S1IMO007C
(Token- required)

CGMO Training Course

CGMO Training 2024 (Phase I)

Instructor from International Mathematical Olympiad
Hong Kong Committee

CGMO TRAINING 2024

Phase I

Application Deadline
23 Jan 2024 12:00 noon

Result Release
23 Feb 2024

Intended Learning Outcomes

Upon completion of the programme, participants should be able to:

1. broaden mathematical knowledge in a variety of areas on the basis of senior secondary mathematics curriculum

2. strengthen the problem solving and higher-order thinking skills

3. learn more about the scope of International Mathematical Olympiad Training

If student members withdraw from the programme after the Application Deadline, the token will be deducted.

◆ Introduction

- An introductory level comprehensive mathematics programme which covers a wide range of topics

- Broaden students' mathematical knowledge and strengthen their problem-solving skills

- Consists of 3 phases

- Outstanding students in the programme will represent Hong Kong in China Girls Mathematical Olympiad (CGMO) 2024 held in summer

This programme is co-organized with International Mathematical Olympiad Hong Kong Committee (IMOHKC)

◆ Target Participants

- S1 to S6 HKAGE **female** student members
- Class size: 20

All applicants **MUST** attend the **Aptitude Test** held on **17 Feb 2024**.
Except for those who have

a)   completed any phase of International Mathematics Olympiad Training, CGMO Training or Introduction to Olympiad Mathematics before **OR**

b)   attended the Aptitude Test held on 13 May 2023, 19 Aug 2023 or 18 Nov 2023

Remarks:
- Due to the limited seats in computer rooms, students who attended the Aptitude Test on 18 Nov 2023 would not be allowed to take the test on 17 Feb 2024. Their results on 18 Nov 2023 will be used for this programme.
- Students will be selected randomly in attending the Aptitude Test if the application is over-subscribed. Only selected students could join the Aptitude Test held on 17 Feb 2024.
- A notification email will be sent on **26 Jan 2024** for the application result of the Aptitude Test.
- All unselected students will be regarded as their application of this programme unsuccessful.

This programme is the same as CGMO Training 2020 (Phase I) (MATS1121) in 19/20 school year and CGMO Training 2022 (Phase I) (E1IMO007C) in 21/22 school year.

◆ Medium of Instruction

Cantonese with English handouts

◆ Pre-requisite

Students should know the basic knowledge of the following:

Quadratic Equations and Functions, Binomial Theorem, Mathematical Induction, Remainder Theorem and Factor Theorem, Arithmetic and Geometric Sequences, Circles and Trigonometry

◆ Enquiries 📞 3940 0101 ✉ programme@hkage.org.hk

◆ Aptitude Test

- Students who wish to apply for this programme must take a general aptitude test on **17 Feb 2024 (2:00 p.m. – 4:00 p.m.).** Except for those who have attended the Aptitude Test held on 13 May 2023, 19 Aug 2023 or 18 Nov 2023.

- This general aptitude test consists of 100 multiple choice questions which covers a wide range of topics in mathematics. The purpose of the test is to figure out the applicant's knowledge in different fields of mathematics in order to choose the most suitable students for different programmes. Neither under-qualified nor over-qualified students will be admitted.

- The next aptitude test is tentatively scheduled on **11 May 2024**. The result of an aptitude test will be valid for one year. If a student takes the test more than once, the latest result will prevail. The following table lists the programmes for which the results of this general aptitude test will apply.

Programme Date	Code	Programme Name	Aptitude test valid			
			13 May 2023	19 Aug 2023	18 Nov 2023	17 Feb 2024
Mar 2024	S1IMO007C	CGMO Training 2024 (Phase I)	✓	✓	✓	✓
Mar 2024	S1IMO008C	Introduction to Olympiad Mathematics 2024 (Phase I)	✓	✓	✓	✓
Jul 2024	S1IMO001C	Maths Ignition – Combinatorics		✓	✓	✓
Aug 2024	S1IMO002C	Maths Ignition – Geometry		✓	✓	✓
Sep 2024	S1IMO003C	Maths Ignition - Number Theory			✓	✓
Nov 2024	S1IMO004C	Maths Ignition – Algebra			✓	✓

Remarks:
1. All aptitude tests will only be arranged on the designated dates. No make-up test will be arranged.
2. No Calculator is allowed.
3. Please bring along with your Identification Card, e.g. HKID, student ID.
4. Please arrive at the venue 15 minutes prior to the Aptitude Test begins.

