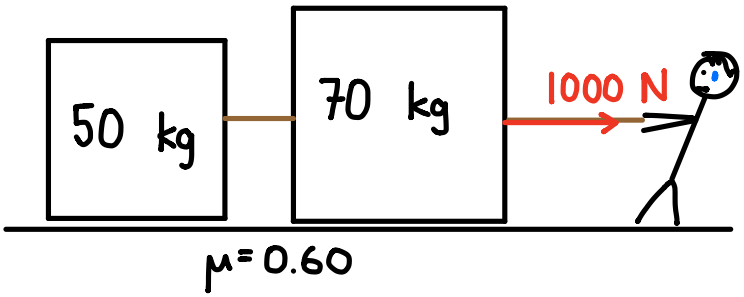
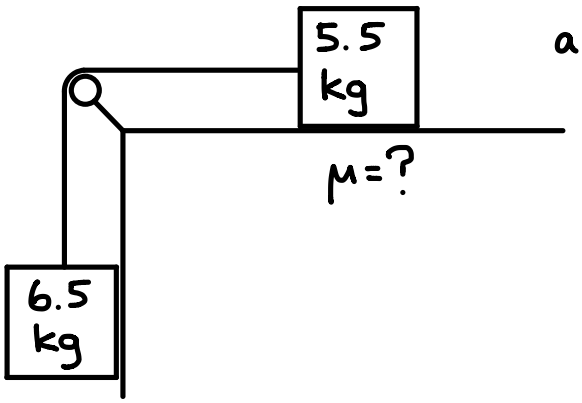
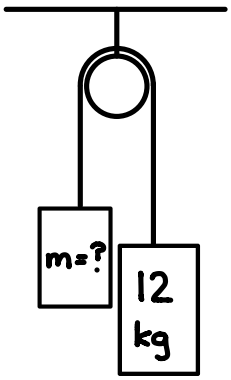


a = ?

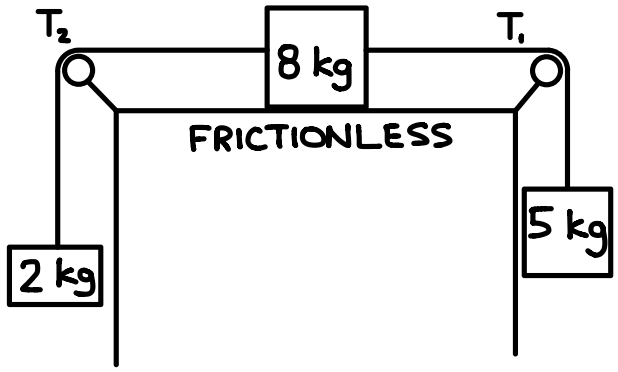
T = ?



