

Name: _____ Period: _____

Tennis, Anyone?

Purpose: To determine the relationship angle and air pressure has on the distance a tennis ball is launched.

Materials: Tennis Ball Launcher, tennis balls, stopwatch, bike pump, launcher stand.

Data:

Tennis Ball Launcher Angle Table 1

Angle (degrees)	Time (seconds)	Measured Distance (yards)	Measured Distance (meters)	Average distance for each angle (meters)

Tennis Ball Launcher Length of Barrel Table 2

Barrel pressure (psi)	Time (seconds)	Measured Distance (yards)	Measured Distance (meters)	Average distance for each pressure (meters)
60				
60				
60				
80				
80				
80				
100				
100				
100				

Analysis: Answer all questions on a separate sheet of paper.

1. Convert the Measured Distance (yards) to Measured Distance (meters). Show calculation for one measurement.
2. Calculate the average distance for each set of trials. Show calculation for one measurement.
3. Compare the three distances traveled by the tennis ball launched at the 30 degree angle in table 1. Are there any differences? What are some possible experimental errors that caused these discrepancies?
4. Compare the average distances traveled by the tennis ball launched at 30, 45 and 60 degrees. Which angle launched the tennis ball the furthest? Do your results verify what physics says the maximum range of the tennis ball launcher should be? Why?
5. Compare the average distances traveled by the tennis ball launched at the different psi. Are there any differences? What are some possible experimental errors that caused these discrepancies?
6. Explain how the tennis ball launcher worked. Draw a diagram for full credit.

