NAME (Print)_____

Borough of Manhattan Community College Course ***Physics 215***

Instructor: ***Dr. Hulan E. Jack Jr.*** Date **October 10, 2002**

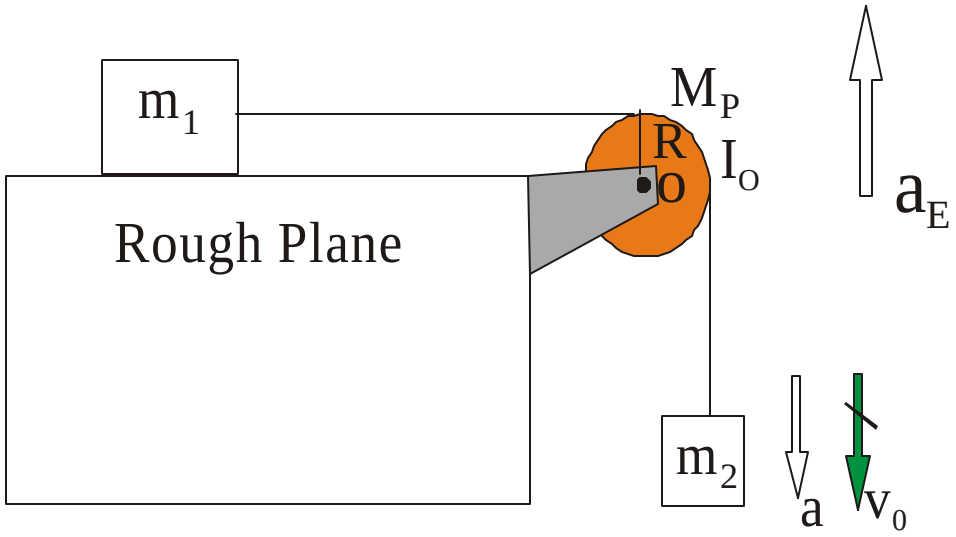
Quiz BC 06

The picture shows the present (initial) situation, **<u>initial state</u>**, of this system.

1. m_1, with mass of 0.2kg., slides with an initial velocity v_0 over the rough horizontal plane. The coefficients of friction are μ_s= 0.4 and μ_k = 0.3, respectively.

2. m_2 , with mass of 0.5 kg., accelerates as shown

3. The two are connected by a massless, inextensible (won't stretch) string .



4. The string goes over the rim of the pulley of mass M_P = 0. kg., radius R = 0.1 m, and moment of inertia about its center O of $I_O = 8x10^{-4}$ kg m^2. **The pulley rotates with the moving string without slipping.**

5. The whole system is on the floor of an elevator that has an acceleration a_E .

We will want to ultimately want to find the velocity v_f after m_2 has fallen a height H by general form **Conservation of Energy**. That is to get v(H) using general form**Conservation of Energy**.

a. Sketch the **final state** of the **system after m_2 has fallen a height H= 0.5 m** below its initial state, include the final velocity v_f . Be sure to **include <u>all</u> needed** initial and final motional items. You can do it on the above picture. ***60 pts***

b. Obtain the relation between the angle, θ, that the pulley turns and the height H and the change in angular velocity in terms of H . That is, get θ(H) and $\Delta\omega$(H). ***20 pts each***

What's your learning style?

Are you auditory, learn by hearing? Then talk it out loud.

Are you visual, learn by seeing? Then draw pictures, doodles, sketches.

Are you kinesthetic, learn by movement? Then act it out. Pretend