Have you heard the joke about the statistician? Probably.

I love statistics. Since I was a child, being able to perfectly predict the chances that something will happen has fascinated me. It's like magic; mathematical fortune telling. I also love essay competitions, but I'm yet to win one. This time, I've decided to try on my statistician's hat once again and attempt to predict my chances of winning. My first step was to read through the entries from previous years, and after a long time counting and reading and learning an awful lot about branches of maths I didn't know anything about (who knew you could make music with maths?), I came up with the following stats:

The competition started in 2020, which gives me 3 years of data to work with. If my calculations are correct, then the following statements are true;

In 2020, 66 essays were submitted.

In 2021, 128 essays were submitted.

In 2022, 97 essays were submitted.

I was able to find all 291 of these essays online, so I made a mental note that I should make this a pretty decent essay, seeing as this will be on the global internet database for the rest of eternity...

Existentialism aside, I proceeded to graph these results. This was what my graph looked like:
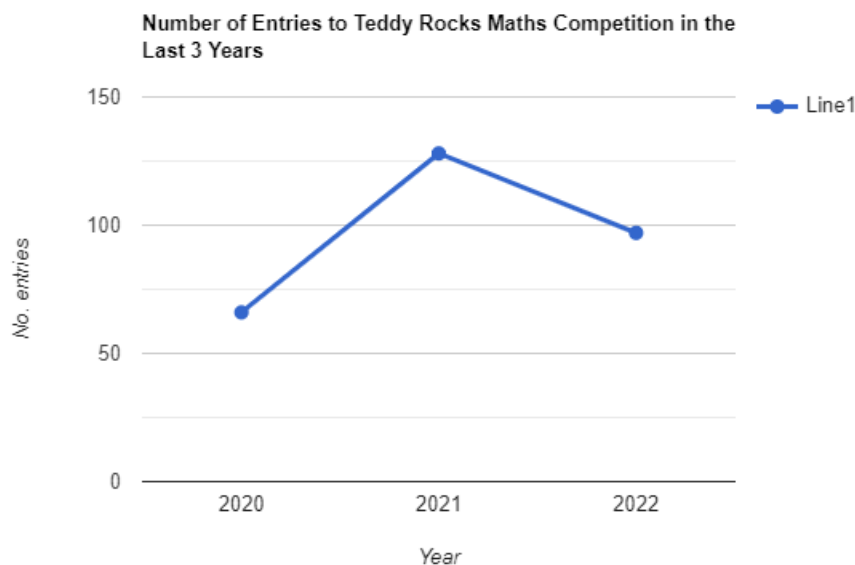
After realising there was a surge in entries in 2021, I sat back for a second and considered my options. There are many ways to find the next point on a graph when you only have three sets of data and there is no apparent trend. You could count 2021 as an outlier in the data (perhaps the maths teachers were feeling particularly pushy that year?), in which case I would redraw the graph as a straight line through the points for 2020 and 2022, calculate the gradient, find the predicted number of people entering this year's competition to be 112.5 - a reasonable number considering the rest of the data – and be very concerned for the half-person who decided a maths competition was more important than the fact that only half of them existed.

Or I could treat the graph as a curve and continue the line downwards, in which case I would calculate the gradient once more and find 66 entries again for 2023. I like the symmetry, but I'm not satisfied with this solution (maybe it's because I haven't reached mathematical nirvana yet, maybe it's because my essay hasn't reached the word count yet, we shall never know...)

