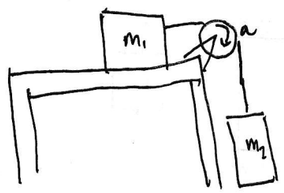
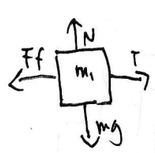
1.



$\mu = 0.2$

$m_1 = 5kg$

$m_2 = 10kg$

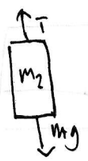


$F_{net} = ma$

$T_1 - Ff = m_1 a$

$Ff = 0.2N$

$T_1 = 0.2N + m_1 a$



$F_{net} = ma$

$m_2 g - T_2 = m_2 a$

$T_2 = m_2 g - m_2 a$

$T_1 = T_2$

$0.2N + m_1 a = m_2 g - m_2 a$

$m_1 a + m_2 a = m_2 g - 0.2N$

$$a(m_1 + m_2) = m_2 g - 0.2N$$

$$a = \frac{m_2 g - 0.2N}{m_1 + m_2}$$

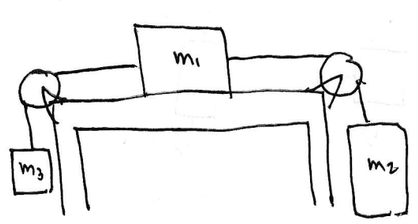
$$a = \frac{10kg\,(9.81 m/s^2) - 0.2(5kg)(9.81 m/s^2)}{5kg + 10kg}$$

$$= \frac{98.1N - 9.81N}{15kg}$$

$$= \frac{88.29\ kg\ m/s^2}{15kg}$$

$$\boxed{a = 5.886\ m/s^2}$$

2.



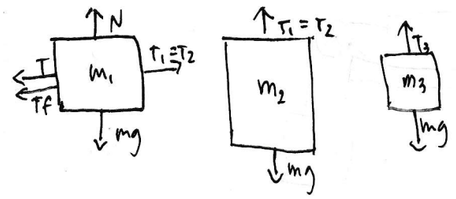
$\mu = 0.2$

$m_1 = 10kg$

$m_2 = 15kg$

$m_3 = 5kg$

$a = ?$



$F_{net} = ma$

$T_2 - T_3 - Ff = m_1 a$

$Ff = \mu N$

$F_{net} = ma$

$mg a - T_2 = m_2 a$

$T_2 = m_2 g - m_2 a$

$F_{net} = ma$

$T_3 - m_3 g = m_3 a$

$T_3 = m_3 a + m_3 g$

$T_2 - T_3 - Ff = m_1 a$

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

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

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

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

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

$$a = \frac{15kg(9.81 m/s^2) - 5kg(9.81 m/s^2) - (0.2)(98.1 kgm/s^2)}{10kg + 15kg + 5kg}$$

$$= \frac{147.15\ kg\ m/s^2 - 49.05\ kg\ m/s^2 - 19.62\ kg\ m/s^2}{30kg}$$

$$= \frac{78.48\ kg\ m/s^2}{30kg}$$

$$\boxed{a = 2.616\ m/s^2}$$

HZOLLAGA JR., DANILO F.