Ex : Case #3 :  

![Diagram of two blocks connected by a pulley with forces labeled T1 and T2.]

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.

\[
T = m_1 a \\
m_2g - T = m_2a
\]

○ Add equations to find \( a \) :

\[
m_2g = a(m_1 + m_2), \quad \text{or} \quad a = \frac{m_2}{m_1 + m_2}g
\]

○ Now, find \( T \) :

\[
T = \frac{m_1m_2}{m_1 + m_2}g
\]