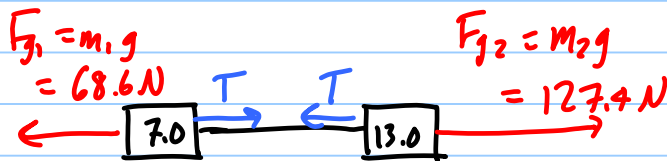
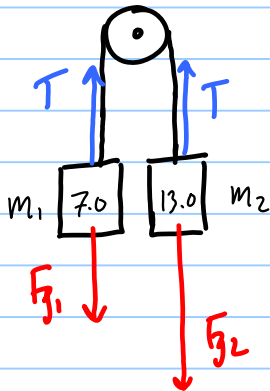


1.)



$$F_{\text{net}} = F_{g2} - F_{g1} = m_{\text{tot}} a$$

$$a = \frac{F_{g2} - F_{g1}}{m_{\text{tot}}} = \frac{(127.4 - 68.6) \text{ N}}{(7.0 + 13.0) \text{ kg}}$$

$$= \boxed{2.94 \text{ m/s}^2}$$

a.) $a_1 = 2.94 \text{ m/s}^2$ up

b.) $a_2 = 2.94 \text{ m/s}^2$ down

c.) m_1

$$F_{\text{net}} = T - F_{g1} = m_1 a \quad T = F_{g1} + m_1 a = 68.6 \text{ N} + (7.0 \text{ kg})(2.94 \text{ m/s}^2)$$

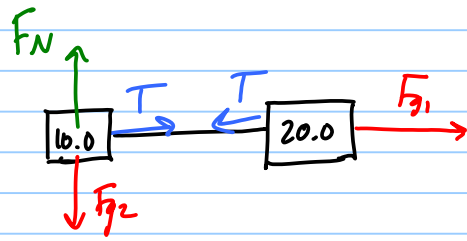
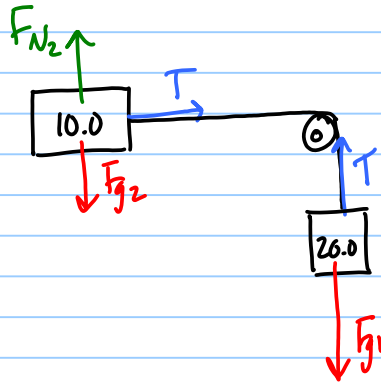
$$= \boxed{89 \text{ N}}$$

d.) m_2

$$F_{\text{net}} = F_{g2} - T = m_2 a \quad T = F_{g2} - m_2 a = 127.4 \text{ N} - (13.0 \text{ kg})(2.94 \text{ m/s}^2)$$

$$= \boxed{89 \text{ N}}$$

2.)



$$F_{g1} = m_1 g$$

$$= (20.0 \text{ kg})(9.80 \text{ m/s}^2)$$

$$= 196 \text{ N}$$

a) $F_{\text{net}} = F_{g1} = m_+ a$

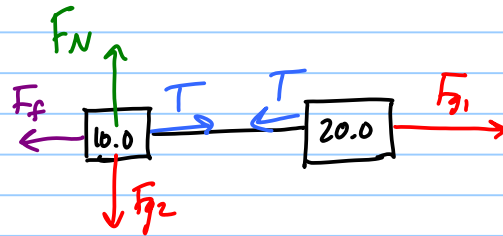
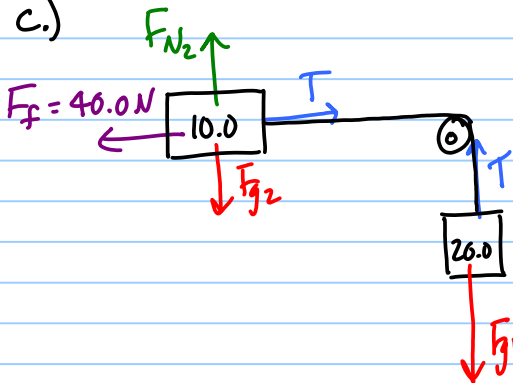
$$a = \frac{F_{g1}}{m_+} = \frac{196 \text{ N}}{(20.0 + 10.0) \text{ kg}} = \boxed{6.53 \text{ m/s}^2}$$

b.) m_2

$$F_{\text{net}} = T = m_2 a = (10.0 \text{ kg})(6.53 \text{ m/s}^2)$$

$$= \boxed{65.3 \text{ N}}$$

c.)



$$F_{\text{net}} = F_{g1} - F_f = m_+ a$$

$$a = \frac{F_{g1} - F_f}{m_+} = \frac{(196 - 40.0) \text{ N}}{(20.0 + 10.0) \text{ kg}} = \boxed{5.2 \text{ m/s}^2}$$

d.) m_2

$$F_{\text{net}} = T - F_f = m_2 a$$

$$T = m_2 a + F_f = (10.0 \text{ kg})(5.2 \text{ m/s}^2) + 40.0 \text{ N} = \boxed{92 \text{ N}}$$