

International Math Olympiad Handbook

– Grade 4

This handbook covers topics for Grade 4 students (Age 9–10).

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Introduction

Grade 4 students strengthen arithmetic skills, explore more advanced multiplication/division, introduction to decimals and fractions, basic geometry, and problem-solving strategies.

Curriculum Topics

- Numbers up to 100,000
- Addition, Subtraction, Multiplication, Division (multi-digit)
- Fractions and Decimals
- Geometry: angles, perimeter, area
- Measurement: length, weight, volume, time
- Data Handling: charts, tables, graphs
- Word Problems
- Patterns and Logical Thinking

Examples & Explanations

- **Numbers:** Read/write numbers up to 100,000

Example: $45,678 = 40,000 + 5,000 + 600 + 70 + 8$

- **Addition/Subtraction:** Multi-digit numbers

Example: $12,345 + 23,456 = 35,801$

- **Multiplication/Division:** Larger numbers

Example: $123 \times 12 = 1,476$

- **Fractions/Decimals:** Add/subtract fractions, simple decimals

Example: $\frac{3}{4} + \frac{1}{2} = \frac{5}{4} = 1 \frac{1}{4}$, $0.6 + 0.3 = 0.9$

- **Geometry:** Identify angles, calculate perimeter/area

Example: Area of rectangle $8 \text{ cm} \times 5 \text{ cm} = 40 \text{ cm}^2$

- **Data Handling:** Read tables/charts

Example: Chart shows 5 boys, 3 girls \rightarrow total students = 8

- **Word Problems:** Solve multi-step problems

Example: 24 pencils, give 7, buy 10 more \rightarrow total?

- **Patterns/Logic:** Find next number or shape

Example: 2, 4, 8, 16, ? \rightarrow 32

Practice Problems

1. $12,345 + 23,456 = ?$
2. $45,678 - 12,345 = ?$
3. $123 \times 12 = ?$

4. $144 \div 12 = ?$
5. $\frac{3}{4} + \frac{1}{2} = ?$
6. Find perimeter of rectangle $7 \text{ cm} \times 9 \text{ cm}$
7. Word problem: $30 - 12 + 8 = ?$
8. Pattern: 5, 10, 20, 40, ?