GAUTENG PROVINCE
MATHEMATICS – ANNUAL TEACHING PLAN –GRADE 10
Final GRADE 10 ATP 2022 :12 JANUARY 2022

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 1			**2 TASKS FOR TERM 1**			
Week 1 **12/1 – 14/1** **(3 days)**	Algebraic Expression	1. Understand that real numbers can be rational or irrational. 2. Establish between which two integers a given simple surd lies				**3%**
Week 2 **17/1 – 21/1**	Algebraic Expression	3. Round real numbers to an appropriate degree of accuracy. 4. Multiplication of a binomial by a trinomial.				**6%**
Week 3 **24/1 – 28/1**	Algebraic Expression	5. Factorization to include types taught in Grade 9 and: • trinomials • grouping in pairs • sum and difference of two cubes	F	**Investigation / Project)** **SBA marks: 15%**		**9%**
Week 4 **31/1 – 04/2**	Algebraic Expression	6. Simplifying, adding and subtracting algebraic fractions using factorization with denominators of cubes (limited to sum and difference of cubes).				**12%**
Week 5 **07/2 – 11/2**	Exponents, equations and inequalities	1. Revise laws of exponents learnt in Grade 9 where $x, y > 0; m,n \in \mathbf{Z}$: • $x^m \times x^n = x^{m+n}$ • $x^m \div x^n = x^{m-n}$ • $\left(x^m\right)^n = x^{mn}$ • $x^m \times y^m = \left(xy\right)^m$ Also, by definition: $x^{-n} = \dfrac{1}{x^n}$, $x \neq 0$ and $x^0 = 1$, $x \neq 0$ 2. Use the laws of exponents to simplify expressions and solve equations, accepting that the rules also hold for $m,n \in \mathbf{Q}.$ 1. Revise the solution of linear equations. 2. Solve quadratic equations (by factorisation).				**15%**
Week 6 **14/2 –18/2**	Exponents, equations and inequalities	3. Solve simultaneous linear equations in two unknowns. 4. Solve word problems involving linear, quadratic or simultaneous linear equations				**18%**
Week 7 **21/2 – 25/2**	Equations and inequalities	5. Solve literal equations (changing the subject of a formula).				**21%**

		6. Solve linear inequalities (and show solution graphically). Interval notation must be known.				
Week 8 **28/2 – 04/3**	Euclidean Geometry	1. Revise basic results established in earlier grades regarding lines , angles and triangles , especially the similarity and congruence of triangles				**24%**
Week 9 **07/3 – 11/3**	Euclidean Geometry	2. Investigate alternative definitions of various polygons (including the isosceles, equilateral and right-angled triangle) 3. Define the following special quadrilaterals the Kite, parallelogram, rectangle, rhombus, square and trapezium. 4. Investigate and make a conjecture about the properties of the sides , angles, diagonals and areas of these quadrilaterals.	**F**	**Test** **SBA marks: 14%**		**27%**
Week 10 **14/3 – 17/3** **(4 days)**	Euclidean Geometry	The following proofs are examinable • The opposite sides and angles of a parallelogram are equal. • The diagonals of a parallelogram bisect each other. • If one pair of opposite sides of a quadrilateral are equal and parallel the quadrilateral is a parallelogram.				**30%**
END OF TERM 1 SCHOOLS CLOSES ON 17/03/2022						

