Quick Maths

What do you want to be when you grow up?
When I was first asked that question I answered "Ballet dancer". During primary school I went through pop star, actor and TV presenter as my future careers but If you were to have asked me "what do you want to be when you grow up?" when I was 15/16…I didn't have a clue! I think that was because I felt being a 'grown up' was getting close and that I should have some idea of what sort of career I wanted to do. The question that used to unlock my hopes and dreams became pressure and a source of anxiety to me! If that is you, DON'T WORRY! It is a totally normal place to be.

Or maybe you have started thinking about your future, but have you thought about the part maths might play? Now is a good time to explore the opportunities that are out there.
You could try typing 'careers in maths' into Google and seeing what comes up but what I really mean is start thinking about what it is that you enjoy doing both in and out of school and the skills that you are developing from those.

Where could that lead you?
Take a look at some jobs that you might fancy and see what skills and qualifications are useful for those – you might be surprised at how often maths comes up!

Here are a few places to start looking:

- **Discovercreative.careers**
- **bbc.co.uk/bitesize/careers**
- **amsp.org.uk/where-maths-meets-the-world-of-work**
- **Careers quiz**

You will discover that maths is useful and used in so many jobs from Architect to Zoologist. Studying maths can open up a world of opportunities to you.

If you are interested to know more about any career areas in particular and/or how studying maths will help in those areas then let us know and we will try to feature them in the next edition!

Student voice

On my Computer Science course we have around 9 hours of lectures (in person or online) a week and 10 hours of practical sessions in a computer lab. I love the social side of university and enjoy living independently but I can find lectures a challenging way to learn so have to do my own research at times.

I enjoyed maths at school, although I found A Level maths harder than GCSE. Maths is very useful in my degree and I use it a lot. For example, Venn diagrams and proof. In coding we use a lot of mechanics (found in A Level maths) because we want to make things move realistically.

If you have an idea of what you want to study at Uni then you should definitely have a look at the 'entry requirements' for that degree. For me, I originally wanted to study medicine - but I didn't want to take A level biology (as I didn't like it). However, I found there were some unis that were okay with that, as long as you had chemistry A level and a 'second science' (which always includes maths).

After doing my first year of medicine, during COVID, I found I struggled to connect with the course, failed a module, and then got kicked off the course. I was able to swap to a computer science degree because the only required A level for that course was maths (which is true for a lot of degrees). I am enjoying studying a lot more now.


Louis, 21

A Levels:
- Maths
- Physics
- Chemistry

University:
- **Computer Science**, Newcastle University

> **Top Tip:** I think the most important thing when doing GCSEs is realising how you learn best and finding the best ways for you to revise. So try different things and stick to the stuff that helps.

Florence Nightingale

Florence Nightingale is celebrated worldwide for professionalising nursing roles for women but she was also a great statistician and data analyst. Although born in Florence, Italy, in 1820, she grew up in England, and rose to prominence as a nurse during the Crimean war. The hospitals she worked in were often overrun with rats and fleas, had few too many beds, blankets, furniture and food, and had few hygiene measures; when she initially protested against these conditions, she was met with disdain and a lack of action. In order to convince hospital officials that these poor conditions were the direct cause of excess deaths, she went meticulously recorded the number of deaths of various illnesses before and after enacting sanitary improvements. She communicated her findings through a now famous diagram called Nightingale's "Rose Diagram". Confronted by the fact that unhygienic conditions were killing soldiers, Nightingale's work caused Government to invest in improving hospitals.
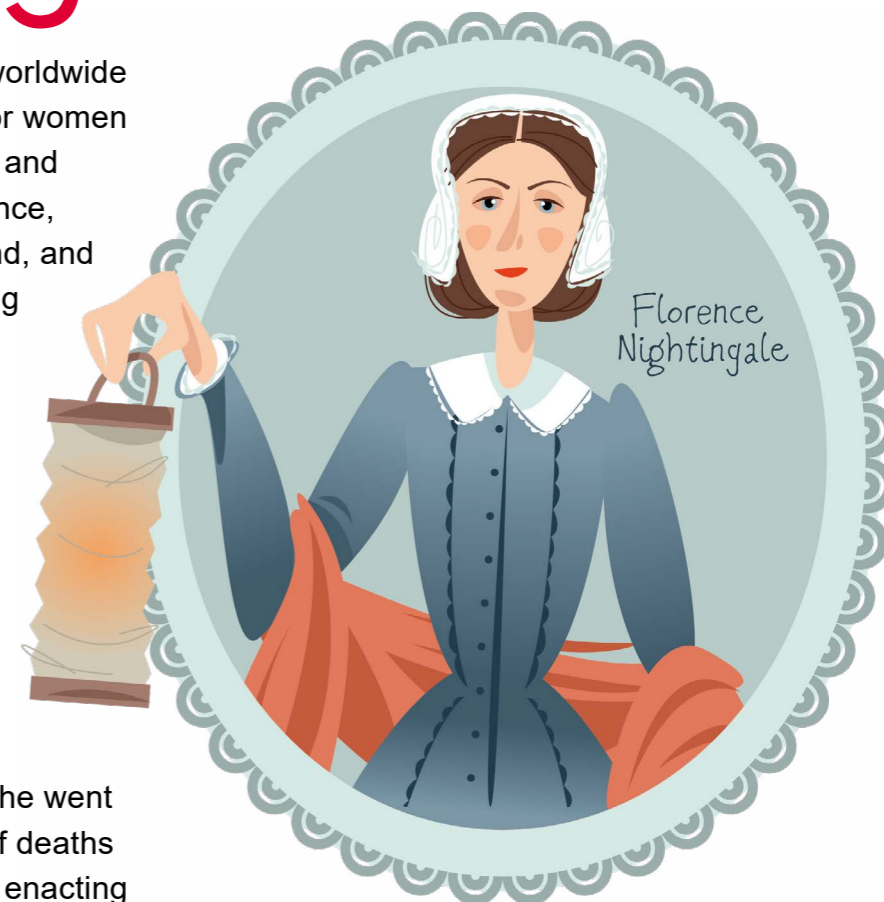
Florence Nightingale's work is powerful to me because it shows the ability of maths and statistics in discovering and communicating truth, and how we can use data to make more informed choices.