If students who have selected to join the aptitude test are absent without any reasons and prior notification provided, it will result in a lower priority in joining the aptitude test next time when they apply.

◆ Certificate

E-Certificate will be awarded to participants who have:

- attended **at least 7 sessions**; and

- completed all the assignments with satisfactory performance

◆ Schedule

Session	Date	Time	Venue
Aptitude Test	17 Feb 2024	2:00 p.m. – 4:00 p.m.	Welkin Systems Limited, 7/F, Righteous Centre, 585 Nathan Road, Mongkok ([MAP](#))
1	2 Mar	2:00 p.m. – 5:30 p.m.	Room 403, HKAGE
2	9 Mar		
3	16 Mar		Room 204, HKAGE
4	23 Mar		
5	6 Apr		
6	13 Apr		
7	20 Apr		
8	27 Apr		
9	4 May		Room 105, HKAGE

- For any assessment to be held in the programme, **no make-up** will be arranged.

◆ Sample Notes

1. Do there exist 2017 consecutive positive integers, each of which has at least two prime factors?

2. Let ABC be an acute triangle and D, E, F be the feet of its altitudes. If P and Q denote the perimeters of △ABC and △DEF respectively, what are the possible values of $\dfrac{P}{Q}$?

◆ **Enquiries** 📞 3940 0101 ✉ programme@hkage.org.hk

Appendix - IMO-related Programmes (1 Sep 2023 onwards)

- IMO-related programmes is a series of programmes that provide International Mathematical Olympiad (IMO) related training. It aims to equip students with the mathematics knowledge and curriculum of IMO, problem solving skills, and high-order thinking skills progressively.

- The programmes are divided into three levels: Introductory, Intermediate, and Advanced level.

- There are different enrollment methods, e.g. aptitude test. For details, please refer to each programme's poster

