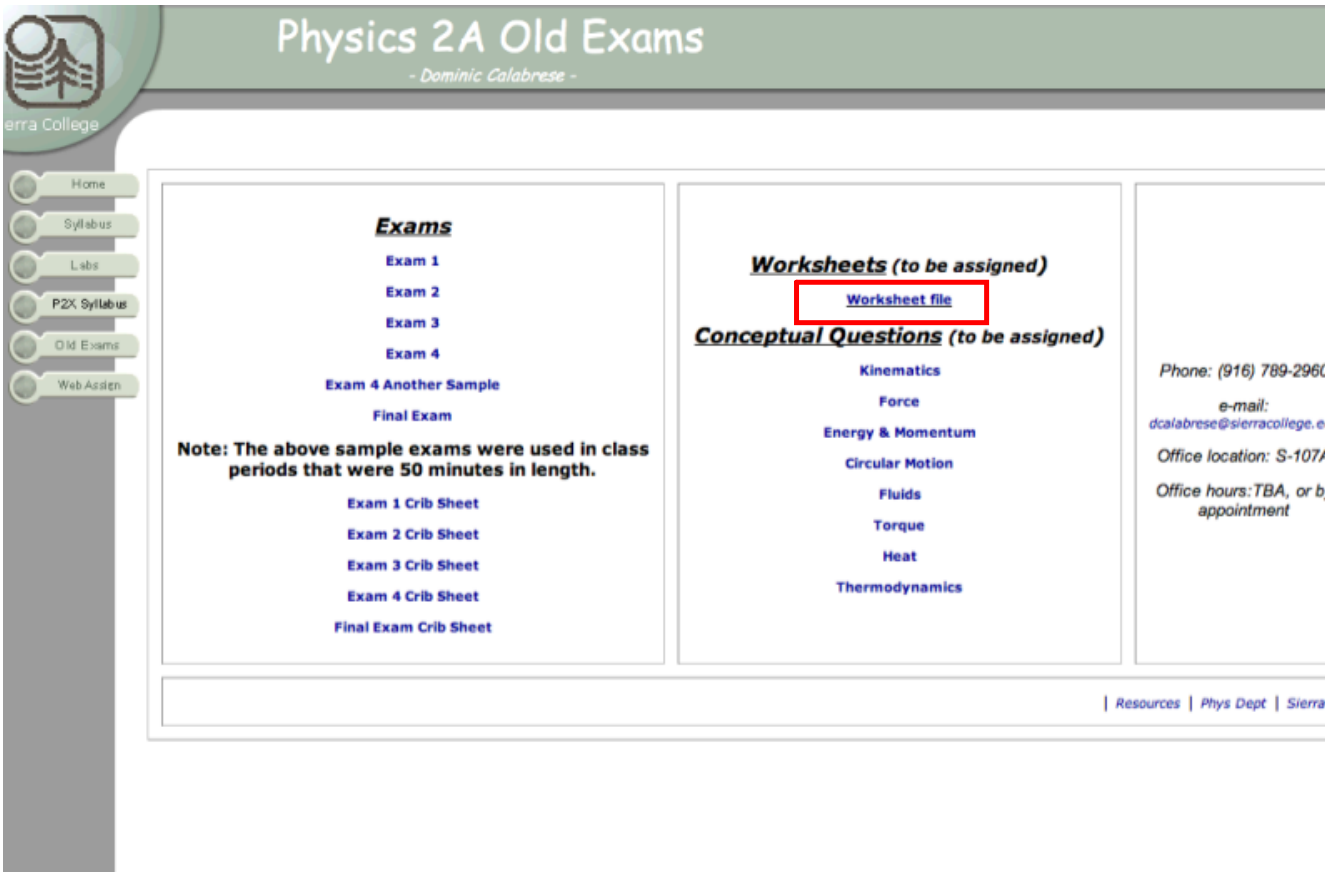
Reminders 10-03-07:
-Next Homework Due 10/4!!!
-Force Conceptual Questions Due Wed. 10/3.
-Work Worksheet due Wed 10/10.
-Conceptual Quiz Wed. 10/10, Work & Energy.
-Late Lab Policy; Dry Labs

Objectives:
-Go over Monday's Quiz
-Work and Energy

Aug 26-10:24 PM

$$a = \frac{F}{M_T} = \frac{F}{50M}$$

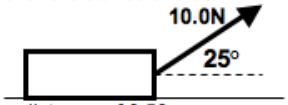
$$F = Ma = M\frac{F}{50M} = \frac{F}{50}$$


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
Phone: (916) 789-296
e-mail:
dcalabrese@sierracollege.e
Office location: S-107
Office hours:TBA, or b
appointment
| Resources | Phys Dept | Sierra

Work Worksheet

Turn this worksheet in at the beginning of the next lecture.

