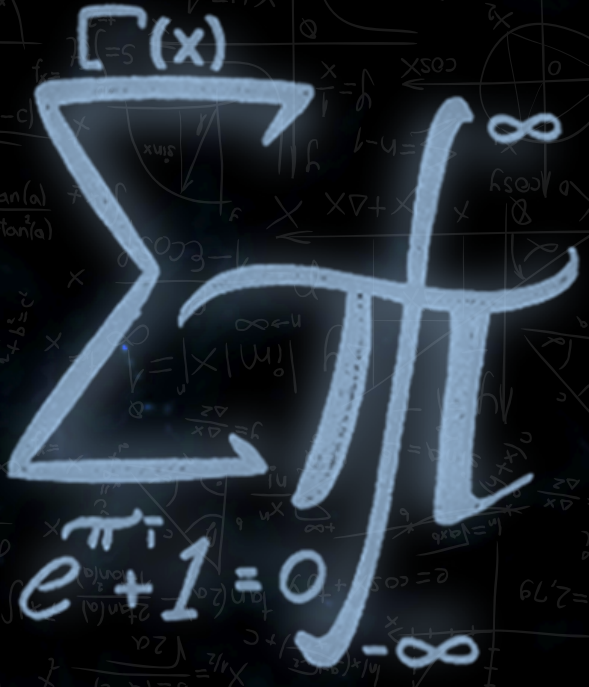

VILLANI'S SQUARES

STUDY GUIDE

VILLANI'S SQUARES STUDY GUIDE

INTRODUCTION

"Villani's Squares" is the mathematics module at Beaconhouse Notion of Academia '25, ingeniously crafted to challenge delegates with the brilliance and innovation of mathematical concepts. This immersive experience pushes boundaries, inviting delegates to unravel the genius of theorems, decode intricate puzzles, and explore groundbreaking applications of mathematics in real-world scenarios. Delegates will work collaboratively on stimulating challenges, fostering teamwork while embracing diverse perspectives.

- ☑ There will be elimination following the first and second rounds
- ☑ Delegates are required to bring their own calculators for the third round

ROUND 1: SOLVE N SHUFFLE

In the exhilarating first round, "Solve n Shuffle," two teams will go head-to-head in an intense faceoff, testing their speed, precision, and mathematical prowess. Each team will be presented with a deck of 30 cards, each bearing a unique and challenging question.

Teams will take turns drawing a card and must solve the question presented on it within a tight time frame. The first team to crack the solution correctly earns the card and secures valuable points. As the round progresses, the competition will intensify, with teams racing against the clock, and each other, to claim the most cards. Only the team with the highest number of cards at the end of this round will advance to the next stage. Exact rules will be unveiled on the day, ensuring a level playing field and keeping the suspense alive.

Areas of focus in Solve n Shuffle will include a broad range of topics such as Graphs of Equations, Matrices, Vectors, Angle Properties, Circle Properties, Indices, and Sets.

"Solve n Shuffle" is a testament to the delegates' ability to synthesize disparate mathematical fields into coherent solutions, all while engaging in a fierce faceoff. This challenge not only assesses their mathematical skills but also their capacity to combine sharp intellect and creative problem solving under pressure.

ROUND 2: π PRISON

In the thrilling second round, "π Prison," delegates will embark on a captivating escape room adventure that tests their mastery of fundamental mathematical concepts. This immersive experience unfolds in four invigorating stages, each designed to challenge a unique mathematical domain and push delegates to their limits.

To progress through the simulation, delegates must solve stimulating problems, unlocking each subsequent stage only after successfully completing and verifying their answers which will be submitted physically or via Google Forms.

The four stages will be divided into the following domains: Case Studies, Alphanumeric Riddles, 5x5 Risk Squares, and Pascal's Box.

Areas of focus in π Prison will include a broad range of topics such as Number Theory, Mensuration, Coordinate Geometry, Sequences and Series, Algebraic Equations and Manipulations, Trigonometry, Principles of Calculus, and Patterns.

"π Prison" promises a blend of intellectual rigor, creative thinking, and strategic problem-solving, making it a challenge that goes beyond traditional mathematical assessments. Every step forward will hinge on their ability to decode complex problems and apply logical reasoning.

ROUND 3: SNAKES AND LADDERS

In the climactic third round, "Snakes and Ladders," delegates are thrust into the classic Snakes and Ladders game through a life sized version that combines mathematical twists with teamwork, strategy, and problem-solving. This engaging round will challenge participants to think critically while navigating the giant board.

Each team will assign one member as the navigator, who will physically move on the board, while the other team member remains seated to answer questions. If needed, the navigator can also step in to answer, ensuring flexibility in the team's approach.

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The game's mechanics are simple yet dynamic. Each correct answer earns the team a dice roll. The navigator moves forward based on the dice roll, with ladders propelling them upward and snakes pulling them back. To make the game even more engaging, quirks will be incorporated into the board, adding an extra layer of challenge to this exciting game. The round ensures fairness with an equal number of turns for all teams, maintaining the excitement until the very end. The game concludes either when a team successfully reaches the finish line or when the allotted time runs out, making every turn crucial.

Areas of focus in Snakes and Ladders will include a broad range of topics such as Probability, Statistics, Trigonometry, Logarithms, and Differentiation and Integration alongside concepts from the first and second rounds.

"Snakes and Ladders" balances fun and nostalgia with the focus required for solving mathematical challenges, which is both stimulating and rewarding. It's not just about reaching the finish line; it's about how well participants rise to the challenges and work together to achieve their goals.

STUDY RESOURCES

Information Documents	Round 1	Sample Questions
	Round 2	Sample Questions
	Round 3	Sample Questions