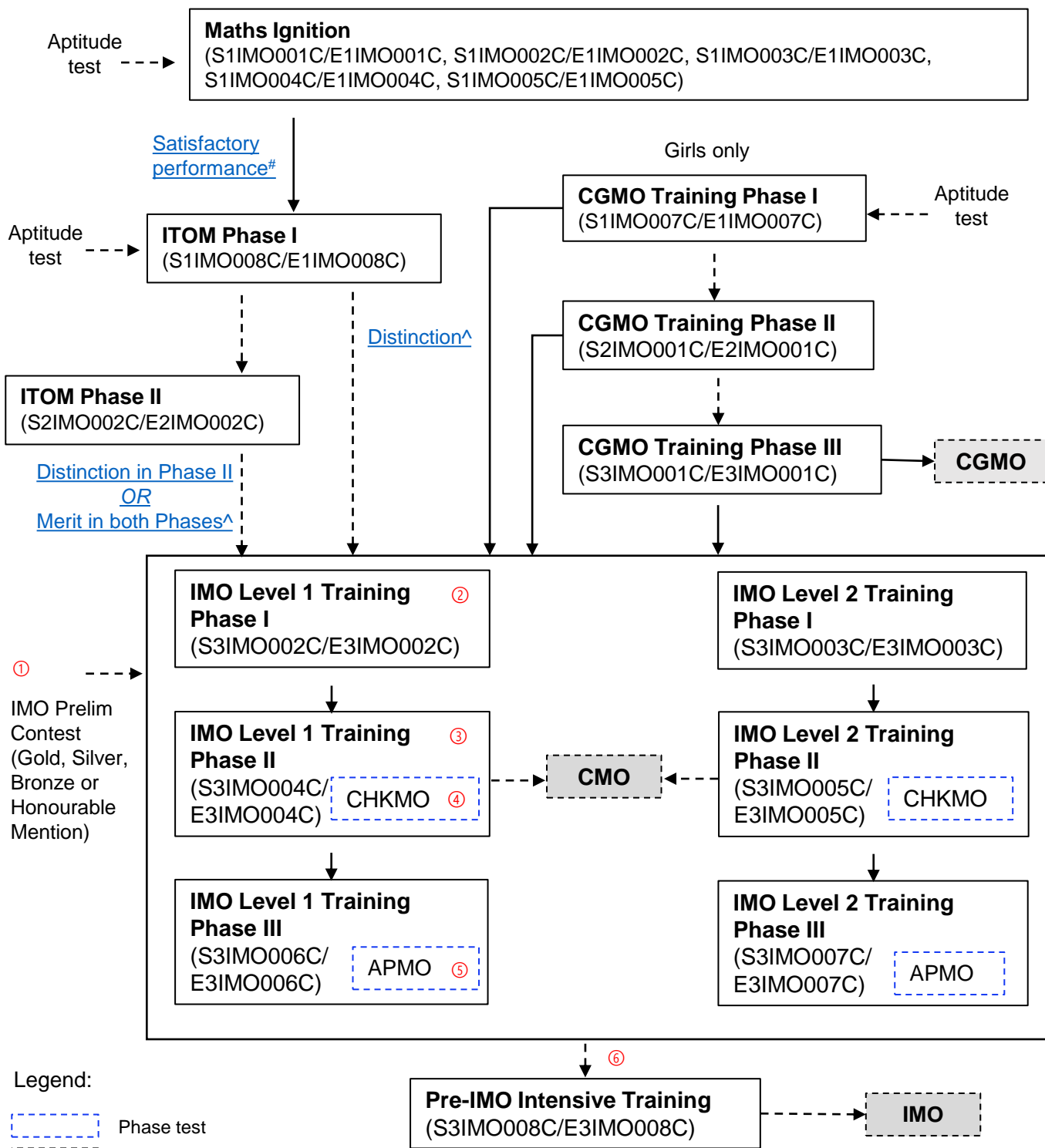|		
Introductory Level	**Maths Ignition (MI) Programmes**	- For S1-S3 HKAGE student members - Introductory training in Mathematical Olympiad by topics - Application for five MI programmes will be open in Apr, Jul & Oct each year - Enroll through <u>aptitude test</u>
Introductory to Intermediate Level	**Introduction to Olympiad Mathematics (ITOM)**	- For S1-S6 HKAGE student members - Two phases of training - Application will be open in Jan each year - Enroll through <u>aptitude test;</u> OR - Students who attained (a) distinction in 2 MI courses; OR (b) merit or above in 3 MI courses; OR (c) completion or above in 4 MI courses <u>could enroll directly</u>
Introductory to Advanced Level	**China Girls' Mathematical Olympiad**	- For S1-S6 HKAGE female HKAGE student members - Three phases of training - Application will be open in Jan each year - Enroll through <u>aptitude test;</u> OR - Students who have completed any phase of IMO/CGMO/ITOM Training <u>could enroll directly</u> - CGMO HK Team members will be selected based on their performance in the trainings
Advanced Level	**International Mathematical Olympiad (IMO) Trainings**	- For all awardees of IMO Preliminary Selection Contest - Hong Kong; OR students who got the certificate of distinction in any phase of ITOM training; OR students who got the certificate of merit in both phases of ITOM training; OR students who have completed any phase of IMO/CGMO training - Four phases of training - IMO HK Team members will be selected based on their performance in the tests and trainings

*For detailed flowchart and timeline, please refer to the next page.

◆ Enquiries 📞 3940 0101 ✉ programme@hkage.org.hk

International Mathematical Olympiad Related Programmes

（English version only 只提供英文版）

Maths Ignition
(S1IMO001C/E1IMO001C, S1IMO002C/E1IMO002C, S1IMO003C/E1IMO003C,
S1IMO004C/E1IMO004C, S1IMO005C/E1IMO005C)

Aptitude test - - - ▶

Satisfactory performance#

Aptitude test - - - ▶

ITOM Phase I
(S1IMO008C/E1IMO008C)

ITOM Phase II
(S2IMO002C/E2IMO002C)

Distinction in Phase II
OR
Merit in both Phases^

Distinction^

Girls only

CGMO Training Phase I
(S1IMO007C/E1IMO007C)

Aptitude test - - - ▶

CGMO Training Phase II
(S2IMO001C/E2IMO001C)

CGMO Training Phase III
(S3IMO001C/E3IMO001C)

CGMO

① - - - ▶

IMO Prelim
Contest
(Gold, Silver,
Bronze or
Honourable
Mention)

IMO Level 1 Training Phase I ②
(S3IMO002C/E3IMO002C)

IMO Level 2 Training Phase I
(S3IMO003C/E3IMO003C)

