



Fall Quarter Newsletter



October 2022

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Word Search



OCTOBER IN STEM

M	T	W	T	F	S	S
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3	4 World Habitat Day	5	6 NOBEL PRIZE ANNOUNCEMENTS	7	8	9 National Nano Day
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Share Your Story!

A little while back, we hosted an essay contest to encourage students to share their experiences and stories, including challenges and successes, as a female or gender minority in STEM. Now, in order to help spread their stories more, we've decided to feature them in this year's fall newsletter.

Enjoy!

All stories published with the author's consent.

Stay

By Emily Bu

I walked straight into the room. 28 people. 5 girls. 23 boys. Of all the girls in the middle school, only 5 had chosen to take part in robotics, had chosen to take part in an area in which we were alone, in risk of being damaged mentally. I watched as a girl walked into the classroom, hesitated, and turned back, as she could not stand to look at the towering groups of boys. I knew what she was thinking. Her expression said it all. Those smug sexist boys.

Don't walk away. Please don't leave me alone. Stay.

My pleads were left unheard.

I shrunk smaller and smaller into my seat, suddenly embarrassed that I had come in the first place and was fighting the urge to just leave. I was just a girl, after all, hardly knowing anything about robotics or how to code.

After the interest meeting, I pondered my return. What chance did I have against all of those boys? I had been judged too many times. The time when no one in the class said anything when I had scored the highest, simply because I was a girl. Of course, all had plenty to say when two boys had scored 100. Or the times when boys ignored my shouts of 'I'm open!' in gym class because they

doubted my ability to catch the ball. I looked up at room B-12. The world of girls needed me, and I had to represent all of them despite if I was jeered. I took out my agenda and marked the date of the next robotics meeting.

...

For the next few weeks, I had made new friends and had formed a team. We were the Wolf Pack, but more specifically, the only team with boys and girls. Despite this crushing fact, we spent everyday planning for the big competition, expanding our Lego creations, coding them, and advancing our prototype. I aided our team to create a presentation explaining our ideas on decreasing the number of damaged packages and helped in building our robot. The other teams that had read our presentation swatted aside our strategies, claiming their ideas were more realistic and would more likely impress the judges. A group of boys was better than a diverse team, they seemed to say. I thought of the girl who had left the room on the first day. Would I give them the satisfaction she had given the boys? On the day of the competition, we all watched tensely as our robot competed with the others. It didn't score very high. I watched, infuriated, as the expressions on the other teams' faces read 'ha-ha, we knew you weren't good enough.' However, when our presentation scored first place, I enjoyed cheering loudly, stealing glances at the dumbstruck boys. It was time. Of the four teams, only two would advance to the next round. I held my breath as the judges gave us their final answer.

Thank you for giving me the strength to stay.

the thorns on my rose

By silverstreamcz

My life is like a rose. I grow every day, becoming smarter, stronger, and braver.

This growth is caused by the soil below me, which is filled with the nutrition of my upbringing and education. The stem carries this nutrition upwards and transforms it into fruitful qualities that make me the best girl I can be.

The stem is split into four parts - science, technology, engineering, and math. Each of those paths are riddled with sharp thorns that threaten to poke me as I try to climb higher.

Unlike a lot of other girls like me, I don't face a lot of discrimination because of my gender. Fortunately, I've had a pretty open path so far. However, the thorns on my stem are my own personal struggle to get onto that path - and stay on. Here's my story.

The path I chose was technology. I started it from a young age - 8 years old - by exploring Scratch, a basic, fun coding platform that

allows kids ages 7-12 to create their own games and programs by dragging and dropping colored code blocks together. I had a lot of fun creating and drawing different characters to include in my games and adding music/sound effects. However, whenever I got to the actual coding, I would slack off and ask for help at even the slightest struggle - or just copy step-by-step instructions in a book without really understanding them.

Needless to say, this wasn't going to get me a lot of "nutrition" later in life. I soon learned that I had to persevere, and not just give up right away. I started getting more creative and thinking of my own solutions to bugs instead of just asking my dad to fix everything. In 4th grade, when I was able to freely code on my own, I joined my school's Science Olympiad team to participate in their Pro Gamers coding event. With the help of my 5th-grade partner, we won first prize!

I felt happy, talented, and powerful. Coding is easy! I thought. Then I started learning Python.

Python is a real programming language that actual developers use. I came expecting to know all the basics already. It couldn't be that different from Scratch, right?

Wrong. Python was like the polar opposite of Scratch. It was much harder, made no sense to my beginner-programmer brain, looked ugly, had only one font, didn't have cool colors or images, didn't let me draw or add music, didn't let me pick characters... the list went on and on. Within 10 minutes, I was flopped on my bed in

frustration. “It doesn’t make sense,” I complained. “It’s too hard. Why can’t I do scratch instead?” My father told me Scratch wasn’t powerful enough to create the programs that would bring me success.

