



**KZN DEPARTMENT OF EDUCATION
MATHEMATICS ANNUAL TEACHING PLAN
GRADE 12 – 2019**

NAME OF SCHOOL:

NAME OF TEACHER:

TERM 1								
DATES	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DATE STARTED	DATE COMPLETED	HOD: SIGNATURE and DATE	% COMPLETED
09/1 – 14/1 (4 days)	PATTERNS, SEQUENCES AND SERIES	1. Number patterns, including arithmetic and geometric sequences and series.						4%
15/1 – 22/1 (6 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 $S_\infty = \frac{a}{1 - r}$ for $-1 < r < 1$.						9%
23/1 – 30/1 (6 days)	EUCLIDEAN GEOMETRY	1. Revise earlier work on the necessary and sufficient conditions for polygons to be similar. 2. 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); 3. Solve proportionality problems and prove riders.						14%
31/1 – 08/2 (7 days)	EUCLIDEAN GEOMETRY	4. Prove (accepting results established in earlier grades): 4.1 that equiangular triangles are similar; 4.2 that triangles with sides in proportion are similar; and 4.3 the Pythagorean Theorem by similar triangles. 5. Solve similarity problems and prove riders.	ASSIGNMENT SBA Weighting: 15	F				21%

TERM 1 (continued)

DATES	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DATE STARTED	DATE COMPLETED	HOD: SIGNATURE and DATE	% COMPLETED
11/2 – 25/2 (12 days)	TRIGONOMETRY: COMPOUND ANGLES	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. $\cos 2\alpha = 1 - 2\sin^2\alpha$	INVESTIGATION SBA Weighting: 15 (to be completed by: 11/02)	F				32%
26/2 – 4/3 (5 days)	TRIGONOMETRY: 2D/3D	Solve problems in two and three dimensions.						37%
05/3 – 15/3 (9 days)	REVISION and MARCH TEST	MARCH TEST to cover all the work done in Term 1, also including the work done in Grade 11 on all these topics; BUT with the exception of 2D/3D Problems in Trigonometry.	MARCH TEST SBA Weighting: 10	F				

TERM 2

DATES	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DATE STARTED	DATE COMPLETED	HOD: SIGNATURE and DATE	% COMPLETED
02/4 – 05/4 (4 days)	ANALYTICAL GEOMETRY	1. The equation $(x - a)^2 + (y - b)^2 = r^2$ defines a circle with radius r and centre $(a; b)$.						41%
08/4 – 10/4 (3 days)	ANALYTICAL GEOMETRY	2. Determination of the equation of a tangent to a given circle.						44%
11/4 (1 day)	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.						45%
12/4 – 15/4 (2 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.						47%
16/4 – 18/4 (3 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 $b > 1$.						50%
23/4 – 26/4 (4 days)	FUNCTIONS, INVERSES AND LOGARITHMS	12. Further sketching and interpretation of graphs of functions and their inverses.						54%

TERM 2 (continued)

DATES	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DATE STARTED	DATE COMPLETED	HOD: SIGNATURE and DATE	% COMPLETED
29/4 (1 day)	CALCULUS	1. An intuitive understanding of the limit concept. 2. 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 .						55%
30/4 – 02/5 (2 days)	CALCULUS	3. Using the definition (first principles), find the derivative, $f'(x)$, for a. $f(x) = ax^2 + bx + c$; b. $f(x) = ax^3$; c. $f(x) = \frac{a}{x}$; and d. $f(x) = c$ (a, b and c are constants).						57%
03/5 – 08/5 (4 days)	CALCULUS	4. Use the formula $\frac{d}{dx}(ax^n) = anx^{n-1}$, for any real number n , together with the rules a. $\frac{d}{dx}[f(x) \pm g(x)] = \frac{d}{dx}[f(x)] \pm \frac{d}{dx}[g(x)]$; and b. $\frac{d}{dx}[kf(x)] = k \frac{d}{dx}[f(x)]$ (k a constant).	TERM 2 TEST SBA Weighting: 10					61%
09/5 (1 day)	CALCULUS	5. Find equations of tangents to graphs of functions.						62%
10/5 (1 day)	CALCULUS	6. Apply the Remainder and Factor Theorems to polynomials of degree at most 3. 7. Factorise third degree polynomials.						63%

TERM 2 (continued)

DATES	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DATE STARTED	DATE COMPLETED	HOD: SIGNATURE and DATE	% COMPLETED
13/5 – 20/5 (6 days)	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.						69%
21/5 – 27/5 (5 days)	CALCULUS	10. Solve practical problems concerning optimisation and rate of change, including calculus of motion.						74%
28/5 – 14/6 (14 days)	REVISION and JUNE EXAMINATIONS	JUNE EXAMINATION to cover <ul style="list-style-type: none"> • The work done in Terms 1 and 2, including the work done in Grade 11 on all these topics. Also: • Algebra, Equations and Inequalities • Gr. 11 Finance, Growth and Decay; and • Gr. 11 Probability. 	JUNE EXAM SBA Weighting: 15	F				

TERM 3

DATES	TOPIC	CURRICULUM STATEMENT	ASSESSMENT	F/IF	DATE STARTED	DATE COMPLETED	HOD: SIGNATURE and DATE	% COMPLETED
09/7 – 10/7 (2 days)	FINANCE, GROWTH AND DECAY	1. Make use of logarithms to calculate the value of n , the time period, in the equations $A = P(1 + i)^n$ or $A = P(1 - i)^n$.						76%
11/7– 22/7 (8 days)	FINANCE, GROWTH AND DECAY	2. Solve problems involving present value and future value annuities. 3. Critically analyse investment and loan options and make informed decisions as to best option(s), including pyramid schemes.						84%
23/7– 29/7 (5 days)	COUNTING AND PROBABILITY	1. Apply the fundamental counting principle to solve probability problems.						89%
30/7 – 05/8 (5 days)	COUNTING AND PROBABILITY	2. Revise <ul style="list-style-type: none"> a. dependent and independent events; b. the product rule for independent events: $P(A \text{ and } B) = P(A) \times P(B)$ c. the sum rule for mutually exclusive events: $P(A \text{ or } B) = P(A) + P(B)$; d. the identity: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$; e. the complementary rule: $P(\text{not } A) = 1 - P(A)$. f. solving of probability problems (where events are not necessarily independent) by using Venn-diagrams, tree diagrams, two-way contingency tables and other techniques. 					94%	
06/8 – 14/8 (6 days)	STATISTICS: REGRESSION AND CORRELATION	1. Revise symmetric and skewed data. 2. 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.	TERM 3 TEST SBA Weighting: 10	F				100%
15/8 – 20/9 (27 days)	REVISION and TRIAL EXAMINATIONS	TRIAL EXAMINATION to cover all the TOPICS dealt with in both Grades 11 and 12.	TRIAL EXAM SBA Weighting: 25	F				