

MINISTRY OF GENERAL EDUCATION
NORTHERN PROVINCE COMMON SCHEME OF WORK
MATHEMATICS AND COMPUTER STUDIES DEPARTMENT
GRADE 10 ADDITIONAL MATHEMATICS

NAME OF TEACHER:.....

TERM ONE

YEAR:

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NAME OF SCHOOL:.....

DISTRICT:

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WEEK	TOPIC/SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1 - 4	PUPILS REPORTING			
5.	SYSTEMS OF EQUATIONS - Linear equations in one variable - Linear equations in two variables.	Solve system of equations with one and two variables	- Maths G10 Pupils Book Pages 157 – 169. - Pure Maths Book 2 New Ed. Pages 139 -150.	3 LESSONS
6.	SYSTEMS OF EQUATIONS Linear and quadratic equations.	- Solve systems of equations with one linear and one quadratic - Solve linear system of equations with three variables.	- Pure Maths Book 2 New Ed. Pages 139 – 150. - Addma (Pure & applied) 6th Ed. Pages 33 – 39.	3 LESSONS
7.	SYSTEMS OF EQUATIONS Equations in three	- Solve linear system of equations with three variables. - Answer questions from	- Pure Maths book 2 New Ed. Pages 139 – 150. - Addma (Pure & Applied) 6th Ed. Pages 33 – 39.	3 LESSONS

	variables	a given test.		
8.	COORDINATE GEOMETRY - Distance of a straight line - Mid – point of straight a line	- Find length of line segment given two points. - Find the Mid – point of two points	- Understanding pure Maths Pages 72- 89. - Addma (Pure &Applied) 6th Ed. Pages 1 – 32.	3 LESSONS
9.	COORDINATE GEOMETRY Equation of straight line	Find the gradient and equation of a straight line.	- Understanding Pure Maths Pages 72 – 89. - Addma (Pure & Applied) 6th Ed. Pages 1 -32.	3 LESSONS
10.	COORDINATE GEOMETRY Equation of a straight line	- Find the equation of a straight line - Plot a line of the form $y=mx +c$	- Understanding Pure Maths Pages 72 – 89. - Addma (Pure & Applied) 6th Ed. Pages 1 – 32.	3 LESSONS
11.	COORDINATE GEOMETRY Parallel and perpendicular lines	Solve problems involving parallel and perpendicular lines	- Understanding Pure Maths Pages 72 – 89. - Addma (Pure & Applied) 6th Ed. Pages 1 – 32.	3 LESSONS
12.	COORDINATE GEOMETRY Areas of rectilinear	Solve problems involving area	- Understanding Pure Maths Pages 72 – 89. - Addma (Pure &Applied) 6th Ed. Pages 1 – 32.	3 LESSONS

	figures.			
13		END OF TERM TESTS		

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NAME OF TEACHER:..... **TERM TWO** **YEAR:.....**

NAME OF SCHOOL:..... **DISTRICT:.....**

WEEK	TOPIC/SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1.	FUNCTIONS Notation of functions	- Describe functions, domain, Co-domain and range - Find domain, Co-domain and range of functions. - Evaluate modulus of a function.	- Understanding Pure Maths Pages 29 - 43 - Adma (pure & Applied) 6th Ed Pages 40 -98	3 LESSONS
2	FUNCTIONS Notation of functions	Find domain, Co-domain and range of functions.	- Understanding Pure Maths Pages 29 - 43 - Adma (Pure &	3 LESSONS

