MATHEMATICS

Dear Grade 12 Learner

Preparing for the final Examination requires hard work, working regularly and persistently.

Subject Requirements
You will need the following:
* A Mathematics textbook and Scientific calculator
* Notebook, for Paper 1 and Paper 2 work.
* Study Guide with summaries and a lot of revision
* Access to previous examination question papers and memorandum
* Create a SIYAVULA account, by going to, **https://www.siyavula.com**. This website is free and zero rated by most networks, excellent for revision, consolidation and working through examination questions.

Below are the different topics for each paper. The marks in brackets next to the topic is an indication of the approximate mark on that topic in the final examination paper.

Paper 1

Equations and Inequalities **(25 ± 3 Marks)**
- Quadratic equations and inequalities
- Simultaneous equations
- Exponents & Surds
- Nature of roots

Number Patterns and Sequences **(25 ± 3 Marks)**
- Number patterns (linear, geometric and quadratic)
  - Analysis of differences
  - Arithmetic and geometric sequences and series formulae for n^{th} term and sum to n^{th} terms
  - convergence and sum to infinity

Functions and Graphs **(35 ± 3 Marks)**
- Parabola; hyperbola; exponential functions and their properties
- Transformations of functions: the effect of different parameters
- One-to-one and many to one mappings
- Inverses of functions
- Restricting the domain of the original function

Financial Mathematics **(15 ± 3 Marks)**
- Simple and compound interest
- Logarithms
- Nominal and effective interest rates
- Depreciation (reducing balance and straight line)
- Annuities (present and future value formulae)

Calculus **(35 ± 3 Marks)**
- First principles and "power" rule
- Gradient at a point and tangents to curves
- Concavity/ Second Derivative
- Cubic graphs
- Applications (maxima and minima; rate of change)

Probability **(15 ± 3 Marks)**
- Probability and Relative Frequency
- Rules and Identities for Dependent & Independent Event
- Venn diagrams; Tree diagrams; Contingency tables
- Counting principle; factorial notation, permutations
- The counting principle in solving probability problems

Paper 2

Statistics **(20 ± 3 Marks)**
- Mean, median & mode (Grouped & ungrouped data)
- Variance and Standard Deviation
- Quartiles
- Five Number Summary & Box and Whisker Plots
- Cumulative Frequency & Ogive
- Histograms & Frequency Polygon
- Scatter Plots
- Least Squares Regression Line
- Correlation Coefficient

Analytical Geometry **(40 ± 3 Marks)**
- Distance, Midpoint & gradient formula
- Parallel and Perpendicular line criteria
- Inclinations and equation of a line
- Circles and tangent

Trigonometry **(50 ± 3 Marks)**
- Definitions, basic identities, reduction formulae; special angles
- Compound and double angle formulae
- Identities and equations (general solution as well as specific solution)
- Solution of triangles and problems in 2D and 3D
- Trigonometric graphs: trigonometric functions and their transformations

Euclidean Geometry **(40 ± 3 Marks)**
- Circle geometry
- Ratio and proportion
- Similarity of triangles

Assessment
School Based Assessment consists of 6 formal assessment tasks.
Your final mark will be compiled as follows:
- SBA: 25% + **100 marks**
  Final exam: 75% **300 marks**
  = 400 marks

School Based Assessment
- **Term 1**: project or investigation (15%); test (15%)
- **Term 2:** assignment(15%); June Exam (15%)
- **Term 3**: test (15%) and a trial examination (25%)

Final Examination
- Two 3 hour papers which are out of 150 marks each.

Tip:
- Ensure that you are fully acquainted with your calculator and know how to calculate the standard deviation, the least squares regression function and the correlation coefficient.
- Ensure you are familiar with the information sheet. Which formulae are on it and where these formulae are on the page.

To access the examination guideline with acceptable reasons for Geometry:
https://wcedeportal.co.za/eresource/160436

To access previous Mathematics National Examination papers go to:
http://bit.ly/Gr12MathsPapers

Revision Material Per Topic:
https://bit.ly/GR12TERMREVMAT