HIGHFIELDS SCHOOL

CURRICULUM OVERVIEW 2023-2024

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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 x 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
• Apply laws of indices, including negative and fractional indices • Expand products of more than two binomials e.g. $(x + 1)(x – 1)(2x + 1)$ • Recap factorising quadratic expressions • Simplify and manipulate algebraic fractions • Use a table of values to plot linear, quadratic, polynomial, reciprocal and exponential graphs • Identify the solution sets of linear inequalities • Apply the concepts of average and instantaneous rate of change (gradients of chords or tangents) in numerical, algebraic and graphical contexts • Calculate or estimate areas under graphs • Recognise and sketch quadratic, cubic, reciprocal, exponential and trigonometrical graphs • Identify intercepts and the turning point of graphs of quadratic functions • Find the roots of a quadratic equation algebraically • Recognise and use the equation of a circle with centre at the origin • Identify and sketch translations and reflections of a given • Recap Pythagoras' Theorem in 3D shapes, trigonometry in right angled triangles, sine and cosine rule, exact trigonometric values	• Similar triangles and shapes • Use kinematics formulae • Use iteration to find approximate solutions • Use algebra to construct proofs and arguments • Use angle facts to prove Circle Theorems • **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
• Transformations, including rotation, reflection, enlargement and translation • Understand addition, subtraction and scalar multiplication of vectors • Use vectors in geometric arguments and proofs • Represent a 2-dimensional vector as a column vector and draw column vectors on a square or coordinate grid • Construct the perpendicular bisector of a line and bisector of an angle • Use a ruler and compass to construct figures and identify the loci of points • Understand the terms population and sample • Interpret and construct diagrams for grouped data as appropriate, i.e. cumulative frequency graphs and histograms • Calculate estimates of mean, median, mode, range, quartiles and interquartile range from graphical representation of grouped data • Draw and interpret box plots • Construct tree diagrams, two-way tables or Venn diagrams to solve more probability problems • Use the addition law for mutually exclusive events	**Revision**	**Revision and final exams**
ASSESSMENT 2 Past GCSE Exam Papers.		