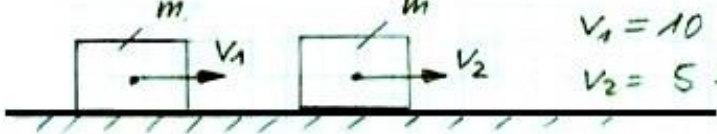


Musterlösung: Kleine Stoßaufgaben

Kleine Aufgaben zu: "Gerader zentraler Stoß"

1.  $v_1 = 10 \frac{\text{m}}{\text{s}}$ $k = 0,8$
 $v_2 = 5 \frac{\text{m}}{\text{s}}$ $m_1 = m_2 = m$

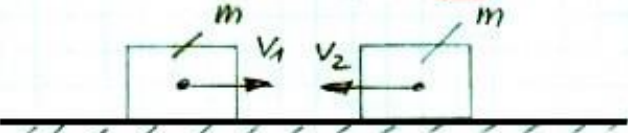
Ges.: u_1, u_2

$$m_1 \cdot v_1 + m_2 \cdot v_2 = m_1 \cdot u_1 + m_2 \cdot u_2$$

$$v_1 + v_2 = u_1 + u_2 \Rightarrow u_1 = v_1 + v_2 - u_2 ; \underline{u_1 = 5,5 \frac{\text{m}}{\text{s}}}$$


$$k = \frac{u_1 - u_2}{v_2 - v_1} = \frac{v_1 + v_2 - u_2 - u_2}{v_2 - v_1} \Rightarrow k(v_2 - v_1) = v_1 + v_2 - 2u_2$$

$$2u_2 = v_1 + v_2 - k(v_2 - v_1) \Rightarrow \underline{u_2 = \frac{10 + 5 - 0,8(5 - 10) \frac{\text{m}}{\text{s}}}{2} = 9,5 \frac{\text{m}}{\text{s}}}$$

2.  Werte s.o.

$$u_2 = \frac{v_1 + v_2 - 0,8(v_2 - v_1)}{2} = \frac{10 - 5 - 0,8(-5 - 10) \frac{\text{m}}{\text{s}}}{2}$$

$$\underline{u_2 = 8,5 \frac{\text{m}}{\text{s}}} ; \begin{aligned} u_1 &= v_1 + v_2 - u_2 = 10 - 5 - 8,5 \frac{\text{m}}{\text{s}} \\ &\underline{u_1 = -3,5 \frac{\text{m}}{\text{s}}} \end{aligned}$$

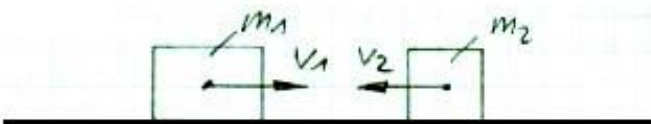
3.  Werte s.o.
 $m_1 = 6 \text{ kg} ; m_2 = 3 \text{ kg}$

$$m_1 \cdot v_1 + m_2 \cdot v_2 = m_1 \cdot u_1 + m_2 \cdot u_2$$

$$k = \frac{u_1 - u_2}{v_2 - v_1} \Rightarrow u_1 = k(v_2 - v_1) + u_2$$

$$\underline{u_1 = 7 \frac{\text{m}}{\text{s}}}$$

$$\underline{u_2 = 11 \frac{\text{m}}{\text{s}}}$$

4.  Werte s. Nr 3

Rechnung s. Nr. 3 mit $v_2 = -5 \frac{\text{m}}{\text{s}}$

$$\underline{u_1 = 1 \frac{\text{m}}{\text{s}}} ; \underline{u_2 = 13 \frac{\text{m}}{\text{s}}}$$