Yet I didn’t want to learn Python - didn’t want to learn to code at all. I just didn’t see the point. Why do STEM? It was boring, difficult, and a waste of time. I could be reading, or drawing, or hanging out with my friends.

For years I dodged any real progress. I would code occasionally to show off to my friends or in technology class, but that was about it. The only time I really got into it was when there was a reward at stake. Often times, that reward was video games. I was obsessed with a variety of video games like Genshin Impact and Pokemon, and every weekend I would code in Python to earn an hour of game time.

These incentives worked, though. I would still shy away from challenges, but the more I coded the more I realized that I actually enjoyed it sometimes. I started to give more effort, adding my own creativity to my programs instead of just coding what my dad told me to code.

Recently, I’ve started to code on my own - which is a big milestone to me. I had thought, Why code when I don’t get to play video games? There’s no reward. But I’ve started to realize that there actually is a reward - the thrill I get when my programs run flawlessly and deliver the result I worked so hard for. Of course,

getting there requires a lot of effort.

But I'm willing to brave the thorns, if only I can get a taste of the sweet nectar that awaits me. I know it's there... I just have to keep growing, and I'll reach it.

After all, all roses have their thorns.



Appreciation vs Talent (Math Competitions)

By Elyz Katz

In 7th grade, my school administered a Mathcounts school sprint round in order to select a team to go to a nearby chapter competition. Most students were under the impression that I was really smart and were shocked when I didn't get in, which made me feel pretty bad. Even a good friend of mine, who did get in, poked fun at me for it.

Because of this, my competitive instinct kicked in, and I studied. REALLY studied. I went to the chapter round the following year with the rest of the team and got... top 40. I was devastated. The friend of mine mentioned above nearly got top 10, and I was unbelievably upset. It killed me to realize that while he hadn't studied, there were people equally as "naturally talented" who HAD, for years upon years. I, irrationally I know, resolved to quit caring about math after that. It killed me also because this was only the CHAPTER ROUND. The very first qualifier.

But I couldn't. In the undertaking, despite my best attempts not to, I had fallen in love with competitive math. No... not just competitive math. ALL math. I couldn't describe it, but the subject

took hold of me, and wouldn't let go.

It took a lot for me to get over my bitterness. Why should people get to be more successful than me when I love it so much more? I thought, how could that possibly be fair?

To this day, I'm grateful for the experience. This side of me which had previously been unveiled now showed itself like a shining star. I'm grateful for it despite how jarring it seemed at the time. I now realize skill isn't everything, and there is more to competition than winning, than just BEING better than the others. In a complete shift of perspective, I now appreciate people for the work they put in - the nature of their success - rather than just THE SUCCESS. Because so much goes into success - circumstances, inborn talent, AND hard work.

I'm going into the 11th grade, which concludes my break from competition. My dream has always been AIME - something I understand to be a relatively low bar for a person in the competitive math scene. Heck, I might not even be able to accomplish that! But heck if I care. I've (unfortunately and fortunately) uncovered this love for math that I can't escape, and in retrospect, I realized I've gained so much from even just that one failure. I've become a better problem solver, a better sport, I found my passion, and so much more. I'm so eager to see what I will learn as I continue this endeavor.

Thanks for taking the time to read this!! Have a lovely day :)

My Math Journey

By Angie Huang

Ever since I was just a little girl, I've always had a passion for math, even when I faced challenges. In elementary school, there was a gifted and talented Gateway program, but despite being identified as gifted, I was not accepted. Of course, this frustrated me, but more than anything else, it motivated me to persist and stay resilient in everything I did. This mindset and my enjoyment of math helped me pass the entrance exam in 5th grade, to get into the University of Minnesota Talented Youth Mathematics Program, where I began the curriculum in 6th grade. This program taught me to love math for its beauty, and I accelerated further in math, having now learned Algebra I and II, Geometry, Precalculus, and Calculus all in my middle school years.

Also in elementary school, I began participating in competition math. In 5th grade, I walked away with a silver medal at national MathCON and placed first in Minnesota Mathmasters. These results helped me prove to students in the Gateway program that I was even better than them, boosting my confidence.

During my middle school years is when I really became endorsed in math, but also the time when I became exposed to the challenges of being a woman in STEM.

In 6th grade, I joined the MATHCOUNTS club. In a room with almost 20 students, I was one of only two girls. Most of the boys were so loud and annoying, always acting immature. As if that was enough, they all looked down upon me, acting like I was nothing compared to them and meaningless to the club, giving me flashbacks to elementary school. Well, it just so happened that both the other girl and I made the four-person team, shocking everybody.

