An eighth grade student in a physics class asked the teacher whether the same object dropped from different heights would bounce different heights. Specifically, the student was interested in how the drop height and the bounce height are related. She hypothesized that the higher the drop height, the higher the bounce would be. The class decided to investigate this question by using a golf ball. Students were given eight set heights to drop the ball from. Then they dropped a golf ball from each of those heights and measured how high the ball bounced back up.

**Part One Instructions**

Below is a scatterplot that shows the data about how high a golf ball bounces when it is dropped from different heights, as collected by the class.

Using the piece of spaghetti, determine the line of best fit for the data. Be cognizant of your thoughts as you decide where to place the line on the graph.



**Part Two Instructions**

Some sample student responses to this task are on the following page. For each student’s response, analyze his/her criterion. Will the criterion always work to produce a line that accurately models any data set? If it will, explain why. If it won’t, draw at least one example of a scatterplot with the line placed using that criterion and explain why the criterion produces a poor line of best fit.

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| ***Ashara’s response***I put the line through the first and last points. | ***Edward’s response*** The line needs to start at (0,0) then go through the most dots. I got my line to go through two of the dots so I put it there. |
| ***Viraj’s response***I wanted 4 dots above and 4 dots below. | ***Molly’s response***The line should be in the middle of the highest and lowest points because that’s like the average. |