ColAUMS Space

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See us at our next event to sign up or use the link below!
Q PAY link

Introduction

Welcome everyone to the third issue of ColAUMS 2021. This issue will be celebrating women in maths (13th May)! Let us present you with a a mathematician profile, letter, and a puzzle as usual. As the first semester comes to a close, I wanted to congratulate everyone for adjusting well to things returning back to normal after the events of last year which we shall not mention. With the exams coming up there is only a few more weeks to go before we can all enjoy that sweet winter break. I wish everyone the best of luck and I hope you enjoy this issue of ColAUMS.

- Jieun Kim, ColAUMS editor

Maryam Mirzakhani

Maryam was an Iranian mathematician who worked on various problems around hyperbolic geometry. She worked as a professor at Stanford University and later became the first female and the first Iranian to be awarded the Fields Medal.

She was one of the members of the Iranian International Mathematics Olympiad (IMO) team in 1994. With her spectacular performance, she would continue to participate in the IMO the following year as well. She would continue her journey into mathematics to complete a PhD proving a very close estimate of number of geodesics on different types of hyperbolic surfaces. Hyperbolic surfaces are surfaces that are shaped like saddles or pringles chips. She then went on to conduct research around hyperbolic geometry.

Maryam was a great advocate of drawing to help visualise the mathematics. She would doodle on sheets of paper and write mathematical formulas around her drawings. Although she is gone now, she has left behind a legacy for many future mathematicians. "Maryam is gone far too soon, but her impact will live on for the thousands of women she inspired to pursue math and science," said Stanford President Marc Tessier-Lavigne.

To Those Who Say Women Can't Do Maths

To anyone who has ever said that women can't do mathematics,

There's no point hiding my thoughts on this subject – you're wrong. Maria Agnesi, Marayam Mirzakhani, and Sophie Germain have not only revolutionised their respective fields of mathematics and contributed immensely to human knowledge and our everyday lives, but have done so whilst being female. Shocking, I know. In the wake of such incredible women (and many others!), you'd think that I wouldn't have to worry about writing a letter like this to people like you, but, unfortunately, I still do.

But the thing is, I could highlight every single incredible woman who has ever done mathematics, but you'd have the same response. *These women are exceptions*, you seem to say. *Most mathematicians are men for a reason*, you imply. *Most women just can't*, you conclude.

But actually, if you start doing just a little bit of research, you will come across a a recent study of 1.6 million different grades which indicates that male and female students perform similarly in STEM subjects, leading the authors to conclude that large gaps in the representation of women in STEM careers 'are not due to differences in academic performance'.

You ask: So, why then do countries with increased gender parity tend to see less women in mathematics? There's no clear cut answer, but take for example Maryjane Wraga's study: when women were told that they typically performed better at a mental rotation task (which normally favours men[a]), their performance suddenly improved. Similarly, when all participants were told that their respective genders performed the worst, their performance worsened. Waga theorises that when someone experiences a 'stereotype threat', mental resources are diverted to dealing with the associated anxiety rather than performing the task at hand, leading to a decline in their performance.

As a woman who has been *told*, 'You can't do mathematics', when you do make a mistake, as all mathematicians do, you're suddenly not just making a mistake you can learn from, but fulfilling a prophecy. Funnily enough, mathematics then becomes stressful – and not because you are genuinely bad at it, but because you've been told that you should be.

So let me perhaps rephrase.

To anyone who has ever discouraged women from fulfilling their dreams of pursuing a career in mathematics:,

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[a]Actually, splicing the data a different way, it turns out that a more significant predictor is hours spent playing video games - so perhaps this isn't a gendered skill after all!

As a mathematician, I can state with 100% certainty that whatever argument you make to justify your position is utterly baseless. Incredible female mathematicians are not exceptions, but incredible role models that anyone (regardless of their gender) can emulate.

And far more importantly, to the women who do mathematics, or want to do mathematics:

You have everything you need to succeed, simply by virtue of being you and loving the work you do.

Make mistakes shamelessly knowing that everyone else is doing the same, and cherish each mistake that you make as an opportunity to learn.

And most importantly - never forget that you can absolutely do mathematics.

For the full letter, and other awesome articles about intersectional feminism, please see https://www.womenunbounded.com/post/to-those-who-say-women-can-t-do-maths.

- *Isabelle Greco, AUMS Communications Officer*

Puzzle

The sum of two prime numbers is 2019, what are the primes?

Answer 1. If two integers add to an odd number, one must be even. The only even prime is 2. 2 and 2017.