Maths Example 1

A determination to push forward even when challenges arise, is one of the most important traits someone could possess. It is a key attribute across many parts of life, such as in the journey from school into higher education, within jobs and careers, and is a key component in the study of mathematics. Learning mathematics has always required a sense of determination and resilience, as often a more thoughtful methodology is needed to solve a problem, rather than just applying general techniques and ideas. It is one of the few disciplines that can both simultaneously be an individual pursuit, or a team activity, is intuitive and synoptic, and one of the world's most powerful tools. It is for these reasons, alongside a sense of achievement gained from studying the subject that has stemmed my fascination of mathematics.  
As part of the many opportunities I had in 6th form, I took on a tutoring role for students about to begin GCSE maths. I helped explain new topics, such as quadratic equations, factorising polynomials and sketching curves, alongside working through and correcting exam questions they may have been confused with. This broadened my mathematical thinking as it improved my communications skills, helping me to be clearer and more concise in my explanations, a skill which can be applied when working in a team across many different disciplines. I've also contributed to end of term extracurricular activities which my school has run for younger year groups. This gave me an insight into some of the other roles undertaken by teachers, whilst being a rewarding way to give back to my teachers who have supported me throughout my time at school.  
Alongside my studies, I'm passionate about music and playing the guitar. Since completing my grade 8 in 2019, I've been able to explore the instrument to a higher level and improve my technical skills. Similar to studying maths, learning an instrument requires time and patience above all else and I've found it is in becoming stuck where most progress is made, so it becomes important to enjoy the learning process as much as the final outcome. Furthermore, performing with other musicians both within and outside of school has helped boost my confidence tremendously. This has helped me to move out of my comfort zone and take pride in the effort I've put in to learn the instrument.  
After I left school I decided to improve upon my A-level maths grade alongside undertaking A-level further maths, a subject I didn't study whilst in 6th form. This is because I recognised the need to have a firm grounding in many areas of mathematics not covered within A-level maths alone in order to succeed to a higher level. I am studying towards these qualifications independently with support from a tutor. The cancellation of the 2020 summer exams due to the coronavirus pandemic has led to my decision to defer sitting my exams to 2021. During this time, I have taken on a temporary part time role as a customer assistant at a local supermarket, fulfilling a small but key role in helping to stock shelves, carrying out product checks, and serving customers. I've gained experience in teamwork, particularly when working under time pressure, and obtained a greater level of discipline which I hope to carry forward into the rest of my studies and wider life.  
My desire to read mathematics at university has not been diminished despite challenges that have arisen. The experience I have gained from studying independently has given me a greater belief in my ability to learn and understand mathematics, and I firmly believe that studying the subject at degree level will help me to develop the skills required in order to become a deeper, thoughtful and more creative thinker. Alongside being able to continue to explore the subject in depth, the wide array of opportunities available at university, will further improve my confidence and resilience now and in my future career.

Maths Example 2

Some say Maths “makes the world go round” and they are right; it sits within our everyday lives without people realising it. Mathematics has always been very important to me, especially throughout my school career – from being part of a special maths group in primary school to taking Mathematics and Further Mathematics A-levels. To borrow a mathematical word, my love of Maths has continued to grow “exponentially”.

Maths complements my personality and vice versa! I love the problem solving, analytical and logical aspects. I have a natural aptitude for Maths; this was demonstrated when I achieved the highest grade 9 GCSE mark in my school year in 2018 for both Mathematics and Physics. I felt I still had a lot of unanswered questions and wanted to learn more. It was therefore an easy decision for me to progress to A-level.

It has enabled me to explore the inner workings of the different mathematical elements and opened even more doors to further my understanding and confidence. It is rewarding to work on, break down and solve complex equations; to put the theory to the test, see it all drop into place and the correct answers appear! I have steadily built my knowledge and used my “Mathematical tool-kit” to explore different routes when problem solving and I am constantly discovering new elements and methods which is really interesting.

Throughout secondary school I have enjoyed participating in the seven yearly maths challenges and also joined the Team Maths challenge in Year 13. Whilst in sixth form, I have also tutored peers and lower year students in Maths to assist them with their Mock exams and GCSEs. I have found this has also helped me. By breaking down maths questions to explain it to a student, it has helped me to stay focussed on the basic fundamental aspects of Mathematics.

I also feel Maths really complements my interest in IT and Computer studies. I was able to visit the Computer museum at Bletchley Park which I found fascinating, particularly learning about the computing evolution and the ground-breaking work they did during World War two. In addition, I also set myself the challenge of building my own computer. I undertook extensive research initially and reached out to a contact who had more experience, to ask for advice on my components list before ordering. It was a challenging project, but I found it to be very rewarding. Putting theory into practice by constructing the computer piece by piece was invaluable to my studies, programming abilities and my own curiosity in the subject.

I have also endeavoured to progress my personal skills particularly within a working environment. I completed a week’s work experience with QAA in 2017, where I undertook numerous administrative tasks e.g. spreadsheet work, data analysis and liaising with my peers face-to-face or on the telephone. In 2018, I also secured a place on the NHS Administration bank following a successful interview and have been able work periodically throughout 2018 & 2019 within the Payroll department undertaking various administrative duties. This has been invaluable experience for me and has continued to help me build on my communication skills with my peers, management staff and across different age groups. It has also helped me improve my self-confidence.

Socially, I enjoyed playing football from the age of 10 up to Under 16’s team. Without realising it at the time, this was also a great environment to not only enjoy the sport but to naturally learn how to be part of a team and to gain confidence both on and off the pitch.

I firmly believe that by progressing onto a degree this will further enhance and develop my skills and that University will provide me with wider opportunities and experiences. I also feel the integrated masters will be instrumental in creating the foundation and fundamental building blocks to further my career and future aspirations in life.

