WHSB **MATHEMATICS** LOWER SCHOOL CURRICULUM MAP

Westcliff High School for Boys

KEY STAGE TWO PRIOR LEARNING INFORMS

YEAR 7

1

CONTENT
Number Theory
Algebraic Expressions and Formulae
2D Shapes and 3D Solids
Equations

SKILLS
Calculator and Number Skills
Calculating Perimeter, Area and Volume
Drawing to Scale
Solving Equations
Writing Equations and Formulae
Problem Solving

Baseline test in 1st half term
4 Directed Revision Questions
4 Unit Tests
2 Mental Maths Tests

2

CONTENT
Sequences and Graphs
Fractions
Angles and Shapes

SKILLS
Identifying Patterns
Plotting and Interpreting Graphs
Converting between Fractions, Decimals and Percentages
Accurate Drawing and Measuring
Problem solving
Revision of all skills

3 Directed Revision Questions
3 Unit Tests
2 Mental Maths Tests

3

CONTENT
Unit Conversions
Ratio and Proportion
Decimals
Data Analysis and Representation

SKILLS
Multiplicative Reasoning
Number Skills
Analysing and Displaying Data
Problem solving

3 Directed Revision Questions
3 Unit tests
End of Year Examination (all skills tested)

YEAR 8

1

CONTENT
Factors and Powers
Rounding and Estimation
Working with Powers
2D Shapes & 3D Solids
Linear Graphs

SKILLS
Developing fluency with algebra
Solving equations from context
Accuracy in calculations
Plotting and Interpreting graphs
Problem solving

4 Directed Revision Questions
4 Unit Tests
2 Mental Maths Tests

2

CONTENT
Transformations and Scale Factors
Decimals and Percentages
Loci and Constructions

SKILLS
Manipulation of 2D shapes
Working with percentages, percentage changes and multipliers
Accuracy in geometric constructions
Problem solving

3 Directed Revision Questions
3 Unit Tests
2 Mental Maths Tests

3

CONTENT
Probability
Scale Drawing and Measures
Real Life Graphs

SKILLS
Probabilistic Reasoning
Accurate drawing and measuring
Plotting and interpreting graphs
Critical analysis of real-life data
Problem solving

3 Directed Revision Questions
3 Unit tests
End of Year Examination (all skills tested)

YEAR 9

1

CONTENT
Powers and Roots
Quadratics
Inequalities, Equations and Formulae
Collecting and Analysing data

SKILLS
Index and surd laws
Linear and quadratic sequences
Expanding and factorising double brackets
Solving linear/quadratic equations and linear inequalities
Algebraic manipulation
Calculating measures of location and spread

3 Directed Revision Questions
3 Unit Tests
2 Mental Maths Tests

2

CONTENT
Non-Linear Graphs
Accuracy and Measures
Graphical Solutions

SKILLS
Identify and plotting non-linear graphs
Compound measures and unit conversions
Interpreting distance-time graphs
Error interval calculations
Estimating solutions using graphical methods
Solving linear simultaneous equations

3 Directed Revision Questions
3 Unit Tests
2 Mental Maths Tests

3

CONTENT
Trigonometry
Multiplicative reasoning
Mathematical reasoning

SKILLS
Using trigonometric ratios to solve problems
Applying properties of trigonometric graphs
Direct and inverse proportion
Algebraic proof through mathematical reasoning

4 Directed Revision Questions
4 Unit tests
End of Year Examination (all KS3 skills tested)

WHSB **MATHEMATICS** MIDDLE SCHOOL CURRICULUM MAP

Westcliff High School for Boys

LOWER SCHOOL PRIOR LEARNING INFORMS

YEAR 10

1

CONTENT
Circle Theorems
Congruence and Similarity
Probability
Data Handling
Vectors

SKILLS
Mathematical Communication
Visualising Data
Data Analysis and Interpretation
Proof
Problem Solving

4 Assessed Homeworks
4 Unit Tests

2

CONTENT
Quadratics
Algebraic Fractions
Graphs

SKILLS
Algebraic Manipulation
Problem Solving
Proof
Algebraic Probability
Interpreting Graphs
Modelling using Graphs

