

Equations that matter

Decoding Reality With Fractions And Fractals

INTERVIEW

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Look closely at a honeycomb or the edge of a coast, and you'll find patterns that seem almost organised. Dr Amit Priyadarshi, associate professor of maths at IIT Delhi, identifies these patterns as structures waiting to be understood. Speaking to GT reporters at the Amity National Camp for Mathematics and Amity International Olympiads' valedictory ceremony organised by AICE, he shared what makes maths such a powerful way of understanding our world.

The favourite subject

After Class XII, I cleared JEE and joined IIT Kanpur, where I enrolled in five-year integrated programme in Mathematics and Scientific Computing. Unlike students who find abstract maths difficult or uninteresting, it fascinated me. That curiosity motivated me to learn more, eventually leading me to pursue a PhD in the United States. It was during this journey that my passion for mathematics truly grew.

The beauty of maths

One has to be patient while learning mathematics. It is a beautiful subject once you understand its basic principles. What I have always loved about mathematics is its certainty. A mathematical statement is ei-



Dr Amit Priyadarshi with GT reporters

ther correct or incorrect. In other sciences, theories can evolve as new discoveries are made. But in mathematics, a proven result remains true regardless of time. Something that was mathematically true thousands of years ago is still true today. Curiosity is at the heart of learning mathematics.

The fun in fractals

Fractals are all around us in nature. They are patterns in which smaller parts resemble the whole. We call such structures self-similar. Take a cauliflower for example. Each small piece looks remarkably similar to the larger structure. Fractals help us mathematically explain many natural forms. Traditional geometry often deals with smooth objects. Nature, however, is rarely that regular. Clouds, mountains, and coastlines are irregular, yet they display repeating patterns at different scales. To study these patterns, mathematicians use the concept of fractal dimensions. Students are often taught that dimensions are whole

numbers such as 0, 1, 2, or 3. Fractal dimensions, however, can be fractional or even any real number, making it unique.

The world beyond textbooks

In my view, maths camps and Olympiads are really important because they encourage students to think deeply about problems. Unlike textbook exercises, Olympiad problems are not straightforward. Sometimes you may spend hours solving a single question. This process develops analytical reasoning, problem-solving skills, and creative thinking. These are the same abilities that are essential for research and innovation later in life. Many children develop fear of mathematics at an early age, and that may prevent them from appreciating its beauty. Introducing puzzles and interactive activities can help students enjoy mathematics.

Message for Amitians

Work hard and strive to excel in whatever career path you choose. Stay curious, remain dedicated, and always give your best to achieve your goals.



Dr Amit Priyadarshi, associate prof, IIT Delhi

Marching through life

Book: Little Women | **Author:** Louisa May Alcott | **Published in:** 1868 (Vol. 1), 1869 (Vol. 2)
Genre: Coming-of-age, Historical fiction

Synopsis: The story follows four sisters living with their mother, Marmee, and their housekeeper while their father is away serving in the American Civil War. The sisters are very different from one another. Jo is strong-headed and ambitious, Amy is ladylike and refined, Meg is responsible and graceful, and Beth is modest and gentle. Together, the March sisters experience adventures, mishaps, parties, and dances as they embark on a journey of self-discovery and learn what it means to become good, moral women. Through joy, jealousy, loss, and love, the sisters navigate the challenges of growing

up and finding their place in the world.

Why is it worth reading: Little Women is a book that may make you want to step into the 19th century, wear pretty dresses, and decorate your hair with ribbons and ringlets. It reminds readers that life brings challenges, and that overcoming them does not always require grand gestures. The novel focuses on the beauty of simplicity. The difference between characters, despite them being sisters, makes them feel remarkably realistic and relatable to the readers. The novel also has poignant moments to indicate that life is not always merry. Through it

Iconic quote

"I am not afraid of storms, for I am learning how to sail my ship."



Rating: ★★★★★
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