$a = 2.0 \frac{m}{s^2}$ LEFT



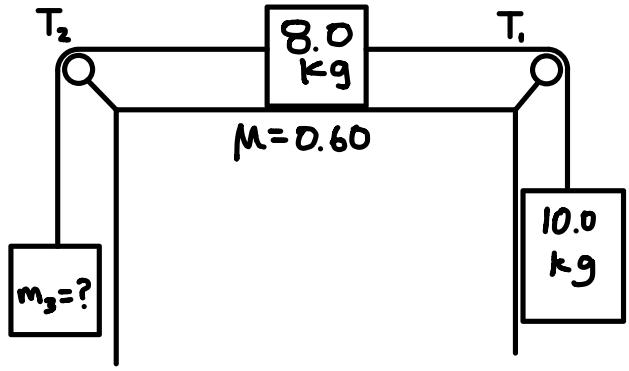
$a = 1.5 \frac{m}{s^2}$ RIGHT



$a = ?$

$T_1 = ?$

$T_2 = ?$

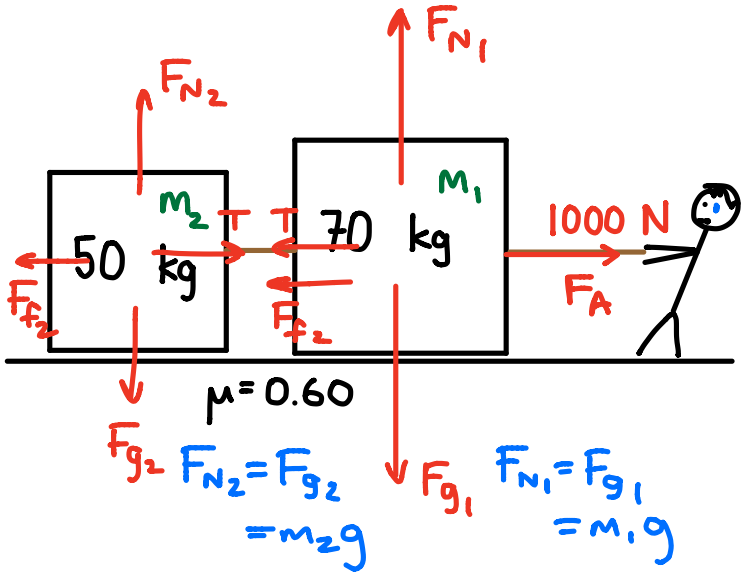


$T_1 = 92\ N$

$a = ?$

$m_3 = ?$

$T_2 = ?$



$a = ?$

$T = ?$

$F_{N_2} = F_{g_2} = m_2 g$

$F_{N_1} = F_{g_1} = m_1 g$

$$F_{NET} = Ma$$

$$F_A - F_{f_1} - T + T - F_{f_2} = Ma$$

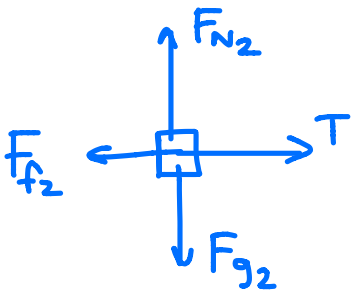
$$F_A - \mu F_{N_1} - \mu F_{N_2} = Ma$$

