

2021 ATP: Grade 11 – 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 | |
|-------------------------------------|---|--------|--------|--|--------|--------|--|---|--------|---|--|
| CAPS Topics | Exponents and surds | | | Equations and inequalities | | | Nature of roots | Logarithms | | Analytical Geometry | |
| Topics /Concepts, Skills and Values | 1. Apply the laws of exponents to expressions involving rational exponents. 2. Add, subtract, multiply and divide simple surds | | | Solve 1. quadratic equations (by factorisation and by using the quadratic formula); 2. equations in two unknowns, one of which is linear and the other quadratic algebraically or graphically. | | | <ul style="list-style-type: none"> Explore the nature of roots through the value of $b^2 - 4ac$. | <ul style="list-style-type: none"> Demonstrate an understanding of the definition of a logarithm and any laws needed to solve real life problems | | <ul style="list-style-type: none"> Use a Cartesian co-ordinate system to determine: <ul style="list-style-type: none"> 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; and the angle of inclination of a line. | |
| SBA | Investigation or project | | | | | | | Test | | | |

2021 ATP: Grade 11 – 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 |
|-------------|---|---|--------|--------|--------|--|--------|--------|--|---------|
| CAPS Topics | Analytical Geometry (continuation) | Functions and graphs | | | | Euclidean Geometry | | | Trigonometry | |
| | <ul style="list-style-type: none"> Use a Cartesian co-ordinate system to determine: <ul style="list-style-type: none"> the equation of a line through one point and parallel or perpendicular to a given line; and the angle of inclination of a line. | 1. Revise the effect of the parameters a and q on the graphs. 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. $y = f(x) = ax^2 + bx + c$ 1.3. $y = \frac{a}{x} + q$ 1.4. $y = a.f(x) = a.b^x + q, b > 0$ and $b \neq 1$ 2. $x^2 + y^2 = r^2$ $y = \pm\sqrt{r^2 - x^2}$ $y = +\sqrt{r^2 - x^2}$ $y = -\sqrt{r^2 - x^2}$ | | | | Accept results established in earlier grades as axioms and also that a tangent to a circle is perpendicular to the radius, drawn to the point of contact. Then investigate and apply the theorems of the geometry of circles: <ul style="list-style-type: none"> The line drawn from the centre of a circle perpendicular to a chord bisects 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; Exterior angle of cyclic quad. is equal to opposite interior angle; Two tangents drawn to a circle from the same point outside the circle are equal in length; Radius is perpendicular to the tangent; and 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. | | | 1. Revise the trig ratios in the solving of right-angle triangle in all 4 quadrants (Grade 10). 2. Apply the sine, cosine and area rules. 3. Solve problems in two dimensions using the sine, cosine and area rules 4. Draw the graphs of the functions defined by: $y = k \sin x,$ $y = k \cos x,$ $y = \sin(kx),$ and $y = \cos(kx).$ | |
| SBA | Assignment | | | | | Test | | | | |

2021 ATP: Grade 11 – 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 |
|--------------------|--|--------|---|--------|--------|--------|---|--------|---|---------|
| CAPS Topics | Trigonometry | | Circles, angles and angular movement | | | | Finance, growth and decay | | Mensuration | |
| | 5. Draw the graphs of the functions defined by $y = \sin(x + p)$ and $y = \cos(x + p)$ 6. Developing the sine and cosine curve. 7. Trigonometric equations. 8. Introduce and apply identities | | <ul style="list-style-type: none"> Angles and arcs Degrees and radians Sectors and segments Angular and circumferential velocity. | | | | Use simple and compound growth/decay formulae $A = P(1 \pm in)$ and $A = P(1 \pm i)^n$ to solve problems (including interest, hire purchase, inflation, population growth and other real life problems). The effect of different periods of compounding growth and decay (including effective and nominal interest rates). | | Solve problems involving volume and surface area of solids studied in earlier grades and combinations of those objects to form more complex shaped solids. 1. Surface area and volume of right prisms, cylinders, pyramids, cones and spheres, and combinations of these geometric objects. 2. The effect on volume and surface area when multiplying any dimension by factor k. 3. Determine the area of an irregular figure using mid-ordinate rule. | |
| SBA | Test | | | | | | Test | | | |

2021 ATP: Term 4: TECHNICAL MATHEMATICS GRADE 11

| TERM 4 | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | EXAM | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------------|--------|--------|--------|-------------------|--------|--------|--------|--------|---------|--|------------------------|--|--|----|----------------------|----|---------------------------|----|-------------------|------------|------------------------|--|--------------------|----|---------------------|----|--------------|----|---|----|-------------------|------------|
| | Revision | | | | Final Examination | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SBA | Test (on revised content) | | | | | | | | | | <table border="1"> <tr> <td>Paper 1 3 hours</td> <td></td> </tr> <tr> <td>Algebraic expressions, equations, inequalities and nature of roots</td> <td>90</td> </tr> <tr> <td>Functions and graphs</td> <td>45</td> </tr> <tr> <td>Finance, growth and decay</td> <td>15</td> </tr> <tr> <td>TOTAL MARK</td> <td>150</td> </tr> </table> <table border="1"> <tr> <td>Paper 2 3 hours</td> <td></td> </tr> <tr> <td>Euclidean Geometry</td> <td>40</td> </tr> <tr> <td>Analytical Geometry</td> <td>25</td> </tr> <tr> <td>Trigonometry</td> <td>50</td> </tr> <tr> <td>Mensuration, Circles, angles and angular movement</td> <td>35</td> </tr> <tr> <td>TOTAL MARK</td> <td>150</td> </tr> </table> | Paper 1 3 hours | | Algebraic expressions, equations, inequalities and nature of roots | 90 | Functions and graphs | 45 | Finance, growth and decay | 15 | TOTAL MARK | 150 | Paper 2 3 hours | | Euclidean Geometry | 40 | Analytical Geometry | 25 | Trigonometry | 50 | Mensuration, Circles, angles and angular movement | 35 | TOTAL MARK | 150 |
| Paper 1 3 hours | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Algebraic expressions, equations, inequalities and nature of roots | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Functions and graphs | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Finance, growth and decay | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL MARK | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paper 2 3 hours | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Euclidean Geometry | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Analytical Geometry | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trigonometry | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mensuration, Circles, angles and angular movement | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL MARK | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 Final Examination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |