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REPUBLIC OF SOUTH AFRICA

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 |
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| CAPS <br> Topics | Exponents and surds |  |  | Equations and inequalities |  |  | Nature of roots | Logarithms |  | Analytical Geometry |
| Topics /Concepts, Skills and Values | 1. Apply the involving <br> 2. Add, subt | onents to onents. and divi | ons <br> surds | Solve <br> 1. quadratic equations (by factorisation and by using the quadratic formula); <br> 2. equations in two unknowns, one of which is linear and the other quadratic algebraically or graphically. |  |  | - Explore the nature of roots through the value of $b^{2}-4 a c$. | - Demonstr definition needed to | tanding of the and any laws problems | - Use a Cartesian co-ordinate system to determine: <br> - the equation of a line through two given points; <br> - 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 |
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| CAPS Topics | Analytical Geometry (continuation) | Functions and graphs |  |  |  | Euclidean Geometry |  |  | Trigonometry |  |
|  | - Use a Cartesian co-ordinate system to determine: 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: <br> 1.1. $y=f(x)=a(x+p)^{2}+q$ <br> 1.2. $y=f(x)=a x^{2}+b x+c$ <br> 1.3. $y=\frac{a}{x}+q$ <br> 1.4. $y=a . f(x)=a . b^{x}+q, b>0$ and $b \neq 1$ $\begin{aligned} & \text { 2. } \quad x^{2}+y^{2}=r^{2} \\ & y= \pm \sqrt{r^{2}-x^{2}} \\ & y=+\sqrt{r^{2}-x^{2}} \\ & y=-\sqrt{r^{2}-x^{2}} \end{aligned}$ <br> 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. <br> Then investigate and apply the theorems of the geometry of circles: <br> - The line drawn from the centre of a circle perpendicular to a chord bisects the chord; <br> - The perpendicular bisector of a chord passes through the centre of the circle; <br> - 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); <br> - Angles subtended by a chord of the circle, on the same side of the chord, are equal; <br> - The opposite angles of a cyclic quadrilateral are supplementary; <br> - Exterior angle of cyclic quad. is equal to opposite interior angle; <br> - Two tangents drawn to a circle from the same point outside the circle are equal in length; <br> - Radius is perpendicular to the tangent; and <br> - 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). <br> 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: $\begin{aligned} & y=k \sin x, \\ & y=k \cos x, \\ & y=\sin (k x), \text { and } \\ & y=\cos (k x), \end{aligned}$ |  |
| SBA | Assignment |  |  |  |  | Test |  |  |  |  |


| TERM 3 | Week 1 Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 |
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| CAPS Topics | Trigonometry | Circles, angles and angular movement |  |  |  | Finance, growth and decay |  | Mensuration |  |
|  | 5. Draw the graphs of the functions defined by $y=$ $\sin (x+p) \text { and } y=\cos (x+p)$ <br> 6. Developing the sine and cosine curve <br> 7.Trigonometric equations. <br> 8. Introduce and apply identities | - Angles and arcs <br> - Degrees and radians <br> - Sectors and segments <br> - Angular and circumferential velocity. |  |  |  | Use simple and compound growth/decay formulae $A=P(1 \pm i n)$ and $A=P(1 \pm i)^{n}$ to solve problems (including interest, hire purchase, inflation, population growth and other real life problems). <br> 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 <br> studied in earlier grades and combinations of those objects <br> to form more complex shaped solids. <br> 1. Surface area and volume of right prisms, cylinders, pyramids, cones and <br> spheres, and combinations of these geometric objects. <br> 2. The effect on volume and surface area when multiplying any dimension <br> by factor $k$. <br> 3. Determine the area of an irregular figure using midordinate rule. |  |
| SBA | Test |  |  |  |  | Test |  |  |  |



