MATHEMATICS
SS III
FIRST TERM

THEME: NUMBER AND NUMERATION

WEEK	TOPIC	PERFORMANCE OBJECTIVES	CONTENT	ACTIVITIES		TEACHING AND LEARNING RESOURCES	EVALUATION GUIDE
				TEACHER	STUDENTS		
1	Surds	Students should be able to: (1) differentiate between rational and irrational numbers. (2) state the rules of additions and subtraction and apply them in simplifying surds. (3) state the rules of multiplication and division and apply them in simplifying surds. (4) use conjugate binomial surds to solve problems. (5) apply the concept of surd to problems involving trigonometric ratios of angle 30^o, 60^o, 45^o etc.	(1) Meaning of rational and irrational numbers reading to the definition of surds (2) The rules guiding the basic operation with surds i.e. $\sqrt{a}+\sqrt{b} \neq \sqrt{b+a}$, $\sqrt{a}-\sqrt{b} \neq \sqrt{a-b}$, $\sqrt{a} \times \sqrt{b} \neq \sqrt{b \times a}$, $\sqrt{a} \div \sqrt{b} \neq \frac{\sqrt{a}}{\sqrt{b}}$ (3) Conjugate of a binomial surds using the idea of difference of two squares. (4) Application to solving triangles involving trigonometric ratios of special angles of 30^o, 60^o and 45^o. (5) Evaluation of expression involving surds.	Guides students to: (1) Differentiate between the rational and irrational numbers leading to the definition of surds. (2) Perform the operation of addition and subtraction of numbers in surdic form. (3) Conjugate binomial surds using the idea leading to the difference of two squares. (4) Appreciate the application of surds to trigonometric rations e.g. $\sin 60^o = \frac{\sqrt{3}}{\sqrt{2}}$ $\sin 45^o = \frac{1}{\sqrt{2}}$	(1) Differentiate between rational and irrational number leading to the definition of surds. (2) Perform and solve problems on addition, subtraction, multiplication and division of surdic numbers. (3) Verify the rules of the operation of addition, subtraction, multiplication and division. (4) Apply the principle of difference of two squares to conjugate surdic expressions. (5) Relate surds to trigonometric ratio.	(1) Surdic operation charts on: addition, subtraction, multiplication and division. (2) Conjugate charts.	Students to: (1) define surds (2) addition, subtraction, multiplication and division of surdic numbers (3) use conjugate to solve surdic expression (4) relate surds to trigonometric ratios.

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2	Matrices and determinants	Students should be able to: (1) define matrix (2) state the order and notation of a matrix. (3) identify and define types of matrices (4) perform the operation of addition, subtraction of matrices (5) multiply matrix by a scalar.	(1) Definition order and notation of matrix. (2) Types of matrices e.g. addition and subtraction of matrices, (3) Scalar multiplication of matrices and multiplication of matrices/general matrix multiplication.	Leads students to: (1) Defines matrix (2) State the order and notation of matrices. (3) Identifies and define different types of matrices. (4) Performs the operation of addition, subtraction of matrices. (5) Multiplies matrix by a scalar.	(1) Define matrix (2) Identify matrix notations. (3) Identify different types of matrices. (4) Perform and solve problems on addition and subtraction of matrices.	(1) Matrix charts (2) Matrix addition and subtraction charts. (3) Determinant charts (4) Computer assorted instructional material.	Students to: (1) define matrices (2) identify matrix notations (3) identify the types of matrices addition, subtraction in two or more matrices.
3	Matrices and determinant (continued)	Students should be able to: (1) quantity and multiply two matrices a and b. (2) find the transpose of matrices by interchanging the rows and columns. (3) calculate the determinants of 2 by 2 matrix.	(1) Determinants of 2x2 and 3x3 matrices. (2) Transpose of a matrix (3) Matrices and simultaneous equations.	(1) Performs the multiplication by a quantity as well as matrix-matrices multiplication (2) Finds the transpose of a matrix by interchanging the rows and columns. (3) Calculates the determinants of matrices. (4) Appreciates the application of matrices to solutions of simultaneous equations.	(1) Perform multiplication by a scalar quantity and matrix by matrix multiplication. (2) Find the transpose of a given matrix by interchanging row with column (3) Calculate determinants of matrices (4) Apply matrix operations to real life situations including solving simultaneous equations.	(1) Computer assorted instructional material. (2) Matrix charts (3) Matrix addition and subtraction charts (4) Determinant charts	Students to: (1) define matrices (2) multiply matrix by another matrix. (3) find the transpose of a matrix (4) calculate determinants of a matrix (2x2) matrices (5) apply solutions in simultaneous equations.

