




GRADE 12 MATHEMATICS
2025 ANNUAL TEACHING PLAN


NAME OF SCHOOL:

NAME OF TEACHER:


TERM 1										
NUMBER OF DAYS	DATE STARTED	DATE COMPLETED	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DH SIGNATURE and DATE	% COMPLETED		
								Term	Year	
15 – 24/01 (08 days)			PATTERNS, SEQUENCES AND SERIES	1. Number patterns, including arithmetic and geometric sequences and series.				19	7	
27/01 – 05/02 (08 days)			PATTERNS, SEQUENCES AND SERIES	2. Sigma notation. 3. Derivation and application of the formulae for the sum of arithmetic and geometric series: 3.1 $S_n = \frac{n}{2}[2a + (n-1)d] = \frac{n}{2}(a+l)$; 3.2 $S_n = \frac{a(r^n - 1)}{r - 1}$ for $r \neq 1$; and 3.3 $S_n = \frac{a}{1-r}$ for $-1 < r < 1$.				38	15	
06 – 10/02 (3 days)			FUNCTIONS, INVERSES AND LOGARITHMS	1. Definition of a function. 2. General concept of the inverse of a function. 3. Determine and sketch graphs of the inverse of the function defined by $y = ax + q$. 4. Focus on the following characteristics: domain and range, intercepts with the axes, shape and symmetry, gradient, whether the function increases/decreases.	INVESTIGATION SBA Weighting: 15%			45	17	
11 – 14/02 (4 days)			FUNCTIONS, INVERSES AND LOGARITHMS	5. Determine and sketch graphs of the inverse of the function defined by $y = ax^2$. 6. Determine how the domain of the function may need to be restricted (in order to obtain a one-to-one function) to ensure that the inverse is a function. 7. Focus on the following characteristics: domain and range, intercepts with the axes, turning points, minima, maxima, shape and symmetry, average gradient (average rate of change), intervals on which the function increases/decreases.				55	21	


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17 – 20/02 (4 days)			 FUNCTIONS, INVERSES AND LOGARITHMS	8. Determine and sketch graphs of the inverse of the function defined by $y = b^x$ for $b > 0$, $b \neq 1$. 9. Focus on the following characteristics: domain and range, intercepts with the axes, asymptotes (horizontal and vertical), shape and symmetry, average gradient (average rate of change), intervals on which the function increases/decreases. 10. Understand the definition of a logarithm: $y = \log_b x \Leftrightarrow x = b^y$, where $b > 0$ and $b \neq 1$. 11. The graph of the function defined by $y = \log_b x$ for both the cases $0 < b < 1$ and $b > 1$.				64	25
21 – 24/02 (2 days)			FUNCTIONS, INVERSES AND LOGARITHMS	12. Further sketching and interpretation of graphs of functions and their inverses.				69	26
25/02 – 07/03 (9 days)			TRIGONOMETRY: COMPOUND ANGLES	Revise Grade 11 Work Compound angle identities: 1. $\cos(\alpha \pm \beta) = \cos \alpha \cos \beta \mp \sin \alpha \sin \beta$ 2. $\sin(\alpha \pm \beta) = \sin \alpha \cos \beta \pm \cos \alpha \sin \beta$ 3. $\sin 2\alpha = 2 \sin \alpha \cos \alpha$ 4. $\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha$ 5. $\cos 2\alpha = 2 \cos^2 \alpha - 1$ 6. $\cos 2\alpha = 1 - 2 \sin^2 \alpha$		F		90	35
10 – 13/03 (04 days)			TRIGONOMETRY: 2D/3D	Revise Sine, Cosine and Area Rules Solve problems in two and three dimensions.				100	38
14 – 28/03 (10 days)			REVISION AND MARCH TEST	MARCH TEST to cover all the work done in Term 1 excluding 2D/3D problems. The Grade 11 work done on all these topics will also be included.	MARCH TEST SBA Weighting: 15%	F			

