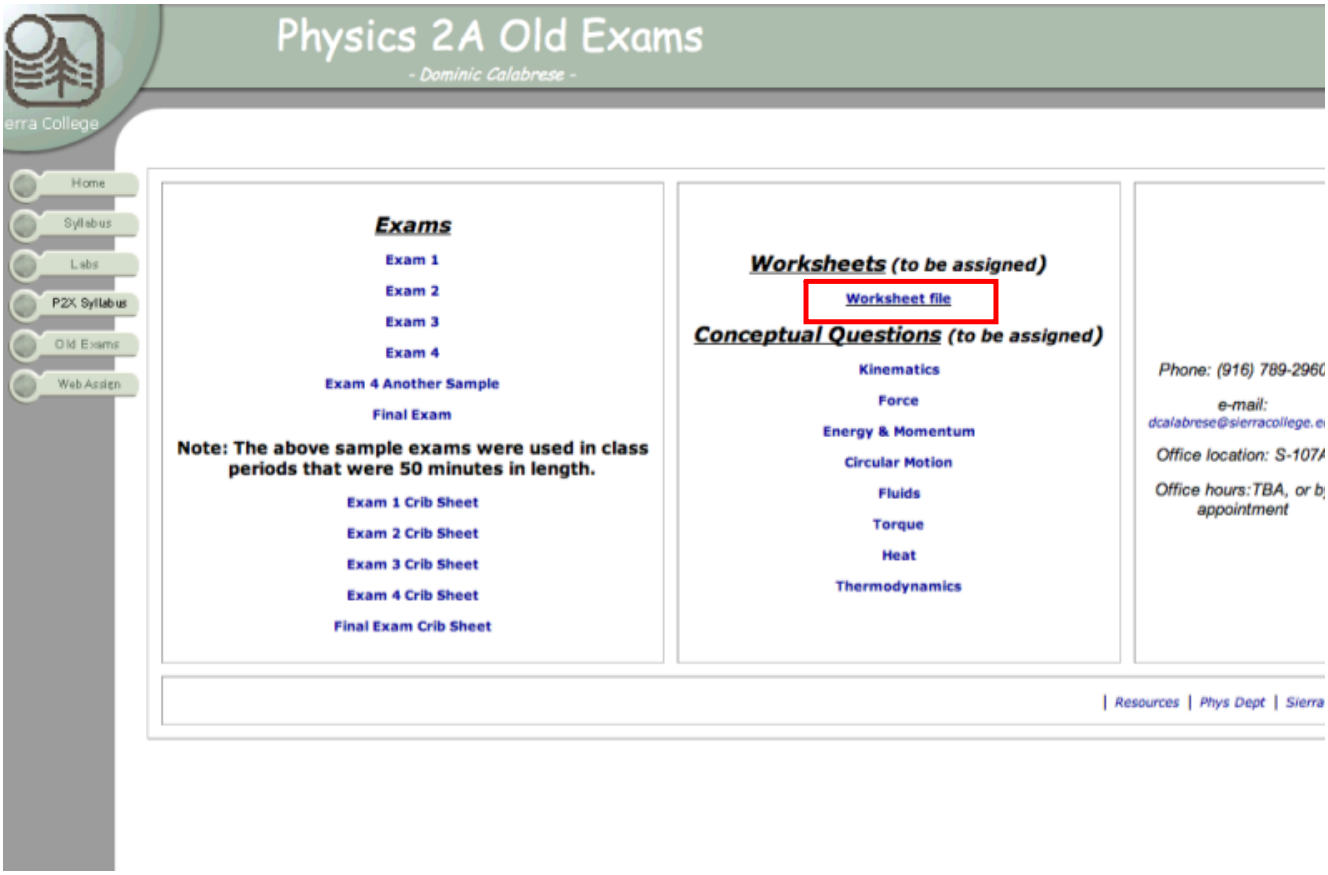
Reminders 10-10-07:
-Next Homework Due 10/14!!!
-Momentum Worksheet due Wed 10/17.
-Quiz Wed. 10/17, Energy & Momentum.
-EXAM 2 10/22
-Chapter 4, 5, & 6 Practice Assignment.

Objectives:
-Potential Energy
-Conservation of Energy
-Momentum

$W_{net} = \Delta KE$

$\Delta KE + \Delta PE = 0$


Physics 2A Old Exams
- Dominic Calabrese -
erra College
Home
Syllabus
Labs
P2X Syllabus
Old Exams
Web Assign
Exams
Exam 1
Exam 2
Exam 3
Exam 4
Exam 4 Another Sample
Final Exam
Note: The above sample exams were used in class periods that were 50 minutes in length.
Exam 1 Crib Sheet
Exam 2 Crib Sheet
Exam 3 Crib Sheet
Exam 4 Crib Sheet
Final Exam Crib Sheet
Worksheets (to be assigned)
Worksheet file
Conceptual Questions (to be assigned)
Kinematics
Force
Energy & Momentum
Circular Motion
Fluids
Torque
Heat
Thermodynamics
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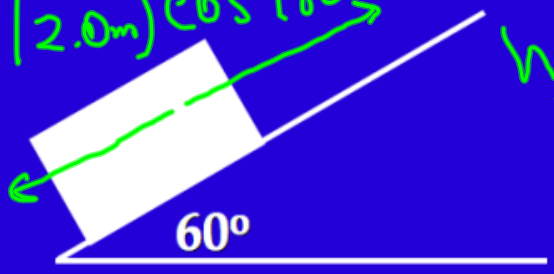
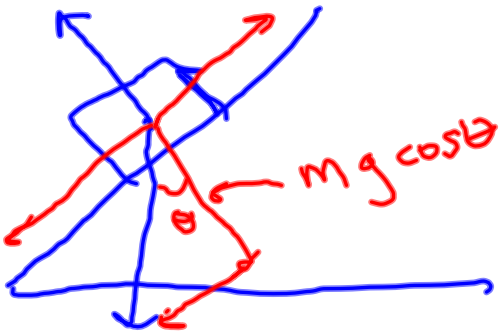
Office hours:TBA, or b
appointment
| Resources | Phys Dept | Sierra

- A 2.0 kg block slides 2.0 m up a hill before coming to a stop (μ_k=0.3). Consider work done by friction after traveling 2.0m up the hill and after traveling 2.0m down the hill.

