

**GAUTENG PROVINCE**  
**MATHEMATICS – ANNUAL TEACHING PLAN – GRADE 12**  
**2017**

DATE	TOPIC	CONTENT	F	ASSESSMENT	DATE Completed	% Complete
<b>TERM 1</b>				<b>3 TASKS TERM 1</b>		
11/1 – 13/1 (3 days)	Number patterns	<ul style="list-style-type: none"> <li>Revision gr 11 quadratic number patterns(1 day)</li> <li>Number patterns (Arithmetic sequences and series).</li> </ul>				4 %
16/1 – 20/1	Sequences & Series	<ul style="list-style-type: none"> <li>Number patterns (Arithmetic sequences and series).</li> <li>Number patterns (Geometric sequences and series).</li> </ul>				8 %
23/1 – 27/1	Sequences & Series	<ul style="list-style-type: none"> <li>Sigma notation.</li> <li>Sum of series.</li> <li>Derivation and application of the formulae for the sum of arithmetic and geometric series:</li> </ul> $S_n = \frac{n}{2} [2a + (n-1)d]$ $S_n = \frac{n}{2} [a + L]$ $S_n = \frac{a(r^n - 1)}{r - 1}; (r \neq 1) \text{ and}$ $S_n = \frac{a}{1 - r}; (-1 < r < 1), (r \neq 1)$ $S_\infty = \frac{a}{1 - r}$				12 %
30/1 – 03/2	Functions: Formal Definition Inverses Restrictions of domain	<ul style="list-style-type: none"> <li>Definition of a function.</li> <li>Focus on the following characteristics:               <ul style="list-style-type: none"> <li>domain and range,</li> <li>intercepts with the axes,</li> <li>turning points,</li> <li>minima, maxima,</li> <li>asymptotes (horizontal and vertical)</li> <li>shape and symmetry,</li> <li>average gradient (average rate of change),</li> <li>intervals on which the function increases /decreases.</li> </ul> </li> <li>General concept of the <i>inverse of a function</i> and restriction of the domain to ensure that the inverse is a function.</li> </ul>	<b>F</b>	<b>PROJECT/ INVESTIGATION</b>  <b>SBA marks: 20</b>		16 %
06/2 – 10/2	Functions: Inverses	<ul style="list-style-type: none"> <li>Determine and sketch graphs of the inverses of the functions defined by <math>y = ax + q</math>; <math>y = ax^2</math>.</li> <li>Graph of the function defined by <math>y = b^x</math>, <math>b &gt; 0</math> and <math>b \neq 1</math>.</li> </ul>				20 %
13/2 – 17/2	Functions: Exponential and Logarithmic	<ul style="list-style-type: none"> <li>Definition of a logarithm: <b>LAWS NOT EXAMINABLE</b> <math>y = \log_b x \Leftrightarrow x = b^y, b &gt; 0; b \neq 1</math></li> <li>The graph of the function define by <math>y = \log_b x</math> for both the cases <math>0 &lt; b &lt; 1</math> and <math>b &gt; 1</math>.</li> </ul>				24 %

20/2 – 24/2	Financial Maths	<ul style="list-style-type: none"> <li>Solve problems using present and future value annuities.</li> </ul>	F	<b>ASSIGNMENT</b>		28 %
				<b>SBA marks: 10</b>		
27/2 – 03/3	Financial Maths	<ul style="list-style-type: none"> <li>Calculate the value of <math>n</math> in the formulae <math>A = P(1+i)^n</math> or <math>A = P(1-i)^n</math></li> <li>Critically analyse investments and loan option(s) [including pyramid].</li> </ul>				32 %
06/3 – 10/3	Trigonometry	<ul style="list-style-type: none"> <li>Compound angle identities:  <math>\sin(\alpha \pm \beta) = \sin\alpha \cos\beta \pm \cos\alpha \sin\beta</math>  <math>\cos(\alpha \pm \beta) = \cos\alpha \cos\beta \mp \sin\alpha \sin\beta</math> </li> </ul>				36%
13/3 – 17/3	Trigonometry	<ul style="list-style-type: none"> <li>Double angle identities:  <math>\sin 2\alpha = 2\sin\alpha \cos\alpha</math>  <math>\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha</math>  <math>= 2\cos^2 \alpha - 1</math>  <math>= 1 - 2\sin^2 \alpha</math> </li> </ul>	F	<b>TEST</b>		40 %
				<b>SBA marks: 10</b>		
20/3 – 24/3 (3 days)	Euclidian Geometry	<ul style="list-style-type: none"> <li>Conditions for polygons to be similar.</li> <li>Revise grade 10 Midpoint theorems. Prove:</li> <li>Proportionality</li> <li>Equiangular triangles are similar.</li> </ul>				44 %
27/3 – 31/3	Euclidian Geometry	<ul style="list-style-type: none"> <li>Triangles with sides in proportion are similar.</li> <li>Pythagorean Theorem by similar triangles.</li> </ul>				48 %
<b>TERM 2</b>				<b>2 TASKS TERM 2</b>		
18/4 – 21/4 (4 days)	Euclidian Geometry	Use : <ul style="list-style-type: none"> <li>Proportionality and Midpoint Theorems.</li> <li>Equiangular triangles are similar.</li> </ul>				52 %
24/4 – 28/4 (3 days)	Trigonometry	<ul style="list-style-type: none"> <li>Solve problems in two and three dimensions.</li> </ul>				56 %
01/5 – 05/5 (4 days)	Functions: Polynomials	<ul style="list-style-type: none"> <li>Factorise third-degree polynomials. Apply the Remainder and Factor Theorems to polynomials of degree at most 3 (no proofs required)(1 day).</li> <li>Intuitive understanding of limit concept.</li> <li>Approximate instantaneous rate of change or gradient of function at a point.</li> </ul>				60 %
08/5 – 12/5	Differential Calculus	<ul style="list-style-type: none"> <li>Limits to define the derivative of a function  <math display="block">f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}</math> </li> <li>First principles.</li> <li>Rules of differentiation.</li> </ul>	F	<b>TEST</b>		64 %
		<ul style="list-style-type: none"> <li>Cubic graphs.</li> <li>Equations of tangents to graphs of functions.</li> <li>Second derivative and concavity.</li> </ul>				68 %
15/5 – 19/5	Differential Calculus	<ul style="list-style-type: none"> <li>Practical problems concerning optimisation, rate of change and motion.</li> <li>Revise Grade 11 Analytical Geometry</li> </ul>				72 %
22/5 – 26/5	Differential Calculus	<ul style="list-style-type: none"> <li>The equation of a circle (any centre)  <math display="block">(x-a)^2 + (y-b)^2 = r^2</math> </li> <li>The equation of a tangent to a circle</li> </ul>				76 %
05/6 – 09/6	<b>JUNE EXAMS</b>	<b>All topics from grade 11 and grade 10 will be examinable in June exam</b>	F	<b>JUNE EXAM</b>		
12/6 – 16/6 (4 days)	<b>JUNE EXAMS</b>					
19/6 – 23/6	<b>JUNE EXAMS</b>					
26/6 – 30/6	Exam corrections				<ul style="list-style-type: none"> <li>Remediation of June examination</li> </ul>	

