



香港資優教育學苑

The Hong Kong Academy for Gifted Education

香港特別行政區政府教育局資助

Subvented by the Education Bureau, the Government of the HKSAR

S1IM0002C

(Token- required)

[ **Gifted Programme** ]

**Introductory Course in  
Mathematical Olympiad**

# Maths Ignition – Geometry

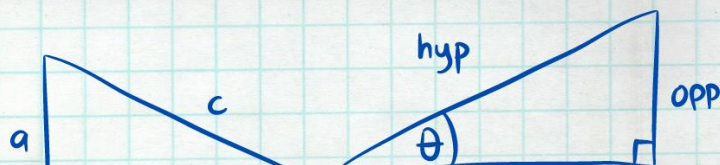
Instructor from International Mathematical Olympiad  
Hong Kong Committee

$$a^2 + b^2 = c^2$$

$$\cos(\theta) = \frac{\text{adj}}{\text{hyp}}$$

$$A = \frac{1}{2}$$

$$A = \frac{\sqrt{3}}{4} a^2$$



**Application Deadline**  
**26 Apr 2024 12:00 noon**

**Result Release**  
**24 May 2024**

## **Intended Learning Outcomes**

Upon completion of the gifted programme, gifted students should be able to:

1. broaden their mathematical knowledge in the topic of geometry on the basis of junior secondary mathematics curriculum;
2. strengthen their problem solving and higher-order thinking skills;
3. learn more about the scope of International Mathematical Olympiad Training.

## ◆ Gifted Programme Introduction

- Maths Ignition is an introductory programme. It is designed as a series of courses on different topics and is developed as a bridging programme to the 'IMO Training' programme.
- 'Maths Ignition- Geometry' is the second course of the series. It aims to broaden students' knowledge in Geometry on the basis of junior secondary mathematics curriculum through exploration and investigation approach. Students who attained (a) distinction in 2 Maths Ignition courses; OR (b) merit or above in 3 Maths Ignition courses; OR (c) completion or above in 4 Maths Ignition courses might be considered for direct admission to the "Introduction to Olympiad Mathematics (Phase I)" (S1IM0008C), an intermediate-level programme offered by IMO Hong Kong Committee.
- This programme is co-organized with International Mathematical Olympiad Hong Kong Committee (IMOHKC).

## ◆ Target Participants

- S1 to S3 HKAGE student members
- Class size: 30
- All applicants MUST attend the Aptitude Test held in HKAGE on 11 May 2024 except for those who have attended the Aptitude Test held on 19 Aug, 18 Nov 2023, or 17 Feb 2024

\* Not for students who have enrolled in:

1. CGMO Training (Phase I) ( E1IM0007C/S1IM0007C ) or
2. Introduction to Olympiad Mathematics (Phase I) ( E1IM0008C/S1IM0008C ) or
3. Any phase of International Mathematics Olympiad (IMO) Training before.

Remarks:

- Due to the limited seats in computer rooms, students who have attended the Aptitude Test on 17 Feb 2024 would not be allowed to take the test on 11 May 2024. Their results on 17 Feb 2024 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 11 May 2024.
- A notification email will be sent on 2 May 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 same as "Introductory Course in Mathematical Olympiad: Maths Ignition – Geometry (S1IM0002C)" in 22/23 school year.

## ◆ Medium of Instruction

Cantonese with English Handouts

## ◆ Pre-requisite

Students should know the basic knowledge of the following:

1. congruence and similarity;
2. properties of triangles and different types of quadrilaterals;
3. Pythagoras' Theorem

## ◆ Aptitude Test

- Students who wish to apply for this programme must take a general aptitude test on **11 May 2024 (1:45p.m. – 3:45 p.m. or 4:00 p.m. – 6:00 p.m.)**, except for those who have attended the Aptitude Test held on 19 Aug, 18 Nov 2023, or 17 Feb 2024.
- 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 **17 Aug 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			
			19 Aug 2023	18 Nov 2023	17 Feb 2024	11 May 2024
July 2024	S1IM0001C	Maths Ignition – Combinatorics	✓	✓	✓	✓
Aug 2024	S1IM0002C	Maths Ignition – Geometry	✓	✓	✓	✓
Sep 2024	S1IM0003C	Maths Ignition - Number Theory		✓	✓	✓
Nov 2024	S1IM0004C	Maths Ignition – Algebra		✓	✓	✓
Feb 2025	S1IM0005C	Maths Ignition - Coordinate Geometry				✓
Mar 2025	S1IM0007C	CGMO Training 2025 (Phase I)				✓
Mar 2025	S1IM0008C	Introduction to Olympiad Mathematics 2025 (Phase I)				✓

