INDIAN
MATHEMATICAL
MODELING CHALLENGE
2025

INDIA NATIONAL MATH TEAM SELECTION STAGE

| FORMAT: ONLINE | REGISTER NOW | Top 50% of Participants receive awards |

IMMC OVERVIEW

OVERVIEW

Indian Mathematical Modeling Challenge: This challenge is the official National Competition designed to serve as the qualifying stage for the International Mathematical Modeling Challenge (IMMC) organized by The Consortium for Mathematics and Its Applications.

India Maths Team Selection: The two winning teams will be selected for India's National Maths Team A and Team B to participate in the International Mathematical Modeling Challenge (IMMC).

IMMC: The International Mathematical Modeling Challenge (IMMC) is a prestigious global competition where teams from over 43 countries come together to solve real-world problems through innovative mathematical modeling.

Eligibility:
Students enrolled in 7th — 12th Grade or pre-university students are eligible to participate.

Students forming a team must ensure all members are from the same school.

Format: Online

STAGES

01 NATIONALS

02 INDIA MATHS TEAM SELECTION

03 IMMC

AFFILIATES & ORGANIZING COMMITTEE

IMMC Affiliations:

- COMAP (USA)
- National Institute of Education (Singapore)
- Tongji University (China)
- NeoUnion ESC Organization, (Hong Kong)
- University of Hong Kong,
- Moscow State University (Russia),
- Freudenthal Institute (Netherlands)
- Roskilde University (Denmark),
- Australian Council for Educational Research (Australia)
- University of Massachusetts, Lowell (USA)

Flexible Competition Dates:

- Students have the option to attempt the problem between February and April 2025.

Announcement of India Mathematics Team A and India Mathematics Team B:

- 20th April 2025

Ambassadors:

- Any student, teacher, school or college society that wishes to become our official coordinator in their region can email us directly at: admin@immcindia.com

National & International Stages: There is *only one stage*, each team will be given 5 days to solve the annual problem and submit their solution *online*.

The top two teams will be chosen for the India Mathematics Team, their solutions will be sent to compete against solutions from over 43 countries!

The entire challenge will be held online

Stages

National Round — Indian National Mathematics Team Announcement (Team A & Team B) — IMMC
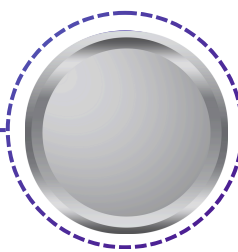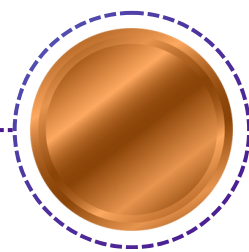
IMMC AWARDS

GOLD AWARD

Gold Award: This prestigious award is reserved for the top 5% of participants.

SILVER AWARD

Silver Award: Awarded to the next 10% of participants.

BRONZE AWARD

The Bronze Award is given to the following 10% of participants.

- *Honorable Mentions* are awarded to an additional 25% of participants.
- *Top 50%* of students participating will receive an award.
- *Every contestant* receives a certificate of participation.

Sample Problems and Solutions

The problems from previous years can be found on the IMMC website linked below.

IMMC Contest Problems:
 https://www.immchallenge.org/Contests/index.html

Additionally, the website provides selected team solutions and commentary from the international judging panel.

Format and Registration

India/International Mathematical Modeling Challenge Stages: There is only one stage, each team will be given 5 days to solve the annual problem remotely and submit their solution online.

Registration: Students can register for the IMMC via the official website (www.immcindia.com). The top two teams from the National Round will automatically qualify for the Indian Mathematics Team A and Team B, representing the country in the IMMC. No further registration is required for the IMMC. Further instructions are given on the next page.

Forming a Team

- A team may consist of up to four students, enrolled in the same school.

- The contest runs during a specified period each year. The dates and times for the contest period each year are announced on the website of the Indian Mathematical Modeling Challenge.

- Each team will decide on a consecutive 5 day period during the contest period to work on the contest problem. For example, the contest for your team could be from 8:00 a.m. on a Thursday after the beginning of the contest period until 8:00 a.m. on the following Tuesday. Your team's contest ends upon completion of the 5 day period.

- Students will be given access to the problem at the chosen time.

- Team members should regularly check the email address they registered with, including their spam or junk folders, as it will be the primary channel for receiving problems and important contest updates.

Registration Instructions

Registration Process:

- All students must register online using the official website.(www.immcinda.com)
- The website will require you to create an account before proceeding with the registration.

Slot Selection:

- The entire competition will be conducted online.
- During registration, students can choose from a variety of time slots (spanning 5-day periods) to submit their exam.
- Slot selection can be based on the team's preferences.

Team Registration:

- Students have the option to register their entire team at once by paying the registration fee collectively.
- Alternatively, students can register individually, making separate payments for each member.

Confirmation:

- After paying the registration fee, students will receive a confirmation email.