1. You apply a 10.0N force on a 1.0 kg book as shown
   a. Using the definition of work, calculate the work done by the 10.0N force over a distance of 0.50m.



   b. Using the definition of work, calculate the work done by the gravity over a distance of 0.50m.

   c. Using the definition of work, calculate the work done by the normal force over a distance of 0.50m.

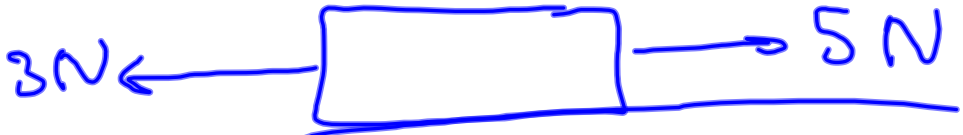
2. Suppose you lift up a 2.0kg book at a constant speed through a distance of 0.75m.
   a. What is the work done by gravity?

   b. What is the work that you do in lifting the book?

3. A string is tied to a 0.50 rock and whirled in a horizontal circular path. If the tension in the string is 40.0N, what is the work done by the string (remember, use the definition of work)?

4. A 1.0kg block is given a push so that it slides up a frictionless hill. The incline of the hill is 15°.
   a. Using the definition of work, what is the work done by gravity after it slides 0.50m up the hill? What does this value imply about its change in speed?

   b. Suppose it heads down the hill. Using the definition of work, what is the work done by gravity after it slides 0.25m down the hill? What does this value imply about its change in speed?



$F_{net} = 2N$

$W_{net} = (2N)(3m) = 6Nm$

$W_{5N} = (5N)(3m) = 15Nm$

$W_{3N} = -(3N)(3m) = -9Nm$

$6Nm$

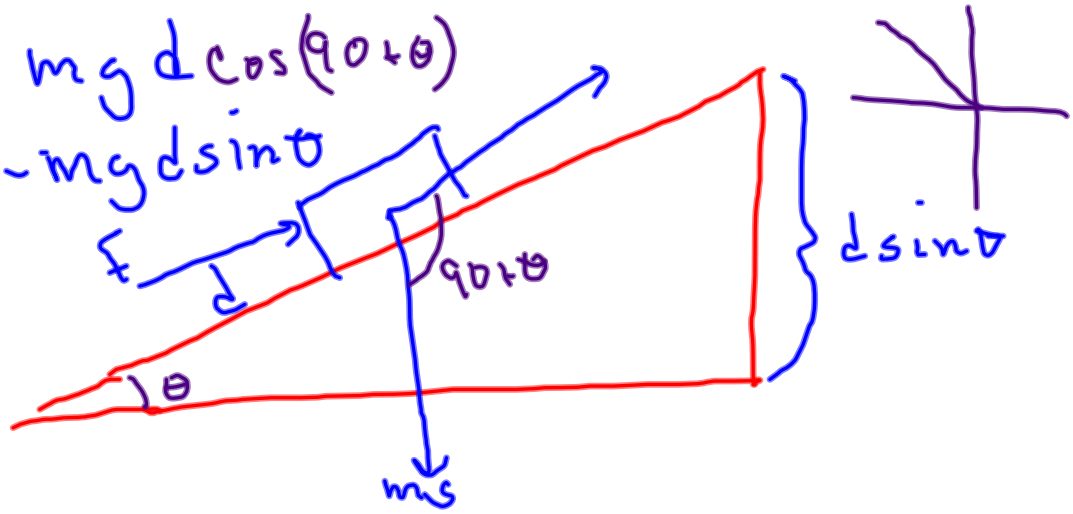
$W = |\vec{F}||\Delta\vec{x}|\cos\theta$

Your team of furniture movers wishes to load a truck using a ramp from the ground to the back entrance of the truck. A worker claims that less work would be required to load the truck if the length of the ramp were increased since it reduces the angle it makes with the horizontal. The ramp helps because

A. the work is the same but the force decreases.
B. the work increases but the force stays the same.
C. the work decreases but the force increases.
D. the work is the same but the force increases.
E. the work decreases and the force decreases .

