



## THE 2022 YOUNG MATHEMATICAL STORY AUTHOR (YMSA) COMPETITION

THE CINDY NEUSCHWANDER AWARD  
(THE 12-15 YEARS OLD CATEGORY)

### SHORTLISTED

'Marina the Deepsea Deliveroo Mermaid' by Livi Randall (13 years old)  
at Leighton Park School (UK)

You can read the author's inspiration for the story and the judges' comments  
on:

[www.mathsthroughstories.org/ymsa2022](http://www.mathsthroughstories.org/ymsa2022)

#YMSAMaths



By Livi Randall  
Leighton Park School



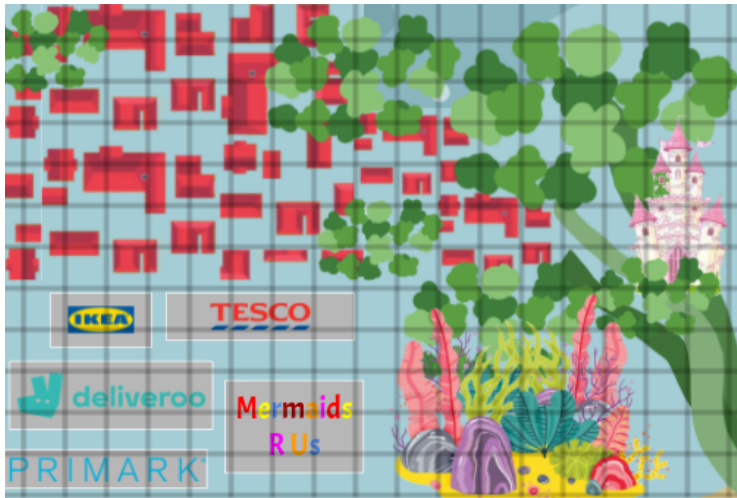
Once upon a time, in a magical kingdom on the planet of Mathlantis, there lived a very little mermaid called Marina Sunday, and she lived with her family of 27 in their mermaid hole. In her family, there was only one business you could go into: Deep Sea Deliveroo. So, for little Miss Sunday's 47 and halfth birthday, her parents, Chicken Tikka and Lil' Steve, presented her with the most amazing gift. Marina had gasped and burst into underwater tears. It was beautiful. The motorbike was pink, and studded with glittery glitter, and it was completely her own! Marina couldn't wait for her first delivery.

The next day, Marina woke bright and early, and filled with anticipation for the day ahead of her; her first day as a Deep Sea Deliveroo delivery person was upon her! After a 14 nanosecond breakfast of alphabet cereal on stem and leaf seaweed, she swam out of the mermaid hole, hopped on her new, pink, glittery bike, and raced off to the Deep Sea Deliveroo Depot to meet her new manager.



As she swam through the seashell revolving doors, Marina caught a glimpse of her new life, and it was beautiful. On arrival, after being ushered into a large office by an army of small sea urchins with a surprising amount of aggression, she came face to face with her new manager: Clinton Mernoodle. They had a long chat, but Marina promptly forgot most of it, other than the fact that she had three deliveries to make that day, and the addresses had been provided by coordinate, and she was told to find the

vector to get there. She broke out in a sweat. Marina had no idea what a vector was or how on earth she would find her way.



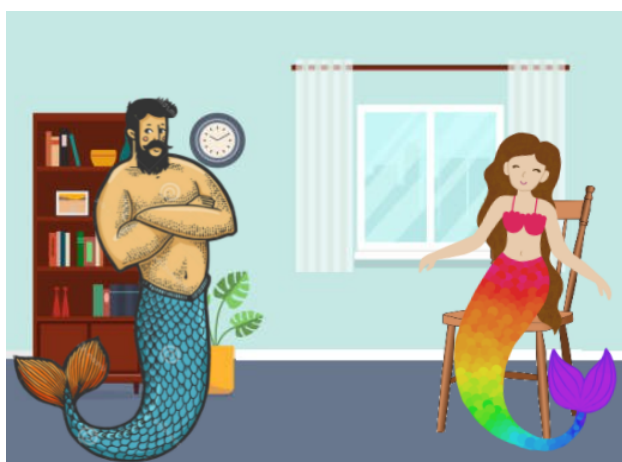
An important thing to know about Mathlantis is that the whole kingdom is divided into squares, much like graph paper, and your address is the coordinates of your house on the squares! However, Marina had never had to use the grid before, and no one had taught her how to find a vector, so she was lost, and confused, all before 9 in the morning! It was all a bit much! Maybe she wasn't cut out for this after all...

