$

Síla  $F_2$  má velikost  $10\text{ N}$ .

d)



$$F_1 = 18 \text{ N}$$

$$a_1 = ? [\text{m}]$$

$$F_2 = 72 \text{ N}$$

$$a_2 = 0,6 \text{ m}$$

Řešení 1.

$$M_1 = M_2$$

$$F_1 \cdot a_1 = F_2 \cdot a_2$$

$$a_1 = \frac{F_2 \cdot a_2}{F_1}$$

$$a_1 = \frac{72 \cdot 0,6}{18}$$

$$\underline{\underline{a_1 = 2,4 \text{ m}}}$$

Řešení 2.

$$M_1 = M_2$$

$$M_1 = F_1 \cdot a_1$$

$$a_1 = \frac{M_1}{F_1}$$

$$a_1 = \frac{43,2}{18}$$

$$\underline{\underline{a_1 = 2,4 \text{ m}}}$$

$$M_2 = F_2 \cdot a_2$$

$$M_2 = 72 \cdot 0,6$$

$$\underline{\underline{M_2 = 43,2 \text{ Nm}}}$$

Rameno síly  $a_1$  je dlouhé 2,4 m.