$$F_A - \mu m_1 g - \mu m_2 g = Ma$$

$$a = \frac{F_A - \mu m_1 g - \mu m_2 g}{M}$$

$$= \frac{1000 - (0.60)(70)(9.8) - (0.60)(50)(9.8)}{120}$$

$$= \boxed{2.45 \ \frac{m}{s^2} \text{ RIGHT}}$$



$$F_{NET} = m_2 a$$

$$T - F_{f_2} = m_2 a$$

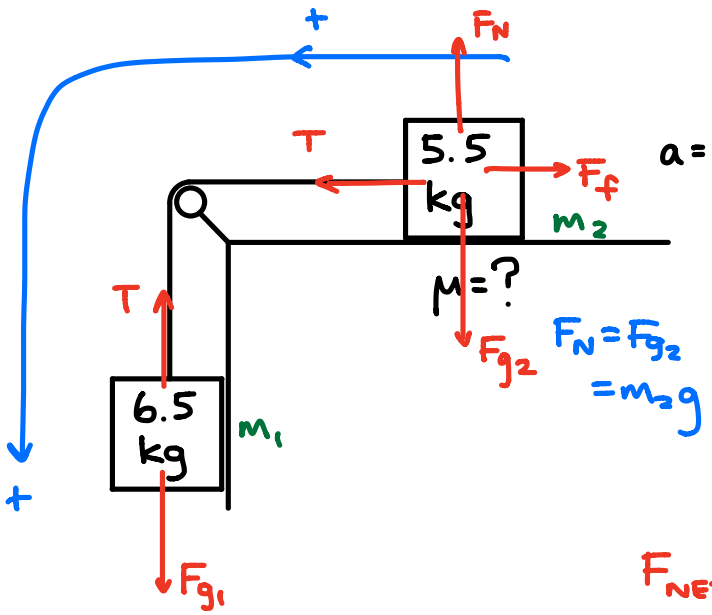
$$T - \mu F_{N_2} = m_2 a$$

$$T - \mu m_2 g = m_2 a$$

$$T = m_2 a + \mu m_2 g$$

$$= (50)(2.45\bar{3}) + (0.60)(50)(9.8)$$

$$= \boxed{417\ N}$$



$$F_{NET} = Ma$$

$$F_{g_1} - \cancel{T} + \cancel{T} - F_f = Ma$$

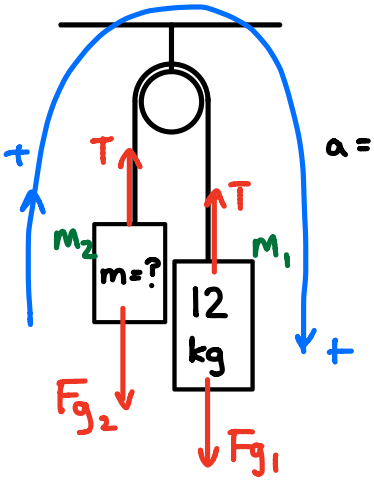
$$m_1 g - \mu F_N = Ma$$

$$m_1 g - \mu m_2 g = Ma$$

$$\mu = \frac{m_1 g - Ma}{m_2 g}$$

$$= \frac{(6.5)(9.8) - (12.0)(2.0)}{(5.5)(9.8)}$$

$$= \boxed{0.737}$$



$a = 1.5 \frac{m}{s^2}$ RIGHT

① METHOD 1: SYSTEM

$$F_{NET} = Ma$$

$$F_{g_1} - \cancel{T} + \cancel{T} - F_{g_2} = (m_1 + m_2)\,a$$

$$m_1 g - m_2 g = m_1 a + m_2 a$$

$$m_1 g - m_1 a = m_2 a + m_2 g$$

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

$$m_2 = \frac{m_1(g-a)}{a+g}$$

$$= \frac{12(9.8 - 1.5)}{1.5 + 9.8}$$

$$= \boxed{8.81 \text{ kg}}$$

② METHOD 2: ISOLATE MASSES

$$F_{NET} = m_1 a$$

$$F_{g_1} - T = m_1 a$$

$$m_1 g - T = m_1 a$$

$$T = m_1 g - m_1 a$$

$$= (12)(9.8) - (12)(1.5)$$

$$= 99.6 \text{ N}$$

$$F_{NET} = m_2 a$$

$$T - F_{g_2} = m_2 a$$

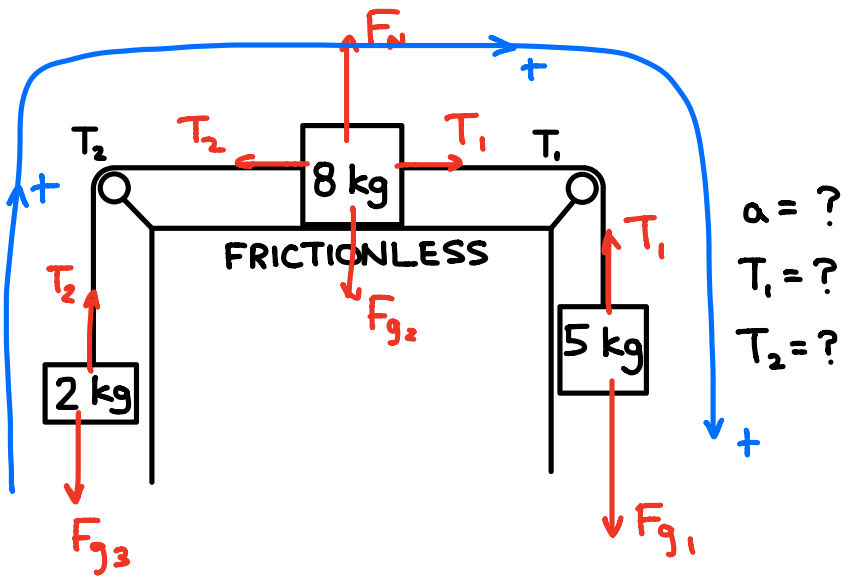
$$T - m_2 g = m_2 a$$

$$T = m_2 a + m_2 g$$

$$T = m_2(a + g)$$

$$m_2 = \frac{T}{a+g}$$

$$= \frac{99.6}{9.8 + 1.5} = \boxed{8.81 \text{ kg}}$$



$$F_{NET} = Ma$$

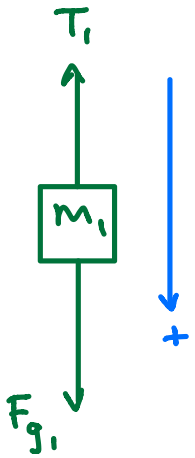
$$F_{g_1} - T_1 + T_1 - T_2 + T_2 - F_{g_3} = Ma$$

