

WHAT IS A MATH STORY?

by Amber Fornaciari

In short, math stories are recollections of people's past experiences with math or evolution of how they view the use of math in their lives. These autobiographical writings can go back as far as childhood or simply back just a few years. Students are asked to share their journey honestly, as a way to honor what they are bringing to the classroom not only as mathematicians, but as people.

As in the previous article titled, "My Math Horror Story", the writer moves through a progression of math instruction throughout her life. Students often share similar stories, like the one below:

"People who are good at math are lucky. I'm jealous of anyone who is good at math. I have a learning disability with math that makes it hard to comprehend it. It's basically always been this way. It takes me so long to learn something and then the next day I won't remember a single thing from it. My step-dad used to get super mad at me because after learning something I would say I didn't know how to do it the next day. So whenever I think of math I think about feeling helpless as my step-dad yelled at me for not knowing how to do a problem." - Elijah Whitehouse

Since a math story is such a personal experience, math stories can vary greatly from person to person. For instance, a math story doesn't have to be a horror story. See the example below.

A math story in the country—Oscar Lopez

"I never thought I would be remembering how I began to use math in my younger years, maybe from 8 years to 13 years old. It was always in the morning from 4:00 am to 6:00 or 7:00 A.M. when my father took me to go and get water to a place approximately a half mile away. We had to walk up the hill with two empty metal 5 gallons containers. When we got to the destination, we waited in line because sometimes there were already people waiting in line. I don't know if we had to wait for 20 or 30 minutes to fill the containers. We filled them $\frac{3}{4}$ full so the water didn't spill on the way down the hill. A couple of breaks were needed along the way because the water was very heavy. When we arrived back home, we emptied the water in a bigger container and did it all over again. This process went up to three times every morning before breakfast and school. I used math to remember how much water I brought back to our home with my papa. I also used math to time how long each trip took so I could be back in time for school. Each trip took longer than the



The previous trip because each trip was more tiring. I added up time for walking, collecting the water, and walking home times the number of trips. Sometimes people would be waiting at 4:00 AM for this filtered water. I could carry about 8 gallons; 4 gallons on each side of the shoulder carrier. This experience has taught me how to estimate the needed amount of water for a variety of jobs such as 1 bucket of water to wash a car.

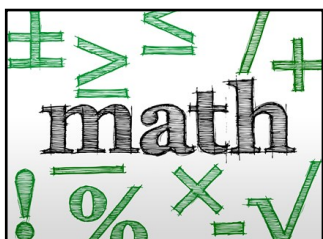
When I was 8 years old I worked a lot, but I enjoyed learning math. The multiplication tables for 7s and 8s were difficult for me, but today they come easily for me. I get excited to learn something new. When I get stuck on new math, I feel like it holds me back.

At 15, I quit school to work in construction. It was in 1985. I needed math for measuring materials and weight for mixing cement, sand, and gravel in Kilograms. I measured oils to put on top of the support for the frame. We used the metric system in Mexico. I learned to use numbers to figure out my pay for my work. I didn't have formal schooling again until the middle of 2017 when I attended Elgin Community College (ECC).

Learning math has helped me become more efficient and not waste energy. When I am working at the warehouse math is very helpful in determining how much work can be completed in two hours. I determine how many people are needed and how much time needs to be allotted.

My goal is to earn my GED, continue my education to be my own boss, and have my own business. Math is important for mechanics and computers. My boss comes to me for advice about things he may not know because he knows I will figure it out or know it. Math has helped me become a problem solver. I feel math keeps my mind sharp!"

Often times, when students begins writing their math stories, it is the first time they are actively reflecting on their experiences with the subject or learning at all, like in Tyree's example below.



"When I think of math, I think this is a subject I Don't wanna do, me and math Don't get along. I think why Do i have to do math cause I'm Def not good at it. I would like to understand math so I can Help my Kids have a better understanding". -Tyree Brown

Benefits of Math Stories

There are numerous benefits to gathering and writing math stories. Adult learners rarely are asked to share their opinions or reflections on their education or math learning. Those can be powerful thoughts for students to build on and revisit as they spend time in a classroom—be it face-to-face or online.

