

Physics 141
Quiz 2
Tuesday, Oct. 28, 2008

Name:

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Problem 1 (of 2-see other side!) (Recommended time \leq 10 minutes)

A block of mass m rests on another block, of mass M , which rests on a frictionless table. The coefficient of friction between the two blocks is μ . Solve for the maximum horizontal force that can be applied to the the upper block without the blocks slipping relative to each other.

Problem 2 (of 2) (Recommended time ≤ 10 minutes) Consider a block of mass m sitting on the (frictionless) top surface of a wedge of mass M , which in turn is free to move (again without friction) on a table.

0.) Draw a good (neat and well-labelled) picture.

1.) Set up the equations of motion for the 2 objects.

2.) Set up the equation(s) of constraint.

3.) Solve for the motion of the block and wedge assuming they are rest at $t = 0$ (do not worry about what happens when the block finally hits the table).

4.) Show that your solution makes sense in the limit $M \rightarrow \infty$.