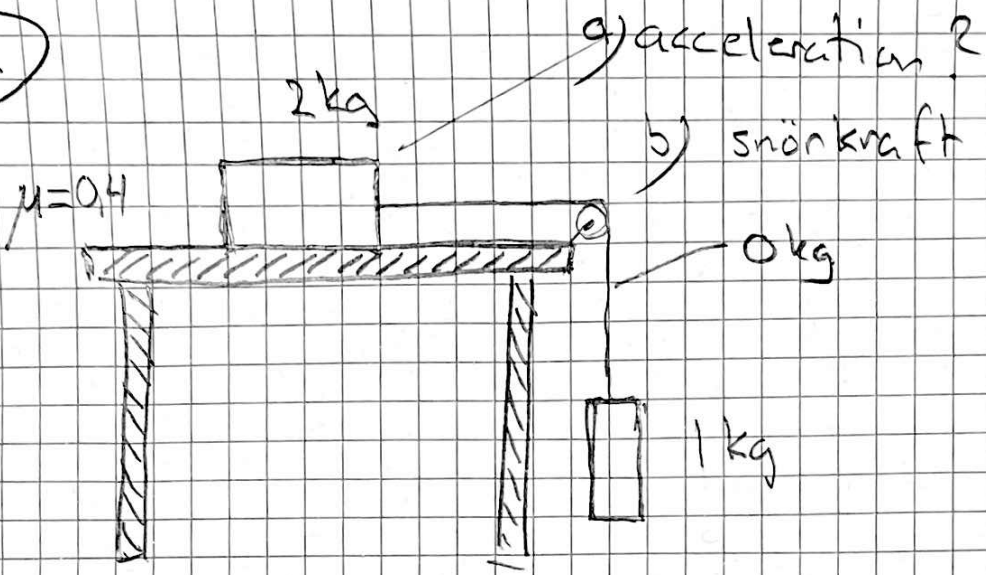
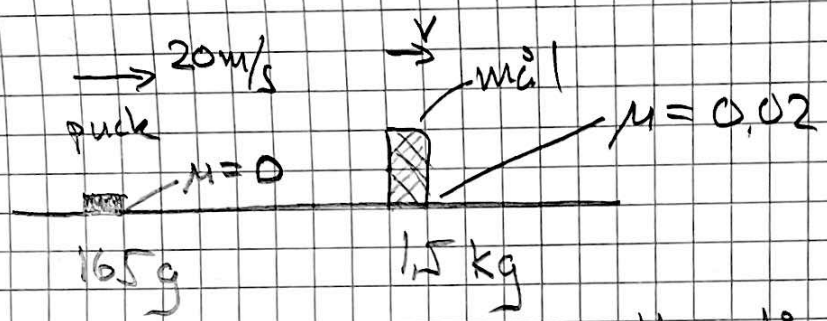


I



(C)
(A)

II

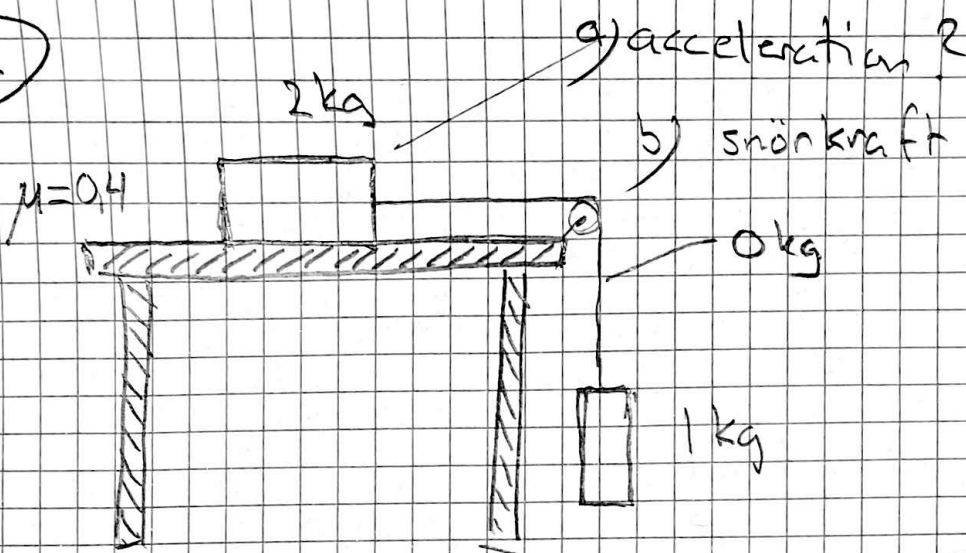


Hur långt glider målet?

