

About the test

The test lasts for two hours and candidates are required to answer multiple choice items on any or all of the following:

Computation

- Perform Computation using any of the four basic operations with real numbers
- Convert among fractions, percentages and decimals
- Express a value to a given number of decimal places
- Calculate any fraction or percentage of a given quantity
- Express one quantity as a fraction or percentage of another
- Compare two quantities using ratios
- Divide a quantity in a given ratio
- Solve problems using fractions, decimals, percentages, ratios, rates, and proportions, and arithmetic mean

Number Theory

- Distinguish among sets of numbers (natural, whole, integers, rational, irrational)
- Order a set of real numbers
- Identify a given set of numbers as a subset of another set
- List the set of factors or a set of multiples of a given positive integer
- Compute the highest common factor or lowest common multiple of two or more positive integers
- Use properties of numbers and operations in computational tasks
- Solve problems involving concepts in number theory

Consumer Arithmetic

- Calculate discount, sales tax, profit or loss
- Express a profit, loss, discount, mark-up and purchase tax as a percentage of some value
- Solve problems involving simple interest
- Solve problems involving compound interest, appreciation and depreciation
- Solve problems involving measures and money (e.g., exchange rate)

Sets

- Explain concepts relating to sets
- Represent a set in various forms
- Describe relationships among sets using set notation and symbols
- List subsets of a given set
- Determine elements in intersections, unions and complements of sets
- Construct Venn diagrams to represent relationships among sets
- Solve problems involving the use of Venn diagrams
- Solve problems in Number Theory and Algebra using concepts in Set Theory

Statistics

- Differentiate between types of data (discrete vs continuous, grouped vs ungrouped)
- Determine class features for a given set of data (class interval, class boundaries, class limits, class midpoint, class width)
- Construct statistical diagrams (pie charts, bar charts, line graphs, histograms, frequency polygons)
- Interpret statistical diagrams
- Determine measures of central tendency for raw, ungrouped and grouped data (mean, median, mode)
- Determine the most appropriate measure for the average of a set of data
- Determine the measures of dispersion for raw, ungrouped and grouped data (range, interquartile range and semi-interquartile range)
- Construct a cumulative frequency table for ungrouped and grouped data
- Draw cumulative frequency curve (Ogive)
- Use statistical diagrams
- Determine the proportion or percentage of the sample above or below a given value from raw data, table, or frequency curve
- Identify the sample space for an experiment
- Determine experimental and theoretical probabilities of events
- Make inference from statistics

Algebra

- Use symbols to represent numbers, operations, variables, and relations
- Translate statements expressed algebraically into verbal phrases
- Perform the arithmetic operations involving directed numbers
- Perform the four basic operations with algebraic expressions
- Substitute numbers for algebraic symbols in simple algebraic expressions
- Perform binary operations
- Apply the distributive law to factorise or expand algebraic expressions
- Simplify algebraic functions
- Use the laws of indices to manipulate expressions with integral indices
- Solve linear equations in one unknown
- Solve simultaneous linear equations in two unknowns, algebraically
- Solve a simple linear inequality in one unknown
- Change the subject of formulae
- Factorise algebraic expressions
- Solve quadratic equations
- Solve word problems
- Prove two algebraic expressions to be identical

Relations, Functions and Graphs

- Explain concepts associated with relations
- Represent a relation in various ways
- State the characteristics that define a function
- Use functional notation
- Distinguish between a relation and function
- Draw and interpret graphs of linear functions
- Determine the intercepts of the graph of linear functions
- Determine the gradient of a straight line
- Determine the equation of a straight line
- Solve graphically a system of two linear equations in two variables
- Represent the solution of linear inequalities in one variable using set notation, the number line, graph,
- Draw a graph to represent a linear inequality in two variables
- Derive composite functions
- State the relationship between a function and its inverse
- Derive the inverse of a function
- Determine the roots of a quadratic function using the quadratic formula or the factorisation method
- Determine the minimum or maximum value of a function
- Determine the domain and range of a function

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