Unfortunately, the rest of that 6th grade year was not my best work. Although our team placed first in the Chapter round and advanced to State, the State round was canceled the day before the competition due to COVID-19. The next year in 7th grade, I got a perfect score in the Chapter round and placed 5th in Chapter Invitational, but due to a huge part of my lack of motivation from the rising pandemic and many distractions, I scored horribly in State. I knew that I couldn't afford to keep this up, so I had to make 8th grade a special year. That year, I set a goal to make National MATHCOUNTS, no matter how impossible it seemed.

In 8th grade, I started with more AMC prep, and by more, I mean hours upon hours of hard work whenever I could. This led me to make AIME, which was also one of my goals in middle school. For MATHCOUNTS, I was the captain of my team, and I took first place individually for both in-person and online Chapter rounds, with my team in first as well. In preparation for State, I spent countless hours thinking about difficult problems. State round was ever so memorable. I placed 5th, also known as the alternate to the National team. The news first came in a huge wave of emotions, because all of my hard work ended this way, and I had let down so many people who believed in me. In reality, I only missed Nationals by one point,

but that one point will never be forgotten. To make things worse, if I hadn't made any stupid mistakes, I could've placed first. But all of this eventually settled in, as there wasn't any way to change the past. I learned that the hard way. Still, my experience was more than worth it, and I grew so much from where I began. Now my goal is to qualify for JMO along with Math Prize for Girls, and eventually MOP.

In retrospect, I wish that I had more women in STEM that I could look up to and aspire to be so that I wouldn't need to have a much higher level of motivation than others. But now that I think about it, this has helped me improve myself and find the real me who loves math enough to keep doing it, despite what others said or did. Now that I've gone through and experienced so much, I have been working hard to help others in the world. Something that I truly enjoy is teaching math, and I've done that in a few ways. First, I was accepted into the Daily Challenge with Po-Shen Loh team, where I have taught as a teaching assistant for multiple courses. This experience has not only improved my teaching but also opened my eyes and brought me many friendships. In addition, I also volunteered as a TA for a local math camp. My math talent has helped me quickly learn Physics and Computer Programming, which I will also use to start free tutoring for kids through my own website. To show my passion for women in STEM, I participated in the Mathandai4girls contest, and placed 4th individually, which I am incredibly proud about. I hope that my experiences will inspire girls to explore and fall in love with math and other fields of STEM. My math journey hasn't been easy, but throughout the ups and downs, I've gained so much knowledge and experience. Actually, what I've experienced is just part of the early stages of my journey, and I will continue to grow.

The Coach of Champions

By Tina Gao

It should be the best day of my life, but shameful, silly failure dragged my heart like I dragged the Alabama National Mathcounts Team.

It was the 3rd day of Mathcounts Nationals, Countdown day, at Washington D.C. what I have dreamed of ever since I started middle school. Allan, the Alabama state captain, was the champion. And we didn't do too bad as a team- 11th place. I should be romping around with Albert and Eric, who were gloating their scores of 25 and 28.

But I am 4th place in Alabama, 110th place nationally, who got a 23 out of 46. I am the reason we were 11th instead of 10th place. What a difference 1 number makes! 10th place gets recognition, and 11th nothing.

My friends Kevin and Aaryan from Florida slumped in the chairs. "The graders couldn't read!" Aaryan complained, "Just because of handwriting!" I told them about how horribly I did- we both got 4 out of 8 on target. I felt a little better, knowing that my friends supported me, but I shared the unfairness. People who also got 23 but won tiebreakers had 2 digit ranks and I had a 3rd wheel to weigh me down!

Kevin and Aaryan were USAJMO qualifiers, much smarter than me. “How do you get good and qualify?” I asked. They suggested I print out and practice a lot of AIME problems. They were hard and would help me be better at AMC10s.

Just when I felt better, Allan, Alexander, and many of the top 56 qualifiers joined us. The crowd had grown to around 20 people, so Allan shared Sprite, Water, and a bag of Trollis. Everyone except me grabbed handfuls. We signed yearbooks and started For the Win games. Although the countdown was over, the rest of those who didn’t make the top 12 still wanted to join the fun! Victor from the Illinois team was kind enough to help me access For the Win on my phone, but we were too late to join Allan’s massive game. In our own games, he won most of them, but I answered some questions faster than him and won a few games.

Victor was about to teach me generating functions when the Alabama coach Mrs. Morrison called.

“I would like to meet you in your room.” She said. Oh no.

“My rank!” I kept panicking as we went up the staircase to the 3rd floor.

“No. It’s going to be good.” She insisted.

