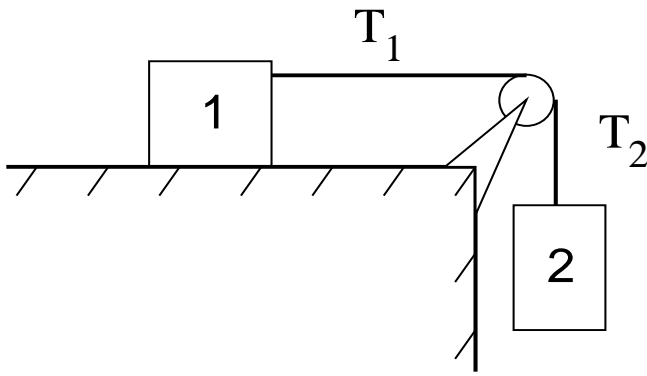


Ex : Case #3 :



Assume: Frictionless pulley,  
Massless rope,  
 $m_2 > m_1$

Find :  $a$ ,  $T$

1). Draw “free-body” diagrams to identify the forces.

$$T_1 = T_2 = T$$

$$a_1 = a_2 = a$$

2). Write  $\Sigma F$  components using Newton's second law.

$$T = m_1 a \quad m_2 g - T = m_2 a$$

○ Add equations to find  $a$  :

$$m_2 g = a(m_1 + m_2), \quad \text{or} \quad a = \frac{m_2}{m_1 + m_2} g$$

○ Now, find  $T$  :

$$T = \frac{m_1 m_2}{m_1 + m_2} g$$