

$$\begin{cases} m_1 a = 2T - m_1 g \\ -2m_2 a = T - m_2 g \end{cases}$$

$$a = \frac{2m_2 - m_1}{m_1 + 4m_2} g$$

$$T = -2m_2 \frac{(2m_2 - m_1)}{m_1 + 4m_2} g + m_2 g$$

$$= \frac{-\cancel{4m_2^2} + 2m_1 m_2 + m_1 m_2 + \cancel{4m_2^2}}{m_1 + 4m_2} g$$

$$= 3 \frac{m_1 m_2}{m_1 + 4m_2} g$$