I unlocked my room. Thankfully, my roommate, Catherine, USAJMO qualifier and member of the 4th place Iowa team, was gone so she wouldn’t see me cry. I froze in front of my table, silent.

Catherine Xu had a two time competitor certificate. I only had a participant plaque.

“I’m so proud of you.” Mrs. Morrison said, “so I wanted to give you a gift. I wanted to give it here because boys don’t care about this.”

She revealed a large box. I lifted the lid and gasped. It was a model of Washington D.C. with the major monuments, big and heavy enough to need two hands to carry. Exactly what I eyed in the gift shop!

I thanked her, but I also wanted to tell her something, “How do you think the rest of the team would feel? My score was above 20, but my rank was 110. I am the reason we got 11th. Everyone else did better than me. They would blame me for not being in the top 10.”

“I know, it's tough, but you did great. Last year, we got 13th place. And you’re the only girl on the team.”

Mrs. Morrison comforted me, but I couldn’t help but feel a twinge of shame. I was proud to be a girl who does math when I win female STEM competitions or extra perks. Besides, it is an excuse when I do bad. But then again, I must prove that girls can do math as well as, and better, than boys. But I am ashamed when I am one of the few girls in the room, living proof that girls are bad at math, and the smart boys tease me about "flirting" with Allan.

But there are also boys who shared my disappointment and sincerely wanted to help me qualify for USAJMO. There are boys who gazed at the only girl on the champion's team admiringly, who knew she deserved to be at Nationals like them. There are girls who strive to break boundaries and solve issues the boys will never face. And there is the coach of the Alabama team, of the national champion and a champion for the underrepresented gender.

“Yeah, at least I got top 50% and we didn’t get 12th or worse.” I smiled.

I realized, champion coaches not only coach champions; they make their entire team feel like champions.



Jenga Blocks

By Alyssa J

In the cold classroom, all I heard were rhythmic keyboard taps and timid mouse clicks, but in my head, a thousand thoughts clashed against each other, throwing themselves at the walls of my mind, making a discordant choir that demanded a voice. They were asking why my efforts were being denied the grade they deserved, why my time spent carefully crafting a project seemed irrelevant, and why my arguments fell through, unable to hold their own against my teacher's open-fire criticism.

Was it because of my race? Was it because of my gender? Did my demographic work against me? Maybe I wasn't meant for this, after all. These questions were the lump in my throat that refused to budge. These thoughts were the tears that burned my eyes.

My teacher's voice, spiked with irritation, crescendoed ever so slightly- just enough to shake the insecure foundation I had built within me.

I was fighting a silent duel with him and with myself. He had encouraged the growth of my already-haunting belief that, no, I really wasn't enough. I wasn't smart enough, I wasn't working hard enough, I wasn't good enough. Then he hit the final block, causing my Jenga tower of courage to crumble. "I think you have too much

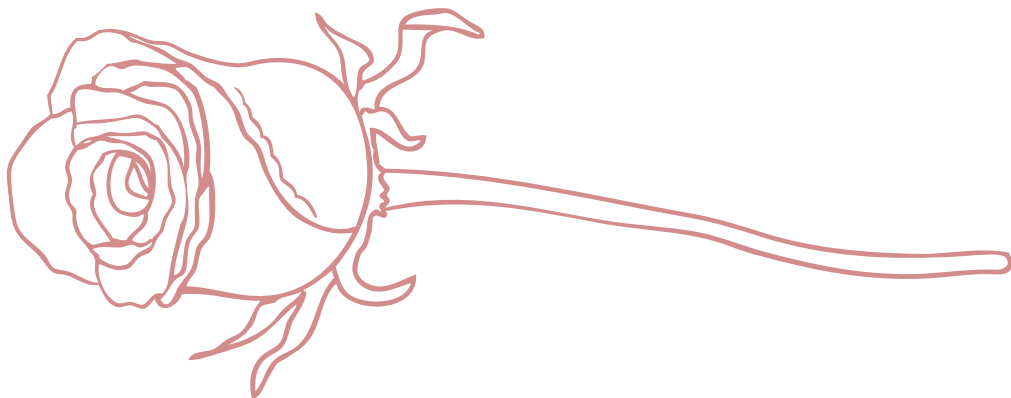
pride.” I stood speechless, stripped from my ability to talk back. I replayed those words in my mind. I turned them over, cut them open, and dissected them. Breathlessly, I returned to my seat.

That day, I went back home with those words embedded into my heart.

The matter had disturbed me for an unbearable amount of time, yet it was settled as quickly as it had risen. “Why shouldn’t you be proud?” My mother’s tone was aggressive, but comforting all the same. Suddenly, I had something new to ponder. And with that, she began to build me back up- replacing my tattered Jenga blocks with titanium, stronger than ever.

