



**GIRLS' HIGH SCHOOL
MATHEMATICS DEPARTMENT**

Form 4 Accelerated & 5 Academic Year 2025-2026

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Term 1

Topics	Learning objectives
Relations & Functions	<ol style="list-style-type: none"> 1. Define a Relation 2. Specify a relation by <ol style="list-style-type: none"> a. Listing the ordered pair b. Use as an equation c. Drawing a graph d. Drawing an arrow diagram 3. Identify types of relations such as 1-1 relations and $M - 1$, $1 - M$ and $M - M$ relations. 4. Compare and contrast between mappings and function 5. Define a mapping (function) as a many –to-one or one-to-one relation 6. Construct arrow diagrams for given relations, example: $x \rightarrow 2x^2$ 7. Construct tables diagrams for given relations, example: $x \rightarrow 2x^2$ 8. Explain concepts associated with relations 9. Represent a relation in various ways 10. State the characteristics that define a function 11. Use functional notation 12. Distinguish between a relation and a function 13. Derive composite functions 14. State the relationship between a function and its inverse 15. Derive the inverse of a function 16. Evaluate $f(a)$, $f^{-1}(a)$, $fg(a)$, $(fg)^{-1}(a)$ 17. Use the relationship $(fg)^{-1} = g^{-1}f^{-1}$
Statistics & Probability	<ol style="list-style-type: none"> 1. Define the terms statistics, data, raw data 2. Define and Calculate the mean, mode and median of a given set of data 3. Draw a pictograph, line graph, pie chart and bar graph to represent a given set of data 4. Read and interpret pictograph, pie chart, bar graphs and line graphs when given. 5. Draw a simple frequency table for a set of data. 6. Construct a cumulative frequency table for a set of data 7. Determine from the cumulative frequency table, the proportion and/or percentage of the sample above or below a given value 8. Draw and use a cumulative frequency curve (Ogive) 9. Estimate the lower and upper quartile and the median from the graph 10. Draw and interpret a frequency polygon and a histogram 11. Analyze statistical data, commenting on the averages, the spread and the shape of the frequency distribution. Identify the sample space for sample experiments 12. Determine experimental and theoretical probabilities of events make inference(s) from statistics.
Solving Quadratic Equations	<ol style="list-style-type: none"> 1. Solve quadratic equations by factorizing. 2. Solve quadratic equations by completing the square. 3. Solve quadratic equations by using the quadratic formula. 4. Solve word problems involving quadratic equations.

	5. Solve a pair of equations in two variables when one equation is quadratic or non – linear and the other linear
Quadratic Graphs	<ol style="list-style-type: none"> 1. Draw and interpret graphs of a quadratic function to determine: <ol style="list-style-type: none"> a. The roots of a function b. The elements of the domain that have given image c. The image of a given element in the domain d. The solutions of quadratic simultaneous equations e. The maximum or minimum value of the function f. The equation of the axis of symmetry g. The interval of the domain for which the elements of the range may be greater than or less than a given point h. An estimate of the value of the gradient at a given point i. Intercepts of the function j. Maximum or minimum value of a quadratic function expressed in the form $a(x + h)^2 + k$
Circle Theorems	<ol style="list-style-type: none"> 1. Explain the theorems associated with a circle 2. Solve problems using the theorems related to the properties of a circle
Vectors	<ol style="list-style-type: none"> 1. Define a vector 2. Give the different ways in which a vector may be represented 3. Add and subtract vectors using component form, that is, vectors written as 2×1 column matrices 4. Add vectors by the triangle and parallelogram laws 5. Multiply a vector by a scalar number 6. Recognize that a scalar may be distributed over addition of vectors 7. Recognize zero vectors and the negative of a vector 8. Determine the magnitude of a vector 9. Identify parallel vectors 10. Associate a position vector $\overrightarrow{OP} = \begin{pmatrix} a \\ b \end{pmatrix}$ with given point P(a, b) where O is the origin (0, 0) and represent this vector on graph 11. Associate a unit vector as a vector of unit length 12. Use vectors to solve problems in geometry (e.g. proving that points are collinear, proving line segments parallel, prove shapes to be a parallelogram, etc)
Variation	<ol style="list-style-type: none"> 1. Represent direct and inverse variations symbolically 2. Perform calculations involving direct and inverse variation 3. Use Variation to solve problems in algebra

Kindly note that all topics covered in Fourth Form will be on the end of term examinations

- **Number Theory and Computation (including Fractions, decimals, percentage)**
- **Approximations**
- **Consumer Math**
- **Lines and Angles**
- **Trigonometry (including angles of elevation & depression & Bearings)**
- **Algebra (including sine and cosine rule)**
- **Circle Measurement**
- **Coordinate Geometry**
- **Matrices**