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08 – 15/04 (6 days)			EUCLIDEAN GEOMETRY	<ol style="list-style-type: none"> Revise earlier work on the necessary and sufficient conditions for polygons to be similar. Prove (accepting results established in earlier grades) that a line drawn parallel to one side of a triangle divides the other two sides proportionally (and the Midpoint Theorem as a special case of this theorem). Solve proportionality problems and prove riders. 	ASSIGNMENT SBA Weighting: 15%	F		16	43
16 – 25/04 (6 days)			EUCLIDEAN GEOMETRY	<ol style="list-style-type: none"> Prove (accepting results established in earlier grades): <ol style="list-style-type: none"> that equiangular triangles are similar; that triangles with sides in proportion are similar; and the Pythagorean Theorem by similar triangles. Solve similarity problems and prove riders. 				32	49
05 – 06/05 (2 days)			CALCULUS	<ol style="list-style-type: none"> An intuitive understanding of the limit concept. Use limits to define the derivative of a function f at any x: $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$. Generalise to find the derivative of f at any point x in the domain of f, i.e., define the derivative function $f'(x)$ of the function $f(x)$. Understand intuitively that $f'(a)$ is the gradient of the tangent to the graph of f at the point with x-coordinate a. 				37	51
07 – 09/05 (3 days)			CALCULUS	<ol style="list-style-type: none"> Using the definition (first principles), find the derivative, $f'(x)$, for <ol style="list-style-type: none"> $f(x) = ax^2 + bx + c$ $f(x) = ax^3$ $f(x) = \frac{a}{x}$ $f(x) = c$ (a, b and c are constants). 				45	54

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12 – 14/05 (3 days)			 CALCULUS	4. Use the formula $\frac{d}{dx}(ax^n) = anx^{n-1}$, for any real number n , together with the rules: 4.1 $\frac{d}{dx}[f(x) \pm g(x)] = \frac{d}{dx}[f(x)] \pm \frac{d}{dx}[g(x)]$; and 4.2 $\frac{d}{dx}[kf(x)] = k \frac{d}{dx}[f(x)]$ (k a constant).				53	56
15 – 16/05 (2 days)			CALCULUS	5. Find equations of tangents to graphs of functions.				58	58
19 – 20/05 (2 days)			CALCULUS	6. Apply the Remainder and Factor Theorems to polynomials of degree at most 3. 7. Factorise third degree polynomials.				63	60
21 – 23/05 (3 day)			CALCULUS	8. Introduce the second derivative $f''(x) = \frac{d}{dx} f'(x)$ of $f(x)$, and how it determines the concavity of a function. 9. Sketch graphs of polynomial functions using differentiation to determine the coordinates of stationary points, and points of inflection (where concavity changes). Also determine the x -intercepts of the graph, using the factor theorem and other techniques.				71	63
26 – 27/05 (2 day)			CALCULUS	10. Solve practical problems concerning optimisation and rate of change, including calculus of motion.				76	65
28 – 29/05 (2 days)			ANALYTICAL GEOMETRY	1. Revise the following including grade 10 concepts: 1.1. The Equation of a line through two given points. 1.2. The equation a line through one point and parallel or perpendicular to a given line. 2. The inclination (θ) of a line, where $m = \tan \theta$ is the gradient of the line ($0^\circ \leq \theta \leq 180^\circ$)				82	66
30/05 – 04/06 (4 days)			ANALYTICAL GEOMETRY	2. The equation $(x - a)^2 + (y - b)^2 = r^2$ defines a circle with radius r and centre $(a; b)$ NOTE: Include circles that touch internally and externally				92	70

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05 – 09/06 (3 days)			ANALYTICAL GEOMETRY	Determination of the equation of a tangent to a given circle.				100	73
10 – 13/06 (4 days)			REVISION OF GRADE 11 FINANCE, GROWTH & DECAY, PROBABILITY & STATISTICS	REVISION					
17 – 27/06 (9 days)			REVISION OF ALL GRADE 12 WORK COVERED IN TERMS 1 & 2,	REVISION					
			JUNE EXAMINATION	JUNE EXAMINATION	JUNE EXAMINATION SBA WEIGHTING: 15%	F			