...

I fell in love with equal signs and spinning gears within concrete walls and crinkled pages, and I have no plan of letting go. My progress refuses to brake for someone who tries to tear me down, and my potential is unstoppable- because “I was born for this,” and so were you.



stems, roses, & the things in between

By L. Wang

```
public class Stem
{
    public static void main(String[] args)
    {
        String gender = "woman";

        System.out.println("I was the only " + gender + " in my
5th grade computer science class. A bunch, a band, a
bundle of boys – they crumpled over sanitized desks
with inside jokes everyone but I could understand.");

        System.out.println("It's here where my neck prickled
with the sensation of chilled smoke, as if a ghost
wandered through the classroom walls & pinned me as
their sole target. I rested here, as " + gender + ",
for a whole, achingly-long year.");

        System.out.println("When 5th grade bled into high
school, and I began taking computer science by choice
rather than by force, I realized that being " + gender
+ " among men is common.");

        System.out.println("Is to be expected, really.");
```

```
int boy = Integer.MAX_VALUE;
int girl = 1;
while (girl < boy)
{
    System.out.println("GAME OVER");
    girl++;
}

Roses retry = new Roses();
retry.shareYourStory();
}
}

public class Roses
{
    public Roses()
    {
    }

    public String shareYourStory()
    {
        System.out.println("A fact: women make up less than 30%
of the STEM workforce.");

        System.out.println("A fact: I am a woman.");

        System.out.println("A fact: and I refuse to wallow.");

        System.out.println("Here's another fact for you: I am
not alone. I never have been. & if you, a fellow
minority-in-STEM, is reading this, then you are not
alone either.");

        System.out.println("July 2022. 9:00 AM. I logged onto
```



```
my first-ever Women's Technology Program class for
mechanical engineering. The Women's Technology Program
MechE track brought together 19 girls from across the
nation – different lives, different stories, the same
willingness to learn – and dumped us into a Zoom class
to explore engineering.");
```

```
System.out.println("Community is a strange thing when
you've been deprived of it for so long. Yet, we bonded
over our love for all-things-science/technology/
engineering/math. We suffered over practice problems
together, constructed marshmallow-spaghetti structures
together. We cheered each other on during Rube Goldberg
machine debugging, failed crochet nights, and burnt
banana bread.");
```

```
System.out.println("People Like Us are out there, I have
learned. I just haven't been looking hardenough.");
```

```
System.out.println("& isn't this a future worth
imagining? That a child, no matter the gender, is
supported through any career path they'd like to take?
That a little girl, grade five, may have a friend in
her computer science course?");
```

```
System.out.println("The generations before us have
taken the mantle upon their backs to carve a place
for Us in STEM.");
```

```
System.out.println("Now, it's up to us. Would you join
me?");
```

```
System.out.println("WINNER");
```

```
}
```

```
}
```

My Math Story <33

By Practice4ohrs on AoPS

Math has always been an extremely important part of my identity. I was taught the multiplication table up to 12 in kindergarten, and was dragged out of class to take “algebra” in first and second grade. This was all due to my parents putting an emphasis on making a career in STEM, and the Model Minority stereotypes put on me as an Asian-American. I was always expected to get top scores and answer every question. In my third grade class, a boy was bragging to everyone else about how he beat me by one point in those quick multiplication sheets.

From the 5th to 6th grade transition, my school offered a test to skip a grade in math. I walked in, expecting to ace the test. That was not the case; I barely knew half the things on there and I guessed the rest. It was one of many challenges for my math journey as I realized that there were others out there, miles better than me.

In 6th grade, I joined the math team lunch club. From there, I heard about the AMC 8. Before this, the only “contests” I have encountered were the small, regional ones that were easy. I thought it would be the same for the AMC 8, so I signed up. After a few months, the scores were out. I opened up the email to see that I’ve gotten a whopping... 8/25. That was the second challenge for me, after failing the test to skip a grade. Ironically, two new students that

year both skipped a grade in math and made distinguished honor rolls in the AMC 8.

That summer, I worked as hard as I could. I mocked many contests and bought AoPS textbooks, hoping that one day I can achieve what the two students did. That year, I got a 14/25 on the AMC 8. I also joined MathCOUNTS that year but didn't make any significant progress.

The following year, after more mocking and crying, I got a 20/25 and made Honor Roll. I also made Chapter in MathCOUNTS, but did not make State. Now, I have an opportunity to skip a grade in math again and I know I won't be throwing that away.