$$m_1 g - m_3 g = Ma$$

$$a = \frac{m_1 g - m_3 g}{M}$$

$$= \frac{(5)(9.8) - (2)(9.8)}{15}$$

$$= \boxed{1.96 \frac{m}{s^2} \text{ RIGHT}}$$



$$F_{NET} = m_1 a$$

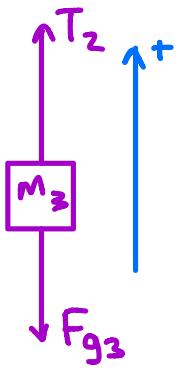
$$F_{g_1} - T_1 = m_1 a$$

$$m_1 g - T_1 = m_1 a$$

$$T_1 = m_1 g - m_1 a$$

$$= (5)(9.8) - (5.0)(1.96)$$

$$= \boxed{39.2 \text{ N}}$$



$$F_{NET} = m_3 a$$

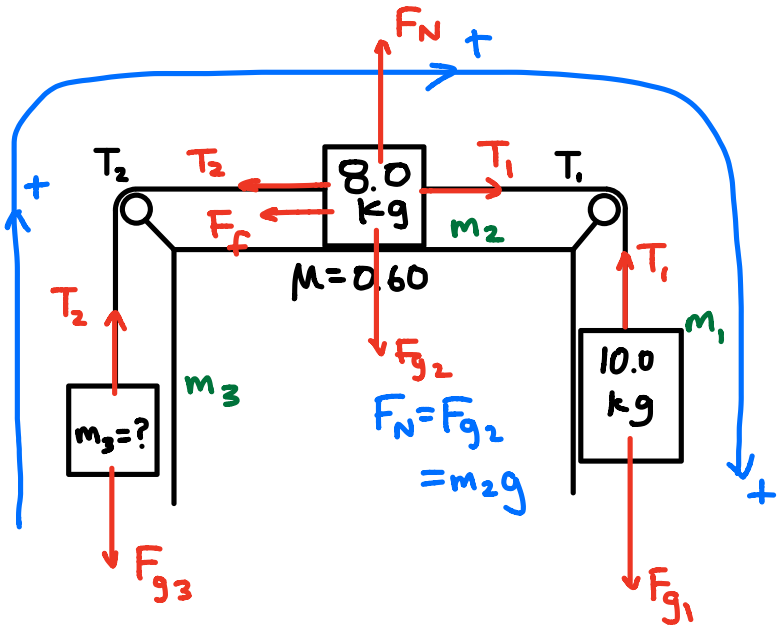
$$T_2 - F_{g3} = m_3 a$$

$$T_2 - m_3 g = m_3 a$$

$$T_2 = m_3 a + m_3 g$$

$$= (2)(1.96) + (2)(9.8)$$

$$= \boxed{23.5\ N}$$

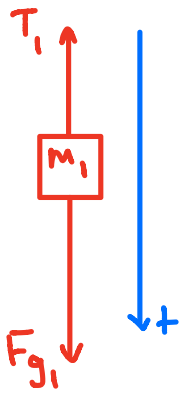


$T_1 = 92$ N

$a = ?$

$m_3 = ?$

$T_2 = ?$



$$F_{NET} = m_1 a$$

$$F_{g_1} - T_1 = m_1 a$$

$$m_1 g - T_1 = m_1 a$$

$$a = \frac{m_1 g - T}{m_1}$$

$$= \frac{(10.0)(9.8) - 92}{10.0}$$

$$= \boxed{0.60 \ \frac{m}{s^2} \text{ RIGHT}}$$

$$F_{NET} = Ma$$

$$F_{g_1} - \cancel{T_1} + \cancel{T_1} - F_f - \cancel{T_2} + \cancel{T_2} - F_{g_3} = (m_1 + m_2 + m_3)a$$

$$m_1 g - \mu F_N - m_3 g = m_1 a + m_2 a + m_3 a$$

$$m_1 g - \mu m_2 g - m_3 g = m_1 a + m_2 a + m_3 a$$

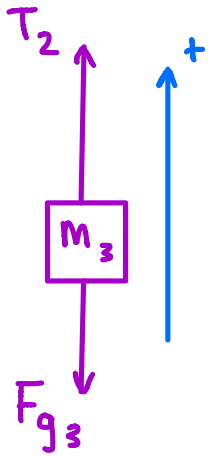
$$m_1 g - \mu m_2 g - m_1 a - m_2 a = m_3 a + m_3 g$$

$$m_1 g - \mu m_2 g - m_1 a - m_2 a = m_3 (a + g)$$

$$m_3 = \frac{m_1 g - \mu m_2 g - m_1 a - m_2 a}{a + g}$$

$$= \frac{(10.0)(9.8) - (0.60)(8.0)(9.8) - (10.0)(0.60) - (8.0)(0.60)}{0.60 + 9.8}$$

$$= \boxed{3.86 \text{ kg}}$$



$$F_{NET} = m_3 a$$

$$T_2 - F_{g_3} = m_3 a$$

$$T_2 - m_3 g = m_3 a$$

$$T_2 = m_3 a + m_3 g$$

$$= (3.86)(0.6) + (3.86)(9.8)$$

$$= \boxed{40.2 \text{ N}}$$