INTERNAIONAL BACCAULAUREATE

PHYSICS INTERNAL ASSESSMENT

The fractional loss of kinetic energy on the first bounce of a ball

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INTRODUCTION

This experiment involved investigating the fractional loss of kinetic energy on the first bounce of a ball. When a ball is bounced against a floor or wall, it rebounds off at a speed relative to the speed at which it was thrown or dropped. The ball possesses different kinds of energy including potential energy and kinetic energy. Potential energy is measured based on the height of the ball above the ground and kinetic energy is measured based on the velocity of the ball. Potential energy, PE = mgh (where m = mass of ball, g = gravitational acceleration, and h = height of ball above the ground); and kinetic energy, KE = ½ mv^2 (where m = mass of the ball, and v is velocity of the ball). Therefore as the ball is dropped and bounces off, its energy is transformed between these two kinds of energy i.e. PE and KE. This is because according to the energy conservation law, energy is neither be created nor destroyed but

DESIGN

Materials and Equipment:

Some of the equipment and materials used in the experiment included: tennis ball, meter stick, tape measure, calculator

Procedure:

The tennis ball was lifted up from the floor to a height of about one meter. The ball was dropped onto the floor and its bouncing height was measured with time. The kinetic energy of the ball was also recorded in the respective table.

DATA AND ANALYSIS

Time (s)	KE (J)
0.1	0.18
0.2	0.30
0.4	0.24
0.6	0.02
0.8	0.04
1.0	0.15
1.2	0.00
1.4	0.08
1.6	0.00
1.8	0.10
2.0	0.08
2.2	0.05
2.4	0.01
2.6	0.10

Table 1: Experimental data of time and kinetic energy