

YEAR 4 EXPRESS MATHEMATICS

GCE 'O' Level Subject Code: 4052

Textbooks: New Discovering Mathematics (Star Publishing, 4A, 4B and Year 3 Textbook)

TERM 1	CHP 0 : REVISION ON ALGEBRA
	CHP 1 : SET THEORY
	1.1 To understand Set Notation
	1.2 To know the criteria for 2 sets to be equal
	1.3 What is an empty set or a null set
	1.4 To represent the meaning of a Universal set, Subsets and Complement of a set and how to represent information using Venn Diagrams
	1.5 How to find the Intersection and union of a set and how to show them by shading Venn Diagrams
	CHP 2 : DATA ANALYSIS -Measures of Spread
	2.1 To understand the cumulative frequency table and learn how to draw the cumulative frequency curve
	2.2 To find the median, quartiles, percentiles and interquartile range for grouped and ungrouped data
	2.3 To learn how to draw the Box and Whiskers Plot and how to find the median, range, quartiles and interquartile range if a plot is given
	2.4 To find the standard deviation for Grouped Data using formula
	2.5 To use the calculator to calculate the mean and standard deviation
	2.6 To understand how we can use the mean and standard deviation to compare two sets of data
	CHP 3 : PROBABILITY
	3.1 To define random experiments
	3.2 To state the sample space of an experiment as the set of all outcomes and to list them
	3.3 To define the event and the complementary event
	3.4 To find the probability of an event occurring given an experiment of equally possible occurring events as $P(E) = \frac{\text{No. of outcomes favouring } E}{\text{No. of possible outcomes}}$
	3.5 To state the range of probability of an event E: $0 \leq P(E) \leq 1$ and its significance
	3.6 To state the rule concerning probability of an event and its complementary event $P(E') = 1 - P(E)$

	3.7 To use the possibility diagram to calculate probabilities
	3.8 To use tree diagrams to calculate probabilities
	3.9 To define mutually exclusive and independent events
	3.10 To use the Addition Law to find the probability of mutually exclusive events
	3.11 To use the Multiplication Law to find the probability of two independent events
	3.12 To apply the concept of probability to solve a variety of problems
	CHP 4 : MATRICES
	4.1 Definition of a matrix
	4.2 To learn to display information in the form of a matrix of any order
	4.3 To understand the order of a matrix
	4.4 Definition of a square matrix, a column matrix and a row matrix
	4.5 How to add two matrices of the same order
	4.6 Definition of the zero matrix
	4.7 To learn that matrix addition obeys the commutative and associative properties
	4.8 How to subtract one matrix from another where both are of the same order
	4.9 To multiply a matrix by a scalar
	4.10 To learn that we can only multiply two matrices if the number of columns in the first matrix is the same as the number of rows in the second matrix
	4.11 To write down the order of the resultant matrix when we multiply two matrices together
	4.12 To learn that matrix multiplication is not commutative
	4.13 To define the 2×2 Identity Matrix, I, and learn that $AI = IA = I$ where A is also a 2×2 matrix
	4.14 To apply the knowledge of matrices in solving word problems
TERM 2	CHP 6 (Year 3 Textbook) : Conditions of congruence and Similarity
	6.1 To apply the four congruence tests to determine whether 2 triangles are congruent
	6.2 To apply the three similarity tests to determine whether 2 triangles are similar
	6.3 To solve problems involving congruent and/or similar triangles
	6.4 To solve problems using the relationship between areas of similar figures
	6.5 To solve problems using the relationship between volumes of different solids

	CHP 5 (Year 3 Textbook) :Problems in Real-World Contexts , Kinematics, Graphs in Practical Situations
	5.1 To extract useful information from tables, charts and graphs to plan and make decisions
	5.2 To interpret the distance –time graph and answer questions related to the motion
	5.3 To be able to describe the motion of the object from the distance-time graph
	5.4 To find the speed of the object from a distance- time graph by finding the gradient of the line segment
	5.5 To interpret the speed-time graph and answer questions related to the motion
	5.6 To know that the area under a speed-time graph represents the distance travelled by the object
	Real World Problems
	CHP 5 : VECTORS IN TWO DIMENSIONS
	5.1 To define a vector and to represent it as a directed line segment .
	5.2 To state the condition for two vectors to be equal
	5.3 To find the sum and difference of two vectors by drawing
	5.4 To find the sum of more than two vectors by the polygon law
	5.5 To define and find the scalar multiplication of a vector
	5.6 To express a directed line segment in the Cartesian plane as a column vector
	5.7 To define position vectors
	5.8 To find the magnitude of a position vector given its column vector form
	5.9 To find the column vector sum or difference of two or more column vectors
	5.10 To state the rules governing parallelism and collinearity of two vectors, that is, if a and b are two parallel vectors, then a = kb for some scalar k and conversely
	5.11 To use rules governing parallelism to show that three given points lie on the same straight line or to show two lines are parallel
	5.12 To solve geometric problems involving the use of vectors
TERM 3	Topical Revision for Preliminary Examinations
TERM 4	INTENSIVE REVISION FOR GCE ‘0’ LEVEL