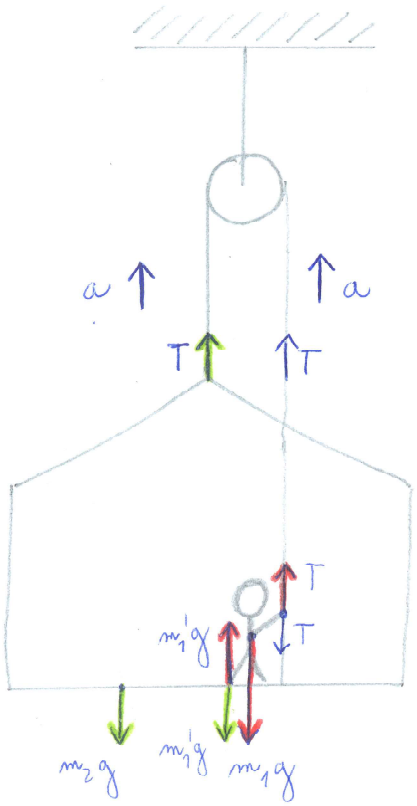
Příklad 7.8

$m_1 = 72\,kg$
$m_2 = 12\,kg$
$m_1' = 40\,kg$



+ oba jedou nahoru (!)

naběrač: $m_1 a = -m_1 g + m_1' g + T$

síla naběrače — síla, kterou kabina

reakce podložky

kabina: $m_2 a = -m_2 g - m_1' g + T$

síla kabiny — síla naběrače (zatížení naběračem)

$$\Rightarrow \quad m_1 a = -m_1 g + m_1' g + T$$
$$m_2 a = -m_2 g - m_1' g + T$$

$$(m_1 - m_2) a = -(m_1 - m_2) g + 2 m_1' g$$

$$a = -g + \frac{2 m_1'}{m_1 + m_2} g$$

$$a = g\left(-1 + \frac{80}{60}\right) = \frac{1}{3} g$$

$$\Rightarrow \quad T = m_1 a + m_1 g - m_1' g = -\cancel{m_1 g} + \frac{2 m_1' m_1}{m_1 - m_2} g + \cancel{m_1 g} - m_1' g$$

$$T = \frac{2 m_1' m_1 - m_1' m_1 + m_1' m_2}{m_1 - m_2} g = m_1' g \frac{m_1 + m_2}{m_1 - m_2}$$

zatížení kladky: $\frac{2T}{g} = 2 m_1' \frac{m_1 + m_2}{m_1 - m_2} = 112\,kg$