GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG PROVINCE
MATHEMATICS – ANNUAL TEACHING PLAN –GRADE 12
GRADE 12 ATP 2025 FINAL

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 1		2025	**2 TASKS FOR TERM 1**			
Week 1 15/1 – 17/1 (3 days)	**Number Patterns , Sequence & Series**	1. Revise quadratic patterns				4%
Week 2 20/1 – 24/1 (5 days	**Number Patterns , Sequence & Series**	2. Number patterns, including arithmetic geometric sequences and series 3. Sigma notation Derivation and application of the formulae for the sum of arithmetic: 3.1 $S_n = \frac{n}{2}[2a + (n-1)d]$; $S_n = \frac{n}{2}(a + l)$		**Investigation / Project**		8%
Week 3 27/1 – 31/1 (5 days)	**Number Patterns , Sequence & Series**	Derivation and application of the formulae for the sum of geometric series: 3.2 $S_n = \frac{a(r^n-1)}{r-1}; (r \neq 1)$; and 3.3 $S_n = \frac{a}{1-r}; (-1 < r < 1), (r \neq 1)$	F			12%
Week 4 3/2 – 7/2 (5 days)	**Functions: Revision & Formal Definition**	1. Revise functions studied in earlier grades with focus on: 1. Sketching of all functions 2. Determining the equations of ALL functions 3. Interpretation of sketched functions including but not limited to: horizontal and vertical lengths, point of intersections, average gradient, domain and range, asymptotes, axes of symmetry, Turning point, minimum and maximum values, graphical transformations, inequalities in functions, nature of roots using graphical approach, etc				15%
Week 5 10/2 – 14/2 (5 days)	**Functions: Formal Definition , Inverse of linear and quadratic functions**	1. Definition of a *function.* 2. General concept of the *inverse of a function* and 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. 3. Determine and sketch graphs of the inverses of the functions defined by $y = ax + q; y = ax^2$ Focus on the following characteristics: domain and range, intercepts with the axes, turning points, minima, maxima, asymptotes (horizontal and vertical), shape and symmetry, average gradient (average rate of change), intervals on which the function increases /decreases.				19%

Week 6 17/2 – 21/2 (5 days)	**Functions: exponential and logarithmic**	4. Revision of the exponential function and the exponential laws and graph of the function defined by $y = b^x$ where $b > 0$ and $b \neq 1$ 5. Understand the definition of a logarithm: $y = \log_b x \Leftrightarrow x = b^y$ where $b > 0$ and $b \neq 1$ 6. The graph of the function, $y = \log_b x$ for both the cases: $0 < b < 1$ and $b > 1$.				23%
Week 7 24/2 – 28/2 (5 days)	**Trigonometry: Revision and compound angles**	1. Revise trigonometric concepts student in earlier grades (reduction formulae, special angles, identities & general solutions) 2. Compound angle identities: $\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \sin\beta\cos\alpha$ $\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \pm \sin\alpha\sin\beta$				27%
Week 8 3/3 – 7/3 (5 days)	**Trigonometry: Double angles**	$\sin 2\alpha = 2\sin\alpha\cos\alpha$ $\cos 2\alpha = \cos^2\alpha - \sin^2\alpha$ $= 2\cos^2\alpha - 1$ $= 1 - 2\sin^2\alpha$				31%
Week 9 10/3 – 14/3 (5 days)	**Trigonometry: two and three dimensions**	3. Revise the proof of the sine, cosine and area rules. 4. Solve problems in two and three dimensions applying the sine, cosine and area rules.	F			35%
Week 10 17/3 – 21/3 (4 days)	**Trigonometry: trigonometric functions**	5. Revise Trigonometric functions studied in earlier grades. 6. Solve problems involving trigonometric functions where compound and double angles are used.		Test		38%
Week 11 24/3 – 28/3 (5 days)	**Euclidean Geometry: Revision**	7. Revise examinable theorems studied in grade 11. 8. Revise numeric and non-numeric riders where application of theorems, converses, corollaries, and axioms is necessary.				42%
END OF TERM 1 SCHOOLS CLOSES ON 28/03/2025						

