Math magic: Vocational school student, 17, breaks stereotypes

Zhang Long

Seventeen-year-old vocational school student Jiang Ping is making headlines across China for her achievement in the recent Alibaba Global Mathematics Competition.

On June 13, she clinched 12th spot among the finalists, standing out as the only participant from a vocational school, Lianshui Secondary Vocational School, amidst a sea of contenders from prestigious institutions like Peking University, Tsinghua University, MIT, and Cambridge.

In a field of 801 participants from 17 countries, Jiang made history as the first secondary school student to reach the finals, scoring an impressive 93 points in the preliminaries. She is also the only female in the global top 30.

In China, vocational education is seen as a secondary option for students who do not perform well in the traditional school system. These schools focus on providing practical and technical skills tailored to specific trades and industries, aiming to prepare students for immediate entry into the workforce. They are usually perceived as a less prestigious alternative to academic high schools and universities.

Jiang's success breaks stereotypes and demonstrates that exceptional talent can emerge from diverse educational backgrounds.

Her major is fashion design, but her talent for mathematics became evident in middle school. Her high school math teacher, Wang Runqiu, noticed her exceptional abilities and recommended Jiang start with Tongji University's Advanced Mathematics.

Jiang Ping poses for a photo in front of a blackboard of math equations. — Ti Gong

Majoring in fashion design, Jiang discovered her talent for mathematics during her middle-school term. — Ti Gong

When she struggled with complex proofs, she turned to Xie Huimin's Mathematical Analysis. She encountered further challenges with multivariable calculus and then began studying Partial Differential Equations.

Despite being a vocational school student, Jiang dedicated two years to self-studying advanced mathematics, ultimately achieving success in the competition.

Jiang said she realized her knack for numbers in middle school. While her classmates worked on assignments, she found them too simple and preferred tackling more challenging problems. "I enjoy solving higher-level mathematics because it ignites my desire to explore," she said.

Initially, Jiang found advanced mathematics difficult, especially graphing problems. She would try to sketch them on paper and continually change her approach to solve them. Admitting that combinatorics wasn't her strongest suit, she often sought help from her teacher Wang.

Using a translation app and a Chinese-English dictionary, Jiang has self-studied to reach the level of a third or fourth-year math undergraduate.

Balancing her fashion design and core academic subjects, she spends most of her free time and self-study periods on mathematics. "Math feels like a friend to me. Solving problems brings immense joy, and failure is equally painful."

Mathematics is omnipresent in her life. Whether drawing fashion sketches or designing garments, she sees a connection with math. For instance, partial differential equations, a topic she excels in, have parallels with fashion design's symmetry. "The symmetry is beautiful," she said, noting that sometimes her design inspirations come from mathematical concepts.

Encouraged by Wang, who assured her that even delivery workers could participate, Jiang entered the Alibaba competition with little confidence. Having tackled the previous year's problems on her own, she decided to give it a shot.

The competition lasted two full days, during which Jiang solved problems relentlessly, pausing only to eat and sleep. "I struggled with one geometry problem because its graphical representation was too complex, and couldn't find a clear solution," she admitted.

The Alibaba Global Mathematics Competition, organized by Alibaba Philanthropy and DAMO Academy, is known for its inclusiveness and fun approach. This year marks its sixth edition. The finals will be held from midnight on June 22 for 24 hours, allowing participants to choose any consecutive 8-hour period to complete their answers. Winners share a prize pool of over 4 million yuan (US$551,200).

Following the announcement of the finalists, Jiangsu University posted on Weibo: "Welcome to apply, come to Jiangsu University and become a fellow alumni with your teacher." Tongji University also extended an invitation.