

Mathematics Questions by Topics

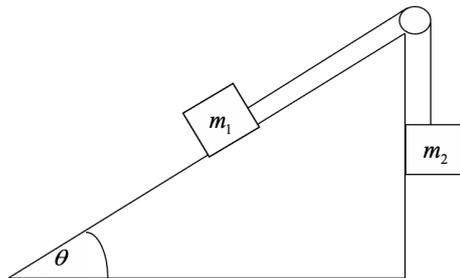
Motion and Force

Question 13

Source: K17SM2Q13

Question 13

A particle of mass m_1 kg is on a smooth plane, inclined at an angle of θ to the horizontal. It is connected by a light string which passes around a smooth pulley to another mass of m_2 kg hanging vertically, as shown in the diagram.



Which of the following is **false**?

- A. The tension in the string is equal to $\frac{m_1 m_2 (1 + \sin(\theta))}{m_1 + m_2}$ kg-wt.
- B. If $m_2 > m_1 \sin(\theta)$ the mass m_2 moves downwards with an acceleration $\frac{g(m_2 - m_1 \sin(\theta))}{m_1 + m_2}$ ms^{-2} .
- C. If $m_2 = m_1 \sin(\theta)$ the masses remain at rest.
- D. If $m_2 = 2m_1$ and $\theta = 30^\circ$ the tension in the string is $\frac{g}{2}$ newtons.
- E. If $m_2 = 2m_1$ and $\theta = 30^\circ$ the mass m_2 moves downwards with an acceleration $\frac{g}{2}$ ms^{-2} .