

## Math Girl Solves the Pattern

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# Math Girl Solves the Pattern

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## Synopsis

During COVID-19 isolation, Dr. Jennifer Austin and her seven-year-old daughter Zoe co-authored the short story “Math Girl Solves the Pattern”. Here we meet the superheroine Math Girl and her nemesis Minus Girl. Math Girl is observant, curious, and creative. Houses, balls, and sailboats are disappearing! The mystery must be solved. Persevering Math Girl saves the day.

**Keywords:** mathsuperhero, pattern, Fibonacci, mathgirl.

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A long time ago there was a girl named Math Girl. She was a superhero to everyone. She saved everyone with her superpower — math!

One day she met her enemy — Minus Girl. Minus always made terrible math jokes about subtraction. She could take away anything with her subtraction power.

Houses by houses and sailboats by sailboats would disappear.

Math Girl was the only one who could help. She had to find out Minus’ pattern.

A pattern is something that repeats itself over and over.

Once Math Girl found out Minus’ pattern, she could stop Minus from striking again.

Math Girl thought the pattern went yellow, green, blue, blue, red, red, and red.

One yellow house, one green house, two blue balls, and three red sailboats disappeared in a flash.

Oh no! Math Girl was wrong. When Math Girl went to a yellow house, Minus was not there! Minus was at the crystal cave. Math Girl was confused. Luckily Minus only took five crystals before she was caught. Then Math Girl thought and thought. Math Girl thought it must be a number pattern. It must go 1, 1, 2, 3, 5! Math Girl was right! When Minus struck again, Minus took eight people. Aha, Math Girl's sequence would continue 1, 1, 2, 3, 5, 8, ....., which is the Fibonacci sequence.

Math Girl caught Minus. Math Girl saved the day! The end.

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*This short story is an example of how first-grader Zoe Austin and her mom, Jennifer Austin, spent part of their time during the COVID-19 pandemic. Zoe has heard her mom share about searching for patterns and about the Fibonacci sequence in particular as part of various online courses and outreach events. Zoe is very observant, creative, and imaginative. She regularly entertains her family with songs and stories that she writes. She worked together with her mom to compose this short story.*

**Reflective Commentary by Zoe Austin:**

“This is supposed to teach kids about math.”

“If this were a movie, Minus’ hair would be purple.”

“Math Girl’s powers are not just math. She can shoot out plus and minus signs out of her hands.”

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**Author bios:**

*Zoe Hope Austin* is a first-grade student at Headwaters School in Austin, TX, where she lives with her parents, two dogs, one cat, one rabbit, a tank of fish, and one owl who inhabits a backyard owl house. Zoe is curious, creative, observant, articulate, and imaginative as she voraciously takes on the world around her. Zoe is developing her mathematical skills in numeracy, geometry, data analysis, and financial literacy. Zoe is active in her Girl Scout Troop 11235 where she has earned badges in STEM career exploration, robotics, citizen science, coding, and space science.

*Jennifer K. Mann Austin*, Ph.D. is an Associate Professor of Instruction and Undergraduate Mathematics Faculty Advisor at the University of Texas at Austin. Dr. Austin chairs the Mathematics Undergraduate Studies Committee and the Mathematics College Readiness Committee and serves on various departmental, college, and university committees focused on undergraduate education. She helped establish and is now the faculty sponsor for the UT Austin Student Chapter of the Association of Women in Mathematics. Fulfilling her passion for outreach, Dr. Austin co-organizes the Mathematics Teachers' Circle of Austin, volunteers for CNS Admissions events, CNS Family Day, and Explore UT, and leads Girl Scout Troop 11235. Dr. Austin's interests include undergraduate mathematics education, mathematical outreach, active learning, topology, knot theory, biomedical applications of mathematics, and DNA topology.

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