		Evaluate modulus of a function.	Applied) 6 th Ed Pages 40 -98	
3.	FUNCTIONS - Inverse function - Graphs of functions	- Find inverse of a function - Sketch the graph and its inverse	- Understanding Pure Maths Pages 29 - 43 - Adma (pure & Applied) 6th Ed Pages 40 -98	3 LESSONS
4.	FUNCTIONS - Composite functions - Graphs of quadratic functions	- Find composite functions - Sketch quadratic functions - Solve quadratic equations	- Understanding Pure Maths pages 29 - 43 - Adma (pure & Applied) 6th Ed Pages 40 -98	3 LESSONS
5.	CIRCULAR MEASURE Radian Measure	- Describe a radian measure. - Convent radians to degrees and Vice - Versa.	- Understanding Pure Maths Pages 124 - 129 - Adma (Pure & Applied) 6th Ed. Pages 111 - 127	3 LESSONS
6.	CIRCULAR MEASURE Arc length	Calculate Arc length	- Understanding Pure Maths Pages 124 - 129 - Adma (Pure & Applied) 6th Ed. Pages 111 - 127.	3 LESSONS
7.	CIRCULAR MEASURE - Area of a sector - Area of a segment	- Calculate area of a sector - Answer questions on circular measure.	- Understanding Pure Maths Pages 124 - 129 - Adma (Pure & Applied) 6th Ed	3 LESSONS

	End of topic test.		Pages 111 - 127	
8.	TRIGONOMETRIC FUNCTIONS Six Trigonometric functions	Describe the six trigonometric functions	- Understanding Pure Maths Pages 99 - 110 - Adma (Pure & Applied) 6th Ed. Pages 128 - 152	3 LESSONS
9 - 11	TRIGONOMETRIC FUNCTIONS - Special angles (30°, 45° and 60°). - Graphs of Sine, Cosine and Tangent functions.	- Find the trigonometric ratios of 30°, 45° and 60° - Describe the relationship between angles in the four quadrants and trigonometric functions. - Draw graphs of Sine, Cosine & tangent	- Understanding Pure Maths Pages 99 - 110 - Adma (Pure & Applied) 6th Ed. Pages 128 - 152.	9 LESSONS
12-13.		REVISION AND END OF TERM TESTS.		

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WEEK	TOPIC/SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1 - 2.	TRIGONOMETRIC FUNCTIONS Modulus of trigonometric functions.	- Solve trigonometric functions involving modulus, - Draw graphs of modulus trigonometric functions.	- Understanding Pure Maths Pages 99 - 110 - Adma (Pure & Applied) 6th Ed. Pages 128 - 152.	6 LESSONS
3 - 5.	TRIGONOMETRIC FUNCTIONS - Addition Formulae - Tangents of Compound Angles - Multiple Angles	Solve trigonometric equations involving addition formulae, compound and multiple angles.	- Understanding Pure Maths Pages 351 - 152 - Adma (Pure & Applied) 6th Ed. Pages 331 - 349.	9 LESSONS
6 - 7.	TRIGONOMETRIC FUNCTIONS. Trigonometric identities.	- Prove identities - Answer questions on trigonometric functions.	- Understanding Pure Maths Pages 188 - 204 - Adma (Pure & Applied) 6th Ed. Pages 128 - 152	6 LESSONS

8.	PERMUTATIONS AND COMBINATIONS Permutations and combinations	- Describe permutations and combinations. - Calculate permutations and combinations of 'n' terms.	- Understanding Pure Maths pages 188- 204 - Pure Mathematics Book 1 4th Ed. Pages 243 - 251.	3 LESSONS
9.	PERMUTATIONS AND COMBINATIONS Factorials	- Calculate 'n' factorial' (n!) - Solve problems of linear arrangement and selection.	- Understanding Pure Maths pages 188 - 204 - Pure Mathematics Book 1 4th Ed. Pages 243 - 251.	3 LESSONS
10 - 11.	PERMUTATIONS AND COMBINATIONS Factorials	- Solve problems on linear arrangement and selection. - Answer questions on permutations and combinations	- Understanding Pure Maths pages 188 - 204 - Pure Mathematics Book 1 4th Ed. Pages 243 - 251.	6 LESSONS
12- 13		REVISION AND END OF YEAR TESTS		