Only 66 entries in the 4th year of an essay competition is a bit depressing, don't you think? I want to be *optimistic.* The news of this essay competition spread like hot teacher-based gossip throughout my school. I'm guessing it might have done the same in others this year. I decided, after pondering my options, to do the one that would give me the highest realistic number of entrants considering the data I had. I did what has been drilled into me throughout secondary school, in maths and biology and chemistry and physics and probably social sciences at some point, over and over again until I was blue in the face from repeating it.
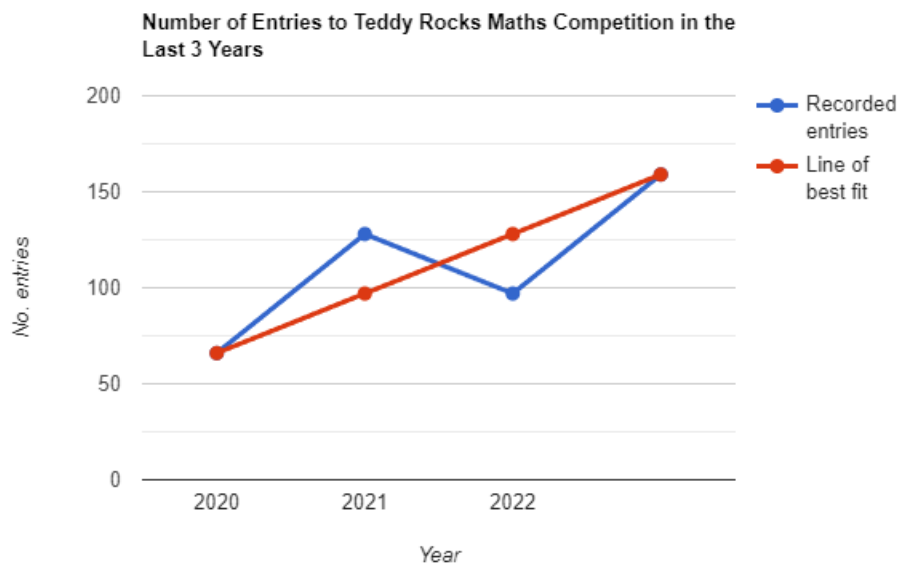
I drew a *line of best fit.*

Now, a line of best fit should intersect with at least 2 points from the data in order to be a real line of best fit. It should also be roughly in the middle of all the other points that it doesn't intersect. Seeing as I had 3 points and was looking to find a fourth, I didn't think this would be too hard. I would make my first point and the imaginary fourth one the points on the line. I didn't know precisely where the fourth point would be, which left me to manipulate the line to run exactly through the middle of points 2 and 3. "But how do you do that?" I hear you exclaim in anticipation. I take a dramatic pause for suspense. Well, fellow mathematician, you find the midpoint.

Finding a line's midpoint is simple. You add the two x values and the two y values of both the points you want to find the middle of and divide them both by two. This gave me a midpoint between the data for 2021 and 2022 of (112.5, 2021.5). The half person is back. They should really see a professional about that. With this information I set boldly and confidently on to make my line go through these points.

It wasn't that simple.

At least for me. After a lot of bizarre calculations and used post-it notes and groaning and shaking my fist at a graphing software that I didn't really know how to use, I finally managed to make my graph fit the data I needed it to. The result was this:

Number of Entries to Teddy Rocks Maths Competition in the Last 3 Years

Ta-dah! A graph with a perfect line of best fit which predicts the number of entries to the Teddy Rocks Maths Essay Competition in 2023! Which took the grand total of predicted 2023 entries of to... 159 entries. One in one hundred and fifty nine? I mean, I don't want to be selfish, but those are bad odds. But that's the probability that I'll win, right?

Wrong.

To start with, this competition has 2 winners; an overall winner, and an under-18s winner. Thankfully, I'm up for both. Better yet, that also means my odds have now increased to 1 in 79.5. I like that. But I refuse to stop there. I want to give myself the best chance of winning possible. And through the wonders of maths, I can use the power of statistics to do so. There are actual human people judging this competition (Dr Tom Crawford, no less), which means that the winner won't be selected at random. There will undoubtedly be a few entries which perhaps don't meet the requirements, maybe someone tries out a clever logarithms joke which baffles the judge for ages as to whether they have met the word count or not. Let's hope it doesn't count; that improves my odds. Perhaps there's one essay written entirely in a made-up language that nobody except the reader can understand. Let's say that maybe 5% of the entries get disqualified. That brings my odds down ever so slightly again to 1 in 75.5. That gives me a 1.3% chance of randomly winning this competition. I can live with that. (If I'd stuck with the estimate of 66 entrants this year, I'd have given myself a 3.19% chance of randomly winning, more than doubling my odds. Don't know why I didn't stick with that, but we've come this far now.)

However, there's one thing I haven't mentioned yet. When I first read the competition overview, I noted a single key detail. The Teddy Rocks Maths Essay Competition isn't only looking for knowledge of maths, or the ability to work out statistics; the Teddy Rocks Maths Essay Competition is looking for *passion and flair.* I have an abundance of that.

So, on that note, after realising that my chances of winning lie only in the hands of Dr Tom Crawford, I leave you with this:

I feel sad that everyone thinks statistics is only *average*, but after a day of hard calculations, I will always go home and sleep *like a log.*