

**ONE VISION EXAMINATION CENTRE
(OVEC)**

(A Credible Private Examinations Consortium)



MATHEMATICS

2026/27 ACADEMIC YEAR

SCHEME OF LEARNING

FOR BASIC 7, 8 & 9

**BASIC EDUCATION TERMINAL
EXAMINATIONS**

Tel: 0241-48 73 30 / 0248-48 28 27

OVEC PRINT



NOTE THE FOLLOWING

1. The Scheme of Learning has been prepared from the new GES Curriculum for Basic Schools. It is therefore advisable for teachers to be guided by the details given by the revised curriculum for effective teaching and learning.
2. Details of the sub-strands (previously called topics) have been expanded under indicators (previously called sub-topics) in the new curriculum.
3. The Scheme of Learning has been divided into three terms which ensures teachers complete the curriculum by the end of the academic year.
4. Pupils shall be examined based on the Scheme of Learning for that particular term. Therefore, teachers are advised to follow the Scheme of Learning provided.
5. At the JHS level it shall include questions from previous classes.
6. Teachers should make sure that the general aims of teaching the various subjects outlined in the curriculum are achieved at the end of the academic year.

BASIC 9 (MATHEMATICS)		TERM TWO	cont'd
SUB – STRAND	INDICATORS		
VARIABLES AND EQUATIONS	<ul style="list-style-type: none"> ♦ Solve single variables linear inequalities with rational coefficients ♦ Illustrate solution sets of linear inequalities on the number line ♦ Solve real life problems involving linear equations and inequalities 		
MEASUREMENT (SOLIDS)	<ul style="list-style-type: none"> ♦ Identify prisms and cuboids, draw their nets to construct the 3-D shapes and use it to determine the surface area ♦ Use the net of a cuboid to determine the its surface area (prisms) ♦ Calculate volumes of solids (cube, cuboid, cylinder) 		
POSITION AND TRANSFORMATION (VECTORS)	<ul style="list-style-type: none"> ♦ Express points in the Cartesian plane as position vectors ♦ Show an understanding of parallel vectors and perpendicular vectors ♦ Apply the triangular and parallelogram laws of addition to resolve vectors ♦ Know examples of situations in everyday life that depict enlargement situations in everyday life ♦ Understand enlargement and can identify real life situations involving enlargement ♦ Investigate the concept of congruent and similar shapes 		
PROBABILITY	<ul style="list-style-type: none"> ♦ Perform a probability experiment involving two dependent events e.g. drawing coloured bottle tops from a bag without replacement ♦ Express the probabilities of the events as fractions, decimals, percentages and/ or ratios: e.g. using a tree diagram, table or another graphic organizer 		

J.H.S. 3

(MATHEMATICS)

TERM THREE

REVISION

BASIC 9 (MATHEMATICS) TERM ONE cont'd	
SUB – STRAND	INDICATORS
GEOMETRIC CONSTRUCTION	<ul style="list-style-type: none"> ◆ Draw inscribed and circumscribed circles for triangles under given conditions ◆ Construct parallelograms (square, rectangles, rhombus) under given conditions
DATA	<ul style="list-style-type: none"> ◆ Select and justify a method to collect data (quantitative and qualitative) to answer a given question ◆ Organize data (grouped and ungrouped) represent it in frequency tables, line graphs, pie chart, bar graph, pictograph, stem and leaf plot, block graph, info graphics, waffle diagrams, box and whisker plots) ◆ Use histogram to determine the mode of the data to solve and/ or pose real life cases ◆ Select a method for collecting data (quantitative and qualitative) taking into consideration how bias – use of language, ethics, cost, time and timing, privacy or cultural sensitivity may influence that data – and collect data ◆ Organize and analyze data and interpret the results using the descriptive statistics (i.e. minimum, maximum, measures of central tendency and range) to answer a given question. ◆ Demonstrate the effect on the mean, median and mode when extreme data is included in a data set

BASIC 9 (MATHEMATICS) TERM TWO	
SUB – STRAND	INDICATORS
FRACTIONS, DECIMALS AND PERCENTAGES	<ul style="list-style-type: none"> ◆ Review fractions and solve problems involving basic operations on fractions ◆ Apply the principle of BODMAS or PEMDAS to solve questions involving various operations ◆ Review word problems involving basic operations on fractions
RATIOS AND PROPORTION	<ul style="list-style-type: none"> ◆ Represent proportional relationships by equations ◆ Use proportional relationships to solve multistep ratio and percent problems, egs: simple interest, tax, discount, commission, NHIL, depreciation, insurance, etc. ◆ Recognize and graph proportional relationships, interpreting the unit rate as the slope of the graph and use these to solve problems

