SCIENCE 9 LAB
POTENTIAL AND KINETIC ENERGY

INTRODUCTION: You have learned that there are two types of energy. Potential energy is stored energy that can be used to do work at future time. Kinetic energy is energy of motion. Both kinds of energy are important because they make things happen. In this lab you will see the relationship between the PE and the KE in a dropped ball.

MATERIALS: golf ball; tennis ball; meter stick; table; tape ; SURFACE BOARD

PROCEDURE:

1. Tape the meter stick to the table with the 0-cm end resting flat on the floor and the 100-cm end extending above the table. **BE SURE THAT THE METER STICK IS PERFECTLY UPRIGHT.**

2. Hold the tennis ball so that the top of the ball aligns with the 40-cm mark on the meter stick. Drop the ball. Carefully observe the height to which the ball bounces. Sight along the top of the ball. Record the height on the Data Table. Drop the ball again from 40 cm. Record the height of the bounce on the table.

3. Repeat step 2 with the same ball, but this time drop the ball twice from a height of 60 cm. Record the results in the table.

4. Drop the ball twice from 80 cm. Record your data.

5. Drop the ball twice from 100 cm. Record your data.

6. Compute the average height of the two bounces in step 2. Record this average in the space in your Data Table. Do the same for steps 3,4, and 5.

7. Repeat steps 2-6 with the golf ball.

8. Construct a line graph, titled Average Bounce Height of Dropped Tennis and Golf Balls. Plot the *height of the drop* on the horizontal axis. Plot the average *height the ball bounces* on the vertical axis.

DATA TABLE

TENNIS BALL			
HEIGHT OF DROP	TRIAL	HEIGHT OF BOUNCE	AVERAGE
40 CM	1		
	2		
60 CM	1		
	2		
80 CM	1		
	2		
100 CM	1		
	2		

GOLF BALL			
HEIGHT OF DROP	TRIAL	HEIGHT OF BOUNCE	AVERAGE
40 CM	1		
	2		
60 CM	1		
	2		
80 CM	1		
	2		
100 CM	1		
	2		

9. Place the surface board next to the meter stick. Using the golf ball drop it from 60 cm so it hits and bounces off each of the different surfaces. Use each surface two times and find the average bounce from each surface. Make a bar graph of the average bounce from each of the different surfaces.

DATA TABLE

SURFACE	TRIAL 1	TRIAL 2	AVERAGE
CARDBOARD			
SAND PAPER			
FOAM RUBBER			
CORK			

QUESTIONS FOR LAB REPORT

1. List several factors that affect the bounce of a ball.

2. Describe the energy changes that ocurred from the time you held the ball until it reached the top of the bounce. (PE / KE / GPE / EPE)

3. Identify where the balls had the greatest KE and PE.

4. Explain why a bounced ball will never bounce higher than the point it started from.