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22 – 23/07 (2 days)			 FINANCE, GROWTH AND DECAY: (FROM GR. 11)	Revise: 1. Use simple and compound decay formulae, $A = P(1 - in)$ and $A = P(1 - i)^n$, to solve problems (including straight line depreciation and depreciation on a reducing balance). 2. Different periods of compound growth and decay. 3. Effective and nominal interest rates.				7	75
24 – 25/07 (2 days)			FINANCE, GROWTH AND DECAY	4. Make use of logarithms to calculate the value of n , the time period, in the equations: $A = P(1 + i)^n$ or $A = P(1 - i)^n$				13	76
28/07 – 05/08 (7 days)			FINANCE, GROWTH AND DECAY	5. Solve problems involving present value and future value annuities. 6. Critically analyse investment and loan options and make informed decisions as to best option(s), including pyramid schemes.				37	83
06 – 08/08 (3 days)			STATISTICS: (FROM GR. 11)	Revise: 1. Histograms and frequency polygons. 2. Variance and standard deviation of ungrouped data 3. Ogives (cumulative frequency curves). 4. Symmetric and skewed data. 5. Identification of outliers.				47	85
11 – 15/08 (5 days)			STATISTICS: REGRESSION AND CORRELATION	6. Use statistical summaries, scatterplots, regression (in particular the least squares regression line) and correlation to analyse and make meaningful comments on the context associated with given bivariate data, including interpolation, extrapolation and discussions on skewness.				63	90
18 – 20/08 (3 days)			PROBABILITY (FROM GR. 11)	1. Revise: 1.1. the addition rules for mutually exclusive events: $P(A \text{ or } B) = P(A) + P(B)$; 1.2. the complementary rule $P(\text{not } A) = 1 - P(A)$; 1.3. and the identity $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$. 2. Identify dependent and independent events and the Product rule for independent events: $P(A \text{ and } B) = P(A) \times P(B)$.				73	93

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			 PROBABILITY (FROM GR. 11)	3. The use of Venn diagrams to solve probability problems, deriving and applying formulae for any three events A, B and C in a sample space S. 4. Use tree diagrams for the probability of consecutive or simultaneous events which are not necessarily independent. 5. Use contingency tables to solve probability problems.					
21/08 – 01/09 (8 days)			COUNTING AND PROBABILITY	5. Apply the fundamental counting principle to solve probability problems.	TERM 3 TEST SBA Weighting: 15%	F		100	100
02 – 03/10 (23 days)			REVISION AND TRIAL EXAMINATION	TRIAL EXAMINATION to cover all the TOPICS dealt with in both Grades 11 and 12.	TRIAL EXAM SBA Weighting: 25%	F			

2025 GR. 12 MATHEMATICS TEST and EXAMINATION SCOPE

MARCH TEST		JUNE EXAMINATION		TRIAL EXAMINATION	
ONLY ONE PAPER		PAPER 1:		PAPER 1:	
DURATION:	2 hours	DURATION:	3 hours	DURATION:	3 hours
TOTAL MARKS:	100	TOTAL MARKS:	150	TOTAL MARKS:	150
This paper will consist of the following sections:		This paper will consist of the following sections:		This paper will consist of the following sections:	
Number patterns	25±3 marks	Algebra, Equations and Inequalities	25±3 marks	Algebra, Equations and Inequalities	25±3 marks
Functions and Graphs	35±3 marks	Patterns and Sequences	25±3 marks	Patterns and Sequences	25±3 marks
Trigonometry: All topics will be included (e.g. sketches, reduction formulae, identities, equations, graphs), excluding 2D/3D problems.	40±3 marks	Functions and Graphs	35±3 marks	Finance, Growth and Decay	15±3 marks
		Differential Calculus	40±3 marks	Functions and Graphs	35±3 marks
		Gr. 11 Finance, growth and Decay	12±3 marks	Differential Calculus	35±3 marks
		Gr. 11 Probability	13±3 marks	Probability	15±3 marks
		PAPER 2:		PAPER 2:	
		DURATION:	3 hours	DURATION:	3 hours
		TOTAL MARKS:	150	TOTAL MARKS:	150
		This paper will consist of the following sections:		This paper will consist of the following sections:	
		Analytical Geometry	40±3 marks	Statistics	20±3 marks
		Trigonometry including 2D/3D problems	50±3 marks	Analytical Geometry	40±3 marks
		Euclidean Geometry	40±3 marks	Trigonometry	50±3 marks
		Gr. 11 Statistics	20±3 marks	Euclidean Geometry	40±3 marks
Completion date of the last topic for the March Test: 13/03/2025		Completion date of the last topic for the June Examination: 09/06/2025		Completion date of the last topic for the Trial Examination: 01/09/2025	

