

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Physics Department

Physics 8.01T

Fall Term 2004

Experiment 06: Work, Energy, Harmonic Oscillator

Section and Group: _____

Participants: _____

Each group need turn in only one report. **Make sure you keep a record of data you need for problem set 07.**

Enter the positions measured by your group into this table.

Quantity:	x_0 (m)	h_1 (m)	h_2 (m)	$U(h_1)$ (mJ)	$U(h_2)$ (mJ)	F (mN)
Your value:						

Use these numbers along with $M = 0.75$ kg, $\theta = 1.97^\circ$ and $g = 9.805$ m/s² to calculate $U(h_1)$, $U(h_2)$ and how much non-conservative work was done by friction between the turning points h_1 and h_2 .

If the friction force is constant, what is its magnitude?

What is the coefficient of rolling friction μ_k between the cart and the track?

What period T did you measure for the spring harmonic oscillator?

Use it to calculate the spring constant k and compare the answer to the result you got from a linear fit to the force-position graph.