TENBURYHIGH
ORMISTON ACADEMY

Curriculum Overview for Mathematics

Year 10 (Higher)

<table>
<tr>
<td rowspan="4">

SP4-SP5: Continuous Data and Set Theory & Logic

Disciplinary knowledge

- Calculating measures of central tendencies
- Calculating distribution
- Define continuous data
- Use of the number line
- Plan thinking and processes before starting

Procedural knowledge

- Presenting and analysing sets of continuous data through box plots
- Presenting and analysing sets of continuous data through histograms
- Presenting and analysing sets of continuous data through cumulative frequency graphs
- Estimate measures of location and spread for continuous data
- Represent sets with set notation
- Represent sets with Venn diagrams
- Represent elements of intersections and unions of sets and subsets

Contextual knowledge

- Comparing continuous data sets through charts and summary statistics.
- Reason and problem solve with continuous data
- Solve probability problems using sets
- Represent solutions to linear inequalities using set notation

</td>
<td>  </td>
<td>Reading like a Mathematician
Subject specific vocabulary definitions and choral response
Reading reasoning and problem-solving questions</td>
</tr>
<tr>
<td>  </td>
<td>Axis , Class interval, Cumulative Frequency, Frequency Density, Histogram, Inequalities, Key, Omission, Total, Two-way tables, Lower Quartile, Median, Upper Quartile, Mean, Mode, Range, Interquartile range, Box plot, universal set, set, complement, intersection, union, subset, Mutually exclusive, Probability, Greater than or equal to (≥), Greater than (>), Less than (<), Less than or equal to (≤), Inequality</td>
</tr>
<tr>
<td>  </td>
<td>End of unit assessment with feedback lesson to address misconceptions
Content from this unit will be included in the formal mock assessment</td>
</tr>
<tr>
<td>  </td>
<td>1 hour of Sparx Maths homework needs to be completed every week

Revision for formal assessment using provided revision booklet</td>
</tr>
</table>

TENBURY HIGH
ORMISTON ACADEMY

NP14: Number Theory **Declarative Knowledge** • recall Highest Common Factor (HCF) • recall Lowest Common Multiple (LCM) • categorise decimals as terminating or recurring • identify degree of accuracy for rounding **Procedural Knowledge** • represent numbers as a product of their prime factors • finding HCF/LCM using prime factors • convert fractions into terminating decimals • convert fractions into recurring decimals (H) • round numbers to a given degree of accuracy • identify the lower and upper bounds of a rounded number **Contextual Knowledge** • advanced prime factors - square/cube numbers, using numbers given in factorised form (H) • solve problems applying HCF and LCM • use the product rule to identify how many factors a number has (H) • prove whether a fraction would convert to a recurring or terminating decimal (H) • represent lower and upper bounds as an error interval • calculate with error intervals (H)	   	Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions highest common factor (HCF), lowest common multiple (LCM), rational number, terminating decimal, recurring decimal, truncate, error interval End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment 1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

A11: Advanced Manipulating and Simplifying Expressions **Declarative Knowledge** • Know the rules of indices **Procedural Knowledge** • Simplify expressions using the rules of indices • Expand / multiply multiple brackets • Factorise quadratics • Simplify algebraic fractions • Rearrange complex formulae	  	Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions Polynomial, binomial, exponent, constant, linear, quadratic, cubic, index (indices), power, base End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment

Contextual Knowledge • Reason and problem solve with rules of indices • Reason and problem solve with expanding multiple brackets • Reason and problem solve with simplifying algebraic fractions • Reason and problem solve with rearranging complex formulae		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

A12: Quadratic Graphs and Equations **Declarative Knowledge** • Know the quadratic formula **Procedural Knowledge** • Solve quadratic equations using graphs • Solve quadratic equations using factorising • Solve quadratic equations using the quadratic formula • Solve quadratic equations by completing the square **Contextual Knowledge** • Sketch graphs of quadratics using their key features • Reason and problem solve with quadratic equations		Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions
		parabola roots y-intercept vertex/ turning point
		End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment
		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

TENBURY HIGH
ORMISTON ACADEMY

Curriculum Overview for Mathematics

Year 10 (Crossover)

