

CLASS	TERM	PRDS.	CONTENT	METHOD	REFERENCE
S.1	1	(12) 2 wks	1. Numbers <ul style="list-style-type: none"> Natural, composite, prime, triangular, square, even, odd. Integers (Addition, subtraction, division, multiplication) i.e. $2 + -3 = -1$ e.t.c Factors and multiples LCM and HCF/GCF 	-Define a no. and give examples. -Adequate examples on integers -Use a table method i.e. the one used on LCM other than the tree. In obtaining factors.	-Composite no. is one which is not prime and 1. - Numbers which don't have a common divisor have 1 as their HCF
		(6) 1 wk	2. Sets 1 <ul style="list-style-type: none"> Language and symbols i.e. $\cup, \cap, \varepsilon, C$ e.t.c Set types; equal set, sub-set, intersection, union Venn-diagrams 	- Too much logic is not required at this level on Venn-diagrams	-Total No. of sub-sets in a set is given by 2^n
		(12) 2 wks	3. Number bases <ul style="list-style-type: none"> Simple definitions i.e. Binary, Octal e.t.c Changing from base ten to other bases Addition, subtraction, multiplication and division of bases Finding the unknown base. (Exclude expressions that deduce to quadratic equations) at this level. 	-With multiplication and division of bases, change the numbers to base ten first, work out normally and convert back to the original base	-The unknown base is written in words i.e. if $n = 4$, then $n = \textit{four}$
		(18) 3 wks	4. Fractions and decimals <ul style="list-style-type: none"> Simple definitions; Mixed, Proper and improper fractions Ordering fractions (Ascending and descending order) Addition, subtraction, multiplication and division of fractions. Decimal fractions (expressing decimals in to fractions) Number problems (Quantities, journey e.t.c) 	-Emphasize the use of BODMAS in all operations -Learners should learn how to use a calculator in reducing fractions	

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S.1	1	(6) 1 wk	5. Number patterns <ul style="list-style-type: none"> Sequences Tests of divisibility. To test for divisibility of a number $n = abc$ by D, then consider the following; $abc = ab \times 10 + c$ $[D \times (\text{either } 1,3,7,9) + 1] \div 10 = m$ Then $(m \times c + ab)$ should be divisible by D	Divisibility tests for 2,3,4,5,6,7,8,9 2(should be even) 3(the sum of digits should be divisible by 3) 4(the last 2 digits should be divisible by 4) 5(last digit should be either 5 or 0) 6(the no. should be divisible by 2 and 3) e.t.c	-Richmond and Richmond (2009), section 3.4 (Divisibility tests), p.102-108 -Wikipedia on Google
	2	(6) 1 wk	6. Mathematical operations <ul style="list-style-type: none"> $a * b = a^2 - b^2$ 	-Adequate examples on decimal places and significant figures	-All zero digits are insignificant except; Trailing zeros after a decimal point and a zero digit between non zero digits
		(6) 1 wk	7. Approximations and estimations <ul style="list-style-type: none"> Approximations Rounding numbers (Decimal places) Significant figures 		
		(6) 1 wk	8. Graphs <ul style="list-style-type: none"> Drawing horizontal, vertical and slanting lines - Using given coordinates -Using given Equation of a straight line 	-Graph books are a must for each learner.	

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S.1	2	(12) 2 wks	9. Geometry 1 <ul style="list-style-type: none"> Measuring lines Drawing parallel lines Drawing and measurement of angles Constructing perpendiculars Formal constructions (triangles only) Inscribing and circumscribing 	-Learners should use a protractor in drawing and measuring angles and forbid it while constructing angles	
		(6) 1 wk	10. Geometric figures 1 <ul style="list-style-type: none"> Polygons Interior angles of a polygon Exterior angles of a regular polygon Sides and diagonals of a polygon 	Interior angle + Exterior angle = 180° Interior angle = $\frac{180(n-2)}{n}$ Sum of interior angles = $180(n - 2)$	Number of diagonals of a polygon = $\frac{n(n-3)}{2}$
		(18) 3 wks	11. Bearings and scale drawing <ul style="list-style-type: none"> Direction Drawing bearings Scale drawing 	Clearly show the difference between direction and bearing.	$R.F = \frac{Actual}{Map}$ Area = $(R.F)^2$ Volume = $(R.F)^3$
		(18) 3 wks	12. Mappings, Relations and functions <ul style="list-style-type: none"> Arrow diagrams Mappings Domain and range Papygrams Function notation $(f(x))$ Values of functions 	-While finding the range, learners should transfer it from the arrow diagram in to curl brackets i.e. {1,3,7}	