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4	Logarithms and indices.	Students should be able to: (1) show the basic laws of logarithm. (2) use logarithm table for calculation (3) use law of logarithm to simplify given expressions without the use of logarithms table.	(1) Revision of laws of indices and laws of logarithm. (2) Use laws of logarithm to simplify and/or evaluate given expressions without the use of logarithm table. (3) Use logarithm table for purpose of calculation.	(1) Brings to the class charts of logarithm and solution from the prepared charts. (2) Guides students to deduce logarithm laws. (3) Uses the deduced logarithm and logarithm table to calculate problems.	(1) Study the two charts. (2) Deduce laws of logarithm especially $-\log_{10} pg = \log_{10} p + \log_{10} q$ $-\log_{10} \frac{p}{q} = \log_{10} p - \log_{10} q$ $-\log_{10} p^n = n \log_{10} p$ (3) Verify logarithm laws with simple exercises. (4) Revise use of logarithm table to solve problems involving calculation.	(1) Logarithm charts (2) Solution chart of logarithm (3) Logarithm table.	Students to: (1) state the laws of logarithm (2) verify the law of logarithm (3) solve problems involving calculation with logarithm table.
5	Arithmetic of finance	Students should be able to: (1) recall the formula for calculating simple interest. (2) drive formula for computing compound interest. (3) determine the depreciation value of an item. (4) compute the annuity of a given problem (5) calculate amortization in a given problem.	(1) Simple interest (Revision) (2) compound interest (3) Depreciation (4) Annuities (5) Amortization	Guides students to: (1) recall the formula for simple interest. (2) drive formula for computing compound interest. (3) compute depreciation value of an item (4) determine the annuities (5) compute the amortization.	(1) Use formula to calculate simple interest, compound interest. (2) Compute depreciation value of a given item (3) Compute the annuity paid on a sum of money at regular interval. (4) Compute the amortization	Charts	Students to: (1) solve problem involving simple interest. (2) solve problem involving compound interest. (3) solve problem involving depreciation. (4) solve problem involving annuity. (5) solve problems involving amortization.

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6	Arithmetic of finance (continued)	Students should be able to: (1) calculate problem involving bonds and departure interest. (2) calculate the number of shares in an investment. (3) use the compound interest formula $A = P(1 + \frac{r}{100})^n$ to calculate the rate (r) of a given investment if a principal (p) is invested for n(years) at r% per annum. (4) calculate the income tax levied on a given income. (5) determine the value added tax (vat) paid on certain goods and services.	Further use of logarithm table in problem involving: (1) Bonds and debenture (2) Shares (3) Rates (4) Income tax (5) Value added tax.	(1) Shows the solution chart. (2) Calculates interest on bound and debenture purchase either by individual or institution e.g. value added tax on the floor of the exchange market attracts 0.5% of the price. (3) Carries simple calculation involving rates, taxes, value added tax (VAT)	(1) Study the solution charts of logarithm in calculating interest in bond and debenture. (2) Calculate interest on bond and debenture purchase by an individual or institution using logarithm table. (3) Solve problems on rates, taxes and value added tax.	(1) Solution charts of logarithm on bond and debenture (2) Logarithm table. (3) Solution chart on rates taxes and values added tax.	Students to: (1) calculate interest on: (2) bond and debenture purchase or sold over a period (3) compute income taxes and value added tax.

