

Name _____

Investigation 8: How Long to Topple Dominoes?

Worksheet 8.2 Toppling Dominoes

Scenario

On November 13, 2009, World Domino Day 2009 saw the world record broken for the most dominoes toppled by a group when 4,491,863 dominoes were toppled. A total of 89 builders set up the dominoes in the WTC Expo Center in Leeuwarden, The Netherlands. In April of 2017, a group of three students broke the unofficial world record for longest domino line with 15,524 dominoes!

View a YouTube video of the dominoes toppling at www.youtube.com/watch?v=y4VJssQv_Qw.

How long do you think it took for the line of 15,524 dominoes to fall over?

How long do you think it took for the 4,491,863 dominoes to fall over?

Formulate a Statistical Question:

Collect Appropriate Data:

Directions:

On a flat and hard surface, stand up the dominoes on end in a straight line. Use the ruler or meter stick to make the spacing between the dominoes even. Space the dominoes about 2.5 cm apart. The only rule is that a domino can knock over only one other domino when it falls.

Set up 10 dominoes in a straight line and carefully time how long it takes for all 10 dominoes to topple. Repeat two more times. Record the three times in the data collection table.

Set up 15 dominoes in a straight line and carefully time how long it takes for all 15 dominoes to topple. Repeat two more times. Record the three times in the data collection table.

Set up 20 dominoes in a straight line and carefully time how long it takes for all 20 dominoes to topple. Repeat two more times. Record the three times in the data collection table.

Set up 25 dominoes in a straight line and carefully time how long it takes for all 25 dominoes to topple. Repeat two more times. Record the three times in the data collection table.

Set up 30 dominoes in a straight line and carefully time how long it takes for all 30 dominoes to topple. Repeat two more times. Record the three times in the data collection table.

Data Collection Table

Number of Dominoes	Time (Sec)	Time (sec)	Time (sec)	Mean Time (sec)
10				
15				
20				
25				
30				

Analyze the Data

1. Using technology construct a scatterplot of the mean time for the dominoes to fall versus the number of dominoes. Make a sketch of the scatterplot.
2. Is a linear model appropriate to describe the relationship between time for all the dominoes to fall and the number of dominoes? Use the correlation coefficient and a residual plot to explain your reasoning.
3. Find the equation of the least squares regression line.
4. Interpret the slope of the least squares regression line in context.

Interpret the Results in the Context of the Original Question

5. Using the linear model you developed, make a prediction for how long it would take 15,524 dominoes to fall. To make this prediction, what assumptions do you have to make about your model?
6. Watch the video again and time how long it takes for all the dominoes to fall over.
https://www.youtube.com/watch?v=y4VJssQv_Qw
7. How close was your prediction? What are some reasons why your prediction might have been off?