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S.1	3	(24) 4 wks	13. Applied arithmetic <ul style="list-style-type: none"> • Currency conversions • Percentage increase and decrease • Discount • Profit and loss • Commission • Simple interest • Compound interest • Depreciation and appreciation • Hire purchase 	-In compound interest, learners cannot find the time period given other variables at this level. The time should always be given. -Time and the rate should be under the same rating i.e. per month, per annum....	-Value of an article after depreciation is given by $A = P \left(1 - \frac{r}{100}\right)^t$
		(6) 1 wk	14. Equations and formulae <ul style="list-style-type: none"> • Algebraic expressions • Algebraic linear equations • Making the subject of the formulae 	-Formulate statements that can deduce to linear expressions -Linear equations should be of one unknown.	
		(18) 3 wks	15. Vectors 1 <ul style="list-style-type: none"> • Vector notations (column, i and j) • Position vector • Addition and subtraction of vectors • Multiplication with a scalar • Direction vector • Magnitude of a vector • Mid point • Equality of vectors • Solving simple equations on vectors • Translation vector • Successive translations 	-Clearly show the learner how the same vector can be expressed in column or i & j form -Equations formed should not deduce to simultaneous equations -Parallel and collinear vectors not at this stage	

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S.2	1	(24) 4 wks	16. Statistics <ul style="list-style-type: none"> • Pie chart • Mean, mode, median (un grouped data) • Frequency distribution table • Mean, mode, median (grouped data) • Calculating mean using working/ Assumed mean • Graphs (Bar-graph, histogram, o-give) 	-Adequate examples should be given under both grouped and un grouped data	-A bar-graph is a plot of frequency against classes (Not class boundaries)
		(6) 1 wk	17. Surds <ul style="list-style-type: none"> • Irrational numbers • Rules of surds • Simplifying surds • Expressing in the form $a + b\sqrt{c}$ 	Order of simplifying surds; $(\sqrt{abc} + \sqrt{bc}), (\frac{a}{b} \pm \frac{c}{d}),$ $\frac{\sqrt{a} + \sqrt{b}}{\sqrt{c} - \sqrt{d}}$	
		(6) 1 wk	18. Indices <ul style="list-style-type: none"> • Rules of indices • Simplifying expressions using indices • Solving equations using indices • Standard form 	-Learners should learn how to use a calculator in confirming answers obtained under S.F	History of indices and logarithms can be obtained on Google
		(24) 4 wks	19. Logarithms <ul style="list-style-type: none"> • Logarithms of numbers • Anti-logarithm (10^n) • Negative logarithm/ Mantissa (10^{-n}) • Multiplication and division using logarithms • Estimating square, cube and n^{th} root of a number • Logarithm notation ($\log_b a = c$) • Rules of logarithms • Simplifying and solving equations using logarithms • Calculating time in compound interest 	-Learners should be taught how to use both the table and a calculator while obtaining logarithms but emphasis should be on a calculator	$\log_b a = c$ $a = \text{index}$ $b = \text{base}$ $c = \text{Logarithm}$ $\rightarrow b^c = a$

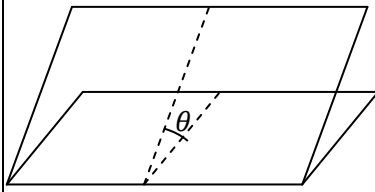
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S.2	1	(12) 2 wks	20. Simultaneous equations <ul style="list-style-type: none"> • Elimination method • Substitution method • Graphical method of solving linear simultaneous equations • Simultaneous equations with infinite solutions • Simultaneous equations with no solution • Applications/ word problems 	-A learner should not mix methods while solving equations. -All equations should be linear. -Matrix method is not covered at this level.	
	2	(12) 2 wks (18) 3 wks	21. Equation of a straight line <ul style="list-style-type: none"> • Coordinates, equations, gradient • Finding the equation of a straight line • Finding the equation from two points • Parallel and perpendicular lines • Distance between two points 22. Inequalities and regions <ul style="list-style-type: none"> • Inequality symbols • Sets of numbers • Representing inequalities on a number line • Solving inequalities (linear) • Representing inequalities on a graph • Shading the unwanted region • Forming inequalities from the graph 	-Learners should be able to identify the gradient and y-intercept from the given equation -For combined inequalities, solve each inequality independently and then combine their answers	