BASIC 7 (MATHEMATICS) TERM ONE	
SUB – STRAND	INDICATORS
Number and Numeration Systems	<ul style="list-style-type: none"> ◆ Modeling number quantities more than 1,000,000,000 using sheets, isometric papers and multi base blocks. ◆ Comparing and ordering whole numbers more than 1,000,000,000 and represent the comparison using $>$, $<$, or $=$. ◆ Rounding (off, up and down) whole numbers more than 1,000,000,000 to the nearest hundred-thousands, ten-thousands, thousands, hundreds and tens. ◆ Rounding decimals to the nearest tenth, hundredth, thousandth, etc. ◆ Expressing decimal numerals to given significant figures and decimal places.
Ratio and Proportion	<ul style="list-style-type: none"> ◆ Finding ratio and using ratio language to describe relationship between two quantities. ◆ Using the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and using rate language in the concept of ratio relationship. ◆ Making tables of equivalent ratios (written as common fractions) relating quantities that are proportional. ◆ Using the proportional reasoning to find missing values in the tables, and plot pairs of values on the coordinate plane. ◆ Finding the percentage of a quantity as a rate per 100 (eg. 30% of a quantity means 30/100 times the quantity).
Patterns and Relations	<ul style="list-style-type: none"> ◆ Extending a given relation presented with and without symbolic materials and explain how each element differs from the preceding one. ◆ Describing the rule for a given relation using mathematical language such as one more, one less, one more than twice, etc. ◆ Identifying the relation or rule in a pattern/mapping presented numerically or symbolically and predict subsequent elements. ◆ Locating points on a number plane, drawing tables of values of a given relation, drawing graphs for given relations and use it to solve problems.
Shape and Space (Angles)	<ul style="list-style-type: none"> ◆ Measuring and classifying angles according to their measured sizes. (right, acute, obtuse and reflex) ◆ Applying the fact that (i) two angles adding up to 90° are complementary (ii) two angles adding up to 180° are supplementary. ◆ Using adjacent, supplementary and vertically opposite angles to solve problems. ◆ Construct a line segment perpendicular to another line segment. ◆ Construct the perpendicular bisector of a line segment ◆ Copy and bisect angles ◆ Construct angles of 90°, 45°, 60°, 30°, 15° and 75°. ◆ Describe examples of perpendicular line segments, perpendicular bisectors and angle bisectors in the environment.
Data	<ul style="list-style-type: none"> ◆ Selecting and justifying a method to collect data (quantitative and qualitative) to answer a given question. ◆ Designing and administering a questionnaire for collecting data to answer a given question(s) and record the results. ◆ Organizing and presenting data from a survey into a table and/or chart, and analyse it to solve and/or pose problems. ◆ Calculating the mean for a given ungrouped data and use it to solve problems. ◆ Calculating the median for a given ungrouped data and use it to solve problems.

BASIC 7 (MATHEMATICS) TERM TWO

SUB – STRAND	INDICATORS
Number Operations	<ul style="list-style-type: none"> ◆ Multiplying and dividing given numbers by multiples of 10 including decimals and benchmark fractions. ◆ Applying mental mathematics strategies and number properties used to do calculations and solve word problems. ◆ Addition and subtraction of up to 4-digit numbers. ◆ Multiplying or dividing multi-digit numbers by 1 and 2 digit numbers. ◆ Creating and solving story problems involving decimals on the four basic operations. ◆ Illustrating with examples the meaning of repeated factors using counting objects such as bottle tops or bundle sticks. ◆ Expressing a given number as a product of a given number or numbers, as well as, in the form of a power or two such numbers as product of powers. ◆ Showing that the value of any natural number with zero as its exponent or index is 1 and using it to solve problems. ◆ Finding the value of a number written in the index form. ◆ Applying the concept of powers of numbers (product of prime) to find HCF
Algebraic Expression	<ul style="list-style-type: none"> ◆ Creating simple algebraic expressions using simple logic to translate a set of instructions into an algebraic expression. ◆ Performing the addition and subtraction of algebraic expressions with rational coefficients. ◆ Performing the multiplication and division of algebraic expressions with rational coefficients. ◆ Substituting values to evaluate algebraic expressions. ◆ Using properties of the four operations to simplify algebraic expression with rational coefficients.
Measurement	<ul style="list-style-type: none"> ◆ Calculating the perimeter of given shapes whose dimensions are in two units (i.e. cm and mm, m and cm or km and m) ◆ Using the relationships between the diameter and circumference to deduce the formula for finding the circumference of a circle and use it to solve problems. ◆ Draw in a square grid rectangles and triangles with given dimensions. ◆ Using the relationships between triangle and a rectangle (or parallelogram) to deduce the formula for determining the area of a triangle. ◆ Finding area of a triangle.
Construction	<ul style="list-style-type: none"> ◆ Constructing a line segment and line perpendicular to another line segment. ◆ Constructing the perpendicular bisector of a line segment ◆ Constructing and bisecting angles ◆ Constructing angles 90° and 45°, 60° and 30°, 75° and 15° respectively. ◆ Describe examples of perpendicular line segments, perpendicular bisectors and angle bisectors in the environment
Probability (chance)	<ul style="list-style-type: none"> ◆ Demonstrating understanding of a single outcome occurring by providing examples of events that are impossible, possible or certain from personal contexts. ◆ Classifying the likelihood of a single outcome occurring in a probability experiment as impossible, possible or certain. ◆ Calculate the probability of the event and express the probability as fractions, decimals, percentages and/or ratios.