Family maths challenge

Estimate how many times a person picks up their mobile phone in one year.

This is an example of a Fermi question where you need to make reasonable assumptions and estimates about the situation in order to come up with an approximate answer.

Maths anxiety

Ever feel like you're never going to be good enough?

Well, when it comes to Maths, there are some evidence-based tips that can actually help.

Firstly all, let's forget about Maths for a minute. Sit down somewhere quiet, and write down all the best things about you. You might be an excellent friend, or good at making people laugh. You might be great at sports, or art. Next, pick one or two of these and write down why they matter to you.

Doing this regularly, especially during exam periods, can improve your self-confidence. This will reduce anxious feelings, letting your brain focus on things you may find challenging, like Maths. Scientists have found that students who do this tend to get higher marks in Maths exams. When it comes to exams, anxiety can actually be useful. Scientists have even found that, without the boost in attention that nerves and anxiety can give you, you might not do as well in an exam.

So don't try to fight it, but remind yourself how the energy anxiety gives you can help you. A lot of musicians or sports people think of their anxious feelings as excitement that help them focus on their performance, and feel energised and keen to get going. Maths exams don't have to be any different. Anxiety is normal, and pushing anxious feelings away can make things worse.

Finally, remember there is no such thing as a 'mathsy' brain. It's all about practice. Rather than beat yourself up when you don't get something right, congratulate yourself for putting in the effort, and for all the Maths problems that you do solve.

If you really are struggling, or finding any anxious feelings overwhelming, please do talk to a parent, carer or teacher.

Our favourite maths jokes

- **I saw my maths teacher with a piece of graph paper yesterday**….. I think he must be plotting something.
- **Did you hear about the mathematicians who are afraid of negative numbers?** They stop at nothing to avoid them.
- **Why did the fifth go for a massage?** Because it was two-tenths!
- **How does a ghost solve a quadratic equation?** By 'completing the scare'.
- **What did the zero say to the eight?** Nice belt!

Student voice

I chose my A Levels because I am interested in learning about human behaviour and how this affects wider society. My GCSE maths teacher told me about Level 3 Core Maths after I said I wanted to study psychology and after looking at the syllabus I found that there was a lot of crossover between areas of Core Maths and the research methods topic in psychology so I thought it would be useful. I had enjoyed maths at school but did not like the topics that were covered in A Level Maths so I took Core Maths to keep up my mathematical skills to support my other subjects. An example of this is that in psychology we use standard deviation to see the spread of data collected from an experiment and I also learnt about this in Core Maths. Next year I plan to study Human and Social Sciences at Cardiff University. In my chosen university course there are several modules in research methods and so I think my knowledge of data analysis from Core Maths will be useful.

Want to find out more about studying maths after GCSE? Check out our helpful article on studying maths beyond GCSE mathematics

Annie 18

A levels:
- Psychology
- Sociology
- English Literature

Also
- Level 3 Core Maths

Top Tip: Choose what you enjoy!

Money

How about this offer – which would you take?

A: £10,000 per day for 30 days

B: A penny that doubles in value every day for 30 days

Have a think and we'll tell you the answer later!

How much money do you have in savings? As a 14 or 15 year old you might think that is a stupid question. If you have got any money; birthday money, pocket money or money from a part-time job then you are going to spend it! But wait a minute take a look at this example from the book "The teenagers guide to money" by Jonathon Self

> Suppose you want to have savings of £10,000 on your 30th birthday:
> You could save 78p a day from the age of 13
> You could save £4.47 a day from the age of 25
> You could save £27 a day from the age of 29

Quite surprising isn't it!

You might be asking how is any of that possible? Well it is because of the power of Compound Interest and the good news is you learn about it in GCSE maths.

I expect you know that when you save money interest is added to your account. Compound interest means that each time interest is paid on an amount saved, that added interest also receives interest. Basically, interest on interest! Here's how: Firstly, you put an initial amount (deposit) of money into an account. The bank pays you interest on your deposit at the end of the year.

Now fast forward a year, this is where the compound interest comes in. You will earn interest on your initial deposit, and you'll earn interest on the interest you just earned. The interest your money earns in the second year, will be more than the first year, as the balance has increased.

Have a go: The average UK amount of pocket money for a 15 year old is £40 a month. You decide to save £8 a month

If you put the money in your Piggy Bank how much would you have after 1 year? 2 years? 5 years?

If you pay the money into a bank account, with an annual interest rate of 5%, how much would you have? What about if you carried on saving that amount until you were 30?

> " *"Compound interest is the 8th wonder of the world. He who understands it, earns it; he who doesn't, pays it."* **Albert Einstein** "

Why did Einstein say that? Well, the bad news is if you are in debt (owe money) then you also have to pay compound interest on that! So, if you are not careful then the amount you owe will grow exponentially!

For more money tips follow Abi from Elent on Instagram @elent_finance

If you would like some more information on how the AMSP can support you, you can contact us at quickmaths@mei.org.uk

Answer

You'd be £5million better off if you chose B over A