

## Physics Experiment #3

### The Domino Effect

#### Problem:

To investigate the ways in which distance, time, and average speed are interrelated by maximizing the speed of falling dominoes. Also, to become familiar with techniques of graphing motion.

#### Apparatus:

50 – 100 dominoes, stopwatch, meterstick, chalk

#### Discussion:

The central property of motion is *speed*---the rate at which distance is covered. When we measure the speed of an object, we measure the rate at which an easily seen physical thing (such as a car) moves over the ground. By rate, we mean the number of events that happen in a period of time.

#### Procedures:

1. Count your dominoes, and set them up in a straight row, with equal spacing between them.
2. Measure the total length of your row of dominoes.
3. Measure the time it takes for your row of dominoes to fall down.
4. Create a data table to record this information (and the next two calculations) in an organized manner.
5. Compute the average spacing distance between dominoes.
6. Compute the average toppling speed for your row of dominoes.
7. Repeat steps 5 & 6 for several *different* spacings, and record your results in your Data Table.
8. Collect average spacing distance and toppling speed data from other groups until you have at least 10 sets of data for graphing purposes.
9. Graph the average speed (dependant variable) vs. the spacing between dominoes (independent variable). Draw a smooth curve through the points.

#### Questions:

1. What is the definition of average speed?
2. What are the factors that affect the speed of falling dominoes?

3. From your graph, what was the maximum toppling speed? Which spacing distance created this speed?
4. At this rate of speed, calculate how long a row of dominoes would be needed to make line that takes 1 minute to fall.
5. What effect do you think the length of the domino has on its toppling speed? How could you test your theory?

**Calculations:**

Show one example of each calculation.

**Conclusions:**

Discuss the:

- a) Point(s) of the lab.
- b) results of the lab.
- c) sources of error and ways to correct them.



# Title: Domino Speed

Purpose:

Hypothesis: Hint: Predict how spacing affects speed of falling

Data: \_\_\_\_\_ →

Analysis Make a graph of Avg Speed vs. Domino Spacing

Conclusion: Questions Answered

	$d$ Total Length of Row (cm)	Time for Row Fall (sec)	Avg. Spacing Between Dominos	$[V = \frac{d}{t}]$ Calculation of Avg. Speed of Falling	Avg. Speed of Falling
1	.	.	.	$V = \frac{d}{t}$	_____ cm/s
2					
3					
4					
5					
8					

