

Incline Planes #2

For these questions, assume there is a system set up shown in class with a pulley hanging over the end of the incline and a second mass (m_2) is hanging from a string attached to the first mass (m_1)

- 1) The incline is at 30° , and mass #1 is 15kg
 - a. Find the mass needed for m_2 so that there is no acceleration
- 2) The incline is at 80° , and mass #1 is 673kg
 - a. Find the mass needed for m_2 so that there is no acceleration
- 3) The incline is at 10° , and mass #1 is 36kg. m_2 has a mass of 5kg. Find the acceleration of the system
- 4) The incline is at 16.5° , and mass #1 is 18g. m_2 has a mass of 3.25g.
 - a. Find the acceleration of the system.
 - b. What mass for #1 would be needed to have zero acceleration
- 5) The incline is at 64° , and mass #1 is 3kg. m_2 has a mass of 3kg.
 - a. Find the acceleration of the system
 - b. What mass for #2 would be needed to have zero acceleration
- 6) The incline is at 37° , and mass #1 is 2.36kg.
 - a. Find the mass needed for m_2 so that there is no acceleration
 - b. Find the mass needed for m_2 so that there is an acceleration of 1.0m/s^2 down the incline
 - c. Find the mass needed for m_2 so that there is an acceleration of 1.0m/s^2 up the incline
- 7) The incline is at 50° , and mass #1 is 635kg.
 - a. Find the mass needed for m_2 so that there is no acceleration
 - b. Find the mass needed for m_2 so that there is an acceleration of 3.5m/s^2 down the incline
 - c. Find the mass needed for m_2 so that there is an acceleration of 4.0m/s^2 up the incline
- 8) Describe if it is possible or not for a mass of 5kg at an incline of 30° to have an acceleration greater than 4.9m/s^2 down the ramp, if there is a second mass over the edge. (Use math if possible to support your answer)
- 9) Describe if it is possible or not for a mass of 5kg at an incline of 30° to have an acceleration greater than 4.9m/s^2 up the ramp, if there is a second mass over the edge. (Use math if possible to support your answer)