HIGHFIELDS SCHOOL
CURRICULUM OVERVIEW 2023-2024

SUBJECT: GCSE HIGHER MATHEMATICS **EXAMINATION BOARD:** OCR

AUTUMN TERM 1 - YEAR 9	SPRING TERM 1 - YEAR 9	SUMMER TERM 1 - YEAR 9
- Using and applying Pythagoras' Theorem - Trigonometry – right angled triangles - Add, subtract, multiply and divide inc. decimals - Index notation - Prime factors and HCF/LCM - Fractions inc. algebraic fractions - Percentages; increasing and decreasing, reverse percentages - Use percentages to solve problems	- Circles; parts of a circle, area, sectors - Plot and draw quadratic and cubic graphs - Find the gradient and midpoint of a straight line - Draw and interpret straight line graphs for real life situations - Surface area and volume - Inequality regions	- Describe and transform 2D shapes using single or combined transformations; translation, rotation, enlargement and reflection - Combine transformations - Understand congruence and similarity - Range, mode, median and mean - discrete data - Mode and estimate of mean – continuous data - Bearings and loci - Introduce circle theorem
ASSESSMENT Past GCSE questions based on the above topics.	**ASSESSMENT** Past GCSE questions based on the above topics.	**ASSESSMENT** Past GCSE questions based on the above topics.
AUTUMN TERM 2 - YEAR 9	**SPRING TERM 2 - YEAR 9**	**SUMMER TERM 2 - YEAR 9**
- Perimeter - Circumference of a circle and arc length - Algebra; simplifying, expanding, factorisation, solving equations, substitution, changing the subject - Linear and quadratic inequalities - Simultaneous equations - Using a calculator	- Compound units - Divide a quantity in a given ratio - Solve a ratio problem in context - Solve problems involving direct proportion - Give reasons for angle calculations - Set up and solve equations involving angles - Angles and parallel lines	- Problem solving and reasoning - Probability; probability scale, sample space, Tree diagrams - Use suitable data collection techniques - Produce and interpret charts and diagrams including pictograms, bar charts, pie charts, line graphs, scatter graphs, two way tables, frequency polygons for grouped data and ordered stem and leaf - Recognise correlation and draw and/or use lines of best fit
ASSESSMENT Past GCSE questions based on the above topics.	**ASSESSMENT** Past GCSE questions based on the above topics.	**ASSESSMENT** School Exam. GCSE past paper.

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AUTUMN TERM 1 - YEAR 10	SPRING TERM 1 - YEAR 10	SUMMER TERM 1 - YEAR 10
- Algebra; algebraic fractions, kinematics formulae, functions, forming and solving equations - Indices; negative and fractional - Index Laws - Changing the subject of a formula - Ratio and proportion in different problems and contexts	- Pythagoras' Theorem (2D and 3D) - Congruence and Similarity - Congruence criteria - Trigonometry – right-angled triangles - Trigonometry – sine and cosine rules, exact values - Bounds	- Expanding products of two or more binomials - Factorising quadratic expressions of the form $x^2 + bx + c$ - Simplify algebraic fractions by factorising - Solve quadratic equations algebraically by factorising or using the formula; find approximate solutions using a graph - Inequalities and number lines - Circle graphs
ASSESSMENT Past GCSE questions based on the above topics.	**ASSESSMENT** Past GCSE questions based on the above topics.	**ASSESSMENT** Past GCSE questions based on the above topics.
AUTUMN TERM 2 - YEAR 10	SPRING TERM 2 - YEAR 10	SUMMER TERM 2 - YEAR 10
- Interpret standard form $A \times 10^n$ - Use standard form in calculations with or without a calculator - Use percentages in different problems and contexts, including compound and simple interest - Angles including interior and exterior angles - Circle Theorem - Surds	- Recognise and use types of sequence of triangle, square and cube numbers, arithmetic progressions, Fibonacci type sequences, quadratic sequences and simple geometric progressions - Sequences – linear and quadratic nth term - Co-ordinates and graphs - Simultaneous equations - Parallel and perpendicular line graphs - Velocity-time graphs - Iteration	- Calculate the probability of independent and combined events, including using tree diagrams - Probability and Venn diagrams - Combination of transformations and invariance - Negative and fractional enlargement - Vectors - Area and volume – cones and spheres
ASSESSMENT Past GCSE questions based on the above topics.	**ASSESSMENT** Past GCSE questions based on the above topics.	**ASSESSMENT** School Exam. GCSE past paper.

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AUTUMN TERM 1 - YEAR 11	SPRING TERM 1 - YEAR 11	SUMMER TERM 1 - YEAR 11
- Estimates of mean, median, mode, range, quartiles and interquartile range - Interpret scatter diagrams and correlation - Interpret and construct diagrams for grouped data as appropriate, cumulative frequency graphs and histograms. - Expand products of more than two binomials e.g. $(x + 1)(x – 1)(2x + 1)$ - Solve quadratic simultaneous equations. - Simplify and manipulate algebraic fractions. - Construct a perpendicular bisector. - Construct a bisector of an angle - Apply ruler and compass constructions to construct figures and identify the loci of points, to include real-world	- Apply similarity to calculate unknown lengths - Understand the relationship between lengths, areas and volumes of similar shapes. - Prove that two triangles are congruent using the cases: SSS, ASA, SAS, RHS - Express exponential growth or decay as a formula - Solve and interpret answers in growth and decay problems - Recognise and sketch graphs of exponential functions in the form $y = k^x$ for positive k - Solve simple ratio and proportion problems - Understand the relationship between ratio and linear functions. - Construct tree diagrams, two-way tables or Venn diagrams to solve more complex probability problems **Revision**	**Revision**
ASSESSMENT Past GCSE Exam Paper. Topic list shared including some of the topics above.	**ASSESSMENT** Past GCSE Exam Paper. Topic list shared including some of the topics above.	

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AUTUMN TERM 2 - YEAR 11	SPRING TERM 2 - YEAR 11	SUMMER TERM 2 - YEAR 11
- Recap Pythagoras' theorem in 3D shapes, trigonometry in right angled triangles, sine and cosine rule, exact trigonometric values. - Recognise and sketch the graphs of y = sinx, y=cosx and y= tanx - Perform a sequence of transformations (reflections, rotations or translation) - Perform and recognise enlargements with fractional and negative scale factors. - Identify and sketch translations and reflections of a given graph - Understand addition, subtraction and scalar multiplication of vectors. - Use vectors in geometric arguments and proofs. - Use kinematics formulae. - Rearrange formulae to change the subject - Approximate solutions by iteration - Inverse and composite functions - Use algebra to construct proofs and arguments.	Revision	Revision and final exams
ASSESSMENT 2 Past GCSE Exam Papers.		