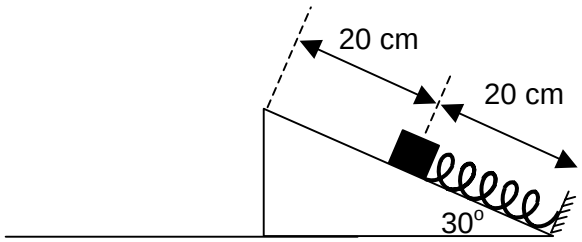
Physics 131 Name_____

Recitation Instructor (circle one): Moe Larry Curly Groucho Chico Harpo

Class time (circle one): 10:30 11:30

**QUIZ #6**

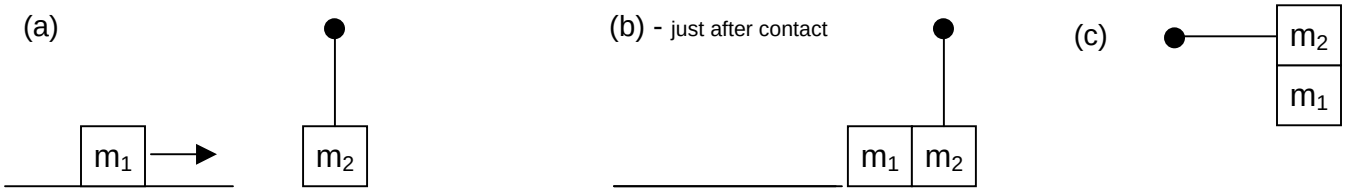
**(1)** A 2.0 kg block on a $30^o$ inclined plane is pushed against a spring (spring constant 8000 N/m) until it is compressed 6.0 cm and released. The block flies off the inclined plane and lands on the ground somewhere. The figure shows the situation just before the block was released.




**(a)** What was the speed of the block just before it hit the ground?

**(b)** Suppose the inclined plane has $\mu_k = 0.90$. Now what is the speed of the block just before it hits the ground?

**(2)** Mass $m_1$ rapidly slides across a frictionless surface and sticks to mass $m_2$ which is at rest and connected to rod that is free to pivot. The rod swings out coming to a rest at an angle of $90^0$ from where it started. Three instants in time are shown and labeled a-c.




**(i)** For system = ($m_1$ and $m_2$), circle all correct relations. "$p_a$" means the system momentum at time (a).

$\vec{p}_a = \vec{p}_b$ $\vec{p}_a = \vec{p}_c$ $\vec{p}_b = \vec{p}_c$

**(ii)** For system = ($m_1$, $m_2$ and the earth), circle all correct relations. "$E_{ma}$" is the mech. energy at time (a).

$E_{ma} = E_{mb}$ $E_{ma} = E_{mc}$ $E_{mb} = E_{mc}$