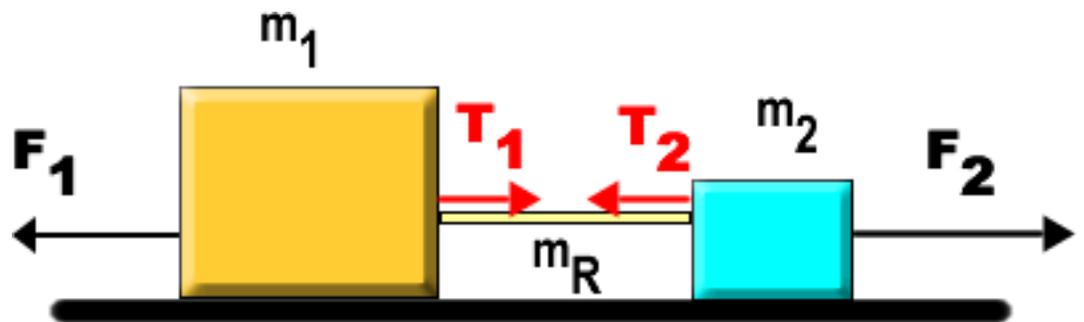


PHY138 - Mechanics - Written Homework Assignment #4

This assignment is due by **Tuesday, October 12** by **5PM** in the Drop Box for your tutorial group. Note the unusual due date: the University is closed on Monday October 11 for Thanksgiving.

Supplementary Problem

In class we extended the text's Example 4.5, finally ending up analysing the problem shown to the right with a massless rope. We assumed that F_1 is less than F_2 . We also assumed that friction was negligible.



Now assume that the rope does have a mass m_R not equal to zero.

1. What is the acceleration? Choose a coordinate system and include the direction of the acceleration in your answer.
2. What is the force exerted on mass 1 by the rope, T_1 ?
3. What is the force exerted on mass 2 by the rope, T_2 ?
4. Are your answers to 2 and 3 equal in magnitude? Why?
5. Now, assume that:
 - o $m_1 = 12$ kg
 - o $m_2 = 5$ kg
 - o $F_1 = 5$ N
 - o $F_2 = 15$ N
 - o $m_R = 2$ kg

Repeat your answers to parts 1, 2 and 3 using these values.

From the Textbook

Chapter 6: Problems 26, 36