

2021 National ATP: Grade – Term 1: MATHEMATICS GRADE 10

TERM 1	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Topics	Algebraic expressions				Exponents, equations and inequalities			Euclidean Geometry		
	1. Understand that real numbers can be rational or irrational. 2. Establish between which two integers a given simple surd lies. 3. Round real numbers to an appropriate degree of accuracy. 4. Multiplication of a binomial by a trinomial. 5. Factorization to include types taught in Grade 9 and: <ul style="list-style-type: none"> <li>• trinomials</li> <li>• grouping in pairs</li> <li>• sum and difference of two cubes</li> </ul> 6. Simplifying, adding and subtracting algebraic fractions using factorization with denominators of cubes (limited to sum and difference of cubes).				1. Revise laws of exponents learnt in Grade 9 where $x, y > 0; m, n \in \mathbf{Z}$ : <ul style="list-style-type: none"> <li>• <math>x^m \times x^n = x^{m+n}</math></li> <li>• <math>x^m \div x^n = x^{m-n}</math></li> <li>• <math>(x^m)^n = x^{mn}</math></li> <li>• <math>x^m \times y^m = (xy)^m</math> Also, by definition: <math>x^{-n} = \frac{1}{x^n}, x \neq 0</math> and <math>x^0 = 1, x \neq 0</math></li> </ul> 2. Use the laws of exponents to simplify expressions and solve equations, accepting that the rules also hold for $m, n \in \mathbf{Q}$ . <ol style="list-style-type: none"> <li>1. Revise the solution of linear equations.</li> <li>2. Solve quadratic equations (by factorisation).</li> <li>3. Solve simultaneous linear equations in two unknowns.</li> <li>4. Solve word problems involving linear, quadratic or simultaneous linear equations.</li> <li>5. Solve literal equations (changing the subject of a formula).</li> <li>6. Solve linear inequalities (and show solution graphically). Interval notation must be known.</li> </ol>			1. Investigate and form conjectures about the properties of special triangles, quadrilaterals and other polygons. Try to validate or prove conjectures using any logical method (Euclidean, co-ordinate or transformation geometry from Grade 9) 2. Disprove false conjectures by producing counter-examples 3. Investigate alternative definitions of various polygons (including the isosceles, equilateral and right-angled triangle, the kite, parallelogram, rectangle, rhombus, square and trapezium)		
SBA	Investigation or project					Test				

2021 National ATP: Grade – Term 2: MATHEMATICS GRADE 10

TERM 2	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 9
Topics	Trigonometry		Number patterns	Functions (including trigonometric Functions)				Measurement		
	1. Extend the definitions of $\sin\theta, \cos\theta$ and $\tan\theta$ for $0^\circ \leq \theta \leq 360^\circ$ . 2. Study the effect of $a$ and $q$ on the graphs defined by: $y = a \sin\theta + q$ ; $y = a \cos\theta + q$ ; and $y = a \tan\theta + q$ where $a$ and $q \in \mathbf{Q}$ and $\theta \in [0^\circ; 360^\circ]$ . 3. Sketch graphs, find the equations of given graphs and interpret graphs. <b>Note:</b> Sketching of the graphs must be based on the observation of the effect of $a$ and $q$		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.	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. <b>Note:</b> that the graph defined by $y = x$ should be known from Grade 9. 2. Point by point plotting of basic graphs defined by $y = x^2, y = \frac{1}{x}$ 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). 3. Investigate the effect of $a$ and $q$ on the graphs defined by $y = a.f(x) + q$ , where $f(x) = x, f(x) = x^2, f(x) = \frac{1}{x}$ and $f(x) = b^x, b > 0, b \neq 1$ . Sketch graphs, find the equations of given graphs and interpret graphs. <b>Note:</b> Sketching of the graphs must be based on the observation of the effect of $a$ and $q$				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 $k$ . 3. Calculate the volume and surface areas of spheres, right pyramids, right cones and combination of those objects (figures).		
SBA	Assignment				Test					

2021 National ATP: Grade – Term 3: MATHEMATICS GRADE 10

TERM 3 (37 days)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Topics	Trigonometry (2D)		Statistics		Probability		Finance and growth		Analytical geometry	
	Solve two dimensional Problems involving right-angled triangles.		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. 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.		1. The use of probability models to compare the relative frequency of events with the theoretical 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 $P(B) = P(\text{not}(A)) = 1 - P(A)$		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. 2. Understand the implication of fluctuating foreign exchange rates (e.g. on the petrol price, imports, exports, overseas travel).		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; 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.	
SBA	Test					Test				

2021 National ATP: Grade – Term 4: MATHEMATICS GRADE 10

TERM 3 (38 days)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	EXAM
Topics	Euclidean Geometry		Revision			Examination				Admin	
	Solve problems and prove riders using the properties of parallel lines, triangles and quadrilaterals										PAPER 1
SBA	Test										Algebra 30 Patterns and Sequences 10 Probability 10 Functions and Graphs 30 Finance, growth and decay 15
TOTAL NUMBER OF SBA TASKS 7 Term 1 Investigation / Project (15%) and Test (10%) Term 2 Assignment (15%) and )Test (10%) Term 3 Test (10 %) and Test (10 %) Term 4 Test (10 %)											PAPER 2
											Analytical Geometry 15
											Trigonometry 50
											Euclidean Geometry 20
											Statistics 15