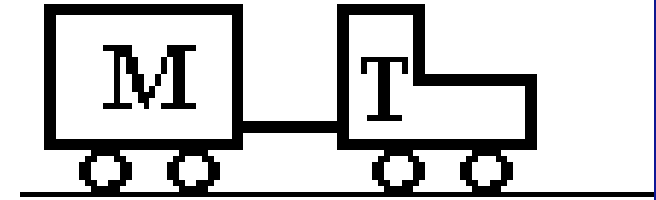
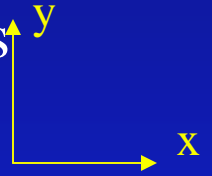




Example:



A tractor T ($m=300\text{Kg}$) is pulling a trailer M ($m=400\text{Kg}$). It starts from rest and pulls with constant force such that there is a positive acceleration of 1.5 m/s^2 . Calculate the horizontal thrust force on the tractor due to the ground.



X direction: Tractor

$$\Sigma F = ma$$

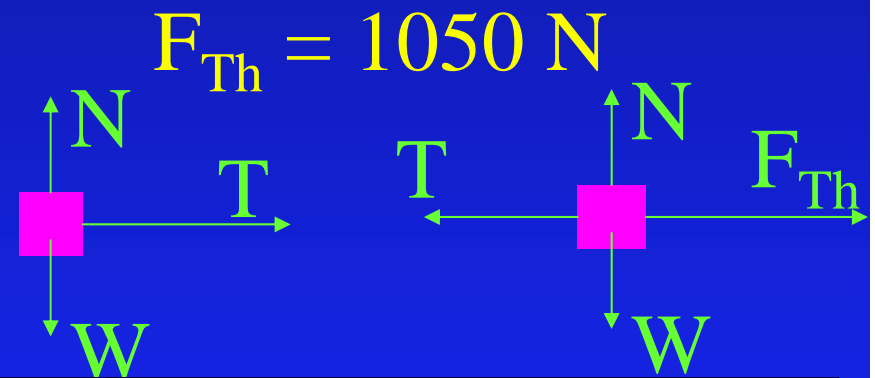
$$F_{Th} - T = m_{\text{tractor}} a$$

$$F_{Th} = T + m_{\text{tractor}} a$$

X direction: Trailer

$$\Sigma F = ma$$

$$T = m_{\text{trailer}} a$$



Combine:

$$F_{Th} = m_{\text{trailer}} a + m_{\text{tractor}} a$$

$$F_{Th} = (m_{\text{trailer}} + m_{\text{tractor}}) a$$