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S.2	2	(24) 4 wks	23. Matrices <ul style="list-style-type: none"> • Introducing matrices (order of a matrix) • Types of matrices (unit matrix, identity matrix) • Addition and subtraction of matrices • Matrix algebra (solving unknowns) • Multiplication of matrices • Matrix formation • Determinant of a matrix • Inverse of a matrix • Singular matrix • Simultaneous equations 	-In matrix algebra, equations should deduce to linear simultaneous equations -In singular matrix, the unknown should not form a quadratic equation	-Before multiplying matrices, the number of columns in the 1 st matrix should equal to the number of rows in the 2 nd matrix Memo. (CR)
		(18) 3 wks	24. Ratios and proportions <ul style="list-style-type: none"> • Ratios • Sharing • Ratio problem • Increasing and decreasing in a given ratio • Ratio algebra • Direct proportion • Inverse proportion • Joint proportion/ variation • Partial variations 	-The constants used under variation should not be abstract i.e. q, w, j. Rather a learner can use c, k, m and n	
	3	(18) 3 wks	25. Expansion and factorization <ul style="list-style-type: none"> • Brackets/ algebra expansion • Subtracting brackets • Expansion/ multiplying two brackets together • Square of a bracket • Difference of two squares • Factorization of algebraic expressions • Quadratic • Application of difference of two squares 	-Expansion of brackets should not exceed the power of 2 -Adequate examples on application of difference of two squares	-Expansion up to the power of 2 $(a + b)^2 = a^2 + 2ab + b^2$

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S.2	3	(12) 2 wks	26. Quadratic equations <ul style="list-style-type: none"> The form $ax^2 + bx + c = 0$ Solution to quadratic equations (factorization method) Solving quadratic inequalities (factorization method) Completing squares The solution $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ Solving singular matrices that deduce to quadratic Eqns. Expressing in the form $(x + b)^2 + c$ and $a(x + b)^2 + c$ Difference of two squares 	-Learners should not use a calculator in solving quadratic equations	
		(12) 2 wks	27. Quadratic graphs <ul style="list-style-type: none"> Straight line graphs Tables of values Plotting Choosing a suitable scale The graph of $y = x^2$ Typical shapes of quadratics Harder quadratic curves Graphical solution of $y = 0, y = x^2 + bx + c$ Graphs of perfect squares and line of symmetry. 	-Adequate examples on how to draw and complete the table	-Maximum and minimum values are the points through which the line of symmetry passes
		(6) 1 wk	28. Solution of quadratic simultaneous equations <ul style="list-style-type: none"> Intersection of a line and curve Linear simultaneous equations Quadratic simultaneous equations 		

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S.3	1	(12) 2 wks	29. Similarity, scale factor and enlargement <ul style="list-style-type: none"> • Scale factors (linear, quadratic/square, cubic) • Similar figures • Enlargement • Scale factor under enlargement (positive and negative scale factors) • Graphical enlargement of objects (centre of enlargement, scale factor, image and object) • Describing enlargement given the object and image 	-A learner should be able to express variables under the same scale factor Learners are encouraged to use a graph book throughout. -Learners should be acquainted with knowledge of construction and equation of a line -Locus involves locating a point given two distances (construction) or two angles (bearing)	For graphical enlargement of objects, consider; $K = \frac{I}{O}$ $+K \rightarrow C.O.I$ $-K \rightarrow O.C.I$ Clock wise rotation is negative while anti-clock wise rotation is positive
		(6) 1 wk	30. Symmetry and reflection <ul style="list-style-type: none"> • Line of symmetry of regular figures • Graphical reflection of objects(points and figures) • Describing reflection given the object and the image 		
		(12) 2 wks	31. Rotation <ul style="list-style-type: none"> • Centre of rotation • Angle of rotation • Clock wise and anti-clockwise rotation • Objects and images • Finding the centre of rotation 		
		(6) 1 wk	32. Construction 2 <ul style="list-style-type: none"> • Review construction 1 (angles, perpendiculars, inscribing and circumscribing e.t.c.) • Construction of shapes (quadrilaterals, parallelogram) • Loci (locus of a point) 		
		(6) 1 wk	33. Bearing <ul style="list-style-type: none"> • Simple kinematics of distance, speed and time • Problem statements on bearing • Locus of a point in bearing 		

