

# Foreword

In the winter of 1993–94 a slim new magazine appeared in the mailboxes of mathematicians all over the US and Canada. The MAA mailed free copies of the first two issues of *Math Horizons* to all of its members and encouraged us to share it with our students by purchasing a bulk subscription. It was thrilling to see and to read. Spun from the brain of Don Albers (with an inspirational assist from Lynn Steen) it was designed to introduce undergraduates to the culture, and the spirit, of mathematics as it existed outside of their college classrooms.

But, mathematics education at that time, and still today to some extent, labored in the shadows of several debilitating myths. Essentially, that it was the solitary pursuit of special geniuses who had unique talents of understanding. Some, famously including Bertrand Russell, described it as cold, austere, and mechanical. That its value lay in its applicability to the sciences was widely believed. Though most professional mathematicians knew that we were not special geniuses (although some of us liked the fact that people thought we were), we played along. Of course, most of us knew that logical reasoning, the core of mathematics, was available to everyone—it's part of what it means to be human. Recognizing mathematics as wildly creative and surprising was a commonplace for us. Experimentation, conjecture, and asking good questions are crucial. And we commonly use words like “beautiful” when talking about it and think of it as an art form as much as a science. Despite the myth of solitary genius, we knew that we loved to talk to others about mathematics and work together with them to crack its mysteries. We knew that intriguing mysteries and playfulness were central features of our daily mathematical work. In spite of this knowledge, little acknowledgement of these ideas appeared in our teaching. Tantalizingly, *Math Horizons* looked like a potential tool to help crack open the ossified mathematics pedagogy of the day and to reveal to our students the beautiful communal essence of real mathematics. Here, in this magazine, from its very first issue, mathematics sparkled with wit, playfulness, and humanity.

And from the very first issue the problem section of *Math Horizons* invited students to explore captivating mysteries through deceptively simple questions that often opened up into very deep areas of mathematics. Problem 2 led students

directly to the Binomial Theorem in a way that revealed its import. Experimentation would lead directly to a solution of Problem 5, which asked a question that connected in a non-trivial way to continued fractions and to the mediant of fractions. Needing to find integers which are the sum of two cubes in two different ways, the very first problem gave faculty an opportunity to tell one of the most romantic legends of mathematical culture, the story of G.H. Hardy, Srinavasa Ramanujan, and taxi 1729.

Christened “*The Playground*” in 2009 under new problem editor Derek Smith, the column became more intentional about its nature and fit in the magazine. Intended to highlight the spirit of the column and the magazine, the new name also inspired the creation of problem categories named after playground equipment that hinted at their nature, e.g., “Sandbox” problems encouraged direct hands-on experimentation, “Zip Line” problems connected back to articles in the magazine. Let us agree that this was an inspired renaming, calling out the two defining features of the column; it is where MH readers come **together** for **communal play**.

Happily, the editors of this volume, Alissa Crans and Glen Whitney, are perhaps uniquely qualified to bring us all together in this *Playground*. Alissa has spent her entire career working to build community among mathematicians and our students; she has been deeply involved in the Carleton Summer Math Program, the EDGE program, the outreach programs of MSRI/SLMath, and she helped found the Pacific Coast Undergraduate Math Conference. New York’s Museum of Math was founded due to the visionary efforts of Glen who also served as editor of *The Playground* from April 2018 to November 2022. Drawing on their own personalities and values by focusing on joy and community in the construction of this book, they have presented us not just a collection of problems and solutions. You will find here the personal reminiscences of the problem creators and hints at fruitful lines of playful investigation, as well as the stories of the people who tried to solve them and of the communities that coalesced around *The Playground*.

This book feels like a big party, I encourage you to grab a pencil and join the fun.

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PS: As a primer and to start the fun, imbedded in this Foreword is an initial problem; begin to solve it with a careful reading of this sentence for a first hint.