My non-fiction writing skills are subpar, so this might not have been the easiest to read. I'd like to think that my words made an impact on you, the reader, as the struggles I talk about tell me to work harder. Hopefully you enjoyed reading my story, my discord's trainwreck#0275 I'm way less serious on there if you want to talk :D Have a nice day~



A Positive Outlook

By Cindy Wang

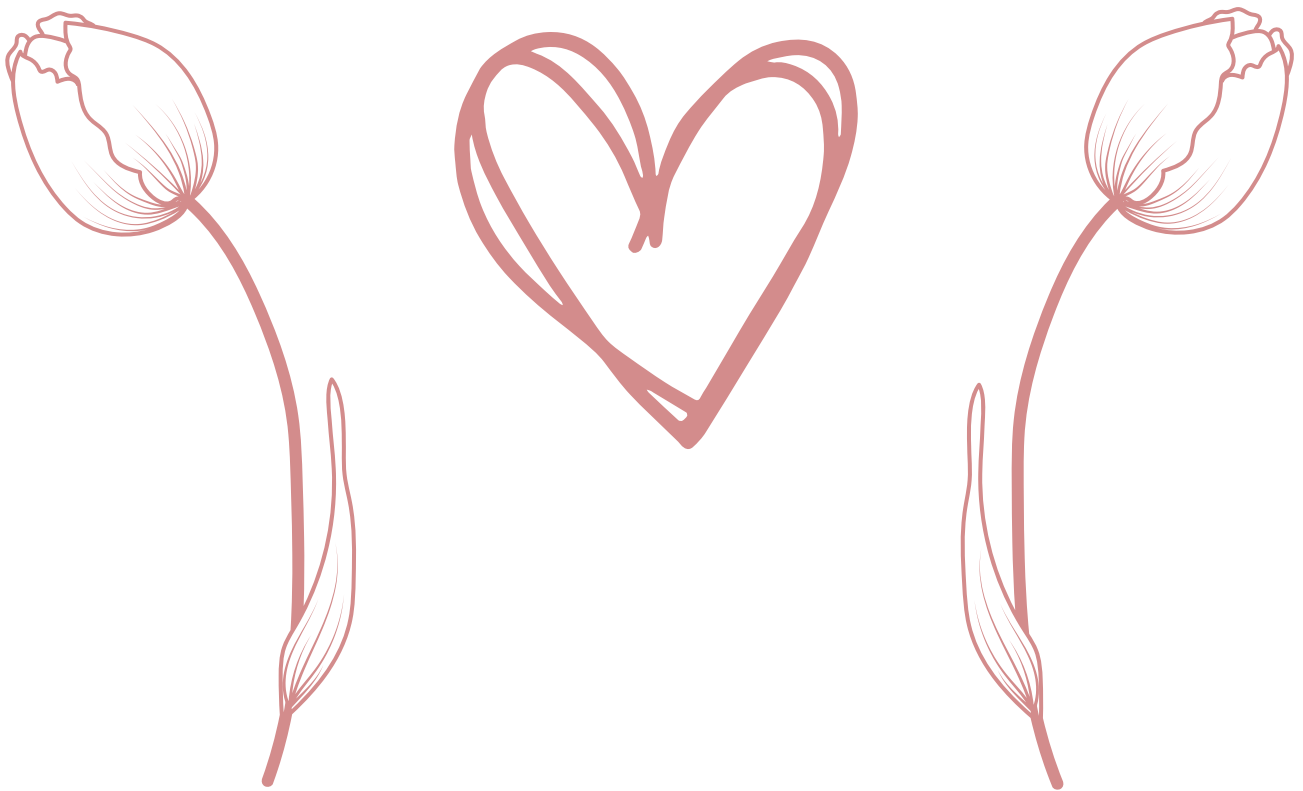
There is no doubt that females in STEM will face discrimination at some point in their career, whether it be while looking for a job, being the only girl in classes, or at competitions. These issues aren't to be taken lightly, and they are definitely not to be ignored. But even so, I believe that we can also shine some insight into the many positive things that are happening with females in STEM.

On all accounts, females in STEM are definitely succeeding. From Maryam Mirzakhani and Maryna Viazovska, the two female Fields medal winners, to well-known scientists like Marie Curie, the impact that women have had in all fields of STEM cannot be overlooked. For many young girls and scientists, these women are great role models and help to introduce more girls to STEM and encourage them to participate, fostering the message that anyone can work in STEM fields, no matter their gender.

Additionally, there are so many organizations, just like this one, that are actively seeking out female participants that may feel overlooked, discriminated against, or marginalized because of their gender, and allow them to share their stories. These stories are not just words on a page; rather, they serve to inspire other women and let them know that they are not alone in their experiences. And, while we might still be in the minority in STEM fields, many outreach

programs, like the National Girls Collaborative Project, are helping interest more young girls in STEM, and increasing the number of women in STEM fields.

