

# MATHEMATICS

## *Overview of Permutations and Combinations, Algebra, and Statistics*

### I. OVERVIEW OF PERMUTATIONS AND COMBINATIONS 10%

- A. Multiplication Principle
- B. Permutations
- C. Combinations

### II. ALGEBRA 40%

- A. Sequences and Series
  - 1. Arithmetic and Geometric Sequences
  - 2. Arithmetic and Geometric Series
  - 3. Sigma Notation
- B. Polynomials
  - 1. Adding and Subtracting
  - 2. Multiplying
- C. Binomial Expansion Theorem
- D. Compound Interest
  - 1. Investing and Borrowing
  - 2. Annuities and Loans
- E. Euler's Constant

### III. STATISTICS 50%

- A. Descriptive Statistics
  - 1. Mean, Median, and Mode
  - 2. Range, Quartiles, and IQR
- B. Measures of Variation
  - 1. Variance
  - 2. Standard Deviation
  - 3. Z-score

C. Basic Probability

1. Independent
2. Dependent

D. Probability Distributions

1. Expected Value
2. Variance and Standard Deviation

E. The Binomial Distribution

F. The Normal Distribution