IMO Level 1 Training Phase II ③
(S3IMO004C/E3IMO004C) CHKMO ④

CMO

IMO Level 2 Training Phase II
(S3IMO005C/E3IMO005C) CHKMO

IMO Level 1 Training Phase III
(S3IMO006C/E3IMO006C) APMO ⑤

IMO Level 2 Training Phase III
(S3IMO007C/E3IMO007C) APMO

⑥

Pre-IMO Intensive Training
(S3IMO008C/E3IMO008C) - - - ▶ **IMO**

Legend:

- - - - (dashed blue box) Phase test

- - - - (dashed grey box) HK team representatives

- - - - ▶ By selection

──────▶ Direct admission once applied

Remarks:

ITOM – Introduction to Olympiad Mathematics
CGMO – China Girl's Mathematical Olympiad
IMO – International Mathematical Olympiad

CHKMO – Hong Kong (China) Mathematical Olympiad
CMO – Chinese Mathematical Olympiad
APMO – Asian Pacific Mathematics Olympiad

IMO2024 HK Team representatives are selected based on their performance in the assessments from ① through ⑥
IMO2025 HK Team representatives are selected based on their performance in the assessments from ② through ⑥

IMPORTANT information for International Mathematical Olympiad (IMO) Training

IMO Training

Eligibility
- IMO Preliminary Selection Contest awardees ① or
- Student members who have completed any phase of the IMO Training or
- Student members who have completed any phase of CGMO Training or
- Student members who have completed any phase of ITOM Training with Distinction
- Student members who have completed both phases of ITOM Training with Merit

Training /Competition	Content	Tentative schedule	Remark
Phase I Training	13 x 3-hr lessons	Jul - Aug	
	Test 1 ② 3 hr, 6 proof problems	Aug	▪ Phase test ▪ No make-up test
Phase II Training	17 x 3-hr lessons	Sep - Dec	
	Test 2 ③ 3 hr, 4 proof problems	Oct	▪ Phase test ▪ No make-up test
	CHKMO ④ 3 hr, 4 proof problems	Dec	▪ Phase test ▪ No make-up test
Phase III Training	8 x 3-hr lessons	Jan - Mar	
	APMO ⑤ 4 hr, 5 proof problems	Mar	▪ End-of-phase test ▪ No make-up test
Selection Tests for Pre-IMO Intensive Training	Test 3 ⑥ 2 days x 4.5 hr, 3 proof problems	Apr or May	▪ About 20 students to be selected based on previous tests ▪ No make-up tests
Pre-IMO Intensive Training	IMO HK Team (6 students) & Alternate Team (6 students)		▪ 12 students to be selected based on previous tests
IMO	2 days x 4.5 hr, 3 proof problems		▪ IMO HK Team
CMO	2 days x 4.5 hr, 3 proof problems		▪ About 6 students to be selected based on previous tests
CGMO	2 days x 4 hr, 4 proof problems		▪ About 8 female students selected via CGMO training

IMO2024 HK Team representatives are selected based on their performance in the assessments from ① through ⑥
IMO2025 HK Team representatives are selected based on their performance in the assessments from ② through ⑥

Useful websites

IMO official website:	http://www.imo-official.org/
IMO website:	http://imo2023.jp/
Art of Problem Solving:	http://www.artofproblemsolving.com/
Mathematical Excalibur:	http://www.math.ust.hk/excalibur/

#Entering ITOM with Satisfactory Performance in Maths Ignition (MI) Programmes

Starting from 1 September 2023 onwards, students who fulfilled one of the criteria below are eligible to enter ITOM - "Introduction to Olympiad Mathematics (Phase I)" (S1IMO008C):
- good results in aptitude test; OR
- distinction in at least 2 different MI courses; OR
- merit/distinction in at least 3 different MI courses; OR
- pass/merit/distinction in at least 4 different MI courses

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^Entering IMO Training with Satisfactory Performance in ITOM or CGMO

Starting from 1 September 2023 onwards, students who fulfilled one of the criteria below are eligible to enter IMO training Phase I Level I (S3IMO002C):
- Non-HKAGE student members / HKAGE student members who were awarded Honourable Mention or above in IMO Preliminary Selection Contest – Hong Kong; OR
- HKAGE student members who have completed any phase International Mathematical Olympiad (IMO) Training; OR
- HKAGE student members who have completed any phase of CGMO; OR
- HKAGE student members who have attained distinction in any phase of ITOM; OR
- HKAGE student members who have attained merit in both phases of ITOM

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