Solution Guide for IMMC

The IMMC operates on the assumption that opportunities to use mathematics are everywhere in the world around us. The challenge is to identify those opportunities, access them and apply mathematics productively to better understand the situation that confronts us and to resolve the problems presented. The IMMC exists to help students:

■ develop a systematic and successful approach to addressing individual problems located in real-world settings, and;
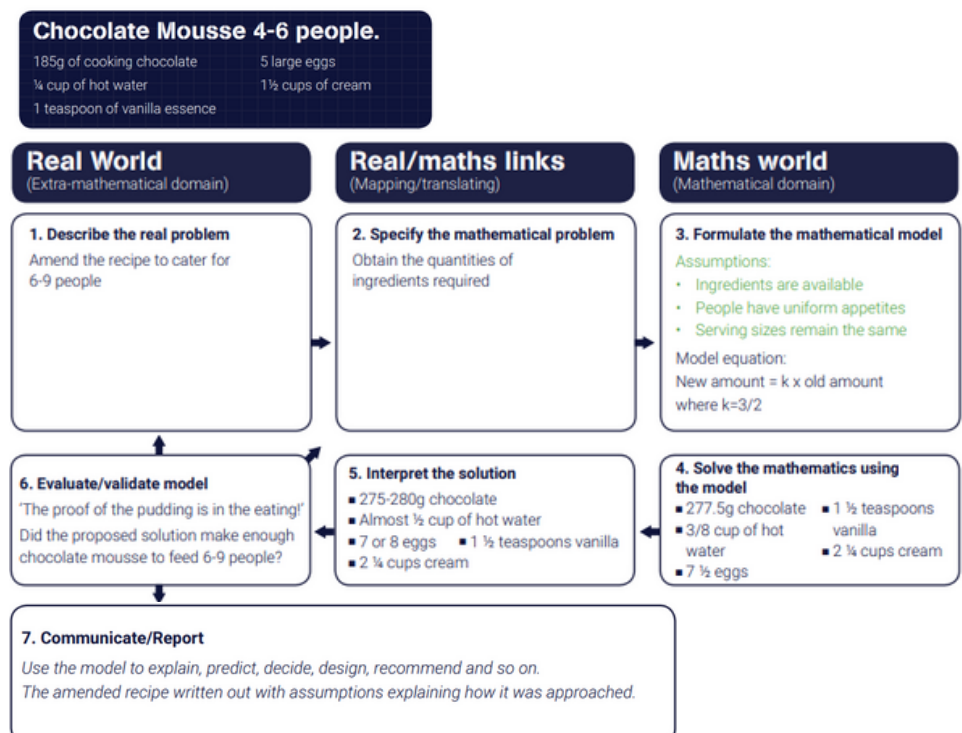
■ through this development, enable students cumulatively to become effective solvers of real-world problems. The aim is to develop students who not only can address problems set by others productively, but also become able to identify and address problems themselves.

In order to be useful and applicable in practice, both in the context of the IMMC, and more broadly, the cyclic process of modelling is scaffolded or guided by a systematic approach to individual problems, consistent with the approach taken by professional modellers when devising solutions to problems in their field. This systematic approach involves seven stages.

1. Identify a (real-world) problem

2. Specify a related mathematical question(s)

3. Formulate a mathematical model to address the question (including making simplifying assumptions, choosing variables, estimating magnitudes of inputs and so on)

4. Solve the mathematics

5. Interpret the mathematical results in terms of their real world meanings

6. Make a judgement as to the adequacy of the solution to the original question(s)

7. Report on success or make adjustments and try for a better solution

Process

Chocolate Mousse 4-6 people.

185g of cooking chocolate   5 large eggs
¼ cup of hot water   1½ cups of cream
1 teaspoon of vanilla essence

Real World (Extra-mathematical domain)

1. Describe the real problem
Amend the recipe to cater for 6-9 people

Real/maths links (Mapping/translating)

2. Specify the mathematical problem
Obtain the quantities of ingredients required

Maths world (Mathematical domain)

3. Formulate the mathematical model
Assumptions:
· Ingredients are available
· People have uniform appetites
· Serving sizes remain the same
Model equation:
New amount = k x old amount
where k=3/2

6. Evaluate/validate model
'The proof of the pudding is in the eating!'
Did the proposed solution make enough chocolate mousse to feed 6-9 people?

5. Interpret the solution
■ 275-280g chocolate
■ Almost ½ cup of hot water
■ 7 or 8 eggs   ■ 1 ½ teaspoons vanilla
■ 2 ¼ cups cream

4. Solve the mathematics using the model
■ 277.5g chocolate   ■ 1 ½ teaspoons
■ 3/8 cup of hot   vanilla
   water   ■ 2 ¼ cups cream
■ 7 ½ eggs

7. Communicate/Report
Use the model to explain, predict, decide, design, recommend and so on.
The amended recipe written out with assumptions explaining how it was approached.

In the News

IM2C Rationale

The purpose of the IM2C is to promote the teaching of mathematical modeling and applications at all educational levels for all students. It is based on t...

International Mathematical Modeling Challenge /

University partnerships boost Australia's International Mathematical Modeling Challenge

The 2024 state winners of IM²C (Australia) will learn from university researchers how to use mathematical modelling for positive change.

Australian Council for Educational Research

THE MATHEMATICAL ASSOCIATION OF VICTORIA

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INTERNATIONAL MATHEMATICAL MODELING CHALLENGE - IMMC

The International Mathematical Modeling Challenge (IM²C) is a team-based mathematical competition for Australian secondary students.

The IM²C exists to support the real-world application of learning, build proficiency, encourage collaboration, and challenge students to use mathematics to make a real difference to the world around them.

(IM²C) International mathematical modeling challenge

SHOWCASE YOUR TALENT AND QUALIFY FOR THE INDIA'S NATIONAL MATHS TEAM!