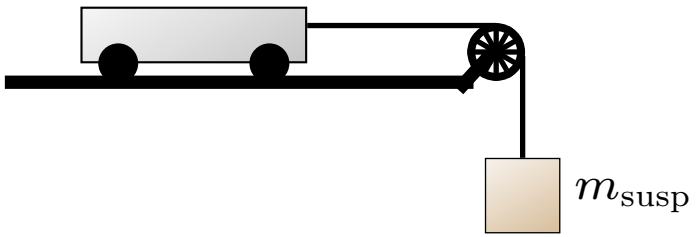
Question 1

A cart is connected to a suspended object. A hand gives the cart a brief, strong push to the left. After the cart leaves the hand it continues to move to the left for a while.

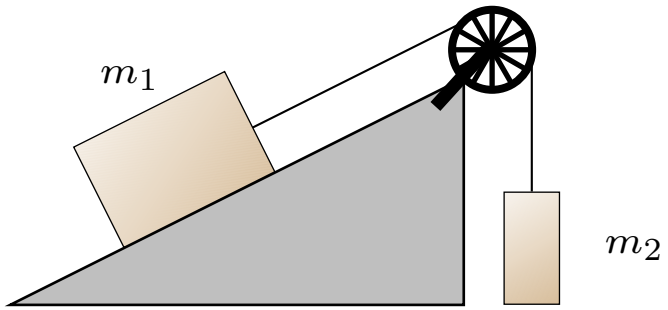


Which of the following is true about the tension in the string after the cart has left the hand and while it moves left?

1. $T = m_{\text{susp}}g$
2. $T < m_{\text{susp}}g$
3. $T > m_{\text{susp}}g$

Question 2

Two blocks are connected as illustrated. The surface is frictionless and the pulley is massless. Suppose that the acceleration of the block on the ramp was known to be a up the ramp and one wanted to obtain the tension, T, in the rope.

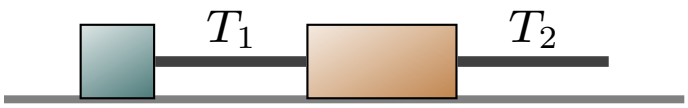


Using tilted axes with x along the ramp, which of the following would be correct for the block on the ramp?

1. $T > m_1 a$
2. $T < m_1 a$
3. $T = m_1 a$

Question 3

Two blocks on a frictionless horizontal surface are connected by a massless rope. The larger block has a greater mass than the smaller block. The rightmost block is pulled by another massless rope. The blocks could either move left or right; the connecting rope is taut.

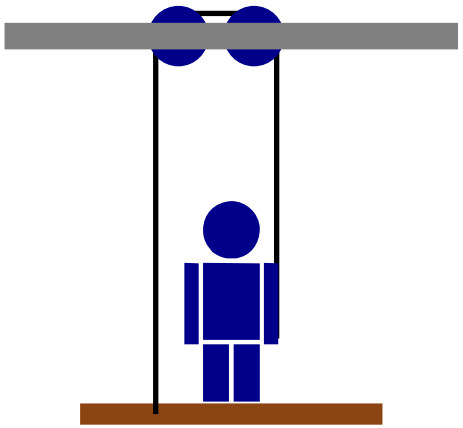


Which of the following is true while the blocks move to the right?

1. $T_1 = T_2$ regardless of direction.
2. $T_1 > T_2$ regardless of direction.
3. $T_1 < T_2$ regardless of direction.
4. $T_1 > T_2$ if moving left; $T_1 < T_2$ if moving right.
5. $T_1 < T_2$ if moving left; $T_1 > T_2$ if moving right.

Question 4

A man, with mass m_{M} stands on a platform with mass m_{P} and holds a massless rope that runs through two pulleys that are fixed at the ceiling and returns to a point where it is tied to the platform. The man is at rest.



Which of the following is true regarding the tension, T, in the rope?

1. $T = \dfrac{(m_{\mathrm{M}} + m_{\mathrm{P}})}{2} g$
2. $T = (m_{\mathrm{M}} + m_{\mathrm{P}}) g$
3. $T = \dfrac{m_{\mathrm{M}}}{2} g$
4. $T = m_{\mathrm{M}} g$
5. $T = g$