

# Algebra Enrichment 2 (E1MAT004C)

|  |  |
|--|--|
| <p><b>Introduction</b></p>               | <p>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:</p> <ol style="list-style-type: none"> <li>1. introduce essential skills and concepts in algebra such as patterns of various number sequences, arithmetic and geometric sequences, summations, solving linear equation in two unknowns, factorization and division of polynomials;</li> <li>2. enhance students' curiosity in math with algebra and equip them with deeper algebra understanding for their self-directed learning.</li> </ol> <p>(This programme is co-organized with Tai Kwong Hilary College.)</p> |
| <p><b>Programme Type / Level</b></p>     | <p>Algebra Course (Level I) (<a href="#">Token-required</a>)</p>   |
| <p><b>Instructor(s)</b></p>              | <p>Mr Alfred Yeung Sai Kit, Head of Mathematics of Tai Kwong Hilary College</p>  |
| <p><b>Pre-requisite</b></p>              | <p>Students should be able to:</p> <ul style="list-style-type: none"> <li>♦ solve linear equations in one unknown;</li> <li>♦ have basic manipulation of polynomials;</li> <li>♦ have basic knowledge of coordinate system.</li> </ul>   |
| <p><b>Target Participants</b></p>        | <ul style="list-style-type: none"> <li>➢ P4 to P6 HKAGE student members</li> <li>➢ Class size: 30</li> </ul> <p>* <b>Student members who completed Algebra Course (Level 1): Math Magic and Algebra Enrichment 1(MATP1211 or E1MAT015C) are suggested to apply.</b></p> <p>* <b>Priority will be given to student members who are awarded Certificate of Distinction or Certificate of Merit in Algebra Course (Level 1):Math Magic and Algebra Enrichment 1(MATP1211 or E1MAT015C).</b></p> <p>This programme is same as “Algebra Course (Level 1): Algebra Enrichment 2 (MATP2212)” in 19/20 school year.</p>  |
| <p><b>Medium of Instruction</b></p>      | <p>English with English handouts</p>   |
| <p><b>Certificate</b></p>                | <p><b>E-Certificate</b> will be awarded to participants who have:</p> <ul style="list-style-type: none"> <li>❖ attended <b>AT LEAST 3</b> sessions AND</li> <li>❖ completed all the assessments with satisfactory performance.</li> </ul>  |
| <p><b>Intended Learning Outcomes</b></p> | <p>Upon completion of the programme, the participants should be able to:</p> <ul style="list-style-type: none"> <li>• develop critical thinking skills and problem-solving skills via challenging algebra problems and games;</li> <li>• apply inductive reasoning to observe the patterns of number sequences;</li> <li>• demonstrate problem-solving skills by modelling, representing, analysing and generalizing simultaneous algebraic equations in a variety of problems;</li> <li>• devise strategies to solve simultaneous algebraic equations and factorize polynomials problems;</li> <li>• manipulate long division of polynomials by applying division algorithm, remainder theorem and factor theorem.</li> </ul>     |
| <p><b>Screening</b></p>                  | <p>Please answer the screening question in the online application form.</p> <p>*The screening question is designed to help the applicant understands the course level and the course content. The question must be answered by the student applicant and it can only be attempted once. The answer cannot be changed once the application is submitted. Selection is based on students' performance in answering the question. Only students who can demonstrate motivation and knowledge of algebra in the screening question can be enrolled in the programme.</p>   |

Application  
Deadline

17 May 2021, 12:00 n.n

Application Result  
Release Date

28 May 2021

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

### Schedule

| Session | Date        | Time                  | Venue (HKAGE) |
|---------|-------------|-----------------------|---------------|
| 1       | 17 Jul 2021 | 2:30 p.m. – 5:30 p.m. | Room 203      |
| 2       | 19 Jul      |                       |               |
| 3       | 20 Jul      |                       |               |
| 4       | 21 Jul      |                       |               |

### 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

### Enquiries

For enquiries, please contact Academic Programme Development Division on 3940 0101 after language selection, press "1".