



### 3.4 þyngdarkraftur

Bk. 24

3.4.1  $m = 2 \text{ kg}$

$a = g = 9,8 \text{ m/s}^2$

$F_{\text{tog}} = m \cdot g = 2 \text{ kg} \cdot 9,8 \text{ m/s}^2 = \underline{\underline{19,6 \text{ N}}}$

þyngdarkraftur verkar niður  $v = 0$

$F_{\text{heild}} = 0$

$F_{\text{heild}} = F_g - F_{\text{tog}} = 0$

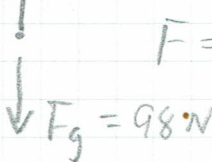
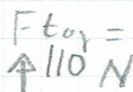
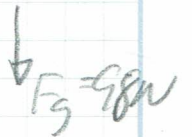
### 3.4.2

$m = 10,0 \text{ kg}$

$g = 9,8 \text{ m/s}^2$

$a ?$

þyngdarkraftur  $F_g = m \cdot g = 98 \text{ N}$



a)  $F_{\text{tog}} = 110 \text{ N}$

$F = m \cdot a \quad F_{\text{tog}} - F_g = m \cdot a$

$110 \text{ N} - 98 \text{ N} = 10 \text{ kg} \cdot a$

$a = \frac{12 \text{ N}}{10 \text{ kg}} = \underline{\underline{1,2 \text{ m/s}^2 \text{ upp}}}$

b)  $F_{\text{tog}} = 90 \text{ N}$

$F_{\text{tog}} - F_g = m \cdot a$

$90 \text{ N} - 98 \text{ N} = 10 \text{ kg} \cdot a$

$-8 \text{ N} = 10 \text{ kg} \cdot a$

$a = \frac{-8 \text{ N}}{10 \text{ kg}} = -0,8 \text{ m/s}^2 \text{ niður}$

Svar: Hröðunin er  $0,8 \text{ m/s}^2$

### 3.4.3

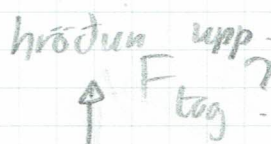
$a = 0,500 \text{ m/s}^2$

$F_{\text{tog}} ?$

$m = 10,0 \text{ kg}$

$g = 9,8 \text{ m/s}^2$

$F_g = 98 \text{ N}$



þá er  $F_{\text{tog}} > F_g$

$F_{\text{tog}} - F_g = m \cdot a$

$F_{\text{tog}} = 98 \text{ N} + 10 \text{ kg} \cdot 0,5 \text{ m/s}^2$

$= 98 \text{ N} + 5 \text{ N}$

$= 103 \text{ N}$



3.4.4.

$$m = 10,0 \text{ kg}$$

$$a_{\text{niður}} = 2,0 \text{ m/s}^2$$

$F_{\text{tog}}?$

$$m \cdot g > F_{\text{tog}}$$

$$F_{\text{niður}} - F_{\text{tog}} = m \cdot a$$

$$10 \text{ kg} \cdot 9,8 \text{ m/s}^2 - F_{\text{tog}} = 10 \text{ kg} \cdot 2 \text{ m/s}^2$$

$$98 \text{ N} - 20 \text{ N} = F_{\text{tog}}$$

$$\underline{\underline{F_{\text{tog}} = 78 \text{ N}}}$$