BASIC 9 (MATHEMATICS) TERM ONE

SUB – STRAND	INDICATORS
NUMBER AND NUMERATION SYSTEM	<ul style="list-style-type: none"> ◆ Express integers to given number of significant and decimal places ◆ Use knowledge and understanding of place value to solve real life problems ◆ Solve problems on relationship between members of the rational number system using knowledge and understanding of the concept of union and intersection of two sets ◆ Apply the concept of sets of sets to solve problems on relationship between members of rational number system and solve real life problems involving union and intersection of two sets
NUMBER OPERATION	<ul style="list-style-type: none"> ◆ Multiply and divide given numbers by multiples of 10 including decimals and benchmark fractions ◆ Demonstrate the ability to determine commutative properties of decimals and benchmark fractions ◆ Use the associative property of addition and multiplication ◆ Solve operations involving addition, subtraction, multiplication and division using word problems ◆ Solve problems including the four basic operations and round the answers to the nearest decimal figures or to some significant figures ◆ Identify simple and compound surds ◆ Explain the identities/ rules of surds ◆ Simplify given surds ◆ Approximate the square roots of non-perfect squares with calculators/ tables
PATTERNS AND RELATIONS (LINEAR GRAPH)	<ul style="list-style-type: none"> ◆ Draw construct a table of values for two linear relations and graph the relation ◆ Use graphs of two linear relations to determine subsequent missing elements in ordered pairs of the relation ◆ Use graphs to solve equations involving two linear relations
ALGEBRAIC EXPRESSION (FACTORIZATION)	<ul style="list-style-type: none"> ◆ Perform change of subject of a given formula and use it to solve problems ◆ Substitute values into given formulae to evaluate it and use it to solve problems ◆ Factorize expressions that have simple binomials and polynomials ◆ Use the knowledge of simplifying and factorizing expressions to solve real world problems
SHAPE AND SPACE (ANGLES AND POLYGONS)	<ul style="list-style-type: none"> ◆ Apply the properties of angles at a point, angles on a straight line, vertically opposite angles, corresponding angles, to solve problems ◆ Derive formula for calculating sum of interior angles of a polygon and use it to find missing angles in a polygon ◆ Calculate exterior angles of a polygon ◆ Identify similar and congruent triangles and use the knowledge to solve related problems

