

## 2021 ATP: Grade 10 – Term 1: TECHNICAL MATHEMATICS

TERM 1	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
<b>CAPS Topics</b>	Introduction (Revision of basic algebra)		Number systems (including binary numbers and introduction of complex numbers)			Exponents		Mensuration	Algebraic Expressions	
<b>Topics /Concepts, Skills and Values</b>	1. Simplifying, adding, subtracting, multiplying and division of algebraic fractions with numerators and denominators limited to the polynomials covered in factorisation.		1. Identify rational numbers and convert terminating or recurring decimals into the form $\frac{a}{b}$ where $a, b \in \mathbf{Z}$ and $b \neq 0$ . 2. Understand that simple surds are not rational.			1. Simplify expressions using the laws of exponents for integral exponents. 2. Solve exponential equations (accepting that the laws of exponents hold for real exponents and solutions are not necessarily integral or even rational).		Conversion of units, square units and cubic units.	1. Establish between which two integers a given simple surd lies. 2. Round real numbers to an appropriate degree of accuracy (to a given number of decimal digits). 3. Revise scientific notation. 4. Manipulate algebraic expressions by: <ul style="list-style-type: none"> <li>• multiplying a binomial by a trinomial;</li> <li>• factorising common factor (revision);</li> <li>• factorising by grouping in pairs;</li> <li>• factorising trinomials;</li> <li>• factorising difference of two squares (revision);</li> <li>• factorising the difference and sums of two cubes; and</li> <li>• simplifying, adding, subtracting, multiplying and division of algebraic fractions with numerators and denominators limited to the polynomials covered in factorisation.</li> </ul>	
<b>SBA</b>	Investigation or project							Test		

## 2021 ATP: Grade 10 – Term 2: TECHNICAL MATHEMATICS

TERM 2	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
<b>CAPS Topics</b>	Algebraic Expressions		Equations and inequalities			Trigonometry				
<b>Topics /Concepts, Skills and Values</b>	1. Revise notation (interval, set builder, number line, sets). 2. Adding and subtracting of algebraic terms. 3. Multiplication of a binomial by a binomial. 4. Multiplication of a binomial by a trinomial. 5. Determine the HCF and LCM of not more than three numerical or monomial algebraic expressions by making use of factorisation. 6. Factorisation of the following types: <ul style="list-style-type: none"> <li>• common factors</li> <li>• grouping in pairs</li> <li>• difference of two squares</li> <li>• addition/subtraction of two cubes</li> <li>• trinomials</li> </ul> 7. Do addition, subtraction, multiplication and division of algebraic fractions using factorisation (numerators and denominators should be limited to the polynomials covered in factorisation).		1.1 Revise notation (interval, set builder, number line, sets). 1.2 Solve linear equations. 1.3 Solve equation with fractions.  2. Solve quadratic equations by factorisation  3. Solve simultaneous linear equations with two variables  4.1 Do basic Grade 8 & 9 word problems. 4.2 Solve word problems involving linear, quadratic or simultaneous linear equations.			1. Know definitions of the trigonometric ratios $\sin \theta, \cos \theta$ and $\tan \theta$ , using right-angled triangles for $0^\circ \leq \theta \leq 360^\circ$ . 2. Introduce the reciprocals of the 3 basic trigonometric ratios, $\sin \theta, \cos \theta$ and $\tan \theta$ . 3. Trigonometric ratios in each of the quadrants are calculated where one ratio in the quadrant is given by making use of diagrams. 4. Practise the use of a calculator for questions applicable to trigonometry 5. Solve simple trigonometric equations for angles between $0^\circ$ and $90^\circ$ . 6. Solve two-dimensional problems involving right angled triangles. 7. Trigonometry Graphs: <ul style="list-style-type: none"> <li>• <math>y = a \sin \theta</math>,</li> <li>• <math>y = a \cos \theta</math> and <math>y = a \tan \theta</math> for <math>0^\circ \leq \theta \leq 360</math>.</li> <li>• <math>y = a \sin \theta + q</math> and <math>y = a \cos \theta + q</math> for <math>0^\circ \leq \theta \leq 360</math></li> </ul>				Consolidation
<b>SBA</b>	Test					Test				