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WEEK	TOPIC/ SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1	BINOMIAL THEOREM Binomial expressions	- Explain the meaning of binomial - Expand expressions using Pascal's triangle	Understanding Pure Maths Pages 222 – 229. Adma (Pure & Applied) 6th Ed. Pages 99 – 110	3 LESSONS
2 - 3	BINOMIAL THEOREM Binomial expressions	Expand expressions using Binomial theorem	Understanding Pure Maths Pages 222 - 229 Adma (Pure & Applied) 6th Ed. Pages 99 – 110	6 LESSONS
4	BINOMIAL THEOREM Binomial expressions	Solve problems involving Binomial theorem	Understanding Pure Maths pgs. 222 - 229 Adma (Pure & Applied) 6th Ed. Pages 99 – 110	3 LESSONS

5-9	REMAINDER AND FACTOR THEOREMS • Remainder theorem. • Factor theorem. • Cubic equations. • Identical Polynomials.	• Use remainder theorem to find the quotient and remainder when the polynomial is divided by $ax+b$ where a and b are integers. • Find factors of polynomials using factor theorem. • Solve cubic equations. • Solve identical Polynomials.	• Additional Mathematics Pure and Applied, 6th Edition. Pgs 291-304. • Understanding Pure Mathematics. • Addma Past Papers.	15 LESSONS
10 - 12	EXPONENTIAL AND LOGARITHMIC FUNCTIONS • Exponents. • Logarithms. • Logarithmic Equations.	• Sketch the graphs of $y=a^x$ where $a > 0, a \neq 1$ and the graph of $y=e^x$. • Express exponential function as a logarithmic function. • Sketch the graphs of $y=\log_a x$ where $a > 0, a \neq 1$ and graph of $y=\ln x$. • Solve problems using laws of indices and laws of logarithms.	• Additional Mathematics Pure and Applied, 6th edition. Pgs 360-369. • Understanding pure mathematics. • Addma Past Papers.	9 LESSONS
13		END OF TERM TESTS.		

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WEEK	TOPIC/CONTENT	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1 - 4.	ARITHMETIC PROGRESSIONS • nth term of an A.P • Finding a given term in an A.P • The Arithmetic Mean • Sum of an A.P	• Find the nth term of an A.P • Find a given term in a given A.P • Find the arithmetic mean of given numbers. • Find the sum of a given number of terms of an A.P	Addima Pure and Applied 6 th Edition Pp 306 – 314. Past Exam Papers.	12 LESSONS
5 - 8.	GEOMETRIC PROGRESSIONS • nth term of a G.P • Finding a given term in a G.P	• Find the nth term of a G.P • Find a given term in a given G.P • Find the geometric mean of given numbers.	Addima Pure and Applied 6 th Edition Pp 315 -327.	12 LESSONS

9 - 12	• The Geometric Means. • Sum of a G.P • Sum to infinity of a G.P DIFFERENTIATION • The meaning of $\frac{dy}{dx}$. • The derived or gradient function. • The derivative of a polynomial. • The derivative of composite functions. • The second derivative of $\frac{dy}{dx}$.	• Find the sum of a given number of terms of a G.P • Find the sum to infinity of a given G.P • Find the gradient function. • Find the derivative of a polynomial ($f'(x)$ or $\frac{dy}{dx}$). • Find the derivative of a sum of functions or composite functions.	Past Exam Papers. Addima Pure and Applied 6th Edition Pp 185 -203. Past Exam Papers.	12 LESSONS
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WEEK	TOPIC/SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1 - 5.	DIFFERENTIATION - Differentiation of Trigonometric Functions. - Differentiation of	Differentiate Trigonometric Functions.		