GM4: Congruence and Similarity **Declarative knowledge:** • Read a column vector • Read a directed line vector **Procedural knowledge:** • Representing a path/translation as a vector (column and directed line), concept and notation • Addition and subtraction of vectors, • Multiplication of a vector by a scalar (parallel vectors) • Magnitude of a vector **Contextual knowledge:** • Interpreting vector addition geometrically • Geometric arguments and proofs using vectors		Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions
		Congruent, transformation, image, vector, similar, translation, enlargement, negative enlargement, fractional enlargement, rotation, reflection, mirror line, axis (pl. axes)
		End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment
		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

A9: Contextual Graphs **Disciplinary knowledge** • Identify x- and y-axes • Recall calculating the gradient of a linear graph • Recall finding the y-intercept of a graph • Recognise units of measurement for speed, distance and time **Procedural knowledge** • Read values from a graph • Interpret the gradient of a contextual graph • Interpret the y-intercept of a contextual graph • Construct contextual graphs from a table of values • Construct speed-time graphs • Construct distance-time graphs		Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions
		x-axis, y-axis, gradient, linear, y-intercept, distance, time, speed, miles per hour (mph), kilometers per hour (km/h), speed-time, distance-time, formula
		End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment
		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

Contextual knowledge • Convert values using a conversion graph, such as currency • Construct contextual graphs from a formula • Interpret speed from a speed-time graph • Interpret distance from a distance-time graph • Reason and problem-solve with contextual graphs		

A10: Advanced Linear Graphs, Equations and Inequalities **Disciplinary knowledge** • Identify axes on a coordinate grid **Procedural knowledge:** • Find the gradient of a line using change in y/change in x • Use the form y=mx+c to draw lines (without plotting points) and to find the root. Sketching linear graphs. • Identify equations of parallel and perpendicular lines. • Solve equations in two variables graphically: know that the points on a line represent the solution set to an equation in two variables, and that the intersection of two lines represents the solution to a pair of simultaneous equations in two variables • Find the solution to a pair of simultaneous equations by elimination and by substitution, and check the solution • Write and solve simultaneous equations from contexts • Find regional solutions to linear inequalities in two variables on a Cartesian grid, including regions formed from multiple inequalities and identifying integer solutions in a region. **Contextual knowledge:** • Advanced y=mx+c questions - is (x,y) on the given line?, finding equations given two points or a point and gradient. Solve problems related to this. • Reason and problem solve with linear graphs, equations and inequalities.		Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions
		y-intercept, x-intercept, root, satisfy, gradient, parallel, perpendicular, intersect, simultaneously, region, boundary
		End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment
		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

TENBURYHIGH
ORMISTON ACADEMY

<table>
<tr>
<td rowspan="4"><u>SP3: Introduction to Probability</u>

Disciplinary knowledge
• Know the language of probability
• Know the notation of probability
• Know the probabilities of mutually exclusive events sum to 1

Procedural knowledge
• Use systematic listing (product rule for counting)
• Record, describe and analyse the frequency of outcomes of simple probability experiments
• Calculate theoretical probability
• Construct theoretical sample spaces
• Calculate the probability of ‘and’ events
• Calculate the probability of ‘or’ events

Contextual knowledge
• Represent possible outcomes on a frequency tree
• Represent possible outcomes on a tree diagram
• Represent possible outcomes on a two-way table
• Represent possible outcomes on a simple Venn diagram
• Use sample space diagrams to calculate probability
• (H) Draw and interpret tree diagrams and associated probabilities for dependent events
• (H) Calculate complex probability problems involving forming and solving algebraic equations
• (H) Calculate ‘given that’ problems</td>
<td>  </td>
<td>Reading like a Mathematician
Subject specific vocabulary definitions and choral response
Reading reasoning and problem-solving questions</td>
</tr>
<tr>
<td>  </td>
<td>Systematic, relative frequency, outcome, event, fair, biased, mutually exclusive, independent, set, universal set, intersection, elements</td>
</tr>
<tr>
<td>  </td>
<td>End of unit assessment with feedback lesson to address misconceptions
Content from this unit will be included in the formal mock assessment</td>
</tr>
<tr>
<td>  </td>
<td>1 hour of Sparx Maths homework needs to be completed every week

