**Experiment 2: Conservation of Energy**

In this experiment you will explore The Law of Conservation of Energy.



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| **Materials**  Masking Tape 1 Ping Pong Ball Tape Measure \*2 Sports Balls (Basketball, golf ball, etc.) | \*You Must Provide |  |
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**Procedure**

1. Find a room with a hard, flat surface that you will be able to drop a ball on.  
   Hint: The harder the surface the better.
2. Using the tape measure, measure 0.50 meters above the flat surface. Use masking tape to secure the  
   tape measure to the wall so you will be able to read the height of the ball.
3. Take the ping pong ball and place the bottom of the ball at the 0.50 meter mark.
4. Drop the ball and record the height the bottom of the ball reaches after one bounce in Table 2.
5. Repeat Steps 3 - 4 two more times for the ping pong ball.
6. Repeat Steps 3 - 5 for two other balls of your choice.

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| **Table 2: Bounce Back Height for Various Objects** | | | | |
| **Ball Type** | **Trial 1** | **Trial 2** | **Trial 3** | **Average Height (m)** |
| **Ping Pong Ball** | .26m | .27m | .25m | .26m |
| **Golf Ball** | .28m | .31m | .29m | .29m |
| **Volley Ball** | .08m | .05m | 0.07m | .20m |

**Post-Lab Questions**

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| **Table 3: Mass of Common Types of Sports Balls** | |
| **Ball Type** | **Mass (kg)** |
| **Ping Pong ball** | **0.0027** |
| **Racquetball** | **0.042** |
| **Golf ball** | **0.045** |
| **Tennis ball** | **0.057** |
| **Soccer ball** | **0.43** |
| **Basketball** | **0.62** |

1. Use Table 3 to calculate the potential and kinetic energy of each ball during different stages of its motion. Record your data in Table 4.

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| **Table 4: State of Energy at Various Points in Motion** | | | | | |
| **Ball Type** | **PE0.5 meters** | **KEbefore bounce** | **PEnew max height** | **TE** | **KEafter bounce** |
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1. Calculate the speed of the ball right before and right after the bounce.