$W_f = |\mu_k N|(2.0m)\cos 180$



$W_f = \mu N 2.0_m$



$N - mg\cos\theta = 0$

$N = mg\cos\theta$

$W_{up} = -\mu_k mg\cos\theta(2.0m)$

$= -(0.3)(2.0kg)(9.80)(\cos 60)(2.0)$

$= -5.9J$

Oct 6-3:31 PM

- **Two railroad cars, each of mass 6500kg traveling at 95km/hr, collide head-on and come to rest. How much energy is lost? where does it go? Hint:You must consider both cars.**

$$W_{nc} = \Delta KE + \Delta PE$$

$$= \Delta KE + 0$$

$$W_{nc} = \Delta KE = \frac{1}{2} m_1 (v_{1f}^2 - v_{1i}^2) + \frac{1}{2} m_2 (v_{2f}^2 - v_{2i}^2)$$

$$W_{nc} = -\frac{1}{2} m_1 v_{1i}^2 - \frac{1}{2} m_2 v_{2i}^2$$

if $v_{1i} = v_{2i}$

$$W_{nc} = -\frac{1}{2} (m_1 + m_2) v_{1i}^2$$

if they same mass $m_1 = m_2$

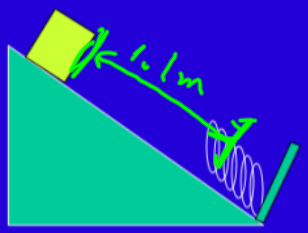
$$W_{nc} = -\frac{1}{2} (2m_1) v_{1i}^2$$

$$= -\frac{1}{2} (13{,}000\,kg)\left(95 \frac{Km}{hr} \cdot \frac{1000 \frac{m}{Km}}{3600 \frac{s}{hr}}\right)^2$$

$$= -4.5 \times 10^6\,J$$

Oct 6-3:32 PM

A 1 kg block slides down an incline (30°) a distance of 1 m where it slams into a spring (k = 100 N/m). If $\mu_k = 0.2$, what is the speed of the mass after the spring is compressed by 0.1 m?



$$W_{nc} = \Delta PE + \Delta KE$$

$$\Delta GPE = -mg(1.1\sin 30)$$

$$\Delta EPE = \frac{1}{2}k(x_f^2 - x_i^2) = \frac{1}{2}k(.1)^2$$

$$W_{nc} = -\mu_k mg\cos\theta(1.1)$$

$$W_{nc} = \Delta GPE + \Delta EPE + \Delta KE$$

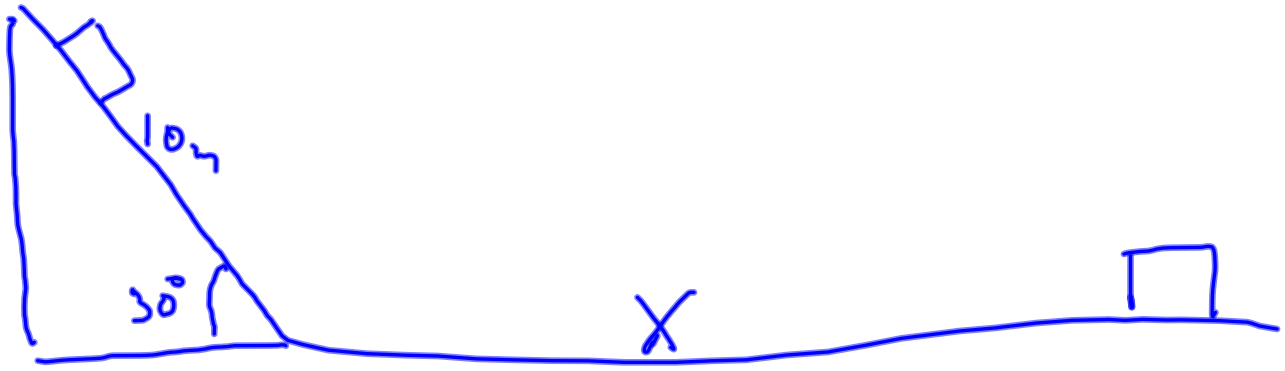
$$-\mu_k mg\cos 30(1.1) = -mg(1.1\sin\theta) + \frac{1}{2}k(.1)^2 + \tfrac{1}{2}mv_f^2$$

$$\mu mg\cos 30(1.1) + mg(1.1\sin 30) - \frac{1}{2}k(.1)^2 = \frac{1}{2}mv_f^2$$

$$v_f = \sqrt{\frac{2\left[\mu mg\cos 30(1.1) + mg(1.1\sin 30) - \frac{1}{2}k(.1)^2\right]}{m}}$$

$$v_f = 2.46 \text{ m/s}$$

Oct 6-3:32 PM



$$W_{nc} = \Delta PE$$

$$W_{nc} = \mu mg\cos 30(10) + \mu mgX$$

$$\Delta PE = -mg\sin 30(10)$$