Standing on the steps of the depot, Marina sighed, maybe she would never find her way in the world of deepsea Deliveroo...but she was sure going to try, because if her parents had taught her anything, it was never to give up on being a delivery driver! Inspiration suddenly struck, and with a renewed sense of strength, the mermaid's mind wandered towards the Mathlantis Centre for Miscellaneous Mermaids in Mathematical Bother, for which the catchy acronym was MCMMMB! She was going to learn about vectors and make her deliveries after all! Marina jumped on her pink bike, studded with glittery glitter, and raced off to the centre.



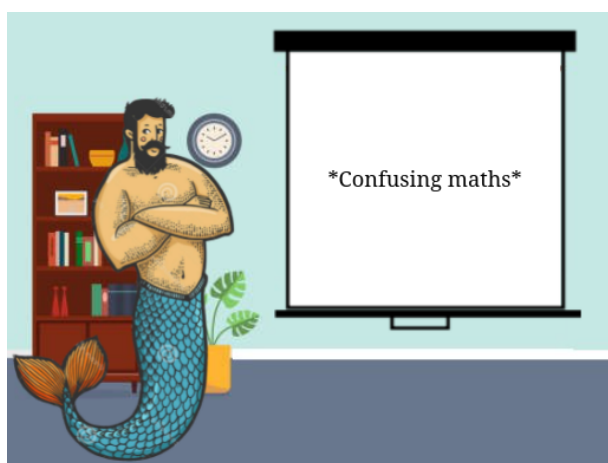
After skidding to a halt outside the Mathlantis Centre for Miscellaneous Mermaids in Mathematical Bother, she noticed how beautiful the building was. It was made of hot pink sandstone, adorned with yellow and green merman cherubs, who waved mathematical symbols in the place of bows and arrows. On second reflection, the building was completely hideous, but Marina entered anyway, knowing she would have to get over the architecture in order to learn the maths she needed.

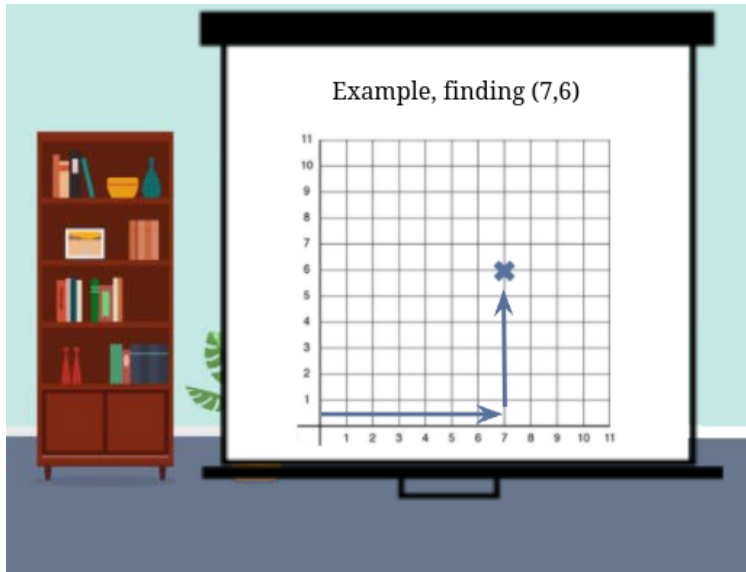
Marina cautiously entered the building, (the inside was as hideously decorated as the exterior) and was immediately met by a very serious looking merman. He immediately spoke, but it was soft and calming, so Marina could relax a bit. "I am Atticus Wellington Edgerdunkle Sebastiano Orlando Maverick Elginstonson. However, I have been made aware that my name can be a challenge, so most people simply call me Wellies, due to my second name. I am your designated mathematical tutor, and I look forward to working with you, Miss Marina Sunday. Please follow me to our tutoring space."



