basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 1)

TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
TOPICS	Exponents and surds		Equations and inequalities				Trigonometry (reduction formulae, trig equations & general solutions)				
DATE COMPLETED											
SBA	**Investigation or project & test (content of Term 1)**										

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 2)

TERM 2	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
TOPICS	Euclidean Geometry				Analytical Geometry		Functions (including trigonometric functions)				
DATE COMPLETED											
SBA	**Assignment & mid-year exam**										

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 3)

TERM 3	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
TOPICS	Trigonometry (sine, cosine and area rules)			Statistics		Probability			Finance, growth and decay		
DATE COMPLETED											
SBA	**Test**					**Test**					

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 4)

TERM 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	EXAM	
TOPICS	Number patterns			**Revision of measurement**	**Revision of Algebra**	**Revision of Trigonometry**	**Examination**				**PAPER 1 150 marks 3 hours**	
DATE COMPLETED											**Algebraic Expressions, equations and inequalities**	**45**
SBA	**Test**										**Number patterns**	**25**
											Finance, growth and decay	**15**
											Functions and graphs	**45**
											Probability	**20**
TOTAL NUMBER OF SBA TASKS 7 **TERM 1 INVESTIGATION/PROJECT (15%) AND TEST (14%)** **TERM 2 ASSIGNMENT (15%) AND MID-YEAR EXAM (14%)** **TERM 3 TEST (14%) AND TEST (14%)** **TERM 4 TEST (14%)**											**PAPER 2 150 marks 3 hours**	
											Statistics	**20**
											Analytical Geometry	**30**
											Trigonometry	**50**
											Euclidean Geometry	**50**

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 1)

TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
TOPICS	EXPONENTS AND SURDS		EQUATIONS AND INEQUALITIES				TRIGONOMETRY (REDUCTION FORMULAE, TRIG EQUATIONS & GENERAL SOLUTIONS)				
	1. Simplify expressions and solve equations using the laws of exponents for rational exponents were, $x^{\frac{p}{q}} = \sqrt[q]{x^p}$; $x > 0$, $q > 0$ 2. Add, subtract, multiply and divide simple surds 3. Solve simple equations involving surds		1. Complete the square 2. Solve quadratic equations (by factorisation and by using the quadratic formula) 3. Solve quadratic inequalities in one unknown (interpret solutions graphically). NB: It is recommended that the solving of equations in two unknowns is important to be used in other equations like hyperbola-straight line as this is normal in the case of graphs 4. Equations in two unknowns, one of which is linear and the other quadratic 5. Nature of roots				1. Derive and use the identities: $\tan\theta = \frac{\sin\theta}{\cos\theta}$, $\theta \neq k.90^\circ$, k an odd integer, and $\sin^2\theta + \cos^2\theta = 1$ 2. Derive and use reduction formulae to simplify the following expressions: 2.1. $\sin(90^\circ \pm \theta)$, $\cos(90^\circ \pm \theta)$, 2.2. $\sin(180^\circ \pm \theta)$, $\cos(180^\circ \pm \theta)$ and $\tan(180^\circ \pm \theta)$, 2.3. $\sin(360^\circ \pm \theta)$, $\cos(360^\circ \pm \theta)$ and $\tan(360^\circ \pm \theta)$, 2.4. $\sin(-\theta)$, $\cos(-\theta)$ and $\tan(-\theta)$, 3. Determine for which values of a variable an identity holds 4. Determine the general solutions of trigonometric equations. Also, determine solutions in specific intervals			
DATE COMPLETED											
SBA	**Investigation or project**						**&**			**Test (content of Term 1)**	

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 2)

