香港資優教育學苑
The Hong Kong Academy for Gifted Education

Games X Maths (MATP1051)

Introduction	Many studies found that learning through games can stimulate learning motivation and cultivate positive learning attitudes among students. This course introduces students to the rationales behind various mathematical games and develops their creativity, logical thinking and mathematical reasoning skills. Let's play and learn!
Programme Type / Level	Across Domains and Interdisciplinary Course (Level 1) ([Token-required](#))
Instructor(s)	Ms. Tsang Pui Ting & Mr. Ng Ka Shun, World Class Arena Asia Limited (WCAAL)
Pre-requisite	Basic arithmetic skills
Target Participants	➢ P4 to P6 HKAGE student members ➢ Class size: 30
Medium of Instruction	Cantonese with Chinese and English handouts
Certificate	**E-Certificate** will be awarded to participants who have: ❖ Attended **AT LEAST 3** sessions AND ❖ Completed all the assignments with satisfactory performance
Intended Learning Outcomes	Upon completion of the programme, participants should be able to: 1. Investigate and develop the higher-order thinking skills (e.g. analysis, evaluation, reasoning, designing) and problem-solving skills (e.g. classification, generalisation, making deduction and inferences, inquiring, systematic listing, observing patterns, formulating and testing hypotheses, divide and conquer, working backward, etc.) used in analysing mathematical games; 2. Develop problem-solving skills to solve problems related to Algebra, Permutations and Combinations, Sorting, Probability and Optimisation; 3. Construct creative mathematical models and solutions for real-life problems; 4. Develop communication and presentation skills so that they can articulate their own views and listen to the views and ideas of others and where necessary defend them.
Screening	Please answer the screening question in the online application form. *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 mathematical logical thinking in the screening question can be enrolled in the programme.

Application Deadline	**5 Aug, 2019 12:00n.n**	**Application Result Release Date**	**16 Aug, 2019**

Student members may withdraw from the programme on or before the deadline. Otherwise, the token will be deducted.

Schedule

Session	Date	Time	Venue (HKAGE)
1	7 Sep	9:00a.m.-12:00n.n	Rm 303
2	21 Sep		Rm 303
3	28 Sep		~~Rm 303~~ Rm 105
~~4~~ [Cancelled]	~~5 Oct~~		
Make-up lesson	**19 Oct**	**9:00a.m.-12:00n.n**	**Rm 303**

Sample Example for the Programme

2. A game for two players.

> One player, known as code-maker. The other player, known as code-breaker.
>
> The secret code consists of a series of symbols, which are chosen from 3 symbol Ⓐ, Ⓑ and Ⓒ. (The code-maker can repeatedly use the same symbol)
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> The code-breaker attempts to duplicate the exact symbols and positions of the secret code.
>
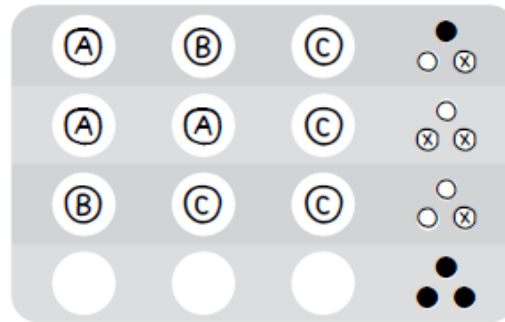> The code-maker responds by using ●, ○ and ⊗ .
> - ● indicates a correct symbol in the right position (without indication of which symbol it corresponds to).
> - ○ indicates a correct symbol in the wrong position.
> - ⊗ indicates a wrong symbol that does not appear in the secret code.
>
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>
> The player wins the game when he/she manage to guess all the symbols in the code sequence and when they all in the right position.

Are you able to make use of the following guesses and responses to find out the secret code?

Ⓐ	Ⓑ	Ⓒ	● ○ ⊗
Ⓐ	Ⓐ	Ⓒ	○ ⊗ ⊗
Ⓑ	Ⓒ	Ⓒ	○ ○ ⊗
○	○	○	● ● ●