The pair ended up in a surprisingly normal looking conference room with white walls, and plain carpet, but Marina soon realised that the room wasn't quite normal, because the ceiling had a mural of pepperoni pizza that was completely made of dried lentils. The quirky designs were actually beginning to grow on Marina, in a mildly concerning way. Wellies told Marina to take a seat, so they could begin the master class on vectors, because time was running out.

"So are you ready?" Asked Wellies, seeming to sense her apprehension  
"I think so..." Marina replied, suddenly feeling nervous. This had to work.  
"Alright, don't be nervous, we can take it slow," the merman reassured her. "Here we go! So, the kingdom is divided into a grid, and every address has a coordinate on that grid, so the vectors tell you how many squares across and how many squares up or down you have to go in order to reach the coordinate of your destination."  
Marina kind of understood the squares, because she had seen maps of the grid, but after that, she was lost. Wellies started again, with a new tactic.





“Marina, I’m sure you know how the grid works, and how coordinates are found, but let's go over it just in case.

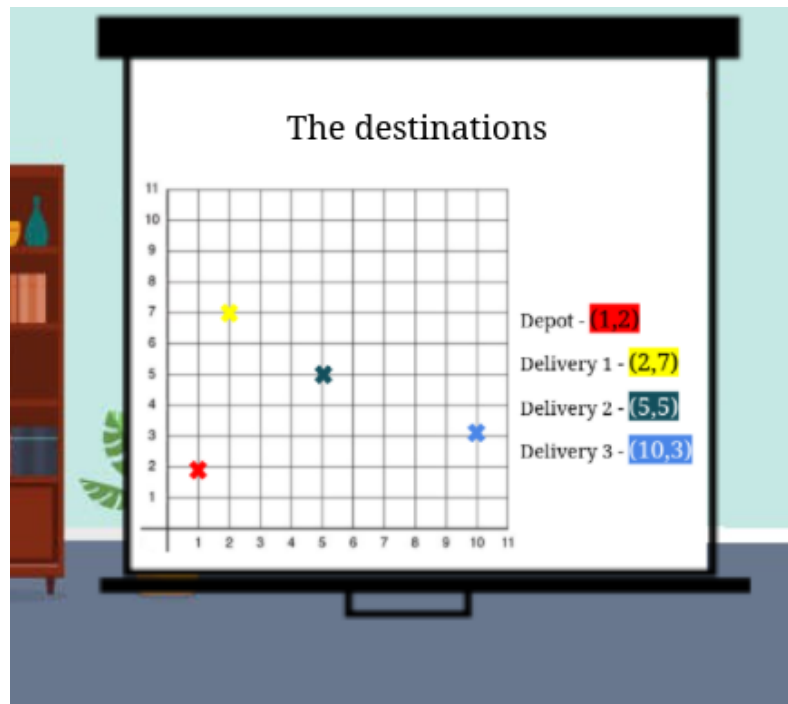
Remember, along the corridor, and up the stairs, so find how far along the bottom of the grid the place is, and that is the first number in the set of coordinates, and the second number is found by counting how many squares up the place is.”

“Ohhh, I remember!” Cried Marina.

And so the pair got down to practising finding coordinates, until Marina could find the coordinates for her three delivery destinations, and the Deliveroo depot! She had the first set of information, and was well on her way to making the deliveries on time!

Wellies continued. “Now you know where you are coming from, and where you are going to, we need to find how to get from one to the other, and this is where vectors come in. However, we need to write down the information first, so can you tell me the coordinates for the Deliveroo hub, and your destinations?”