### 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.**

## ◆ Course Schedule

Session	Date	Time	Venue
Aptitude Test	11 May 2024	1:45 p.m. – 3:45 p.m. OR 4:00 p.m. – 6:00 p.m.	Mong Kok (To be confirmed)
1	5 Aug 2024	2:00 p.m. – 5:00 p.m.	Room 403, HKAGE
2	7 Aug 2024		Room 303, HKAGE
3	9 Aug 2024		Room 403, HKAGE
4	12 Aug 2024		Room 403, HKAGE

- A notification email will be sent on **2 May 2023** for the application result of the Aptitude Test.
- For any assessment to be held in the programme, **no make-up** will be arranged.

## ◆ Certificate

E-Certificate will be awarded to gifted students who have:

- attended **at least 3 sessions**; and
- completed all the assignments with satisfactory performance

## ◆ Sample Notes

- How many five-digit numbers have 'decreasing digits' (e.g. 43210, 95321)?
- Ann has 3 pieces of orange candies, 4 pieces of strawberry candies and 5 pieces of pineapple candies. She plans to eat 1 piece of candy every day. In how many different ways can she eat the 12 pieces of candies?

## ◆ 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 **aptitude test**

### 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 **aptitude test; 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 could enroll directly

### 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 **aptitude test; OR**
- Students who have completed any phase of IMO/CGMO/ITOM Training could enroll directly
- CGMO HK Team members will be selected based on their performance in the trainings

### Advanced Level

#### International Mathematical Olympiad (IMO) Trainings

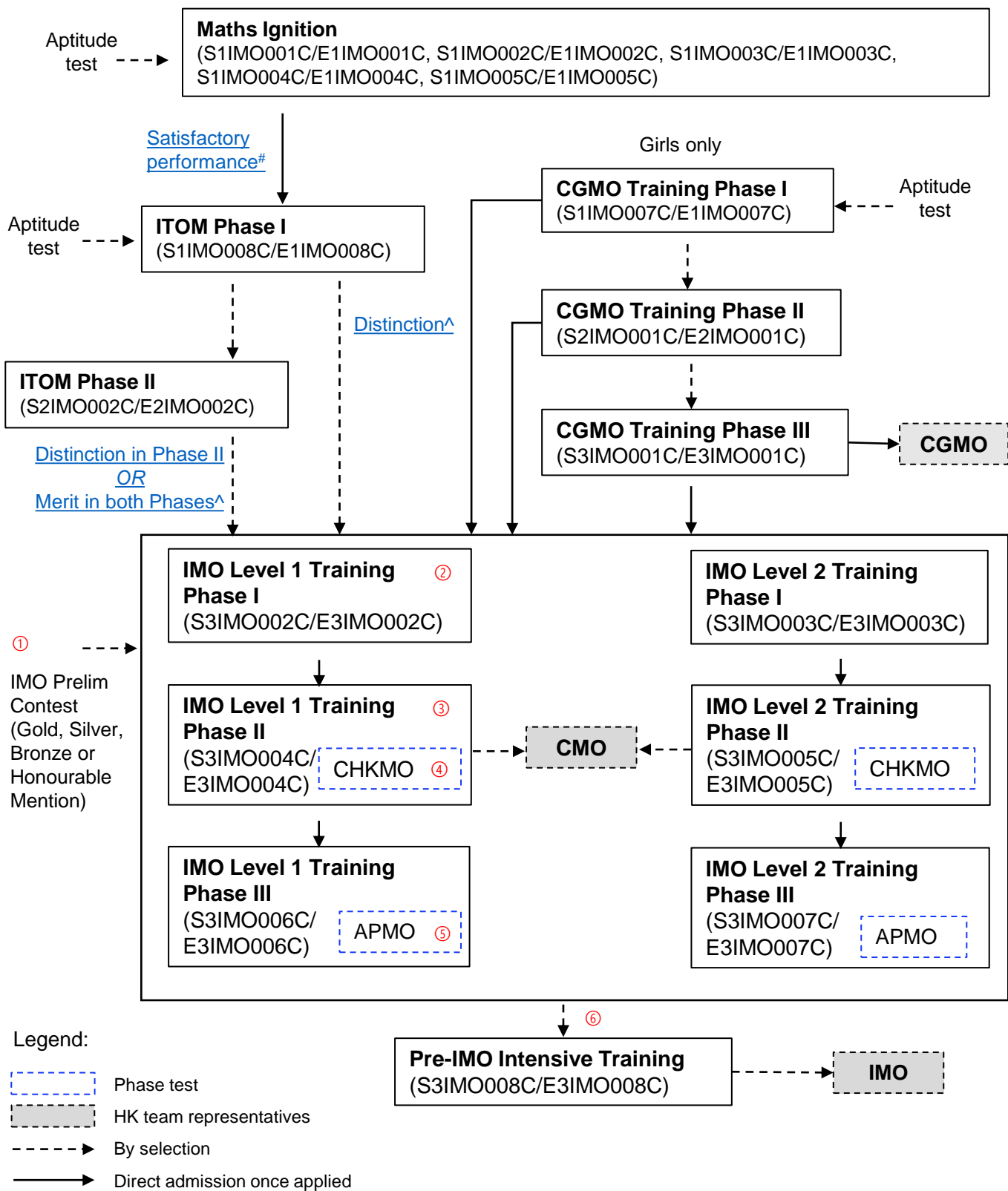
- For all awardees of IMO Preliminary Selection Contest - Hong Kong; OR students who got the certificate of distinction in any phase of ITOM training; OR students who got the certificate of merit in both phases of ITOM training; OR students who have completed any phase of IMO/CGMO training
- Four phases of training
- IMO HK Team members will be selected based on their performance in the tests and trainings