When we come to know and connect with our students more deeply, we build a foundation for all our future interactions. When learners can trust teachers with their personal opinion or stories, this can promote student retention, which in turn helps those students reach their educational goals.

I personally have had many moments where I was able to approach students or differentiate my instruction in a way that benefited their learning because of their math stories. For example, just knowing that a student has test anxiety helps me to frame tests in a less threatening way, teach testing strategies, and figure out ways to help that student with that particular challenge.

Reading a story like Elijah's can be heartbreaking but so informative. As an instructor I now know that Elijah struggles with math, may need extra support, and might have some trauma in his past that affects his learning. When I read a story like Oscar's I immediately think, this student knows how to persevere and be a leader. How can I help that student use those skills to learn? When I read a story like Tyree's I see a yearning for understanding.

The most rewarding benefit of the math story activity is featured below.

“Throughout my life I have always had a difficult time with school, but nothing compared to my difficulties in math. I just could never grasp the concepts as quickly as other students, and my anxiety disorder prevented me from asking questions. I always felt like a bother, and I didn't want to hold my class behind with all of my silly questions. I was embarrassed that I didn't understand the content, when it seemed like everyone else did. As I got older, my anxiety disorder worsened and I developed depression. School became my worst enemy. It was less of a learning environment, and more of a place I'd go to have panic attacks. It became apparent that public school was not working for me, as I spent most of my time hiding in the bathrooms instead of attending class. I dropped out of school my freshman year to focus on my mental health. After taking a year and a half off of school, I registered for G.E.D classes at Elgin Community College (ECC). I was so nervous to be attending school again, but I was hopeful that I'd have a different experience. I started with learning basic math such as addition, subtraction, and multiplication. I caught on quickly, but it saddened me that my old school district had let me pass all the way through my freshman year without have a solid grasp on these foundational concepts. Luckily for me ECC was nothing like my past experiences with school! The classes were smaller, the teachers were more personable, and best of all I didn't have to raise my hand to go to the bathroom. I felt so much more respected here than I did in high school. My teachers felt like teachers, and not like authority figures. I don't fear that I'm being judged by the other students when I ask questions, because we all are there to learn and support each other. It's empowering that we are all working towards the same goal. I no longer feel shame about my math skills, and am excited to go to school each day. I may not be getting my education in the most conventional way, but I'm proud of myself for acknowledging my differences and doing what works best for me!” - Noelle Tuegel

Hearing that a student has found her niche within the program but also found that she can be successful with math is not only affirmation for the individual instructor but also inspiration for other students.

How Do I Implement Math Stories?

The first step is to spend time reflecting on your own math story. The actual activity of writing out your own math story produces similar emotions to what students may feel when they are asked to complete this activity. Some students may also feel more comfortable opening up if they know that you have made yourself vulnerable too.

Second, plan time to dedicate to the math story activity. An instructor should think about timing within a term, session, semester or class. When will students be most receptive? When will it make sense to fit this into my day? Some instructors use this as a first week or beginning of the term activity while others wait until they have formed more of a relationship with their students. To avoid making the very first day of class stressful, it is best to not to use this as a first day activity. It is important to respect that student expectations for the first day of class will likely not include divulging their past or writing something personal.

Step three includes executing the activity. A sample mini-lesson for this activity is below:

Objective - Students will write a math story.

Introduction - What is a math story? Everyone has one. We've all encountered math in our lives in different ways with differing emotions. Math may or may not be your favorite subject, but you've come in contact with it at some point in your life and that is where we are going to start with this activity.

Model

- Teacher shares a small portion of their own math story.
- Teacher shares other examples of a math story, which could be from a previous student or any other source.
- This [video](#), from Story Strong, has a great example of an oral math story.

Activity - Ask students to write their own math story using one of the prompts given. Students may write with just one prompt or a combination of prompts. A sample student prompt sheet follows this article.

