sics
. No. 20

Name.....
Date.....

Potential Energy

. Problem: How may we determine the amount of potential energy a rubber ball loses in making one bounce?

I. Materials: meter stick, rubber ball

II. Procedure:

1. Drop a rubber ball from heights of 200 cm, 180 cm, 160 cm, 140cm 120 cm, 100 cm, 80 cm, 60 cm. In each case, measure the height to which the ball rises after hitting the floor.
2. In each case obtain the ratio of the height h_2 to which the ball returns with the height h_1 from which it was dropped.

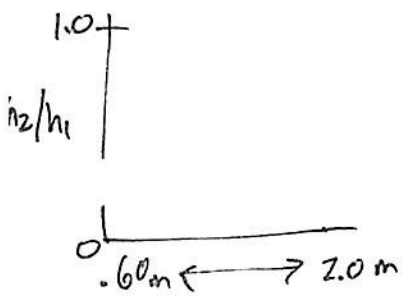
   The ratio h_2/h_1 is equal to mgh_2/mgh_1 and is therefore the fraction of the original potential energy possessed by the ball which it regains after one bounce.

V. Calculations: Make a graph showing how this fraction varies with the distance fallen by the ball. What conclusions can you draw from your graph about the part of its energy the ball loses after a bounce?

Data Table

h_1 (cm)	h_2 (avg) (cm)	trial #1	trial #2	trial #3	trial #4	h_2/h_1
200						
180						
160						
140						
120						
100						
80						
60						

Graph



A 3 kg mass is dropped from a height of 0.75 m and strikes a vertically placed spring. The elastic constant of the spring is 2000 nt/m. How far will the spring be compressed ?

A motor is rated to delivers 10kw. At what speed in m/sec can this motor raise a mass of 27,500 kg?

A meteroite weighing 1860 nt strikes the earth with a velocity of 45.2 m/sec. What is its kinetic energy and how much heat will be given off during the collision?