“Okay! So my department’s coordinates are (1,2), my first delivery is at (2,7), the second is at (5,5), and the third is at (10,3).”





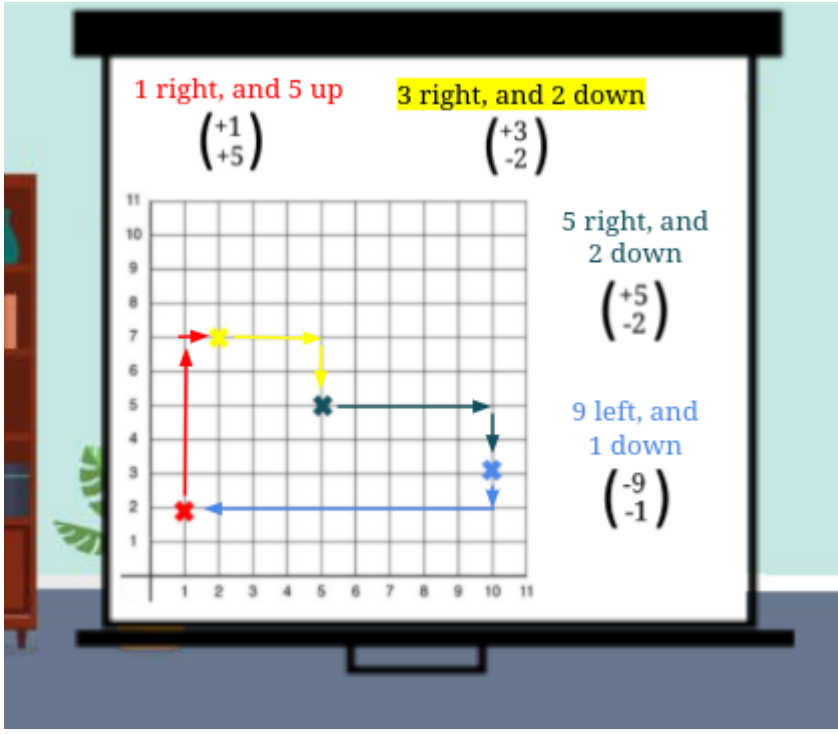
“Perfect,” Announced Wellies.

“Now, we just have to find the vectors, so you can get from one to the other! So, your first destination is at the point (2,7), and you have to start from the point (1,2), so, can you count how many squares are up, and how many squares across you have to go to get from (1,2) to (2,7)?”

“Yes! It is 1 to the right and 5 up, so the vector would be (+1, +5). But Wellies, how would I go left, or down?” Asked Maina.

“Well, to go right or up, there is a plus sign in front of the number, but to go left or down, there is a minus one. Now you know that, do you want to find the other vectors? But remember, the start point has to be the previous destination!”

Marina’s brain started buzzing; she understood! “From (2,7), I need to go three right and two down to get to (5,5) which is my second destination, so the vector is (+3, -2). And from there, it is 5 right and 2 down to my final delivery! So the vector would be (+5, -2). After I make that final delivery, I have to go back to the Deepsea Deliveroo hub to collect my money, so to get back to (1,2) from (10,3), the vector will be 9 to the left, and 1 down, or (-9, -1). I understand!!!”





“Yay! Well done Marina! Now, go and make your deliveries, and use those vectors well!”

Marina threw herself at Wellies, gave him a huge hug, and bolted out the door, ready and armed with her vectors and coordinates. She would make the best deliveroo driver ever!

And she did. That day, Marina made all her deliveries to all the right people, and she didn't get lost once, thanks to Wellies and his vectors and coordinates! So Marina the little mermaid got her Deepsea Deliveroo Delivery merperson customised tail for her service to the company, and she has worn it every day since, proud to make her deliveries in the uniform, knowing that she is part of something bigger than just deliveries. Marina Sunday is part of the deepsea deliveroo family. And all thanks to maths!



**The End!**