TERM 3		2 TASKS TERM 3	
24/7 – 28/7	Statistics	<ul style="list-style-type: none"> <li>Revise symmetric and skewed data</li> <li>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.</li> </ul>	80 %
31/7 – 04/8	Statistics	<ul style="list-style-type: none"> <li>Use statistical summaries, scatterplots, regression (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.</li> </ul>	84 %
07/8 – 11/8 (4 days)	Counting and Probability	<ul style="list-style-type: none"> <li>Revise:               <ul style="list-style-type: none"> <li>dependent and independent events;</li> <li>the product rule for independent events: <math>P(A \text{ and } B) = P(A) \times P(B)</math></li> <li>the sum rule for mutually exclusive events A and B: <math>P(A \text{ or } B) = P(A) + P(B)</math></li> <li>the identity: <math>P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)</math></li> <li>the complementary rule: <math>P(\text{not } A) = 1 - P(A)</math></li> </ul> </li> <li>Probability problems using Venn diagrams, trees, two – way contingency tables and other techniques</li> </ul>	<b>F</b>  <b>TEST</b>  <b>SBA marks: 10</b>  <b>88 %</b>
14/8 – 18/8	Counting and Probability	<ul style="list-style-type: none"> <li>Probability problems using Venn diagrams, trees, two – way contingency tables and other techniques</li> <li>Probability problems using fundamental counting principles.</li> </ul>	92 %
21/8 – 25/8	Analytical Geometry	<ul style="list-style-type: none"> <li>Revise Analytical Geometry</li> </ul>	96 %
28/8 – 01/9	Trigonometry	<ul style="list-style-type: none"> <li>Revise trigonometry</li> <li>Revise problems in two and three dimensions</li> </ul>	100 %
04/9 – 08/9	<b>Prelim exam</b>		<b>F</b>  <b>PRELIM EXAM</b>  <b>SBA marks: 25</b>
11/9 – 15/9	<b>Prelim exam</b>		
18/9 – 22/9	<b>Prelim exam</b>		
25/9 – 29/9 (4 days)	<b>Prelim exam</b>		
<b>TERM 4</b>			
09/10 –13/10	Revision		<b>F</b>  <b>25 % SBA</b>  <b>75 %</b>  <b>Final exam</b>
16/10 –20/10	Revision		
23/10 –27/10	Revision		
30/10 – 3/11	<b>FINAL EXAMINATIONS</b>		
06/11 –10/11	<b>FINAL EXAMINATIONS</b>		
13/11 –17/11	<b>FINAL EXAMINATIONS</b>		
20/11 -24/11	<b>FINAL EXAMINATIONS</b>		
27/11 - 01/12	<b>FINAL EXAMINATIONS</b>		

Paper 1	Marks	Paper 2	Marks
Algebra, equations, inequalities	25 ± 3	Statistics	20 ± 3
Patterns and sequences	25 ± 3	Analytical Geometry	40 ± 3
Finance, growth, decay	15 ± 3	Trigonometry	40 ± 3
Functions and graphs	35 ± 3	Geometry and measurement	50 ± 3
Calculus	35 ± 3		
Probability	15 ± 3		
	150		150