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THEME: ALGEBRAIC PROCESSES							
7	Application or linear and quadratic equations to capital market.	Students should be able to: (1) solve linear equations. (2) word problems involving linear equations. (3) quadratic equations and word problems involving quadratic equations. (4) solve simultaneous linear equations, simultaneous linear equations and quadratic equations. (5) Word problems on linear, quadratic and simultaneous linear equation. (6) Solve problems on linear equation involving capital market.	(1) Revision of solution of simultaneous linear and quadratic equation e.g. $y + x = c$ $y^2 + x^2 + k$ (2) Word problems on linear equations, simultaneous linear equations, quadratic equations are linear are quadratic. (3) Application to capital market.	(1) Displays chart of simple linear and quadratic equation. (2) Revises the solution of simultaneous linear and quadratic equations. (3) Guides students to discover how word problems can be interpreted into linear, quadratic and simultaneous equations. (4) Solves problems in linear equations such as (i) a father and his son are share holders in a public liability company. The father invests 3 times as much as the son. If they invest altogether amount to 3000 shares of ₦50, 000 per share etc. How did the father invest?	(1) Study the chart (2) Solve the solution of simultaneous linear and quadratic equation. (3) Use steps given by the teacher to solve word problems (4) Solve problems involving on linear, one quadratic equation following teachers guide and suggestion.	Solution charts of simultaneous linear and quadratic equations.	Students to: (1) solve problems on simultaneous linear and quadratic equations. (2) solve word problems (3) solve problems on capital market.

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THEME: GEOMETRY							
8	Trigonometry: Graphs of trigonometric ratios.	Students should be able to: (1) find from the table sine, and cosine value of a given θ^o (2) draw graphs of sine, cosine and tangent of for angles $0 \leq x \leq 360^o$ (3) interpret/read graphs of trigonometric ratios.	(1) Construct tables of values for sine and cosine graphs (2) Plot graphs of sine and cosine for $0 < x < 360^o$	Guides students to: (1) Constructs table of values $0 \leq x \leq 360^o$ for sine and cosine graphs. (2) Plots graphs of sine and cosine for $0 \leq x \leq 360^o$ (3) On chalkboard (4) Interprets the graphs of sine and cosine and read out given values.	(1) Construct table of values. (2) Plot graphs of tables of values on their graph books. (3) Interpret the graphs of sine and cosine and read out given values.	(1) Graph board Graph books. (2) Pencil, ruler, broom stick/twine	Students to: (1) construct various table of values of sine and cosine (2) plot graphs using the constructed table of values. (3) interpret their plot graphs and read out values.
9	Trigonometry of graphs of sine, cosine and tangent.	(1) Carryout graphical solutions of simultaneous linear equation and trigonometric equation.	(1) Graphs of sine, cosine and tangent for $0 \leq x \leq 360^o$ (2) Graphical solution of simultaneous linear and trigonometric equation.	(1) Separates equation containing linear expression and trigonometric ratios (2) Prepares table of values of both linear and trigonometric ratio. (3) Plots the sine type of graphs on the page. (4) Read values from graphs.	(1) Separates equation containing linear expression and trigonometric ratios. (2) Prepare table of values of both linear and trigonometric ratio (3) Plot the line types graphs on same page. Read values from the graphs.	Graph board, graph books, pencil, ruler, broom stick/twine.	Students to: (1) solve problems on drawing linear equations from combating of linear and trigonometric ratio. (2) prepare table of values (3) plot linear and trigonometric graphs on the same graph.

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10	Surface Area	Students should be able to: (1) find the surface area of a sphere and hemisphere. (2) state the expression for the surface area of the sphere and hemisphere and use it to solve problems.	Surface area of a sphere and hemisphere.	(1) Brings a sphere to the classroom (2) Explains the concept of the surface area. (3) Leads students to find the surface area of a sphere with given dimension.	(1) Study the sphere and state its characteristics (2) Note the concepts of surface area. (3) Find the surface area of a sphere (4) Solve problems on surface area of a sphere.	Spherical globe	Students to: find the surface area of a given sphere.
11	**REVISION OF TEAM WORK**						
12	**EXAMINATION**						