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 2		**2 TASKS FOR TERM 2**				
Week 1 8/4 – 11/4 (4days)	**Euclidean Geometry: Revision**	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 Mid-point Theorem as a special case of the converse of this theorem);				**46%**
Week 2 14/4 18/4 (4days)	**Euclidean Geometry: Proportionality and Similarity**	3. Prove (accepting results established in earlier grades): • that equiangular triangles are similar; • that triangles with sides in proportion are similar; and • the Pythagorean Theorem by similar triangles				**50%**
Week 3 21/4 – 25/4 (4days)	**Analytical Geometry: Revision**	1. Revise the following midpoint, gradient and distance : • the equation of a line through two given points; • the equation of a line through one point and parallel or perpendicular to a given line; • The inclination (θ) of a line, where $m = tan\,\theta$ is the gradient of the line $(0^\circ \leq \theta \leq 180^\circ)$				**54%**
Week 4 **28/4 – 01/05**	28 Freedom Day Observed 29 and 30 April Special School Holidays 01 May Workers Day 02 May Special School Holiday					
Week 5 5/5 – 9/5 (5 days)	**Analytical Geometry:**	2. Apply the equation $(x-a)^2 + (y-b)^2 = r^2$ that defines a circle with radius r and centre $(a\,;\,b)$. 3. Determine the equation of a tangent to a given circle. 4. Determine whether circles intersect internally, externally or do not intersect. 5. Determine whether a point lies inside, outside or at the circumference of the circle. 6. Determine whether a line is exterior, secant or tangential to a circle	F	**ASSIGNMENT**		**58%**
Week 6 12/5– 16/5 (5 days(	**Differential Calculus: Polynomials and the limit concept**	1. Factorise third-degree polynomials. Apply the Remainder and Factor Theorems to polynomials of degree at most 3 (no proofs required). 2. An intuitive understanding of the limit concept, in the context of approximating the rate of change or gradient of a function at a point.				**62%**
Week 7 19/5 – 23/5 (5 days)		3. Use limits to define the derivative of a function f at any x : $f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$ 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				**65%**

	Differential Calculus: first principles and rules of differentiation	tangent to the graph of f at the point with x-coordinate a. 4. Using the definition (first principle), determine the derivative, $f'(x)$ where a, b and c are constants: 4.1 $f(x) = ax^2 + bx + c$; 4.2 $f(x) = ax^3$; 4.3 $f(x) = \frac{a}{x}$ and 4.4 $f(x) = c$. 5 Use the formula $\frac{d}{dx}(ax^n) = anx^{n-1}$ (for any real number n) together with the rules 5.1 $\frac{d}{dx}[f(x) \pm g(x)] = \frac{d}{dx}[f(x)] \pm \frac{d}{dx}[g(x)]$ and 5.2 $\frac{d}{dx}[kf(x)] = k\frac{d}{dx}[f(x)]$ (k a constant)				
Week 8 26/5 – 30/5 (5 days)	**Differential Calculus: first principles and rules of differentiation**	6. Determine equations of tangents to graphs of functions. 7. Introduce the second derivative $f''(x) = \frac{d}{dx}(f'(x))$ of $f(x)$ and how it determines the concavity of a function. 8. Sketch graphs of cubic 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. 9. Interpret sketched cubic functions including the graph of the derivative of a cubic function.				**69%**
Week 9 2/6 – 6/6 (5 days)	**Differential Calculus: Applications of calculus**	10. Solve practical problems concerning optimisation and rate of change, including calculus of motion.				**73%**
Week 10 9/6 – 13/6 (5 days)	**June Examination**	**June Examination**				
Week 11 **16/6 – 20/6** (4days)	**June Examination**	**June Examination**	**F**	**JUNE EXAMINATION**		
Week 12 **23/6 – 27/6** **(5 days)**	**June Examination**	**June Examination**				
END OF TERM 2 SCHOOLS CLOSES ON 27/06/2025						