2021 ATP: Grade 10 – Term 3: TECHNICAL MATHEMATICS

TERM 3	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
CAPS Topics	Functions and graphs			Euclidean geometry				Analytical Geometry			
	1. Functional notation 2. Generate graphs by means of point-by-point plotting supported by available technology. 3. Drawing of the following functions: a) Linear function b) Quadratic function c) Hyperbola: d) Exponential			1. Revise basic geometry done in Grades 8 and 9. Lines and parallel lines, angles, triangles congruency and similarity. 2. Apply the properties of line segments joining the mid-points of two sides of a triangle. Do practical problems. 3. Know the features of the following special quadrilaterals: the kite, parallelogram, rectangle, rhombus, square and trapezium (apply to practical problems). 4. Pythagoras' theorem • Calculate the unknown side of a right-angled triangle.				Represent geometric figures on a Cartesian co-ordinate system. Apply for any two points $(x_1; y_1)$ and $(x_2; y_2)$ formulae for determining 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); 3. coordinates of the mid-point of the line segment joining the two points; and 4. the equation of a straight line passing through two points. $y=mx+c$		Consolidation	
SBA	Test					Test					

2021 ATP: Grade 10 – Term 4: TECHNICAL MATHEMATICS

TERM 4	Week 1	Week 2	Week 3	Week 4	Week 5	Weeks 6-10																										
CAPS Topics	Circles, angles and angular movement		Finance and growth		REVISION	EXAMS																										
Topics /Concepts, Skills and Values	1. Define a radian 2. Indicate the relationship between degrees and radians, convert radians to degrees or degrees to radians and minutes to radians and radians to degrees and minutes		1. Use the simple and compound growth formulae and to solve problems, including interest hire purchase, inflation, population growth and other real life problems. 2. Understanding the implication of fluctuation foreign exchange rates ( e.g on the petrol price, imports, exports, overseas travel )			All Topics/ Concepts, Skills and Values																										
SBA	TOTAL NUMBER OF SBA TASKS 7 Term 1: Test (10%) and Investigation / Project (15%) Term 2: Test (10%) and Test (10%) Term 3: Test (10%) and Test (10%) Term 4: (10%)		<table border="1"> <thead> <tr> <th colspan="2">Paper 1</th> </tr> <tr> <th>TOPIC</th> <th>MARKS</th> </tr> </thead> <tbody> <tr> <td>Algebra (Expressions, equations and inequalities including nature of roots)</td> <td>60 ± 3</td> </tr> <tr> <td>Functions &amp; Graphs</td> <td>25 ± 3</td> </tr> <tr> <td>Finance, growth and decay</td> <td>15 ± 3</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>100</b></td> </tr> </tbody> </table>		Paper 1		TOPIC	MARKS	Algebra (Expressions, equations and inequalities including nature of roots)	60 ± 3	Functions & Graphs	25 ± 3	Finance, growth and decay	15 ± 3	<b>TOTAL</b>	<b>100</b>	<table border="1"> <thead> <tr> <th colspan="2">Paper 2</th> </tr> <tr> <th>TOPIC</th> <th>MARKS</th> </tr> </thead> <tbody> <tr> <td>Analytical Geometry</td> <td>15 ± 3</td> </tr> <tr> <td>Trigonometry</td> <td>40 ± 3</td> </tr> <tr> <td>Euclidean Geometry</td> <td>30 ± 3</td> </tr> <tr> <td>Mensuration and circles, angles and angular movement</td> <td>15 ± 3</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>100</b></td> </tr> </tbody> </table>		Paper 2		TOPIC	MARKS	Analytical Geometry	15 ± 3	Trigonometry	40 ± 3	Euclidean Geometry	30 ± 3	Mensuration and circles, angles and angular movement	15 ± 3	<b>TOTAL</b>	<b>100</b>
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