BASIC 8 (MATHEMATICS) TERM THREE

SUB – STRAND	INDICATORS
FRACTIONS, DECIMALS AND PERCENTAGES	<ul style="list-style-type: none"> ◆ Review and solve problems involving basic operations on fractions ◆ Add, subtract, multiply, divide fractions by using the principle of the order of operations (the rule of BODAMS or PEDMAS) and apply the understanding to solve problems ◆ Review word problems involving basic operations on fractions and related concepts
RATIOS AND PROPORTION	<ul style="list-style-type: none"> ◆ Use ratio reasoning to convert measurement units, manipulate and transform units appropriately when multiplying or dividing quantities ◆ Solve unit rate problems including those involving unit pricing and constant, and speed translation ◆ Apply the knowledge of speed to draw and interpret travel graphs or distance – time graphs ◆ Recognize and represent proportional relationships between quantities by deciding whether two quantities are in a proportional relationship ◆ Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams and verbal descriptions of proportional relationships
EQUATIONS AND INEQUALITIES	<ul style="list-style-type: none"> ◆ Translate word problems into inequalities in one variable and vice – versa ◆ Solve simple linear inequalities ◆ Determine solution/ truth sets of simple linear inequalities in given domains
POSITION AND TRANSFORMATION	<ul style="list-style-type: none"> ◆ Understanding rotation and identify real life situation involving rotation. ◆ Draw rotation image in a coordinate plane and determine the angle of rotation ◆ Investigate the concept of congruent of shapes.
PROBABILTY	<ul style="list-style-type: none"> ◆ Perform a probability experiment involving two independent events such as drawing coloured bottle tops from a bag with replacement and list the elements of the sample space ◆ Express the probabilities of the events as fractions, decimals, percentages and/ or ratios: e.g. using a tree diagram, table or another graphic organizer

BASIC 7 (MATHEMATICS) TERM THREE

SUB – STRAND	INDICATORS
Fractions, decimals and percentages	<ul style="list-style-type: none"> ◆ Determining and recalling the percentages and decimals of given benchmark fractions (ie. tenths, fifths, fourths, thirds and halves) and use these to compare quantities. ◆ Comparing and ordering fractions (ie. common, percent and decimal fractions up to thousandths) limit to benchmark fractions. ◆ Explaining the process of addition and subtraction of two or three unlike and mixed fractions. ◆ Solving problems involving addition and subtraction of fractions. ◆ Explaining the process of multiplying a fraction (ie. common, percent and decimals fractions up to thousandth) by a whole number and by a fraction. ◆ Finding the fraction of a given quantity (money or given quantity of object) ◆ Explaining the process of dividing a fraction (ie. common, percent and decimals fractions up to thousandth) by a 1-digit whole number and by a fraction. ◆ Determining the results of dividing a quantity (ie. money or objects) or a fraction by a fraction.
Variables and Equations	<ul style="list-style-type: none"> ◆ Translating word problems to linear equations in one variable and vice versa. ◆ Modeling and solving linear equations using concrete materials (eg. counters, integer tiles) and describe the process orally and symbolically. ◆ Model and solve linear equations set with shapes on a balance. ◆ Model linear equations, then write mathematical expressions and describe the process of solving the equation using algebraic tiles. ◆ Solve linear equations in one variable.
Bearing and Transformation	<ul style="list-style-type: none"> ◆ Bearing of a point from another point. ◆ Determining shapes in real life that have reflection (or fold) symmetries. ◆ Plotting points and plane shapes on a coordinate plane and draw their images under reflection in given lines. ◆ Plotting points and plane shapes on a coordinate plane and draw their images under translation by given vector. ◆ Verifying the concept of congruent and similar shapes in coordinate plane using properties of both the objects and images; and in real life situations (carpet designs, fabric patterns)
Data	<ul style="list-style-type: none"> ◆ Selecting and justifying a method to collect data (quantitative and qualitative) to answer a given question. ◆ Designing and administering a questionnaire for collecting data to answer a given question(s) and record the results. ◆ Organizing and presenting data from a survey into a table and/or chart, and analyse it to solve and/or pose problems. ◆ Calculating the mean for a given ungrouped data and use it to solve problems. ◆ Calculating the median for a given ungrouped data and use it to solve problems.
Probability (chance)	<ul style="list-style-type: none"> ◆ Demonstrating understanding of a single outcome occurring by providing examples of events that are impossible, possible or certain from personal contexts. ◆ Classifying the likelihood of a single outcome occurring in a probability experiment as impossible, possible or certain. ◆ Calculate the probability of the event and express the probability as fractions, decimals, percentages and/or ratios.