	Exponential Functions. - Tangents and Normals. - Stationary Points. - Velocity and Acceleration. - Small Increments: Approximate Changes.	- Differentiate exponential functions. - Find the equations for Tangents and Normals. - Calculate maxima and minima. - Find Velocity and Acceleration. - Evaluate the Approximate Change of a given function.	Addima Pure and Applied 6th Edition Pp 206 – 229 and Pp 395 -402. Past Exam Papers.	15 LESSONS
6 - 8	DIFFERENTIATION Maximum and Minimum Problems.	Solve problems involving maxima and minima.	Addima Pure and Applied 6th Edition Pp 215 – 221 Past Exam Papers	9 LESSONS
9 - 11	INTEGRATION - Introduction to integration. - Indefinite and definite integrals. - Integration of polynomials with fractional powers. - Integration of powers of the linear function ax + b.	- Integrate terms of integer powers and their sum excluding $\frac{1}{x}$ or x^{-1}. - Integrate polynomials with fractional powers. - Find indefinite and definite integrals. - Integrate powers of linear function	Additional Mathematics, Pure and Applied 6th Edition, pp241 – 283 and pp384 – 387. Past Exam Papers.	9 LESSONS

		ax + b.		
12 - 13.		REVISION AND END OF TERM TESTS		

MINISTRY OF GENERAL EDUCATION
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NAME OF TEACHER:.....

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WEEK	TOPIC /SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1 - 4.	INTEGRATION - Area under the curve. - Area between two curves. - Volume of solids of revolution.	- Find area under a curve. - Find areas between two curves. - Find area bounded by curves of polynomials. - Find volume formed when a curve is rotated through 360° for both x and y axes.	Additional Mathematics, Pure and Applied 6 th Edition, pp241 - 283. Past Exam Papers.	12 LESSONS
5 - 7.	INTEGRATION Velocity and Acceleration.	- Find the area of the region under the velocity - time graph and acceleration - time graph. - Solve problems involving velocity and acceleration.	Additional Mathematics, Pure and Applied 6 th Edition, Pp 444 - 449 Past Exam Papers	9 LESSONS
8 - 11	VECTORS IN TWO DIMENSIONS Notation and	Define a vector.		

	magnitude of a vector. • Addition and Subtraction of vectors. • Scalar multiplication. • Column vectors. • Position vectors. • Unit vectors • Scalar product of two vectors and angles between two vectors. • Parallel and perpendicular vectors.	• Use notations $\underline{a}$, $\underline{AB}$, $\underline{ai} + \underline{bj}$. • Add and Subtract vectors. • Multiply vectors by a scalar. • Evaluate column vectors and their magnitudes. • Find position vector of a point. • Apply position vectors in calculations. • Find unit vector. • Use scalar product of two vectors. • Use dot product to find angles between two vectors. • Define properties of scalars such as when $\underline{a} \cdot \underline{b} = 0$. • Define vector equation of a straight line.	Additional Mathematics, Pure and Applied 6th Edition, pp153 – 184. Past Exam Papers.	12 LESSONS
12 - 13		REVISION AND END OF TERM TESTS.		

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WEEK	TOPIC/SUBTOPIC	LEARNING OUTCOMES	REFERENCES	NO. OF LESSONS
1 - 5	STATISTICS - Range, Mode, Median and Mean of ungrouped data. - Cumulative frequency tables and cumulative frequency curves. - Quartiles, Percentiles, Interquartile range and semi-Interquartile range. - Mean, Variance and Standard Deviation of ungrouped and grouped data.	- Evaluate the Range, Mode and Median of a given data. - Make cumulative frequency tables. - Draw cumulative frequency curves. - Find quartiles, percentiles, inter-quartile range and semi-Interquartile range. - Calculate mean, variance and standard deviation of ungrouped and grouped data.	Mathematics Grade 12 Pupils Book pp 213 - 233 General Mathematics for Secondary Schools Book 4 pp 8 – 19 and pp78 - 80 Past Exam Papers.	15 LESSONS
6 - 10	REVISIONS			

11 - 13	MOCK EXAMS			
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