

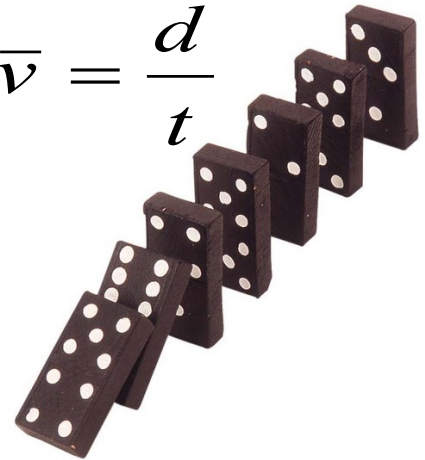
Lab: Dominoes and Velocity

CONCEPTUAL PHYSICS: UNIT 1

Directions: *The following activity is designed to investigate the spacing of dominoes that produces the fastest “falling” speed. Remember that **speed** (or velocity) is **distance divided by time**.*

$$\bar{v} = \frac{d}{t}$$

You will be changing the spacing between the dominoes and determine which spacing produces the fastest “toppling” speed. You will be spacing them one-domino width, two, three, four, and the maximum spacing and calculating the velocity of each spacing. Before you begin give me your guess (hypothesis) on which spacing you think will produce the fastest speed.



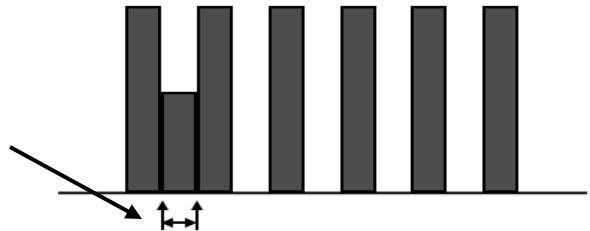
Your Hypothesis:

Materials:

- Dominoes (50)
- Stopwatch
- Metric ruler

Procedure:

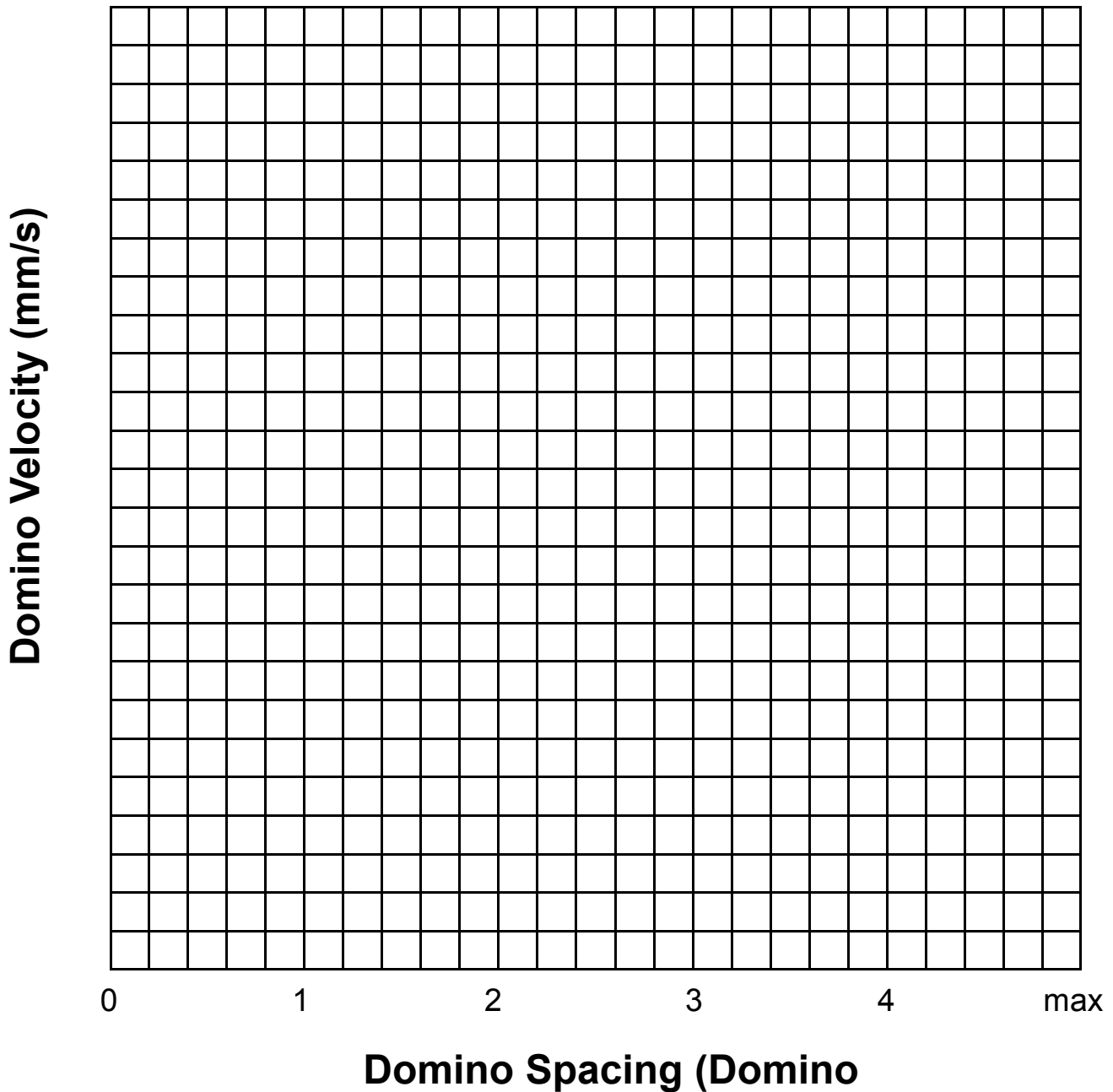
1. Obtain materials and form a group of 3-4 students.
2. Start by spacing the dominoes **one-domino width** between each domino.
3. Have one team member tap the first domino and record the time that it takes for all the dominoes to fall. Record in Data Table #1.
4. Now space the dominoes **two-domino widths** apart and repeat step three. Record in Data Table #1.
5. Now repeat with both **three-domino** and **four-domino** width spacing and records times in Data Table #1
6. Finally, space them as **far apart as you can** so that they will still topple over. Record the time in Data Table #1.
7. When you are finished, calculate the velocities of each spacing and then graph your data (line graph) in the space provided on the backside of this worksheet.
8. When you have completed the graph, answer the Conclusion Questions.



DATA TABLE 1: DOMINO SPEED

Spacing (mm)	Time (seconds)	Speed (mm/s)
One-domino _____ mm		
Two-domino _____ mm		
Three-domino _____ mm		
Four-domino _____ mm		
Max.-spacing _____ mm		

Domino Toppling Speed



Conclusion Questions:

1. What spacing produced the **fastest** toppling speed?
2. Which spacing produced the **slowest** toppling speed?
3. Did the results agree with your original **hypothesis** or not?
4. Which variable is the **dependent** variable and which is the **independent** variable?
5. By looking at your graph, what would be the toppling velocity if the dominoes were spaced **1.5 dominoes** between each domino? What about **2.5 dominoes**? (show your work)
6. How did you determine the **speeds** in question number 5?
7. Why are **line graphs** used for data like this?
7. What is the difference between **speed** and **velocity**?
8. Do you think lighter, or heavier dominoes would change your results? Explain.