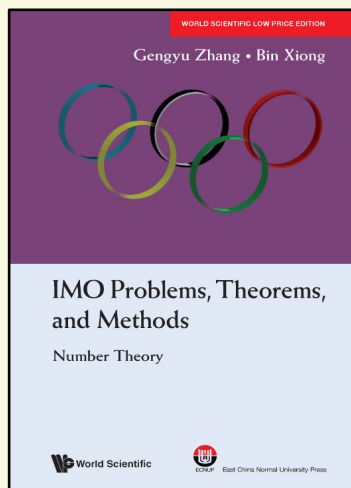


# IMO Problems, Theorems, and Methods

## Number Theory



By **Gengyu Zhang**  
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### ABOUT THE BOOK

The problems in the International Mathematical Olympiad (IMO) are not only novel and interesting but also deeply rooted in profound mathematical context. The team at the International Mathematical Olympiad Research Center at East China Normal University has compiled and studied problems from past IMOs, dividing them into four volumes based on the mathematical fields involved: algebra, geometry, number theory, and combinatorics.

In the number theory volume, the IMO number theory problems are organized into three chapters: "Divisibility of Integers," "Modular Arithmetic," and "Indeterminate Equations." Each chapter begins with an introduction to the relevant foundational knowledge and methods, followed by a reclassification and reorganization of past IMO problems. Multiple elegant solutions are provided for some of the problems, along with a statistical analysis of their difficulty.

The book concludes with a record of past IMO participation and award information, as well as an index of number theory problems, facilitating further study and convenient reference. This series is suitable for researchers in mathematical competitions, mathematics educators, and contestants.

### READERSHIP

Students engaged in mathematical competition, coaches in mathematics teaching, and teachers setting up math elective courses.

### CONTENTS

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- Divisibility of Integers
- Modular Arithmetic

*Contd.*

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- Indeterminate Equations
- IMO General Information
- IMO Number Theory Problem Index

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**Gengyu Zhang**, graduated from School of Mathematical Sciences of Peking University as an undergraduate and Columbia University as a graduate. During high school he won two gold medals in Chinese Mathematical Olympiad (CMO). After graduation, he has always maintained his interest and passion in mathematical competitions, conducted research on formulating and solving mathematical problems, and participated in a wide range of mathematical education activities in primary and secondary schools.

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