3 Assessed Homeworks
3 Unit Tests

3

CONTENT
Area and Volume
Advanced Trigonometry
3D Trigonometry

SKILLS
Problem Solving
Applications of Trigonometry
Accuracy in Calculations
Finding Error Intervals in Calculations

2 Assessed Homeworks
2 Unit Tests
End of Year Examinations

YEAR 11

1

CONTENT
Catch up review of Year 10 (Covid)
Rational and Irrational Numbers
Surd Manipulation
Tangents to Graphs
Area Under a Graph
Sequences and Proportion

SKILLS
Equation manipulation
Algebraic Substitution
Efficient Calculator Use
Problem Solving

3 Assessed Homeworks
3 Unit Tests
1 Summative Assessment
Trial Examinations

2

CONTENT
Quadratic Simultaneous Equations
Tangents to Circles
Iteration
Quadratic Inequalities
Ratio Problems
Function Notation
Graph Transformations

SKILLS
Graph Sketching
Problem Solving
Algebraic Manipulation

3 Assessed Homeworks
3 Unit Tests

3

CONTENT
Catchup and Revision

SKILLS
Developing Exam Technique

Public Examinations

GCSE EXAMINATION BOARD: EDEXCEL

LINKS TO A-LEVEL STUDY:

There are several topics studied at GCSE that form the basis of topics studied at A-Level. For example, expanding brackets leads to binomial expansions, solving quadratic equations leads to the factor theorem and finding the tangent to a curve leads to differentiation and speed/distance/time calculations leads to constant acceleration formulae

ENRICHMENT OPPORTUNITIES:

Intermediate Maths Challenge
Maths Society
Maths Feast

WHSB **FURTHER MATHEMATICS** MIDDLE SCHOOL CURRICULUM MAP

Westcliff High School for Boys

LOWER SCHOOL PRIOR LEARNING INFORMS

YEAR 10

1

CONTENT
Circle Theorems
Congruence and Similarity
Probability
Data Handling
Vectors

SKILLS
Mathematical Communication
Techniques to compare Data
Geometric Proof
Problem Solving

4 Assessed Homeworks
4 Unit Tests
1 Summative Assessment

2

CONTENT
Indices and Surds
Binomial Expansion
Completing the Square
Function Notation
Non-Linear Graphs

SKILLS
Algebraic Manipulation
Proof
Graph Sketching

4 Assessed Homeworks
4 Unit Tests

3

CONTENT
Quadratic Equations
The Factor Theorem
Simultaneous Equations
Linear and Quadratic Inequalities
Sequences and Algebraic Proof

SKILLS
Algebraic Proof
Algebraic Manipulation

2 Assessed Homeworks
2 Unit Tests
End of Year Examinations

YEAR 11

1

CONTENT
Coordinate Geometry
Circle Equations and Theorems
Trigonometric Ratios and Functions
Sine and Cosine Rule
Solving Trigonometric Equations
Using Trigonometric Identities
3D Trigonometry Problems

SKILLS
Geometric problem solving

3 Assessed Homeworks
3 Unit Tests
1 Summative Assessment
Trial Examinations

2

CONTENT
Pre-Calculus
Differentiation
Matrices

SKILLS
Rates of change
Estimating the area under a curve
Equations of tangents and normal
Gradient functions and stationary points
Matrix transformations

3 Assessed Homeworks
3 Unit Tests

3

CONTENT
Catchup and Revision

SKILLS
Developing Exam Technique

Public Examinations

GCSE EXAMINATION BOARD: AQA

LINKS TO A-LEVEL STUDY:

There is considerable overlap with the study of Further Mathematics in the Middle School and Mathematics in the Sixth Form. For example, the factor theorem, binomial expansions, coordinate geometry and differentiation are all revisited at A-Level and studied in more depth

ENRICHMENT OPPORTUNITIES:

Intermediate Maths Challenge
Maths Society
Maths Feast

WHSB **MATHEMATICS** SIXTH FORM CURRICULUM MAP

Westcliff High School for Boys

MIDDLE SCHOOL PRIOR LEARNING INFORMS

LOWER SIXTH

1

CONTENT
Algebra
Vectors in 2D and 3D
Coordinate Geometry
Proof and the Binomial Theorem
Kinematics in 1D
Data Handling and Representation
Forces and Connected Particles

SKILLS
Algebraic manipulation
Modelling using vectors
Equations of lines and circles
Developing problem solving skills
Critical analysis of data
Applications of Newton's Laws of Motion

