

I fell in love with mathematics at the age of 8. It happened when we were taught how to add two-digit numbers for the first time. When the teacher did the first example, something like  $12 + 19 = 31$  say, and showed us how to carry the 1, I had a sudden realization that I now knew how to add numbers with three digits too! And four digits! And a billion digits! I could see groupings of 1, 10, 100, 1000, and so on in my mind, and suddenly I didn't have to memorize my addition tables any more, it just made sense. My teacher was kind enough to show me what older kids were doing after school when nobody else needed help, and by the end of second grade I'd started doing square roots. After elementary school, I started to discover different types of math – geometry, algebra, arithmetic – and began to learn more about each of them on my own time. It was my first love.

It seems strange that something as simple as this could leave such an impression, especially since I was well aware that everyone older than me already knew this. Thinking back on those memories, it was not that my idea was true which made me so excited, it was the explanation, the logic, the notion that simple ideas give rise to more complicated ideas. I imagine the joy I felt would have been similar to the first time a future artist realized that paintings begin as blobs of separate colors on a palette, or when a future musician hears a favorite composer for the first time. Just as a painter creates beauty through color or a musician creates beauty through sound, a mathematician creates beauty through thoughts and logic. The famous mathematician G.H. Hardy expressed this same sentiment in his book [A Mathematician's Apology](#) when he says "A mathematician, like a painter or poet, is a maker of patterns. If his patterns are more permanent than theirs, it is because they are made with ideas." In other words, mathematics is, at its core, the weaving together of ideas into a tapestry.

Once I was old enough to really understand many of the differing areas of mathematics, I quickly took up the analysis of sequences and series, integral calculus, and number theory as my favorite topics. I found that these topics tended to involve a lot of creativity in determining methods that would provide solutions, and the artistry behind finding these solutions has always been a beautiful thing to me. Clever substitutions must be made, or clever reductions or conjugates used, even sometimes drawing in completely new and seemingly unrelated ideas. This same love of creative mathematics led me to participate in competitions, and I have been fortunate enough to do well in high school competitions as well as collegiate ones, and these will continue to be part of my life. These competitions and these select subjects are the only creative outlets I have ever known, and have played important roles in my emotional development as well as my intellectual development. This explains a great deal about why I am so drawn to mathematics and why it plays such a critical role in my life, but this is not a full picture.

Almost everyone who has ever known me has asked me some form of the question "Why do you like math so much?" The easy answer to this question is that I find the subject beautiful and enjoy learning about it, but this is not a complete answer. For me, this question is a very deep one. There is something about it that brings me to life. Long before I even knew anything of advanced mathematics, I was doing proofs instinctively, even subconsciously at times. It is a deep and vital part of who I am. And so my love of mathematics exists not because of its usefulness, nor because of any skills I have, nor even because of its beauty. I love mathematics because I am a mathematician, and mathematics will always be a part of my life because it will always be a part of me.

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