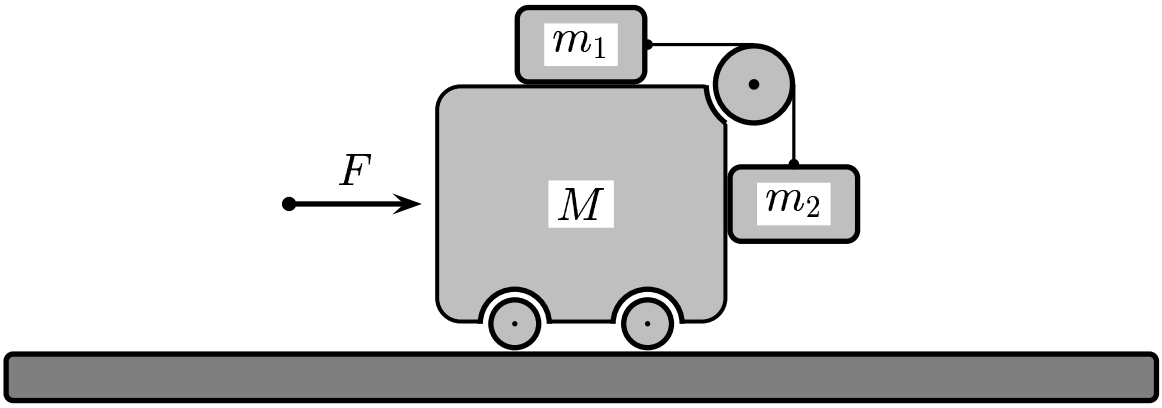
Consider the setup shown, where the wheels and the pulley are frictionless. The force F is adjusted such that m_1 is stationary with respect to the horizontal surface of the cart. The acceleration of the cart is a.



The Tension of the string is given by

A) $T = m_1\, a$
B) $T = (m_1 + m_2)\, a$
C) $T = (m_1 + m_2)\, g$
D) $T = (m_1 - m_2)\, g$

Applying Newton's second law to block m_1 in the horizontal direction yields

$$m_1 : \quad \sum F_x = T = m_1\, a\,.$$

Applying Newton's second law to block m_2 in the vertical direction yields

$$m_2 : \quad \sum F_y = T - m_2\, g = 0\,.$$

$T = m_2\, g$ is not given as a choice.

Answer **A**.