TERM 2	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
TOPICS	EUCLIDEAN GEOMETRY				ANALYTICAL GEOMETRY		FUNCTIONS (INCLUDING TRIGONOMETRIC FUNCTIONS)				
	1. Accept results established in earlier grades as axioms that a tangent to a circle is perpendicular to the radius drawn to the point of contact 2. Then investigate and prove the theorems of the geometry of circles: • The line drawn from the centre of a circle perpendicular to a chord bisects the chord • The line drawn from the centre of a circle to the midpoint of a chord is perpendicular to the chord • The perpendicular bisector of a chord passes through the centre of the circle • The angle subtended by an arc at the centre of a circle is double the size of the angle subtended by the same arc at the circle (on the same side of the chord as the centre) • Angles subtended by a chord of the circle, on the same side of the chord, are equal • The opposite angles of a cyclic quadrilateral are supplementary • Two tangents drawn to a circle from the same point outside the circle are equal in length • The angle between the tangent to a circle and the chord drawn from the point of contact is equal to the angle in the alternate segment Use the above theorems and their converses, where they exist, to solve riders				1. Revise, • Distance between the two points • Gradient of the line segment connecting the two points (and from that identify parallel and perpendicular lines) • Coordinates of the mid-point of the line segment joining the two points 2. Derive and apply: • 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 $(0^\circ \leq \theta \leq 180^\circ)$		1. Revise the effect of the parameters a and q and investigate the effect of p on the graphs of the functions defined by: 1.1. $y = f(x) = a(x+p)^2 + q$ 1.2. $y = f(x) = \frac{a}{x+p} + q$ 1.3. $y = f(x) = a.b^{x+p} + q$ where $b > 0$, $b \neq 1$ 2. Investigate numerically the average gradient between two points on a curve and develop an intuitive understanding of the concept of the gradient of a curve at a point 3. Point by point plotting of basic graphs defined by $y = \sin\theta$, $y = \cos\theta$ and $y = \tan\theta$ for $\theta \in [-360^\circ, 360^\circ]$ 4. Investigate the effect of the parameter k on the graphs of the functions defined by, $y = \sin(kx)$, $y = \cos(kx)$ and $y = \tan(kx)$ 5. Investigate the effect of the parameter p on the graphs of the functions defined by, $y = \sin(x+p)$, $y = \cos(x+p)$ and $y = \tan(x+p)$ 6. Draw sketch graphs defined by: $y = a\sin k(x+p)$, $y = a\cos k(x+p)$ and $y = a\tan k(x+p)$ at most two parameters at a time			
DATE COMPLETED											
SBA	**Assignment & mid-year exam**										

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 3)

TERM 3	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
TOPICS	TRIGONOMETRY (SINE, COSINE AND AREA RULES)			STATISTICS		PROBABILITY			FINANCE, GROWTH AND DECAY		
	1. Prove and apply the sine, cosine and area rules 2. Solve problems in two dimensions using the sine, cosine and area rules			1. Revise measures of central tendency and dispersion in ungrouped and grouped data 2. Revise five number summary (maximum, minimum and quartiles) and box and whisker diagram 3. Revise histograms 4. Frequency polygons 5. Ogives (cumulative frequency curves) 6. Variance and standard deviation of ungrouped data 7. Symmetric and skewed data 8. Identification of outliers		1. Revise the use of probability models to compare the relative frequency of events with the theoretical probability 2. Revise the use of Venn diagrams to solve probability problems, deriving and applying the following for any two events in a sample space S: • Addition rule $P(A\ or\ B) = P(A) + P(B) - P(A\ and\ B)$, • A and B are mutually exclusive if $P(A\ and\ B) = 0$, addition rule for mutually exclusive events A and B is: $P(A\ or\ B) = P(A) + P(B)$ • A and B are complementary if they are, ➢ mutually exclusive and ➢ $P(A) + P(B) = 1$ Then $P(B) = P(not\ A) = 1 - P(A)$ 3. Identify dependent and independent events and the product rule for independent events: $P(A\ and\ B) = P(A) \times P(B)$ 4. 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. 5. Use tree diagrams for the probability of consecutive or simultaneous events, which are not necessarily independent 6. Use Venn diagrams, tree diagrams and contingency tables to solve real-life problems			1. Revise the use of 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 2. Understand the implication of fluctuating foreign exchange rates (e.g., on the petrol price, imports, exports, overseas travel) 3. 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) 4. The effect of different periods of compound growth and decay, including nominal and effective interest rates		
DATE COMPLETED											
SBA	**Test**					**Test**					

2023/24 ANNUAL TEACHING PLANS: MATHEMATICS: GRADE 11 (TERM 4)

TERM 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	EXAM	
TOPICS	NUMBER PATTERNS			**REVISION OF MEASUREMENT**	**REVISION OF ALGEBRA**	**REVISION OF TRIGONOMETRY**	**EXAMINATION**				**PAPER 1 150 marks 3 hours**	
	Patterns: Investigate number patterns leading to those where there is a constant second difference between consecutive terms and the general term is therefore quadratic			1. Revise the volume and surface areas of right prisms and cylinders 2. Study the effect on volume and surface areas when multiplying any dimension by a constant factor k 3. Calculate volume and surface areas of spheres, right prisms, right cones and combination of those objects (figures)							**Algebraic expressions, equations and inequalities** **Number patterns** **Finance, growth and decay** **Functions and graphs** **Probability**	**45** **25** **15** **45** **20**
DATE COMPLETED											**PAPER 2 150 marks 3 hours**	
SBA	**Test**										**Statistics** **Analytical Geometry** **Trigonometry** **Euclidean Geometry**	**20** **30** **50** **50**
TOTAL NUMBER OF SBA TASKS 7 **TERM 1 INVESTIGATION/PROJECT (15%) AND TEST (14%)** **TERM 2 ASSIGNMENT (15%) AND MID-YEAR EXAM (14%)** **TERM 3 TEST (14%) AND TEST (14%)** **TERM 4 TEST (14%)**												