Revision for formal assessment using provided revision booklet</td>
</tr>
</table>

TENBURY HIGH
ORMISTON ACADEMY

Curriculum Overview for Mathematics

Year 10 (Foundation)

A6-8: Cartesian Grid, Sequences and Inequalities

Disciplinary knowledge

- Define linear
- Label the x- and y-axis on the Cartesian grid
- Label coordinates
- Define quadratic
- Identify and recognise linear graphs, quadratic graphs and other graphs
- Identify terms in a sequence
- Know the inequality symbols
- Know the axes on a graph (H)
- Know how to read a number line

Procedural knowledge

- Plot coordinates on the Cartesian grid
- Find the midpoint of a linear segment
- Represent number relationships graphically
- Read values from the Cartesian grid
- Draw graphs of y=n and x=n
- Find integer gradients
- Identify parallel lines from their equation
- Continue linear sequences
- Calculate the rule for linear sequences
- Continue non-linear sequences (geometric and Fibonacci)
- Represent a single inequality on a number line
- Read an inequality from a number line
- Represent a restrictive inequality on a number line
- Read a restrictive inequality on a number line
- Solve a linear inequality
- State integer solutions to a linear inequality
- Solve a restricted inequality

Contextual knowledge

- Use the gradient and y-intercept to generate the equation of a linear graph in the form of y=mx+c
- Represent sequence rules as nth term
- Represent sequences in picture sequences
- Solve an inequality where division/multiplication of a negative is required
- Solve a system of linear inequalities
- Form an inequality from a description
- Represent simple inequalities graphically

Reading like a Mathematician
Subject specific vocabulary definitions and choral response
Reading reasoning and problem-solving questions

A6: Cartesian, coordinate, quadrant, 2D, vector, midpoint, segment, quadratic, gradient, y-intercept, equation, parallel

A7: nth term, term, sequence, term-to-term, position-to-term, geometric, Fibonacci, difference

A8: Inequality, < - less than , > - greater than, ≤ - less than or equal to, ≥ - greater than or equal to, = - equal to, ≠ - not equal to, Number Line, Linear Inequality, Solution Set, Integer Solutions, System of Inequalities, Open Circle, Closed Circle, Forming an Inequality

End of unit assessment with feedback lesson to address misconceptions
Content from this unit will be included in the formal mock assessment

1 hour of Sparx Maths homework needs to be completed every week

Revision for formal assessment using provided revision booklet

TENBURY HIGH
ORMISTON ACADEMY

GM4: Congruence and Similarity **Declarative knowledge:** • Read a column vector • Read a directed line vector **Procedural knowledge:** • Representing a path/translation as a vector (column and directed line), concept and notation • Addition and subtraction of vectors, • Multiplication of a vector by a scalar (parallel vectors) • Magnitude of a vector **Contextual knowledge:** • Interpreting vector addition geometrically • Geometric arguments and proofs using vectors		Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions
		Congruent, transformation, image, vector, similar, translation, enlargement, negative enlargement, fractional enlargement, rotation, reflection, mirror line, axis (pl. axes)
		End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment
		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet

SP3: Introduction to Probability **Disciplinary knowledge** • Know the language of probability • Know the notation of probability • Know the probabilities of mutually exclusive events sum to 1 **Procedural knowledge** • Use systematic listing • Record, describe and analyse the frequency of outcomes of simple probability experiments • Calculate theoretical probability • Construct theoretical sample spaces • Calculate the probability of 'and' events • Calculate the probability of 'or' events **Contextual knowledge** • Represent possible outcomes on a frequency tree, tree diagram, two-way table and on a simple Venn diagram • Use sample space diagrams to calculate probability		Reading like a Mathematician Subject specific vocabulary definitions and choral response Reading reasoning and problem-solving questions
		Systematic, relative frequency, outcome, event, fair, biased, mutually exclusive, independent, set, universal set, intersection, elements
		End of unit assessment with feedback lesson to address misconceptions Content from this unit will be included in the formal mock assessment
		1 hour of Sparx Maths homework needs to be completed every week Revision for formal assessment using provided revision booklet