Maths Example 3

As I have gone through school, from primary to secondary, and GCSE to A-Level, mathematics has been the one subject that I have developed a real passion for. My interest in the subject stems in a large part from my enjoyment of problem solving, breaking down large problems into smaller sections and going through each one in order to build up to completing the question.

As I have gone forward onto A-Level, my mathematical toolkit has expanded and, as a result, I am beginning to build up the confidence to delve deeper into solving larger and more complex questions. I am becoming a more independent thinker, as I am able to tackle more difficult problems on my own, and I enjoy getting 'lost' within a question as I explore various different avenues in order to solve problems.

As part of the many opportunities I have had whilst in 6th form, I have extended my interest in the subject through tutoring for a Y9 student starting GCSE mathematics. I helped explain new topics such as quadratic equations, including sketching parabolas and factorising polynomials, alongside going through and correcting tests. This has added a new dimension to my mathematical skills because in order to explain a topic, one's own understanding of the subject must be high. Additionally, being able to explain a mathematical idea has improved my general and technical communication skills, and this transferable skill will benefit me in the future in all manner of different careers; it is vital to be able to share and present ideas and concepts when working as part of a team.

My interests also extend into other areas such as music. I have been playing the guitar for 6 years, and I have completed grade 6. I am now working towards grade 8. Learning an instrument has allowed me to be more creative. I enjoy writing my own music, and in a similar way to getting 'lost' within a mathematical problem, being able to sit with a guitar in hand for hours on end is one of the most enjoyable aspects of my music as a whole and is when I am at my most creative musically. My confidence has also been improved from playing the guitar on stage, having performed in various concerts at school. As my skills in the instrument have improved, so my enjoyment has increased, and I have started to actually enjoy playing in front of an audience, which has in turn further boosted my self-confidence not only in guitar, but in the wider scope of my life.

I am especially interested in current affairs. In year 12 I completed the Extended Project Qualification and, for this, I undertook a research project on the topic of Brexit. I found this to be a highly intriguing topic as I had to work hard to delve into and analyse both sides of the argument on the matter. Furthermore, I got in contact with my local MP to ask for his views on the subject, and this proved to be a good experience in first-hand information gathering and writing formal letters. The experience I have gained of writing a formal report has also helped with my essay writing in my A-Level subjects. With mathematics, being able to research and write reports is an important part of the scientific field, with researching, analysing and referencing information crucial in a wide range of subjects alongside mathematics.

Over the past couple of years, I have come to the belief that studying mathematics at degree level will allow me to develop the skills required in order to become a more independent, thoughtful and creative thinker. Alongside being able to continue to explore the subject in depth, the wider opportunities available at university, along with new challenges, will further boost my confidence and resilience. I believe that the experience of university, along with the skills and knowledge I hope to gain, will benefit me in all aspects of my life, giving me a greater freedom in choosing whatever I wish to do in the future.

Maths and Computing 4

Participating in the UKMT Individual Junior Challenge in Y8, sparked my interest in using mathematics for problem solving and it has steadily increased since. I have continued to participate in both the individual and team challenges yearly. I wanted to challenge myself at GCSE so self-studied a GCSE in further mathematics. Whilst I did not achieve the top grades, I enjoyed the challenge of teaching myself new and harder material than previously. I believe it prepared me much better for my A-levels and my AS results of an A in further maths show what I can do with the interaction between students and a teacher. I mainly enjoy the problem solving aspects of the subject and I feel like linking this interest with studying computing will open up a future career in cyber security for me.

After the first year of my degree, which would teach me the foundations I need, the idea of immersing myself in the range of topics available to study really excites me. I know I will have no problem motivating myself to attend lectures or tutorials, since even looking at the various topics makes me want to start learning them now. I would happily spend hours finding out and exploring the applications mathematics and computer science have.

My A-levels have developed many skills that will be useful at university. For example, I have developed my ability to break a problem down into its component parts in order to solve it. As well as this, I have become more methodical when approaching a problem. I enjoy the feeling when it clicks into place, e.g. circular motion, the first time I understood how it all comes together I got this feeling of immense satisfaction. Building on my basics from GCSE in computing, developed my logical thinking while writing algorithms and refining my project work. I have welcomed the challenge with my latest project to develop an android app, as it has required me to learn Java from scratch. I have thoroughly enjoyed adding another programming language to my skills. I am also looking forward to picking up other programming languages during the degree. I have been able to apply my mathematical knowledge to chemistry when doing both practical work and theory, which has given me an advantage over other students who have not studied mathematics. From lessons, I can see how computer science has helped with visualising molecules at the molecular level as well as simulations making the initial stages of drug testing safer and more ethical.

My extracurricular interests have very much been based in mathematics and computer science Entering into the Cyber Discovery programme made me consider studying a combined degree. Of the 23 thousand that were a part of the initial stage, I was one of the top 170 to make it to the final stage. Throughout the programme I got to test my Python programming skills as well as learn about SQL and command injection, cryptography, SSH amongst many other things. Taking part in the programme gave me the confidence to consider a future career in the cyber security industry and I believe that doing this degree would give me the necessary qualification to do so.

For 7 years I have been a part of a local Sea Scout unit; the last 3 as a Young Leader. This has developed my teamwork and communication skills as well as showing I can manage a long-term commitment. I have kept on top of my studies as well as dedicating several hours a week to Scouts. I have also gained my RYA 2 powerboat permit as well as a Scout leadership permit for powerboats. I now regularly assist in the sessions by being in charge of the safety boat.

In conclusion, a degree in mathematics and computer science will enable me to continue with my passion for understanding the theory as well as opening up future career choices for me. I am excited to be able to start the next stage of my studies surrounded by other students with similar interests.

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