

Name: \_\_\_\_\_

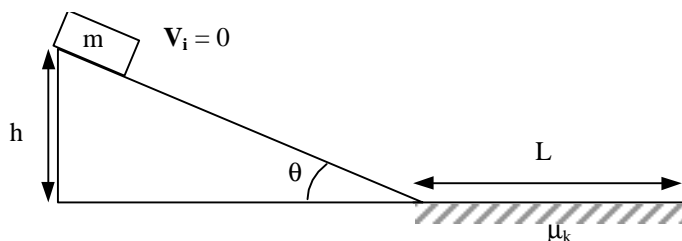
Physics 161  
6/27/2001

Quiz #4

Summer I '01  
Jeff Simpson

**Show ALL your work.** *If you need more workspace, use the back of the same page and write a note indicating this.*

1. A block of mass  $m = 4.0$  kg starts from rest on top of a *frictionless* ramp of height  $h = 1.25$  m. The block travels down the incline and across a horizontal surface with a coefficient of friction  $\mu_k = 0.375$ .



(a) Draw a free body diagram (FBD) for the block (i) on the ramp and (ii) on the horizontal surface.

(b) Calculate the work done for **each** of the forces on your two FBDs in parts (i) and (ii) above. What is the net work for (i) and (ii)?

(c) Using the Work-Kinetic Energy Theorem, find the speed of the block at the bottom of the ramp?

(d) Again using the Work-Kinetic Energy Theorem, find the distance  $L$  from the bottom of the ramp the block travels before coming to rest.