$W = mgd\cos(90+\theta)$

$= -mgd\sin\theta$



$W_{ext} = -W_g$

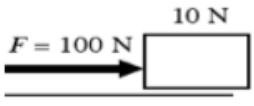
$= mgd\sin\theta = F_{app}\, d$

Mechanical Advantage $= \frac{F_{out}}{F_{in}}$

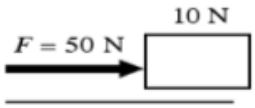
- Suppose a horse pulls a cart with a force of 400 N. What is the work done on the cart after it has traveled 11 m in 5 seconds.

Various similar boxes are being pushed for 10 m across a floor by a horizontal force as shown below. The weights of the boxes and the applied horizontal force for each case are given in the indicated figures. The frictional force is 20% of the weight of the box (g = 10 N/kg).

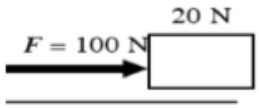
Rank the change in kinetic energy for each box from the greatest change in kinetic energy to the least change in kinetic energy. All boxes have an initial velocity of +10 m/s (+ direction is to the right and - to the left, with –4 < -2).



A

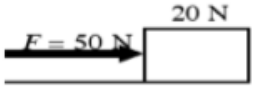


B

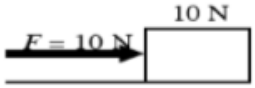


C

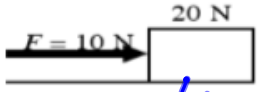
(100 - 2) = 98N (50 - 2) = 48N; (100N - 4) = 96N



D



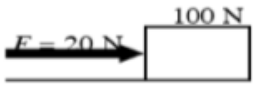
E 8N



F 6N

(50N - 4) = 46N

G 0N



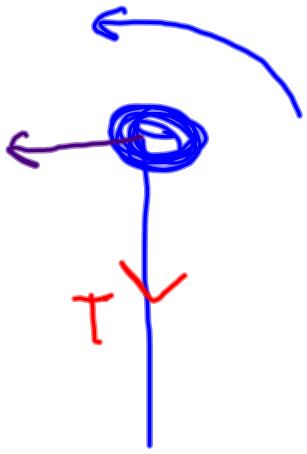
H 0

$W_{net} = \frac{1}{2} m(v_f^2 - v_i^2)$

$F_{net} d = \Delta K.E.$

Greatest 1 A 2 C 3 B 4 D 5 E 6 F 7 G=H 8 _____ Least

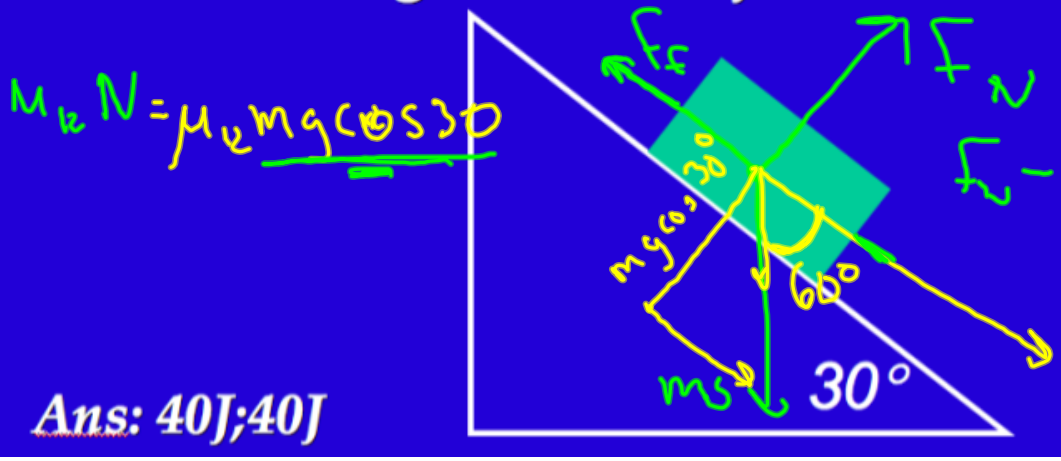
Whirl Rock in horizontal circle at constant speed



$W = |F||\Delta x|\cos\theta$

Example

- A 5.0 kg block slides 2.5 m down a wedge (μ=0.2)? What is the work done by the net force on the object? What is the change in the object's KE?



Ans: 40J;40J

$\mu_k N = \mu_k mg\cos 30$

$F_N - mg\cos 30 = 0$

Need Work done by mg & f_f.

$\rightarrow W_{mg} + W_f = \Delta KE$

$(5.0kg)\left(9.80\frac{m}{s^2}\right)(2.5m)\cos 60 +$

$(0.2)(5.0)(9.80)(2.5)\cos 30 \cos 180 = \Delta KE$

$40J = \Delta KE$