

$$a = \frac{\Delta v}{\Delta t}$$

Def. d. Beschleunigung

Beispiel:

$$v_1 = 7 \frac{\text{m}}{\text{s}}$$

$$v_2 = 21 \frac{\text{m}}{\text{s}}$$

$$\Delta t = 10 \text{ s}$$

$$\textcircled{1} \Delta v = v_2 - v_1$$

(hinterher -  
vorher)

$$= 21 \frac{\text{m}}{\text{s}} - 7 \frac{\text{m}}{\text{s}} = 14 \frac{\text{m}}{\text{s}}$$

$\textcircled{2}$

$$a = \frac{\Delta v}{\Delta t} = \frac{14 \frac{\text{m}}{\text{s}}}{10 \text{ s}} = 1,4 \frac{\text{m}}{\text{s}^2}$$

Einheit

$$\frac{\frac{\text{m}}{\text{s}}}{\text{s}} = \frac{\text{m}}{\text{s}} \cdot \frac{1}{\text{s}} = \frac{\text{m}}{\text{s}^2}$$

$$F = m a$$

Einheit:  $N = \text{kg} \frac{\text{m}}{\text{s}^2}$

$$\Rightarrow m = \frac{F}{a}$$

$$\Rightarrow a = \frac{F}{m}$$

$$m = \frac{F}{a} = \frac{180 \text{ kg} \frac{\text{m}}{\text{s}^2}}{0,2 \frac{\text{m}}{\text{s}^2}} = 900 \text{ kg}$$

Beispiel

$$m = 900 \text{ kg}$$

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

$$\begin{aligned} F = m a &= 900 \text{ kg} \cdot 0,2 \frac{\text{m}}{\text{s}^2} \\ &= 180 \text{ kg} \frac{\text{m}}{\text{s}^2} \\ &= 180 \text{ N} \end{aligned}$$

$$a = \frac{F}{m} = \frac{180 \text{ kg} \frac{\text{m}}{\text{s}^2}}{900 \text{ kg}} = 0,2 \frac{\text{m}}{\text{s}^2}$$