BNA 2026
Villani's Squares

Brief Study Guide

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In a world teetering on the brink of chaos, only the sharpest minds; those capable of analytical prowess, strategic thinking, and flawless mathematical execution—can hope to seize power. This engaging module is designed to test your command over fundamental and advanced mathematical principles, and translate abstract concepts into real-world applications and cunning strategies. Through three challenging rounds, you shall prove your worth, showing that you possess the numericalintelligence necessary to establish rule!

Round

1

The competition begins with the **"Numeral Nexus**," a high-stakes 2v2 confrontation. This round demands not just individual skill, but also synchronized teamwork under immense pressure. Questions will focus on a wide range of core mathematical topics requiring rapid-fire problem-solving and collaboration. Points are awarded not exclusively for correct answers but coupled with efficiency with which your duo operates. Success in this monumental duel depends on communication, trust, and the ability to instantly recognize and deploy the most effective mathematical tool for the task at hand.

2

Round 2, rightfully titled the "**Quant Quest**", shifts the focus from theoretical problems to complex real-

world applications, mirroring the challenges of commanding a vast, complex operation. This round is split into three thematic sections: mechanics, geometry, and statistics. For example, delegates may be tasked with utilizing mechanics to calculate the orbital dynamics for launching a satellite, or employing statistics to predict the success rate of an operation based on probability distributions. A central theme will be using mathematics for large-scale operations, such as designing the logistics and finding the best possible interstellar route for building and sustaining a colony on Mars. This tests your capacity to leverage mathematics for practical, world-altering purposes. Whether you defeat this dire challenge, now rests in your palms!

3

With a special focus on classic systems like the Caesar Cipher.Mastery of cryptography, The final round is a two-part test of pure intellectual agility and strategic information management; “**Crypto**”. The first part features challenging brain teasers that demand lateral thinking and creative application of mathematical logic, often relying on pattern recognition, sequence analysis, and abstract reasoning rather than direct formulas. The second part, cryptography, plunges you into the world of advanced codes and information security. Here, you must use principles of modular arithmetic, number theory, and knowledge of combinatorics to decrypt complex data. This is the ultimate proof of a delegate’s analytical and information security expertise!

Note: The information in this document is subject to changes.