# The Room with Formulas on the Wall

by Kalina Maleska
based on a story by Irina Solomatina

This story was inspired by the biography of Sofya Kovalevskaya, the first woman with a doctorate in mathematics, as written in the book She Was: 16 Women Who Became Part of the History of Belarus *(2019), prepared by Irina Solomatina and Natalie Kukharchyk.*

The room was unwelcoming. Alena hated it the minute she stepped inside. The wallpaper on three of the walls was dark blue and made the room look gloomy and small. The fourth wall, just opposite the bed she was supposed to sleep in, had pieces of paper glued on it from the floor to the ceiling. Numbers and mathematical formulas were written all over the papers, and although Alena loved maths, this wall with old pieces of paper and pale numbers scribbled on it looked ugly. It was an alien room. She disliked it so much that she didn't even bother to ask whose room it was.

She knew her parents had to leave her at her Aunt's house in Vitebsk for some time and go back to Minsk to look for jobs since both had lost
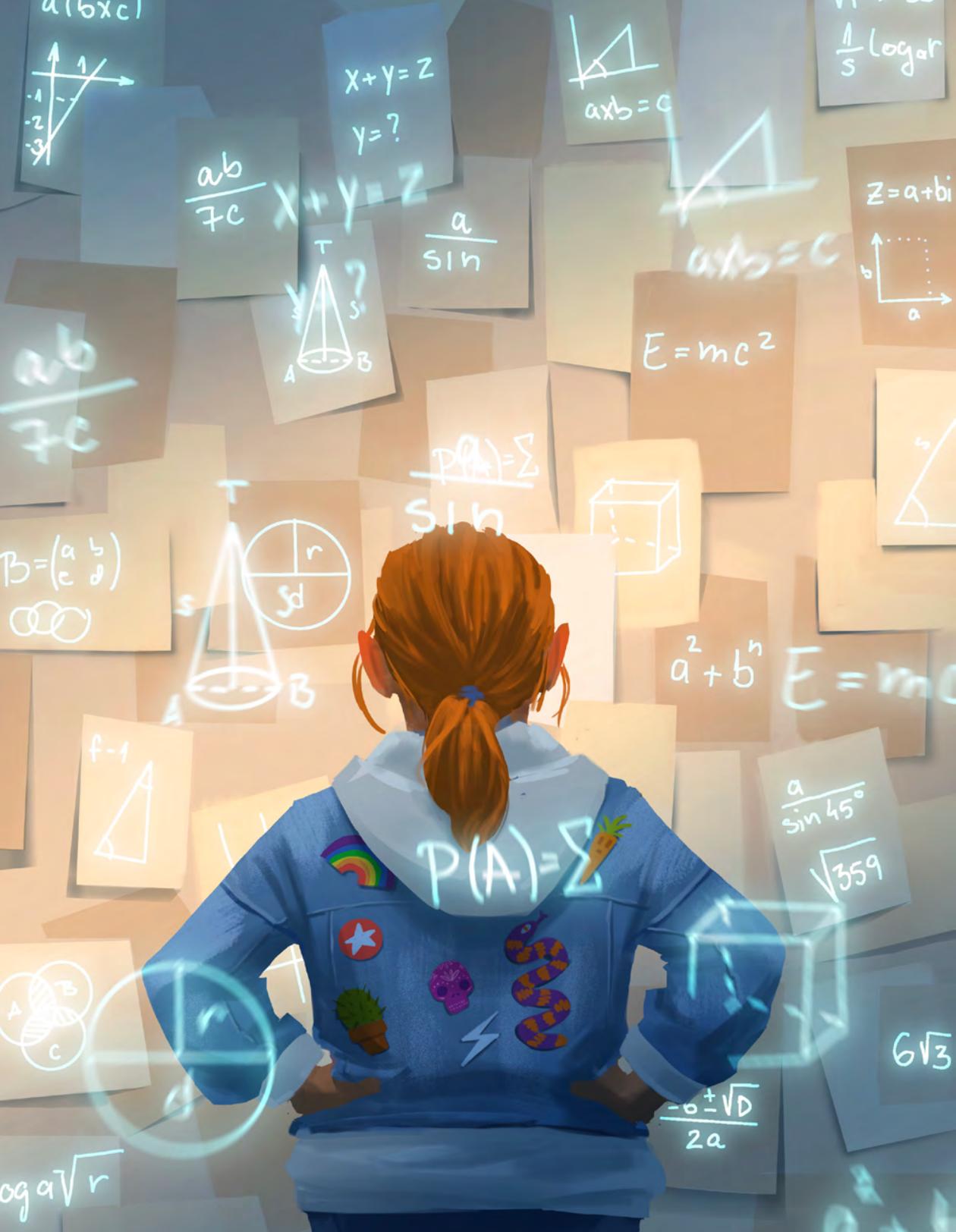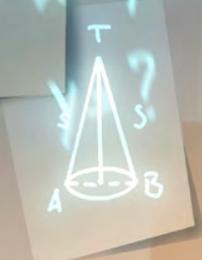
their jobs during the pandemic. Her Aunt, who was her mother's sister, also looked gloomy and downcast, just like the room, and was not pleasant company when they sat at the table to eat together with her Uncle and her cousin, Alexei.

Alena could not sleep all night and slept very little the following few nights.

"When are you coming back?" she'd always ask her Dad when he phoned her.

