

How Strong is Spaghetti?

Objective: To find a linear function that fits a set of real world data.

Procedure:

- ❖ Puncture two holes in the top of the cup and thread a string through the holes. Tie the ends of the string together so that the string acts like a handle.
- ❖ Place one piece of spaghetti under the string so that the cup hangs from the middle of the piece of spaghetti. One person should hold both ends of the spaghetti.
- ❖ Another person should begin to add pennies to the cup. When the spaghetti breaks, record the number of pennies needed to break the spaghetti.
- ❖ After you have broken one piece of spaghetti, use two new pieces and again place pennies in the cup until the spaghetti breaks. Repeat the experiment until the table below is completed.

Data Table and Exploration:

1. Complete the table below based on your experiments.

Pieces of Spaghetti	Number of Pennies Needed
1	
2	
3	
4	
5	

2. Graph your results on graph paper. Use the pieces of spaghetti on the x-axis and the number of pennies on the y-axis. Remember to label your axes and scale on the graph.
3. Describe what you see on your graph. What kind of model do you think is appropriate for this data?
4. Pick any two points from your line. Write a function in slope-intercept form.
5. Using your equation above, estimate the amount of pennies needed to break the pieces of spaghetti.

Pieces of Spaghetti	Number of Pennies Needed
20	
50	
150	

6. Using your calculator, calculate a line of best fit. Write the function.
7. How does the line of best fit compare with your line?
8. Use the calculator function to predict how many pennies are needed to break 20, 50, and 150 pieces of spaghetti. How do these values compare to the predictions you made from your equation?