Giving students choices in the prompts allows students more equity in accessing the prompts, which in turn, allows for a variety of thoughts of math to be expressed. For some examples of math prompts that one teacher has gathered and found to be very helpful in terms of encouraging her students to view themselves as capable math people, go to [Corwin Connect](#).

Writing math stories can easily be adapted to meet the needs or preferences of your students. The task can be changed to drawing a picture or images to tell their stories if writing isn't the best fit. Very general sentence frames can also be used to get students started, but the magic from the task comes from the open-endedness of the prompts.

Students could produce their stories by typing or writing or by creating a video or slideshow. I tend to have them simply write it or type it the first time. Be flexible - it could be written in a student's native language and translated later.

Next, **read and reflect**. Not only is reading the math stories fascinating, and sometimes emotional, but it also provides instructors with a window into their students math world that they might otherwise never have known. Look to the next issue of *The Math Practitioner* for more about meaningful next steps for the math stories that you collect.

References:

[My Math Story and Identity](#), Story Strong, Angel, Murray Hill MS, Class of 2022

[Getting the Most Out of Math Portfolios](#), Margie Pearse, Corwin Connect, September 02, 2016

Editor's Note:

The COVID-19 pandemic may bring up math fears our students have that they cannot recognize or define. They are seeing a lot of numbers in the news—big numbers—that even the experts are scrambling to make sense of. What, for example, is the difference between the mortality rate of seasonal influenza, which is about 0.1% and the mortality rate of COVID-19, which worldwide is about 5% (as of this writing). If you still have contact with your students via distance learning, consider sharing with them the student pages included in this issue as an introduction to ratios. Demystifying those numbers will enable our students to feel more empowered at a time when many feel powerless.

When Amber wrote this article about collecting student math stories, she probably had in mind asking students to write about their math stories whilst in the classroom. What if we ask them to write stories now, though, as students are learning at a distance? What would we find out? Would their stories be different somehow? Would students have more time to reflect as they write the stories? Would they feel more comfortable sharing their true feelings as they write from home instead of in the classroom? Would their math stories be in some way associated with COVID-19?

We have a unique opportunity to find out. On the page following this article you will find some prompts you could use to get your students thinking about their math stories. If you choose to ask your students to write these stories, please share them with the ANN community at [Ask ANN](#) or email me at mathpractitioner@gmail.com. Please ask your students to sign a [student work release form](#) if you plan to share the stories. We eagerly wait to hear from you.

MY MATH STORY

Everyone has a math story. What is yours?

Here are some questions or topics to help you get started. You do NOT have to answer all of these, they are just ideas to get you thinking.

Throughout my life my experience with math has been...

My best experience with math was when...

My worst experience with math was when...

How do you use math in your daily life?

When I think of math...I think...

My family feels that math is...

People who are good at math...

Happy 100 Years!

Here's another math story—NCTM is celebrating 100 years! We would like to acknowledge that the story of the Adult Numeracy Network (ANN) is grounded in support we received from NCTM. In the early 1990s, adult basic education teachers approached NCTM and asked them to extend their agenda to include adults. NCTM responded by co-sponsoring the *Working Conference on Adult Mathematical Literacy*, which took place over three days in March 1994 in Arlington, Virginia. That event served as the launch of ANN.

Now NCTM is inviting ANN members to join NCTM in celebrating their Centennial with [100 Days of Professional Learning](#)—live, free webinars presented by speakers who were originally scheduled to present at the NCTM Centennial Annual Meeting in Chicago (canceled due to COVID-19). Each webinar will be held at 7 p.m. Eastern time on 100 selected days from April 1 leading up to the October NCTM 2020 Annual Meeting & Exposition in St. Louis. According to NCTM, A variety of speakers and topics will be offered which will include **all grade bands and interests**.

Visit nctm.org/100 to register for sessions, to keep up-to-date on the schedule of sessions, and in the future to access recordings of previous sessions.

