



E1MAT004C

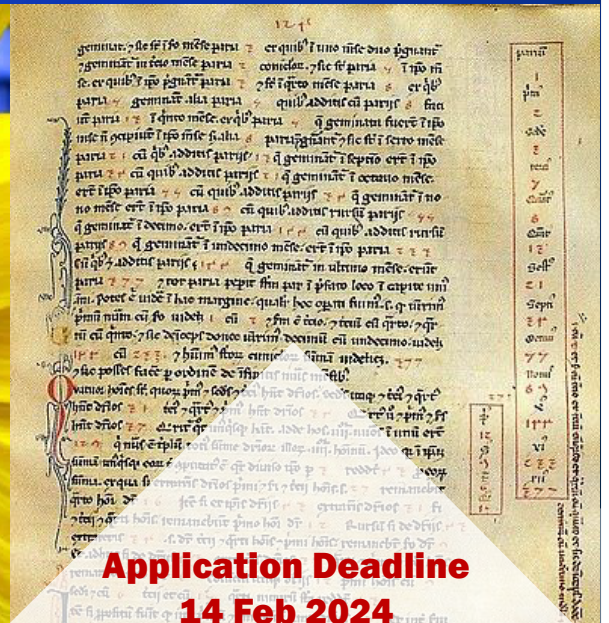
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Algebra Course (Level I):

Algebra Enrichment 2

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Application Deadline

14 Feb 2024

12:00 noon

Result Release

23 Feb 2024

Intended Learning Outcomes

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

1. apply inductive reasoning to observe the patterns of number sequences;
2. demonstrate problem-solving skills by modelling, representing, analysing and generalizing simultaneous algebraic equations in a variety of problems;
3. devise strategies to solve simultaneous algebraic equations and factorize polynomials problems;
4. manipulate long division of polynomials by applying division algorithm, remainder theorem and factor theorem;
5. develop critical thinking skills and problem-solving skills via challenging algebra problems and games.

◆ Introduction

Apparently, Mona Lisa, nautilus and sunflower bear no relationship to each other, but in fact all of them are related to the Fibonacci Sequence and the Golden Ratio. This course covers the topics below:

1. introduce essential skills and concepts in algebra, e.g., patterns of various number sequences, arithmetic sequences, geometric sequences, summations, solving linear equation in two unknowns, factorization and division of polynomials;
2. enhance students' curiosity in mathematics with algebra; and
3. equip students with deeper understanding in algebra for their further study in higher-level mathematics, engineering, and science programmes.

This programme is under the collaboration of HKAGE and Tai Kwong Hilary College.

◆ Schedule

Session	Date	Time	Venue
1	4 May	9:30 a.m. – 12:30 p.m.	Room 203, HKAGE
2	11 May		
3	18 May		
4	25 May		

◆ Target Participants

- P4 to P6 HKAGE student members in 2023/24 school year
- Class size: 30

Priority will be given to students who are awarded Certificate of Distinction or Certificate of Merit in Algebra Course (Level I): Math Magic and Algebra Enrichment 1 (E1MAT015C).

◆ Pre-requisite

Students should be able to:

- solve linear equations in one unknown;
- have basic manipulation of polynomials;
- have basic knowledge of coordinate system.

◆ Medium of Instruction

English with English Handouts

◆ Screening

Please answer the screening questions in the online application form.

*The screening questions are designed to help the applicant understand the course level and the course content. The questions must be answered by the student applicant and it can only be attempted once. The answers cannot be changed once the application is submitted. Selection is based on students' performance in answering the questions. Only students who can demonstrate motivation and knowledge of algebra in the screening questions can be enrolled in the programme.

◆ Certificate

E-Certificate will be awarded to participants who have:

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

◆ Sample Notes

Solve the simultaneous equations using the method of substitution:

$$\begin{cases} \frac{x}{4} + \frac{y}{3} = 7 & \dots(1) \\ 2x - \frac{y}{6} = 39 & \dots(2) \end{cases}$$

Reference

- Mark Zegarelli. Basic Math & Pre-Algebra For Dummies. John Wiley & Sons, Inc
- Mary Jane Sterling. Algebra I For Dummies. John Wiley & Sons, Inc
- Mary Jane Sterling. Algebra II For Dummies. John Wiley & Sons, Inc
- Larry Gonick. The Cartoon Guide to Algebra. HarperCollins
- Roger B. Nelsen. Proofs Without Words: Exercises in Visual Thinking. Mathematical Association of America
- Roger B. Nelsen. Proofs without Words II. Mathematical Association of America
- Roger B. Nelsen. Proofs Without Words III: Further Exercises in Visual Thinking. Mathematical Association of America
- 三谷 政昭 世界第一簡單密碼學 (修訂版) 世茂出版
- 相知 政司 世界第一簡單虛數・複數. 世茂出版
- 本社編輯部編 解題思路—如何作證明題 九章出版社
- 吳振奎編著 世界數學名題欣賞叢書(2)斐波那契數列 九章出版社
- 孫 琦、曠京華著 世界數學名題欣賞叢書(5)質數判定與大數分解 九章出版社
- 孫 琦、萬大慶著 世界數學名題欣賞叢書(7)置換多項式及其應用 九章出版社
- 潘有發著 趣味歌詞古體算題選 九章出版社
- 左銓如等編著 初等代數研究 九章出版社
- 結城浩 數學女孩秘密筆記：整數篇 世茂出版
- 結城浩 數學女孩秘密筆記：數列廣場篇 世茂出版