BASIC 8 (MATHEMATICS) TERM ONE

SUB – STRAND	INDICATORS
NUMBER AND NUMERATION SYSTEMS	<ul style="list-style-type: none"> ◆ Apply the understanding of place value to read and write in number quantities over 1,000,000,000 ◆ Skip count forwards and backwards in 10,000s, 100,000s, 500,000s, etc. ◆ Compare and order whole numbers using $>$, $<$ and $=$ ◆ Express integers on any size into standard form ◆ Express integers in a given number of significant and decimal places ◆ Use the concept of sets to identify perfect squares and determine the square roots. Use the knowledge on sets and sets of factors of numbers to solve problems. ◆ Use the knowledge on sets and sets of factors of numbers to solve problems to solve real life problems involving union and intersection. (involve two set problem)
PATTERNS AND RELATIONS	<ul style="list-style-type: none"> ◆ Calculate the gradient of a line and use it to write equation of a line of the form ◆ $y = mx + c$. Determine the point – slope form of the equation of a straight line ◆ Use the graph of a linear relation to determine subsequent missing element in the ordered pairs of the relation ◆ Use graphs of linear relations to solve real life problems. Compare and complete table relations
SHAPES AND SPACE (ANGLES AND CONSTRUCTION)	<ul style="list-style-type: none"> ◆ Draw and determine the values of alternate and corresponding angles ◆ Determine the values angles in a triangle using knowledge of the sum of interior angles in angles in a triangle and other properties ◆ Construct and bisect angles of 120°, 105°, 135° and 150° ◆ Construct scalene, isosceles, equilateral, obtused angled, acute angled triangles in different orientations under given conditions. ◆ Construct the loci under given conditions (locus from a point, equidistant from two fixed points, equidistant from two intersecting straight lines, and equidistant from two parallel lines). ◆ Draw circles of given radii at the points as centre and chords. ◆ Construct perpendicular bisectors (mediators), perpendicular from a point, regular hexagon within a circle given the length of a side.
DATA	<ul style="list-style-type: none"> ◆ Identify types of given data, including numerical, categorical, ungrouped and group data ◆ Select and justify a method to collect data (quantitative and qualitative) to answer a given question ◆ Organise both grouped and ungrouped data (frequency data, line graph, pie graph, bar graph, pictograph, info graphics, waffle diagrams, box and whisker plots, stem and leaf) ◆ Calculate the mean, median and mode for a given set of ungrouped data and explain why these values may be the same or different ◆ Justify a context in which the mean, median or mode is the most appropriate measure of central tendency to use when reporting findings

BASIC 8 (MATHEMATICS) TERM TWO

SUB – STRAND	INDICATORS
NUMBER OPERATIONS	<ul style="list-style-type: none"> ◆ Multiply and divide by power of 10 including decimals and the benchmark fractions ◆ Apply mental Mathematics strategies and number properties to do calculation ◆ Apply mental Mathematics strategies to solve word problems ◆ Add and subtract more than four digit numbers and decimals ◆ Multiply and divide multi digit numbers by 2 and 3 digit numbers (expand and box method, place value method, lattice method, distributive property method, divisibility test) ◆ Create and solve story problems involving decimals on the four basic operations. ◆ Identify and explain the laws of indices ◆ Apply the law of indices to simplify and evaluate numbers involving powers of numbers (PEDMAS) ◆ Solve exponential equations ◆ Solve real life problems involving powers of natural numbers
ALGEBRAIC EXPRESSION	<ul style="list-style-type: none"> ◆ Use the distributive property to remove brackets and solve multiplication of binomial expression ◆ Perform addition, subtraction and multiplication and division algebraic expressions including fractions ◆ Substitute values to evaluate algebraic expressions including fractions and use these to solve problems ◆ Factorize given expressions involving the four operations and use the experiences gained to solve problems
MEASUREMENT (PYTHAGORAS THEOREM AND VECTORS)	<ul style="list-style-type: none"> ◆ Use the relationship between the diameter and circumference of a circle to deduce the formula for finding its area and use this to solve problems ◆ Establish the relationship between the hypotenuse “c” and the two other sides “a” and “b” of a right angled triangles ($a^2 + b^2 = c^2$) and use it to solve problems. ◆ Use the Pythagoras theorem to solve problems on right angled triangles. ◆ Use the Pythagoras theorem to calculate the area of a triangle in real life problems. ◆ Establish the relationship between the basic trigonometric ratios and solve problems involving right angled triangles ◆ Add, subtract and find the scalar multiplication of vectors in the component form ◆ Demonstrate understanding of vector equality ◆ Demonstrate understanding of bearing and back bearing.
DATA	<ul style="list-style-type: none"> ◆ Identify types of given data, including numerical, categorical, ungrouped and group data ◆ Select and justify a method to collect data (quantitative and qualitative) to answer a given question ◆ Organise both grouped and ungrouped data (frequency data, line graph, pie graph, bar graph, pictograph, info graphics, waffle diagrams, box and whisker plots, stem and leaf) ◆ Calculate the mean, median and mode for a given set of ungrouped data and explain why these values may be the same or different ◆ Justify a context in which the mean, median or mode is the most appropriate measure of central tendency to use when reporting findings