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 2				**2 TASKS FOR TERM 2**		
Week 1 05/4 – 08/4 (4 days)	Trigonometry	1. Define the trigonometric ratios $sin\theta, cos\theta$ and $tan\theta$ Using the right – angled triangle. 2. Extend the definitions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ for $0° \leq \theta \leq 360°$. 3. Define the reciprocal of the trigonometric ratios $cosec\theta, sec\theta$ and $cot\theta$, using the right – angled triangles(these three reciprocals should be examined in grade 10 only)				**33%**
Week 2 11/4 –15/4 (4 days)	Trigonometry	4. Use a diagram to determine the numerical values of ratios for angles from 0° to 360° 5. Derive values of the trigonometric ratios for the special cases (without using a calculator $\theta \in \{0°; 30°; 45°; 60°; 90°\}$				**36%**
Week 3 18/4 – 22/4 (4 days)	Trigonometry	6. Solve simple trigonometric equations for angles between 0° and 90° 7. Solve two dimensional Problems involving right-angled triangles				**39%**
Week 4 25/4 – 29/4 (4 Days)	Number patterns	Patterns: Investigate number patterns leading to those where there is a constant difference between consecutive terms, and the general term (without using a formula-see content overview) is therefore linear.		**ASSIGNMENT** SBA marks: **15%**		**42%**
Week 5 02/5 – 06/5 (4 days)	Functions (including trigonometric Functions	1.The concept of a function, where a certain quantity (output value) uniquely depends on another quantity (input value). Work with relationships between variables using tables, graphs, words and formulae. Convert flexibly between these representations. **Note**: that the graph defined by $y = x$ should be known from Grade 9.				**45%**
Week 6 09/5 – 13/5	Functions (including trigonometric Functions	2. Point by point plotting of basic graphs defined by $y = x^2,\quad y = \dfrac{1}{x}$ and $y = b^x; b > 0$ and $b \neq 1$				**48%**

Week	Topic	Content		SBA		%
		to discover shape, domain (input values), range (output values), asymptotes, axes of symmetry, turning points and intercepts on the axes (where applicable).				
Week 7 16/5 – 20/5	Functions (including trigonometric Functions)	2. Point by point plotting of basic graphs defined by $y = x^2, \quad y = \dfrac{1}{x}$ and $y = b^x; b > 0$ and $b \neq 1$ to discover shape, domain (input values), range (output values), asymptotes, axes of symmetry, turning points and intercepts on the axes (where applicable).	F			51%
Week 8 23/5 – 27/5	Functions (including trigonometric Functions)	3. Investigate the effect of a and q on the graphs defined by $y = a.f(x) + q$, where $f(x) = x$, $f(x) = x^2$, $f(x) = \dfrac{1}{x}$ and $f(x) = b^x, b > 0, b \neq 1$. Sketch graphs find the equations of given graphs and interpret graphs. **Note**: Sketching of the graphs must be based on the observation of the effect of a and q				55%
Week 9 30/5 – 03/06	Functions (including trigonometric Functions)	Study the effect of a and q on the graphs defined by: • $y = a\sin\theta + q$; • $y = a\cos\theta + q$; and $\theta \in [0°; 360°]$		**TEST** **SBA marks: 14%**		58%
Week 10 06/6 – 10/6	Functions (including trigonometric Functions)	• $y = a\tan\theta + q$ where a and $q \in Q$ and $\theta \in [0°; 360°]$. 6. Sketch graphs find the equations of given graphs and interpret graphs. **Note**: Sketching of the graphs must be based on the observation of the effect of a and q.				61%
Week 11 13/6 – 17/6 (3 days)	Measurement	1.Revise the volume and surface areas of right-prisms and cylinders. 2. Study the effect on volume and surface area when multiplying any dimension by a constant factor k.	F			64%
Week 12 20/6 – 24/6	Measurement	3. Calculate the volume and surface areas of spheres, right pyramids, right cones and combination of those objects (figures).				67%