I

(C)

(A)

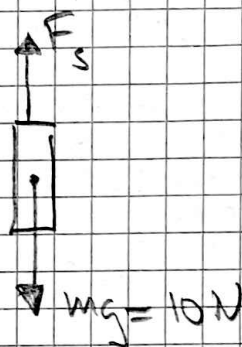


Lösning jämvikt ⇒



$$F_f = \mu \cdot F_N$$

$$0,4 \cdot 20 = 8 \text{ N}$$



Rör sig som en kropp

total massa 3 kg

kraft bakåt 8 N

kraft framåt 10 N

Kraftresultant $F_R = 10 - 8 = 2 \text{ [N]}$

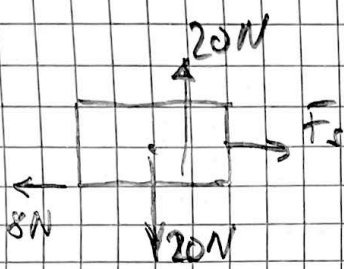
$$F_R = m_{\text{tot}} \cdot a$$

$$2 = 3 \cdot a$$

$$a = \frac{2}{3} \approx 0,67 \frac{\text{m}}{\text{s}^2}$$

SVAR: $0,67 \frac{\text{m}}{\text{s}^2}$

b)



$$F_R = F_s - 8$$

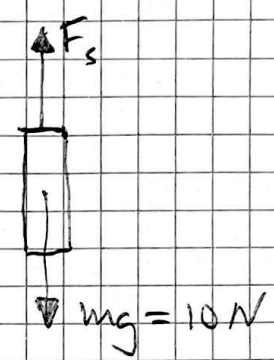
$$F_R = m \cdot a$$

$$F_R = 2 \cdot \frac{2}{3} = \frac{4}{3}$$

$$\frac{4}{3} = F_s - 8$$

$$F_s = \underline{\underline{9,3 \text{ [N]}}}$$

eller



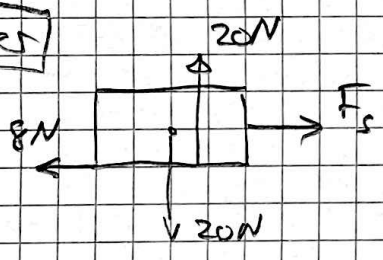
$$F_R = m \cdot a = 1 \cdot \frac{2}{3} = \frac{2}{3}$$

$$F_R = 10 - F_s$$

$$\frac{2}{3} = 10 - F_s$$

$$F_s = \underline{\underline{9,3 \text{ [N]}}}$$

eller

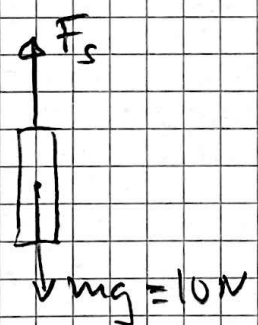


$$F_{R1} = F_s - 8$$

$$F_{R1} = m \cdot a$$

$$F_{R1} = 2 \cdot a$$

$$2a = F_s - 8$$



$$F_{R2} = 10 - F_s$$

$$F_{R2} = m \cdot a$$

$$F_{R2} = 1 \cdot a$$

Båda har samma acceleration eftersom de står sig ihop.

$$a = 10 - F_s$$

multipliera m 2 på båda sidor

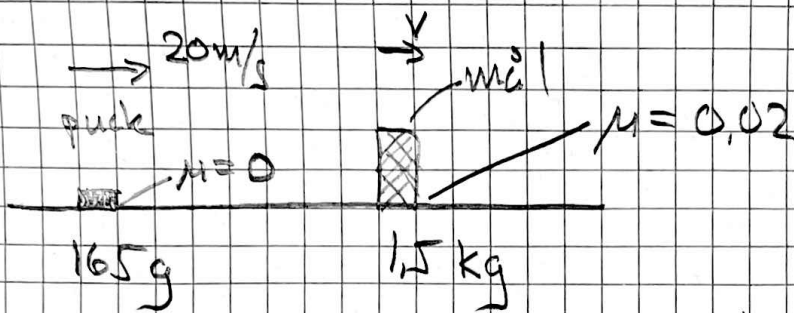
$$2a = 20 - 2F_s$$

$$\begin{array}{r} F_s - 8 = 20 - 2F_s \\ +2F_s \quad +2 \quad +8 \quad +2F_s \\ \hline 3F_s = 28 \end{array}$$

$$F_s = \frac{28}{3} = \underline{\underline{9,3 \text{ [N]}}}$$

SVAR: 9,3 N

II



Hur långt glider målet?

Plan:

1. rörelsemängd beror på puck + mål
2. bromsarbete omvandlar rörelseenergi till värme

Lösning

1.

$$P_{före} = P_{efter}$$

$$m_{puck} \cdot v_{puck} = (m_{puck} + m_{mål}) \cdot v$$

$$0,165 \cdot 20 = (0,165 + 1,5) \cdot v$$

$$3,3 = 1,665 \cdot v$$

$$v = \frac{3,3}{1,665} \approx 1,981981982$$

pucken glider utan motstånd.

$$F_f = \mu \cdot F_N = 0,02 \cdot 15 = 0,3$$

$$F_N = 15N$$

$$15N$$

$$2. \frac{(m_{mål} + m_{puck}) \cdot v^2}{2} = F_f \cdot s$$

↑ stoppstrecka

$$\frac{1,665 \cdot 1,98198^2}{2} = 0,3 \cdot s$$

$$\frac{3,27027...}{0,3} = \frac{0,3s}{0,3}$$

$$s \approx 10,90 \approx \underline{\underline{11m}}$$

SVAR: 11m