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S.3	1	(6) 1 wk	34. Probability <ul style="list-style-type: none"> • Events, sample space, outcomes • Generation of sample space (table and tree diagram) • Table (tossing a coin, throwing dice, tetrahedron) • Tree diagram (pickings) • Venn diagrams 	-Pickings should not be more than two in the tree diagram -A learner should be able to obtain the function given its inverse	At least \geq At most \leq
		(12) 2 wks	35. Sets 2 <ul style="list-style-type: none"> • Set builder notation • Complement of a set • Three set problems • Probability (included in examples) 		
		(12) 2 wks	36. Inverse and composite functions <ul style="list-style-type: none"> • Inverse of a function • Composite functions • Solving linear and quadratic functions 		
	2	(24) 4 wks	38. Pythagoras theorem and trigonometry <ul style="list-style-type: none"> • Pythagoras theorem • Sines, cosines and tangents of angles • Inverse of sines, cosines and tangents • Angles of depression and elevation • Sine rule and cosine rule • Solution of a triangle. (missing sides and angles) • Trigonometric ratios (30°, 45° and 60°) • Angles in quadrants (1^{st}, 2^{nd}, 3^{rd} and 4^{th}) • Ratios for angles from 0° to 360° • The sine, cosine and tangent curves • Trigonometric equations. 	-Remind learners on the slogan “ SOHCAHTOA” -Include types of angles i.e. acute, obtuse and reflex angles in quadrants -Learners should leave their answers in surd form while obtaining ratios of angles	Angle of depression equals to angle of elevation and they are alternating.

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S.3	2	(6) 1 wk	39. The circle and its properties <ul style="list-style-type: none"> • Area and circumference • Area of a sector and arc length • Circle properties 	Learners should be given adequate examples on circles	
		(6) 1 wk	40. Measurement <ul style="list-style-type: none"> • Area of regular shapes (circle, triangle, square/rectangle, trapezium, parallelogram, rhombus, kite) • Surface area and volume (sphere, cylinder, cone, pyramid, tetrahedron). • Surface area and volume of other shapes (prism, trough, frustum e.t.c.) 	Consider surface area of solid shapes and open shapes	Volume of other shapes “ Cross section area * length”
		(18) 3 wks	41. 3-Dimension Geometry <ul style="list-style-type: none"> • Revision on Pythagoras and trigonometry • 3-D • Lines and planes • Angles between lines and planes • Angle between two planes • Nets of solids (cuboids, prisms, cylinder, pyramid, cone) 	 <p>If two planes are parallel to each other, the angle between them is zero</p>	Angle between two planes is located at the point of intersection of the bisectors of the given planes

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S.3	3	(12) 2 wks	45. Linear programming <ul style="list-style-type: none"> • Revision on inequalities • Word problems • Graphs of inequalities (shading the un-wanted region) • The objective function (maximizing and minimizing) 	Examples should be from simple to complex Symbols and alternative words; > (Greater than, more than, above, in excess of.., exceeding.....) < (less than, below, under, lower than....)	\geq (greater or equal to, at least, not less than) \leq (Less or equal to, not more than, at most, limited to..)
		(6) 1 wk	46. kinematics <ul style="list-style-type: none"> • Definitions (distance, speed/average speed and time) • Unit conversions (distance, speed and time) • Calculus. Finding the distance, speed and time • Speed-time graphs • Distance-time graphs • Word problems. Use of a graph and calculus 	-Acceleration and velocity are not covered under this topic -Total distance covered equals to area under graph (under distance-time graph)	For unit conversions; $1kmh^{-1}$ $= \left(\frac{1000}{3600}\right) m/s$ $1ms^{-1}$ $= \left(\frac{3600}{1000}\right) km/h$
THE END					
REVISION OF ALL CONTENT IN PREPARATION FOR UCE EXAMS					