END OF TERM 2 SCHOOLS CLOSES ON 24/06/2022

DATE	TOPIC	CONTENT	F	ASSESSMRNT	Date Completed	% Completed
TERM 3				**2 TASKS FOR TERM 3**		
Week 1 19/7 –22/7 (4days)	Statistics	1. Revise measures of central tendency in ungrouped data. 2. Measures of central tendency in grouped data: calculation of mean estimate of grouped and ungrouped data and identification of modal interval and interval in which the median lies. 3. Revision of range as a measure of dispersion and extension to include percentiles, quartiles, inter-quartile and semi-inter-quartile range.				**70%**
Week 2 25/7 – 29/7	Statistics	4. Five number summary (maximum, minimum and quartiles) and box and whisker diagram. 5. Use the statistical summaries (measures of central tendency and dispersion), and graphs to analyse and make meaningful comments on the context associated with the given data. 6. Represent the data on bar graphs, line graphs and Histogram				**73%**
Week 3 01/8 –05/8	Probability	1.The use of probability models to compare the relative frequency of events with the theoretical probability.				**76%**
Week 4 08/8 – 12/8 (3 days)	Probability	2. The use of Venn diagrams to solve probability problems, deriving and applying the following for any two events in a sample space S: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$; A and B are Mutually exclusive if $P(A \text{ and } B) = 0$; A and B are complementary if they are mutually exclusive; and $P(A) + P(B) = 1$. Then $P(B) = P(not(A)) = 1 - P(A)$		**TEST** **SBA marks: 14**		**79%**
Week 5 15/8 - 19/8	Finance and growth	1. Use the simple and compound growth formulae [$A = P(1 + in)$ and $A = P(1 + i)^n$] to solve problems, including interest, hire purchase, inflation, population growth and other real-life problems.				**82%**
Week 6 22/8 – 26/8	Finance and growth	2.Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel).				**85%**
Week 7 29/8 – 02/9	Analytical Geometry					**88%**

		Represent geometric figures on a Cartesian co-ordinate system. Derive and apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ the formulae for calculating the: 1. distance between the two points;				
Week 8 05/9 – 09/9	Analytical geometry	2. gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines); and 3. Coordinates of the mid-point of the line segment joining the two points.				**91%**
Week 9 12/9 – 16/9	**Euclidean Geometry**	**The following proofs are examinable** • The diagonals of a rectangle are equal. • The diagonals of a rhombus bisect each other at right angle and bisect the interior angles. •	F	**TEST** **SBA marks: 14%**		**94%**
Week 10 19/9 – 23/9	**Euclidean Geometry**	**The following theorem is examinable** • The line segment joining the midpoints of two sides of a triangle is parallel to the third side and equal to half the length of the third side Solve problems and prove riders using the properties of parallel lines, triangles and quadrilaterals				**97%**
Week 11 26/9 – 30/9	**Euclidean Geometry**	Solve problems and prove riders using the properties of parallel lines, triangles and quadrilaterals				**100%**
END OF TERM 3 SCHOOLS CLOSES ON 30/09/2022						

DATE	TOPIC	CONTENT	F	ASSESSMRNT	Date Completed	% Completed
TERM 4				**1 TASK FOR TERM 4**		
Week 1 11/10 – 14/10 (4days)	**Revision**					
Week 2 17/10 – 21/10	**Revision**		F	**TEST** **SBA marks: 14%**		
Week 3 24/10 – 28/10	**Revision**					
Week 4 31/10 – 04/11	**Revision**					
Week 5 07/11 – 11/11	FINAL EXAMINATIONS			SBA: **25 %** Final exam: 75%		
Week 6 14/11 – 18/11	FINAL EXAMINATIONS					
Week 7 21/11 – 25/11	FINAL EXAMINATIONS					
Week 8 28/11 – 02/12	FINAL EXAMINATIONS					
Week 9 05/12 – 09/12	REPORTING					
Week 10 12/12 – 16/12 (3Days0	REPORTING					
	END OF TERM 4 SCHOOLS CLOSES 14/ 12 / 2022 : END OF YEAR					

7

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**

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.

NB:

- # 7 SBA TASKS TO BE COMPLETED IN 2022

THE TASKS ARE AS FOLLOWS: SBA

TERM	SBA TASKS	WEIGNTING
1	Investigation/Project	15%
	Test	14%
2	Assignment	15%
	Test	14%
3	Test	14%
	Test	14%
4	Test	14%
	WEIGHTING	**100%**