Though there is no doubt that women face many hardships in STEM, as many, including myself, have experienced, I feel that there is also much value in shining a light on the many, many positive things that are happening in the STEM community. And though there is still so much work to be done in equaling the balance in STEM, so many women in STEM have, and will continue to, reach out to each other, support one another, and build a welcoming community for more girls to join STEM.



Navigating the Endless World of STEM

By ISABELL Z

As the bright light of the sun poured into my room, I woke up and got ready for the day ahead of me. I walked up to my bulletin board and stared blankly at the thousands of sticky notes posted on the miniature board. Through the clutter of pins, notes, and papers, one caught my attention. It was a bright blue colored note with the words “STEM day” written on it. Suddenly, I dashed to my calendar with a hundred thoughts going through my mind at the same time. It was STEM day, in which students can find an interesting project and work on the topic the students chooses for most of the day. After a day of hard work, the student is expected to present it to the whole school. If their project was selected they would be able to move on to the regional contest, states, and lastly nationals. I was so excited for this day as if I won my project could possibly be used for the benefit of society. By the thought of the exciting day ahead, I quickly rushed downstairs to get the supplies ready, eager to start my project. Before I was seated on the bus, I had already thought of an idea for my project this year. I wanted to help the environment by experimenting with current engines at browser headquarters such as Google for their percentage of carbon emissions released. Even if a solution was found that decreases the carbon dioxide released out

of their server by a bit if all browsers incorporated this method it could change the total amount of CO2 released every year significantly.

Since today was STEM day there were only two hours of school. After I had finished my required two hours I immediately came home eager to start researching my project. I sent an email asking if I could go to Google's Atlanta Headquarters for research. After a few business hours, there was still no reply. Discouraged, I went online to try to find other solutions to my incoming disaster. Through many articles, I finally managed to gain insight into the information I needed anyway as I happily celebrated the wall I made that blocked my great disaster. During the following hours, I spent a lot of time learning from a Youtube interview about how the google physical server connects to a machine that releases the gasses into the sky. At the same time, I was also trying to brainstorm ideas to find other possible ways to get people's searches as fast and as efficiently, though at the same time, releasing a smaller amount of harmful chemicals into the atmosphere. After a long time of thinking, I found many different possible solutions, some worked very badly, and some worked perfectly just not as fast. After my brain started venturing out of super focus mode, the delicious aroma of my mom's cooking broke through all my train of thought and reminded me that self-care exists. I immediately hurried into the kitchen gobbling down some of my mother's homemade soup dumplings suddenly realizing how hungry I was.

After I finished eating and making sure my body was ready for more work, I walked back to my study room with the flow of ideas coming back to me. My day was split up into parts to keep

everything organized. This part of the day was mainly about researching how the engineers at Google keep the entire browser running as well as possibly learning their tricks to keep the search engine from being hacked. During those hours I also made sure my plan B was ready. Like any other good planner, I had learned from experience to always have a plan B just in case something went wrong. Therefore, I planned one that was not too off-topic from my project, so it was easy to prepare. For my other plan, I was researching how the analysts help keep Google safe by keeping viruses and trackers away, keeping the 3.4 billion people that use Google safe on the internet. Though while working on my other project, I found research from the analysts that had various pieces of information that were key in my research. From their studies, it was revealed that one Google search is equivalent to about 0.2 grams of CO₂. According to a study from 2015, there are around 3.4 billion searches per day. The total carbon released every single day by the server would then be 680 million grams. The important message behind this project was to find a solution to this big carbon problem. If people were careful about their carbon footprint then this giant global warming issue could have been solved long ago.

Generally, when I share my experience with others they always ask, how do you already have an idea of how you're going to pave your pathway when some people are still stuck not knowing how to use the shovel? I always answer the same thing, the longing for the feeling of new discovery. This mysterious force has always been pushing me to do multiple tasks educationally that people my age would have been scared to do. My feeling of new discovery was only created when I had seen my parents and ancestors push themselves to their educational limits because of this unseen force. I had also

experienced my mom and dad working night and day trying to find the solution to the mysterious Riemannian Geometry in math, hoping to leave a footprint in history, hoping to help out the future generation. Doing this project was half motivated by my feeling of discovery, the possible prize of changing the world even by a bit was the motivation behind mostly every single move that I make. The other motivating factor that has helped me accomplish many things in STEM is Grace Wahba, a famous statistician who is one of my absolute role models. Grace was one of the few people in the 1900s who was working in the STEM field, she single-handedly founded the Wisconsin School of Spline, and the trainees produced by her were very outstanding and among the top statisticians today. She was also one of the key inventors behind the smoothing spline, a powerful approach for estimating functional relationships between a predictor X and a response Y .