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 3			**2 TASKS FOR TERM 3**			
Week 1 22/7 –25/7 (4days)	**Finance, growth and decay : Revision**	1. Revise and use simple and compound growth and decay formulae: $A = P(1 \pm in)$ and $A = P(1 \pm i)^n$ to solve problems (including straight line, depreciation and depreciation on a reducing balance).				**77%**
Week 2 28/7 – 1/8 (5 days)	**Finance, growth and decay : Future and present value annuities**	2. Solve problems involving future value annuities. 3. Sinking funds. 4. Solve problems involving present value annuities				**81%**
Week 3 4/8 –8/8 (5 days)	**Finance, growth and decay : Future and present value annuities**	5. Make use of logarithms to calculate the value of n, the time period, in the equations $A = P(1+i)^n$ *or* $A = P(1-i)^n$. 6. Outstanding Balance in a loan 7. Missed payments 8. Last payment 9. Critically analyse investment and loan options and make informed decisions as to best option(s) (including pyramid)				**85%**
Week 4 11/8 – 15/8 (5 days)	**Statistics: Revision**	Revise: • Five number summary & box and whisker plots • Stem and leaf • Histograms • Frequency polygons • Ogives (cumulative frequency curves) • Variance and standard deviation of ungrouped data • Symmetric and skewed data • Identification of outliers.	**F**	**TEST**		**88%**
Week 5 18/8 - 22/8 (5 days)	**Statistics: Regression analysis**	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.				**92%**
Week 6 25/8 – 29/8 (5 days)	**Probability and Counting principle: Revision**	1.Revise, • the identity: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ • the addition rule for mutually exclusive events: $P(A \text{ or } B) = P(A) + P(B)$ • the complementary rule: $P(\text{not } A) = 1 - P(A)$				**96%**

		• identifying dependent and independent events and, • the product rule for independent events: $P(A \text{ and } B) = P(A) \times P(B)$ • 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. • the use of tree diagrams for the probability of consecutive or simultaneous events which are not necessarily independent.				
Week 7 1/9 – 5/9 (5 days)	**Probability and Counting principle**	2. The fundamental counting principle 3. Apply the fundamental counting principle to solve probability problems				**100%**
Week 8 8/9 – 12/9 (5 days)	**Revision**	4. Revision and administration of pre-preparatory exam papers				
Week 9 15/9 – 19/9 (5 days)	**PREPARATORY EXAMINATION**		F	**PREPARATORY EXAMINATION**		
Week 10 22/9 – 26/9 (4days)	**PREPARATORY EXAMINATION**					
Week 11 29/9 – 3/10 (5 days)	**PREPARATORY EXAMINATION**					
END OF TERM 3 SCHOOLS CLOSES ON 3/10/2025						

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 4						
Week 1 13/10 – 17/10 (5 days)	Revision					
Week 2 20/10 – 24/10 (5 days)	Revision					
Week 3 27/10 – 31/10 (5 days)	Revision					
Week 4 3/11 – 7/11 (5 days)	Revision					
Week 5 10/11 – 14/11 (5 days)	FINAL EXAMINATIONS					
Week 6 17/11 – 21/11 (5 days)	FINAL EXAMINATIONS					
Week 7 24/11 – 28/11 (5 days)	FINAL EXAMINATIONS					
Week 8 1/12 – 5/12	FINAL EXAMINATIONS					
Week 9 8/12 – 12/12	FINAL EXAMINATIONS					
END OF TERM 4 SCHOOLS CLOSES 12/ 12 / 2025 : END OF YEAR						

note:

- Modelling as a process should be included in all papers, thus contextual questions can be set on any topic.
- Questions will not necessarily be compartmentalised in sections, as this table indicates. Various topics can be integrated in the same question.

Mark distribution for Mathematics NCS end-of-year papers: Grades 10-12			
Paper 1: Grades 12: bookwork: maximum 6 marks			
description	**Grade 10**	**Grade 11**	**Grade. 12**
Algebra and equations (and inequalities)	30 ± 3	45 ± 3	25 ± 3
Patterns and sequences	15 ± 3	25 ± 3	25 ± 3
Finance and growth	10 ± 3		
Finance, growth and decay		15 ± 3	15 ± 3
Functions and graphs	30 ± 3	45 ± 3	35 ± 3
Differential Calculus			35 ± 3
Probability	15 ± 3	20 ± 3	15 ± 3
Total	**100**	**150**	**150**
Paper 2: Grades 11 and 12: theorems and/or trigonometric proofs: maximum 12 marks			
description	**Grade 10**	**Grade 11**	**Grade 12**
Statistics	15 ± 3	20 ± 3	20 ± 3
Analytical Geometry	15 ± 3	30 ± 3	40 ± 3
Trigonometry	40 ± 3	50 ± 3	50 ± 3
Euclidean Geometry and Measurement	30 ± 3	50 ± 3	40 ± 3
Total	**100**	**150**	**150**

SIX (6) SBA TASKS TO BE COMPLETED IN 2025

THE TASKS ARE AS FOLLOWS:

TERM	SBA TASKS	WEIGNTING
1	Investigation/Project	15%
	Test	15%
2	Assignment	15%
	June Examination	15%
3	Test	15%
	Preparatory Examination	25%
	WEIGHTING	**100%**