

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Department of Physics
8.01

Problem Solving Session 1: Applications of Newton's Second Law

Section

Table

Group Members

Hand in one set of solutions per group.

Problem 1 Block 1 moves on the surface of a horizontal table. The static and kinetic coefficients of friction between the block and table are equal and have the value μ . A massless string of fixed length is attached at one end to block 1, extends horizontally to a pulley, drops vertically to a second pulley, and finally rises vertically to the ceiling where the second end is attached. The two pulleys are massless and have no friction. Block 2 is suspended a fixed distance below the movable pulley. The system is released from rest. Find an expression for the downward acceleration of block 2 in terms of some or all of the parameters m_1 , m_2 , μ and the acceleration of gravity g . Explain any situation in which your expression may not represent the true motion of the system.