\*Detail flowchart and timeline, please refer to next page.

For timetable of MI programmes, ITOM, and CGMO in coming year, please refer to section "Aptitude Test" of this poster.

# International Mathematical Olympiad Related Programmes

(English version only 只提供英文版)



**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	<ul style="list-style-type: none"> <li>▪ Phase test</li> <li>▪ No make-up test</li> </ul>
Phase II Training	17 x 3-hr lessons	Sep - Dec	
	Test 2 ③ 3 hr, 4 proof problems	Oct	<ul style="list-style-type: none"> <li>▪ Phase test</li> <li>▪ No make-up test</li> </ul>
	CHKMO ④ 3 hr, 4 proof problems	Dec	<ul style="list-style-type: none"> <li>▪ Phase test</li> <li>▪ No make-up test</li> </ul>
Phase III Training	8 x 3-hr lessons	Jan - Mar	
	APMO ⑤ 4 hr, 5 proof problems	Mar	<ul style="list-style-type: none"> <li>▪ End-of-phase test</li> <li>▪ No make-up test</li> </ul>
Selection Tests for Pre-IMO Intensive Training	Test 3 ⑥ 2 days x 4.5 hr, 3 proof problems	Apr or May	<ul style="list-style-type: none"> <li>▪ About 20 students to be selected based on previous tests</li> <li>▪ No make-up tests</li> </ul>
Pre-IMO Intensive Training	IMO HK Team (6 students) & Alternate Team (6 students)		<ul style="list-style-type: none"> <li>▪ 12 students to be selected based on previous tests</li> </ul>
IMO	2 days x 4.5 hr, 3 proof problems		<ul style="list-style-type: none"> <li>▪ IMO HK Team</li> </ul>
CMO	2 days x 4.5 hr, 3 proof problems		<ul style="list-style-type: none"> <li>▪ About 6 students to be selected based on previous tests</li> </ul>
CGMO	2 days x 4 hr, 4 proof problems		<ul style="list-style-type: none"> <li>▪ About 8 female students selected via CGMO training</li> </ul>

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

## #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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