

**Madeline Wolfe**

Lebanon Middle School

*From Games to Professor: Brooke Ullery's Math Journey*

Exhausted from the hard work, and intense courses, Brooke Ullery kept thinking about how math was too hard for her; she was close to stopping. Although she had thoughts of quitting, she persisted with everything she learned. Because of her persistence, she later found a point where she discovered that she wanted to continue in mathematics. The actions she took as a young woman influenced how far she has come in her life now.

Brooke first remembers liking math when she was really little, growing up in Minnesota. Her dad, who was unable to finish his Ph.D. in mathematics due to being drafted into the Vietnam War but still was very knowledgeable in math, bought her a Elementary Algebra book that she read over and over again. She also loved Raymond Smullyan's logic story books. She enjoyed being really good at math, almost as if she was superior, and liked having an edge on classmates in math classes. She clearly excelled at math, and once she was in seventh grade, she joined an advanced math program at a nearby university.

The University of Minnesota Talented Youth Mathematics Program (UMTYMP) was a place for her to go twice a week for an extended math class. She encourages those who are interested in math to try to find something like this and take advantage of all similar opportunities. This program replaced her mathematics at school, and got her ahead of her classmates, also giving her confidence to pursue mathematics to higher levels. Although this was one of the greatest math experiences a middle and high schooler could get, this program was rigorous. One of the times she struggled most in her math life was in her second and third years at UMTYMP. She felt drained and felt that the math was too hard, but she persevered and realized that she did want to continue in this program, and in math in general. Brooke says the fact that "You can always make progress in math if you try hard and want to get better" is one of the great characteristics of math.

Starting in high school, Brooke knew that she wanted to do something in math as a career, partially because she always liked abstract subjects that you couldn't always apply in real life. However, in college, she took science, economics, and math courses instead of narrowing in on math, but realized that the math classes were the only ones she thoroughly enjoyed. She says that taking math courses in college are important if you take something related (such as science or economics) because they will

give you an edge. She also explains that it is easier to switch to something else from math than vice versa.

Starting when she was younger, but throughout college, she sometimes felt embarrassed about loving math, and pursuing it, as I think many women do. She sometimes told people that she was going to major in economics, but Brooke ended up getting her undergraduate degree as a math major from the University of Chicago. She says that college was one of the hardest times in her math life, because whenever she started something new, it would seem almost impossible. But, she also says that one of the best parts of math is figuring something out, like putting together pieces of a puzzle. Of course, the most rewarding is finishing something big, like a new theorem.

Brooke says that she always feels like she needs more information, so after her years at the University of Chicago, she then went on to the University of Michigan, to get her Ph.D. While in graduate school, she did a lot of teaching, specifically in calculus. She also did a great deal of research, studying in classical algebraic geometry under her advisor, Robert Lazarsfeld, with a focus on secant varieties and the singularities of them. (For a beginning algebra student: this is related to the set of solutions to a polynomial equation.) Her Ph.D. thesis was about the normality of secant varieties, and she continues to do this and associated fields of research today.

Now, in her first year after graduate school, Brooke is working at the University of Utah, doing research. She is a postdoctoral fellow, and explained that during these years, she will need to achieve a lot, so she can be hired elsewhere. Next year, she will move to Harvard University to continue research for four years. Brooke hopes to become a math professor in the future, and will apply for both research, and teaching positions after her years working at Harvard. She also would love to either work at the University of Minnesota Talented Youth Mathematics Program where she went as a child, or start a similar program of her own.

Brooke Ullery is someone who aspires to be the best she can be. She has worked hard, facing the small world of mathematics and even smaller female world head on, and with a smile. She has always loved mathematics, and continues to pursue what she wishes in math. Brooke Ullery is someone to look up to, and someone who you can count on to do her best, every day.