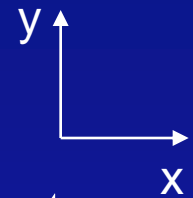


Newton's 3rd Example



A rope attached to box 1 is accelerating it to the right at a rate of 3 m/s^2 . Friction keeps block 2 on top of block 1 w/o slipping. What is the tension in the rope?

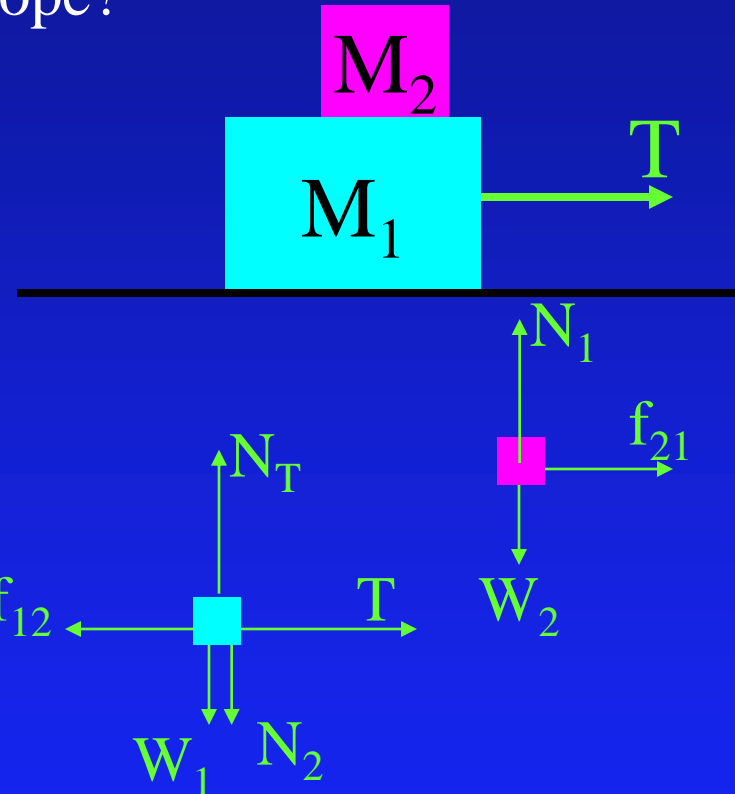
X-direction: $F = ma$

Block 2: $f_{21} = m_2 a_2$

Block 1: $T - f_{12} = m_1 a_1$

N3L says $|f_{12}| = |f_{21}|$

Combine: $T - m_2 a_2 = m_1 a_1$
 $T = m_1 a_1 + m_2 a_2$
 $= (m_1 + m_2) a$



- Same as if had one block $M = m_1 + m_2$! ! ! !