Baseline Test
3 Assessed Homeworks
3 Unit Tests
Formative Assessment

2

CONTENT
Trigonometry and Radians
Differentiation and Integration
Forces and Friction
Probability

SKILLS
Fluency using and developing understanding of trigonometric functions
Gradients, tangents and normals
Working out area under a curve
Further use of Newton's Laws of Motion
Probabilistic analysis

Assessed Homeworks
4 Unit Tests

3

CONTENT
Exponentials and Logarithms
Further Algebra
Differentiation
Variable Acceleration
Distributions and Hypothesis Testing

SKILLS
Sketching graphs
Solving logarithmic equations
Partial fractions/polynomial division
Applications of calculus
Probability distribution and statistical analysis
Advanced problem solving skills

Assessed Homeworks
4 Unit Tests
Formative Assessment
3 EoY Exams

UPPER SIXTH

1

CONTENT
Functions
Sequences and Series
Binomial Expansion
Moments
Projectile Motion

SKILLS
Graph sketching and transformations
Modelling using series
Developing the concept of turning forces
Understanding 2-dimensional motion
Advanced problem solving

4 Assessed Homeworks
4 Unit Tests
Formative Assessment

2

CONTENT
Trigonometry
Parametric Equations
Integration
Numerical Methods
The Normal Distribution
Static Rigid Bodies
Further Kinematics

SKILLS
Applications of trigonometry
Solving equations and algebraic manipulation (parametric to Cartesian)
Probability and statistical analysis
Applications of forces and moments

Trial Examinations
3 Assessed Homeworks
3 Unit Tests

3

CONTENT
Revision

SKILLS
Past Paper Revision

3 Assessed Homeworks

A LEVEL EXAMINATION BOARD:
EDEXCEL

PREPARATION FOR UNIVERSITY AND DESTINATIONS:

KS5 Help Club

ENRICHMENT OPPORTUNITIES:

Senior Maths Challenge
Maths Prefects
Maths Mentor

WHSB **FURTHER MATHEMATICS** SIXTH FORM CURRICULUM MAP

Westcliff High School for Boys

MIDDLE SCHOOL PRIOR LEARNING INFORMS

LOWER SIXTH

1

CONTENT
Further Mechanics- Work, energy and power, strings and springs and Collisions
Vectors-cross product

SKILLS
Manipulate algebra, construct and apply knowledge to solve problems in 3 dimensions
Working with both the real and imaginary planes and representing diagramatically,
Mathematical proof, Vector methods including finding the shortest distance between two points

4 Assessed Homeworks
4 Unit Tests
Formative Assessment

2

CONTENT
Further Mechanics- Work, energy and power, strings and springs and Collisions
Vectors-cross product

SKILLS
Modelling real life problems and predicting outcomes based on mathematical analysis
Using vector skills to approach geometric problems
Developing trigonometric skills needed

4 Assessed Homeworks
4 Unit Tests

3

CONTENT
De Moivre's theorem and Complex numbers, Volumes of revolution, Inequalities and Series

SKILLS
Calculus skills are developed during this term.
Understanding the differences between inequalities and equations

4 Assessed Homeworks
4 Unit Tests
EoYExams

UPPER SIXTH

1

CONTENT
Hyperbolic functions, methods in calculus, polar coordinates, conic sections, differential equations

SKILLS
Polar and cartesian geometries. Working with exponentials. Solving second order differential equations

Formative Assessment
4 Assessed Homeworks
4 Unit Tests

2

CONTENT
t-formula, Taylor series, methods in calculus, numerical methods

SKILLS
Applying & using the t-formula.
Deriving & using Taylor series. Applying & using Leibnitz's theorem, L'Hopital's rule, Weierstrauss substitution
Applying Euler's method & Simpson's rule

4 Assessed Homeworks
4 Unit Tests

3

CONTENT
Revision

SKILLS
Past paper revision

4 Assessed Homeworks
4 Unit Tests

A LEVEL EXAMINATION BOARD:
EDEXCEL

PREPARATION FOR UNIVERSITY AND DESTINATIONS:

KS5 Help Club

ENRICHMENT OPPORTUNITIES:

Senior Maths Challenge
Maths Prefect
Maths Mentor