"I don't know exactly, Ale, honey, but as soon as we can," he'd answer.

One night, she just could not bear to look at the old and partly torn pieces of paper, so she lay down on the floor to sleep. When she woke up very early the next morning, she looked around and under the bed noticed a book. She opened the book randomly and saw on the page some mathematical formulas. She turned the pages. There were stories of many mathematicians in it, accompanied with images of numbers, triangles, ellipses, formulas, diagrams. On one of the pages there was a lipstick print, as if someone kissed the page. Alena read a name: Sofya Kovalevskaya. "In 1889, the mathematician Sofya Kovalevskaya was appointed to the position of full professor at Stockholm University," the sentence below the lipstick print said.

Alena was impressed, since the word 'mathematician' meant something special to her. She tried to read more, but the words kept escaping her sight, as if they just passed through her eyes and brain and flew out the back of her head. Dyslexia—she remembered the word her Mum pronounced after they went to take some tests. It was a word that was repeated occasionally thereafter. "Oh, she'll be a mathematician," her father would usually say in response. "Like Sofya," Alena thought now.

It was still very early in the morning, so she was surprised to hear the sounds of the others in the house. They must have also thought that she was still sleeping, since they spoke of her parents.

"Oh, I told my sister that sooner or later they will have problems if they don't continue their education," Alena could hear her Aunt saying.

"There's no point talking about it now," her Uncle replied.

"And they didn't even get married. I really don't understand her. Now, if something happens to him, Alena won't be entitled to anything that belongs to him," her Aunt added.

"Well, they can still get married."

"I wasn't in touch with her for a few years after she moved to Minsk. He might not even be Alena's real father."

"Well, what does it matter? He loves…"

Before the Uncle managed to finish his sentence, Alena stormed into the living room.

"He is my real father!" she shouted and threw the book with all her might. The book nearly missed her Aunt and landed on the floor, a few pages partly torn. The force of her Aunt's scream and subsequent crying was unexpected to Alena. Her Aunt picked up the book and started gently smoothing out the pages, tears wetting them.

"Get out," she slowly said to the girl.

Alena went into the room and sat down on the floor. Several hours later, Alexei went inside the room, climbed the chair and then the table, and put the book on the highest shelf that was out of Alena's reach.

"It was my sister's book," Alexei said.

Alena didn't dare ask anything. That night, she dreamt that her Mum was in one of her classrooms, whispering in her ear: "Now you will meet your real father." Alena was very scared since she remembered clearly in

the dream that she did not want to meet any real father of hers. At that moment, the father she had always known entered the classroom. "Ale, honey, try these," he said in the dream and handed to her several pieces of pastry in the form of numbers. They had a bitter, salty and sweet taste at the same time. When Alena woke up, she approached the wall with the numbers and started examining everything that was written on the pieces of paper.

She did not want to leave the room for more than a week. Alexei would come in the morning to bring her breakfast. Her Aunt would come in the afternoon to bring lunch but would never say a word. Alena was going through the numbers every day and, though in the beginning she could not understand much, she gradually came to solve some of the maths problems. That was exciting.

One day, Alena dared to speak to Alexei.

"Did your sister love maths?" she asked.

"Yes, she was better at it than our teacher," Alexei smiled. Then, after a pause, he continued, "Do you really read backwards?"

"No… I'm not good at reading. I turn the pages sometimes to the right, and sometimes to the left, and read what I see there, just a sentence or two," Alena tried to explain.

Another day she asked:

"Did your sister wear lipstick?"

"She'd put my Mum's lipstick on sometimes, yes. How did you know?" Alexei was surprised.

"There's a lipstick print next to the mathematician Sofya."

"That was my sister's name, and Sofya Kovalevskaya became her favourite mathematician."

As Alexei left the room, Alena climbed the chair, then the table, and managed to reach the book. She read how at the age of twenty-four, Sofya obtained a PhD, thus becoming the first woman to be awarded a doctorate in mathematics. On the previous page, it was written that four years before that, in 1870, Sofya was not even allowed to attend lectures at Berlin University because women were not admitted to universities then, so she had to take private lessons.

"Dad," she said to her father over the phone that evening, "we are lucky to live in this time."

"What do you mean?" Her father was a bit confused.

"It's hard to explain over the phone. I'll tell you when you come back."

A few days later, she came to the first page of the chapter about Sofya in the book, which described her childhood. It said that when her family moved to their house in the Vitebsk region, Sofya was about eight years old. The wallpaper on one of the walls in her room was missing. It was covered with sheets of paper on which formulas and lectures of famous mathematicians were inscribed. Sofya was impressed with these signs that at first seemed alien and intriguing, and gradually became familiar and understandable.

As Alena was reading the sentences with some difficulty and was going through the numbers on the page with more ease, the door opened and her Aunt entered the room. Being so engulfed in looking at the book, Alena forgot that it was the usual time when her Aunt came to bring her lunch. Alena was frightened. She tried to justify herself for taking the book that was supposed to be out of her reach.

"Sofya must have been very smart to read such a book. Did she also write the formulas on the wall?"

"Yes," her Aunt said, leaving the plate of food on the table. "She was fantastic at maths. If she had been here, you would have been solving maths problems together."

Alena saw tears coming to her Aunt's eyes.

"And she was so kind, you would have liked her," her Aunt continued. "She would have let you sleep in her bed, and she would have slept on the ground."

"When my parents come back, can I still come visit you and sleep in this room?"