Mathematics Project Competition (2024/25) 數學專題習作比賽 (2024/25) Information Sheet資料頁				
Category 參賽組別	☑* A組 : 初中習作　(Category A: Junior secondary project) B組 : 中一小型習作 (Category B: S1 mini-project)			
Title of Project 專題習作題目	The Competition Towards Capturing			
Name of School	Yan Oi Tong Tin Ka Ping Secondary School			
學校名稱	仁愛堂田家炳中學			
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Title: The Competition Towards Capturing

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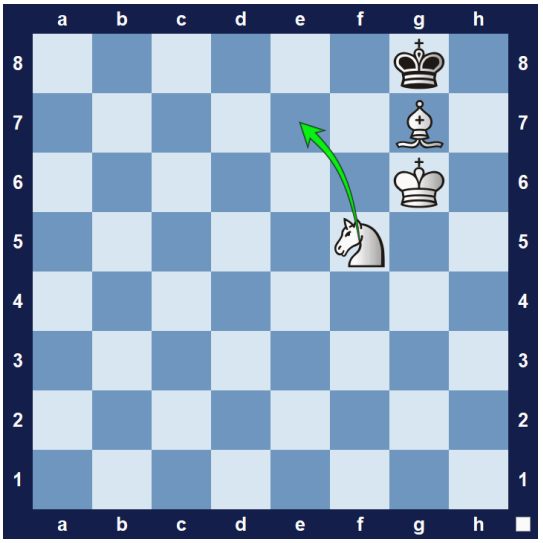
A. Introduction

Playing International Chess has been one of our passions since our secondary school lives began. Chess is a complicated game consisting of the opening, middle, and endgame. The opening has been studied throughout the years with the best moves being discovered either through trial or error, or computer engines. Many opening principles were developed to ensure players play the best move. Even in the openings, there are many variations for players to remember. The middlegame is a test of wits that requires players to create chances and punish opponents' mistakes, it is impossible to study every best move of the middlegame as anything can change in the middlegame. However, the endgame is similar to the opening. There are **certain patterns** to remember that can guarantee victory over others, but variations are limited in endgames. With patterns arising, an interesting question arises - **is there a way to connect math equations with endgame patterns?**



One of our groupmates proposed an intriguing question. **Is there a way to find out how many moves it would take for a knight to capture a pawn without looking at the amount of squares between them?** Is there a **general equation for an infinite chessboard** that can calculate the amount of moves immediately?

D. Conclusion

To conclude, there are several things that our group has learned in this project.

For one, we feel extremely delighted that we have found a way to **calculate** endgame sequences and accurately execute move orders. It was such a satisfying feeling when we created the general formula.

Secondly, we thought out of the box when we looked at what to investigate about chess. Instead of the usual 64-squares chess board, the infinite chess board allows us to have more creativity and imagination, unbounded by the barriers of the original board.

Lastly, although we faced many challenges along the way, which included disapproving of "Whipped Knight with Enhanced Speed' many times, we still managed to find a way to solve the issues and make these terms valid. The general equation took several tries and we even had to start from scratch twice. But in the end, we managed to overcome these obstacles and the results were much worth it. Chess isn't a simple game. It is complex and takes a lot of time to study. But with the help of mathematics, these processes can make studying chess more fun and engaging.

E. Reference

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