

Calculating the route from school to sea

How maths led Captain Louise Sara out on to the oceans

Captain Louise Sara is a Fleet Captain and Director of Maritime Standards for a large cruise and travel company.

I was around 10 when I realised that I wanted to go to the sea and be a deck officer. I was inspired by another female captain when I was on a bridge visit to a small ferry between Southampton and the Isle of Wight. That inspiration would end up taking me all around the world.

At school, I researched what qualifications I needed to follow my goals. Maths and/or physics were pre-requisites for A level entry; for GCSE entry, maths and physics, or combined sciences, were a requirement.

Why is maths so important for a career out at the sea? It encompasses so much of what captains do: from very basic speed/distance/time formulas, to calculating times of arrival, or speeds required on passage, plus stability and tidal calculations.

More complicated maths is also used in the job, including principles of spherical trigonometry to calculate distances of a great circle passage plan which is known as Terrestrial Navigation, or working out the position of the ship by using the stars, or checking compass accuracy by taking bearings of the sun, known as Celestial Navigation.

We learn stability calculations to determine the ship's stability in water, calculating things like the vessel's Centre of Gravity and Draught, which is basically how deep the vessel is in various densities of water.

I studied maths and science at school, and then went on to complete A levels in maths with mechanics, and physics. I found both subjects extremely difficult at the time but it led to a better understanding of the work we were taught when I was at Nautical College. (For those that entered the college at GCSE level, there was foundation knowledge in maths to get cadets up to the level required for the maths they would learn while there.)

I wanted to go straight to sea out of doing my A levels. However, my Dad convinced me to go to university and complete a degree, which I gained in business and law. I went to sea after that.

Since then, **I have been fortunate enough to travel the world on cruise ships, captaining vessels on some of Europe's most important oceanic routes** and becoming Senior Captain on ferries trading across the world's busiest shipping lanes. I have been involved in new-build passenger vessels and also engaged in trials testing cutting-edge



ship technology. My career to date has been exciting and varied. I've also been lucky enough to have been able to continue my work at sea and have a family.

Maths taught me how to be responsive to situations and also to problem-solve. Two years ago I came ashore – and **I now work as Director of Maritime Standards for one of the largest travel operators in the world**, overseeing many projects for the continual improvement and alignment of Maritime Standards on corporate vessels.

To this day I still use maths for work, though not all the fancy maths that I learnt at school and college. Instead, the fundamental principles I learned now help me when looking at the standards we are working to, and also for comparing data against key performance indicators (KPIs).

Maths taught me how to be responsive to situations and also to problem-solve. Whilst I was Captain I found it easy to work through logistics of some of the more intricate planning we had to do with schedules, and I do the same in my current job when we are scheduling our team for ship visits. I see solutions rather than problems and can quite quickly rationalise a situation – I believe that maths has helped me with that along the way.

Louise shares her story as part of our *Your Future in Maths: A-Z* campaign.

[Find out more about the campaign](#)