

**Annette Rouleau** (VP of Education and Engagement at the Julia Robinson Mathematics Festival ([jrmf.org](http://jrmf.org)))

*Education Notes bring mathematical and educational ideas forth to the CMS readership in a manner that promotes discussion of relevant topics including research, activities, issues, and noteworthy news items. Comments, suggestions, and submissions are welcome.*

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The tables are missing! Not exactly what you want to hear when you have invited over 500 students to have some fun exploring math with you. But there were a few benches and a gym with a lot of floor space, so I announced that this was going to be JRMF's first ever Floor festival. And it was wonderful! Sitting (or laying!) all across the gym, the students were genuinely engaged in JRMF's math activities.



Figure 1. Cup Stacking

JRMF, or the Julia Robinson Mathematics Festival ([jrmf.org](http://jrmf.org)), is a nonprofit organization that connects K-12 students with math experiences that foster a positive mathematical identity. We achieve this by designing hands-on math activities that require problem-solving and collaboration, and by training teachers, parents, and community members on how to lead these engaging, yet challenging activities. We also host (or help others host) Math Festivals, which are an opportunity for children to gather and explore mathematics through our activities. So far in 2023, we have had almost 200 Math Festivals across North America that have reached almost 30,000 children, of whom one-third attend underserved and underrepresented schools.

As the majority of math events for children are usually held outside regular school hours, holding math festivals during the school day is something we have been encouraging others to consider. It feels like an inclusive way to bring engaging, challenging mathematics to children who might not otherwise be able to attend a math event. During a JRMF-in-school math festival, the math activities are typically led by two older classes of students, with one class volunteering for the morning and the other volunteering for the afternoon. It is truly wonderful to hear a grade 6 student gently encouraging a grade 2 student to "Tell me more about your thinking" or bravely asking a grade 9 student if they want to try the next challenge.

## Why a Math Festival?

It is not a secret that many students experience math anxiety and even more profess to dislike math entirely. Unfortunately, this leads to math avoidance, which closes the door to many opportunities as they become adults (Namkung et al., 2019). We want to change that, so, at a JRMF Math Festival, we offer the kind of meaningful math students seldom encounter, yet is so

necessary for developing a love of mathematics and cultivating an interest in pursuing it further. In doing so, we focus on four areas:

## Promoting inclusion.

We know that extracurricular math programming has a long history of targeting high-achieving students. This results in disproportionately high levels of participation by males who thrive on competition and by those who have the support required to register and attend after school math events.

Often overlooked are females and students of color — the same children who have also traditionally been excluded in the math classroom. Successful inclusion of these particular groups of children means allowing them the voice and agency to freely express ideas and grapple openly with math tasks (Schettino, 2016) .

## Building confidence.

Math is often presented with a one-size-fits-all approach, which quickly devolves into the artificial binary of being a math person or not. At a Math Festival, we offer a different approach. We design open-ended activities with multiple entry points that allow students to gain confidence from their initial success and then build on that as they tackle more challenging mathematics (Lambdin, 2002). They have the opportunity to see themselves as mathematical beings, often for the first time.

## Inspiring joy.

Many children (and adults) find math tedious, yet joy has everything to do with wanting to learn and engage in math. Skills such as persistence, determination, and willingness to problem solve lay at its very foundation. So, at a Math Festival, students learn through play which helps learners of all ages better assimilate new ideas and leads to deeper conceptual and procedural mathematical understandings (De Holton et al., 2001).

## Creating community.

Finally, we encourage collaboration. Mathematics learning is a social endeavor, not individual (Burton, 2002). Students need opportunities to empower themselves and each other in a productive struggle with challenging problems.

There is a burning need for joyful math as school districts deal with the aftermath of successive years of learning interruptions. And JRMF brings that joyful math, and it is contagious. If you ever have, or have had, the chance to attend a JRMF Math Festival, you'll understand why. To see a whole gym full of children eagerly engaging in collaborative problem solving is powerful and makes one want to see it happen more. This is true in the schools we visit — once a school community has participated in a festival hosted by us, they immediately realize its value. And, more importantly, in the manner of 'teach someone to fish', they also recognize that this is something that they could do on their own. And that's really what we want — entire communities of people connecting children with joyful math, not just us. We like to imagine a world where math is so celebrated that we have made JRMF redundant!

If you are interested in hosting a festival and are wondering how to get started, please reach out to [annette.rouleau@jrmf.org](mailto:annette.rouleau@jrmf.org) . We work closely with K-12 schools, but we also support faculty at post-secondary institutions who are interested in math events that connect local children with their campus. Additionally, all of our resources are freely available on our website ( <https://jrmf.org/puzzle/> ) and are an amazing collection of math activities suitable to a wide range of interests and abilities.



Figure 2. Pentominoes

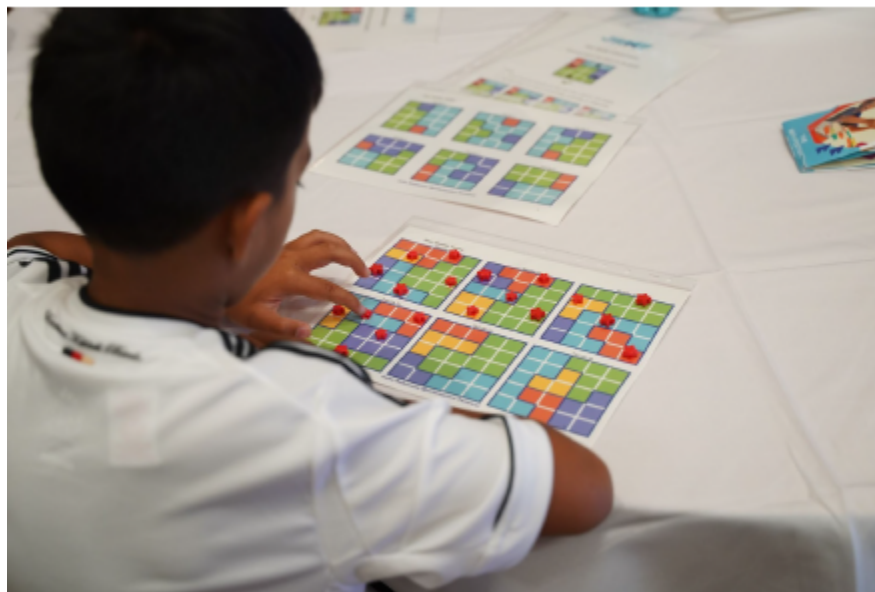


Figure 3. Star Battle

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Annette Rouleau is VP of Education and Engagement at the Julia Robinson Mathematics Festival ([jrmf.org](http://jrmf.org)) and her passion is to share the joy and wonder that is possible in the teaching and learning of mathematics, yet so seldom experienced.

A former elementary teacher, she studied for her doctorate at Simon Fraser University under Peter Liljedahl and has taught mathematics pedagogy courses to both preservice and inservice teachers. She also conducts professional development workshops on Building Thinking Classrooms.