Grace also happened to be one of the first people who bonded me with the 4 areas of STEM. Her entire career all makes up a story to me and that story has gained a huge significance and meaning over time. This story has pushed me and motivated me to do many tasks that were key in my pursuit of science and math. Though to be like my role models, I need to go on a quest to find anything that will help the future generations, something to leave a mark in the history of science, technology, engineering, and math. If I possibly complete this task, then the future generations could ascend homosapiens to the possible, most superior race in the universe.

References: Nychka, D., Ma, P., and Bates, D. (2020) A Conversation with Grace Wahba, *Statistical Science*, 35, 308–320.

My Story

By Scarlet Gitelson

Most of my male friends would say that my gender hasn't affected my experience in STEM. Many of them would say it hasn't affected my lived experience at all. I, however, am fairly certain that none of those friends have had their math coach excitedly approach them to say that it was 'so rare' to get to teach someone of their gender as good at math as they were. I am also fairly certain that none of them have felt the discomfort of going to their first science olympiad practice only to feel acutely uncomfortable because they were one of only three people of their gender in the room. Simply put, they don't have the first hand experience to know how wrong they are.

Being a girl interested in STEM, I've faced more obstacles than I can count. I have had to challenge assumption after assumption made about me, and I've often failed at eliminating the stereotypes people associate with me. From the boy in my 6th grade class who told me that I shouldn't talk as much as my male counterparts in class debates to the member of a math team who said I couldn't be happy without a boyfriend to the coding camp where I had to get one of the boys in my group to walk me to the bathroom, my ambition has led to some of the most humbling experiences of my life.

However, if I'm being honest, the previous statement is a grave oversimplification. Being a girl who loves STEM has helped me make some of my best friends. From late nights spent playing For The Win! To hours spent laboring over science problems in crowded cafeterias, science and math have been responsible for some of my favorite memories. Through STEM's gentle guidance, I have learned so much about teamwork, perseverance, and dedication, and I hope I never stop loving the feeling of solving problems. Being a girl interested in subjects like these is at times isolating, and certainly comes with its fair share of adversity, but I wouldn't trade the world for the thrill of each 'Aha' moment or the satisfaction at the end of a late night study session. At the end of the day, I am a girl who loves STEM, and I hope beyond hope that fact never changes.



Word Search

Words from the list can be found forwards, backwards, up, down, and on diagonals. Good Luck!

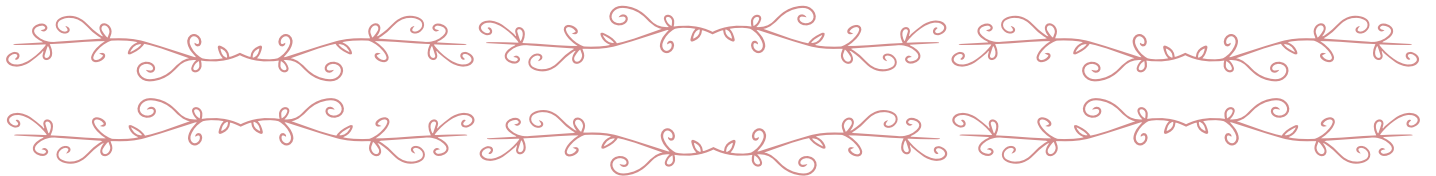
Y	I	C	O	M	M	U	N	I	T	Y	I	S	I	Online
N	E	N	G	I	N	E	E	R	I	N	G	T	I	Support
R	T	C	E	T	R	O	P	P	U	S	N	O	T	Community
M	E	T	S	C	Y	P	L	A	T	F	O	R	M	Curiosity
S	A	D	V	A	N	C	E	M	E	N	T	Y	C	Resilience
C	M	I	G	I	R	L	E	A	R	N	I	N	G	Girl
H	W	O	N	L	I	N	E	N	E	R	G	Y	D	Change
A	O	O	R	G	R	A	D	U	A	T	I	O	N	Advancement
N	R	E	S	I	L	I	E	N	C	E	A	R	Y	Platform
G	K	N	P	E	R	S	I	S	T	E	N	C	E	Education
E	M	E	D	U	C	A	T	I	O	N	R	C	T	Persistence
A	C	C	E	L	E	R	A	T	I	O	N	E	G	Rose
R	O	D	C	U	R	I	O	S	I	T	Y	U	N	Engineering
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														Teamwork
														Stem
														Story

Play this puzzle online at: thewordsearch.com/puzzle/4130446/

*Thank you so
much for reading!*



This quarter's newsletter was a bit more lengthy because of the essay contest stories but we hope you enjoyed nonetheless!



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