

Subject: Mathematics

These are the objectives a student on each Pathway needs to achieve by the end of year 8, to ensure they are making expected progress:

Pathway 1	Outline of Objective	Outline of Objective	Outline of Objective	Outline of Objective
	<p><u>All objectives included here and all objectives stated in Pathway 2</u></p> <p>Half Term 1A <u>Proportional Reasoning</u></p> <ul style="list-style-type: none"> Express any ratio in the form 1: n Explore direct proportion graphs Multiply and divide mixed numbers Multiply and divide simple algebraic fractions <p>Half Term 3A <u>Developing Geometry</u></p> <ul style="list-style-type: none"> Perform standard construction including perpendiculars Understand and use the properties of diagonals of quadrilaterals 	<p>Half Term 1B <u>Representations</u></p> <ul style="list-style-type: none"> Find the mid-point of a line segment Explore non-linear graphs Use the product rule for counting <p>Half Term 3B <u>Reasoning with Data</u></p> <ul style="list-style-type: none"> Find unknown data values given the mean or changes in the mean Explore histograms for unequal groups Find the median from a table of values 	<p>Half Term 2A <u>Algebraic Techniques</u></p> <ul style="list-style-type: none"> Expand a pair of binomials Solve equations and inequalities with unknowns of both sides Find the rule for the n^{th} term of a linear sequence Explore powers of powers 	<p>Half Term 2B <u>Developing Number</u></p> <ul style="list-style-type: none"> Understand and use surd notation Understand and use negative and simple fractional indices Convert between units of area and volume Use error interval notation

KS3 Assessment – Year 8 Progress Grid

Pathway 2	Half term 1A	Half term 1B	Half term 2A	Half term 2B
	<p><u>Proportional Reasoning</u></p> <p>Ratio and Scale</p> <ul style="list-style-type: none"> Understand ratio and its link to multiplication Use ratio notation Reduce ratios to simplest form Solve ratio problems Calculate the circumference of a circle <p>Multiplicative Change</p> <ul style="list-style-type: none"> Use scale factors, linking to ration, to solve simple direct proportion problems Convert between currencies, including using graphs Draw and interpret scale diagrams and maps <p>Multiplying and dividing fractions</p> <ul style="list-style-type: none"> Multiply and divide fraction by an integer Multiply and divide fraction by a fraction Understand the use of the reciprocal 	<p><u>Representations</u></p> <p>Working in the Cartesian plane</p> <ul style="list-style-type: none"> Plot and interpret straight line graphs Understand and use the equations of a straight line, including parallel to the axes Make links between direct proportion and straight line in the form $y = kx$ Model situations by translating them into expressions, formulae and graphs <p>Representing data</p> <ul style="list-style-type: none"> Draw and interpret scatter graphs Understand correlation Drawn and use lines of best fit Understand grouped and ungrouped, discrete and continuous data Design and use one and two-way tables <p>Probability</p> <ul style="list-style-type: none"> List outcomes using sample space diagrams for one and two events Find probabilities using tables and Venn diagrams 	<p><u>Algebraic Techniques</u></p> <p>Brackets, equations and inequalities</p> <ul style="list-style-type: none"> Expand and factories into single brackets Form and use expressions, formulae and identities Form and solve equations and inequalities with and without brackets Distinguish between equations, expressions, formula and identities <p>Sequences</p> <ul style="list-style-type: none"> Generate sequences using more complex rules, e.g. with brackets and squares terms, both in words and algebraically <p>Indices</p> <ul style="list-style-type: none"> Form expressions using indices Understand and use the addition and subtraction rules 	<p><u>Developing Number</u></p> <p>Fractions and percentages</p> <ul style="list-style-type: none"> Develop understanding of fractions, decimals and percentages Evaluate percentage increases and decreases Use multipliers to solve percentage problems Express one number as a percentage of another <p>Standard index form</p> <ul style="list-style-type: none"> Convert between numbers in ordinary and standard form Compare numbers given in standard form Calculate with numbers given in standard form, with and without a calculator <p>Number sense</p> <ul style="list-style-type: none"> Develop mental strategies Convert between metric measures and units Estimation, including rounding to a given number of decimal places Use the order of operations
	<p><u>Half term 3A</u> <u>Developing Geometry</u></p> <p>Angles in parallel lines and polygons</p> <ul style="list-style-type: none"> Review Y7 angles rules Understand and use parallel lines and angles Revisit geometric notation 	<p><u>Half term 3B</u> <u>Reasoning with Data</u></p> <p>The data handling cycle</p> <ul style="list-style-type: none"> Understand and use primary and secondary sources of data Collect data, including using questionnaires 		

KS3 Assessment – Year 8 Progress Grid

- Work out angles in special quadrilaterals
 - Find and use the sum interior and exterior angles of a polygon
 - Prove simple geometric facts
- Area of a trapezia and circles
- Review area of shapes covered in year 7
 - Calculate the area of a trapezium
 - Calculate the area of a circle, and the area of parts of a circle
 - Use significant figures
 - Calculate the area of compound shapes
- Line of symmetry and reflection
- Recognise line symmetry in polygons and other shapes
 - Reflect shapes in horizontal, vertical and diagonal lines
- Interpret and construct statistical diagrams, including multiple bar charts
 - Construct and interpret pie charts
 - Compare distributions using charts
 - Identify misleading graphs
- Measures of location and dispersion
- Revisit the median and mean, including finding the total given the mean
 - Find the mean of grouped data
 - Work out the mode and modal class
 - Choose the appropriate average
 - Comparing distributions using measures

Pathway 3

<u>Half term 1A</u>	<u>Half term 1B</u>	<u>Half term 2A</u>	<u>Half term 2B</u>
<u>Proportional Reasoning</u>	<u>Representations</u>	<u>Algebraic Techniques</u>	<u>Developing Number</u>
<p>Ratio and Scale</p> <ul style="list-style-type: none"> • Understand ratio and its link to multiplication • Use ratio notation • Reduce ratios to simplest form • Solve ratio problems • Calculate the circumference of a circle 	<p>Working in the Cartesian plane</p> <ul style="list-style-type: none"> • Plot and interpret straight line graphs • Understand and use the equations of a straight line, including parallel to the axes 	<p>Brackets, equations and inequalities</p> <ul style="list-style-type: none"> • Expand and factories into single brackets • Form and use expressions, formulae and identities 	<p>Fractions and percentages</p> <ul style="list-style-type: none"> • Develop understanding of fractions, decimals and percentages • Evaluate percentage increases and decreases • Express one number as a percentage of another
<p>Multiplicative Change</p> <ul style="list-style-type: none"> • Use scale factors, linking to ration, to solve simple direct proportion problems • Convert between currencies 	<p>Representing data</p> <ul style="list-style-type: none"> • Draw and interpret scatter graphs • Design and use one and two-way tables 	<p>Sequences</p> <ul style="list-style-type: none"> • Generate sequences using more complex rules, e.g. with brackets and squares terms 	<p>Standard index form</p> <ul style="list-style-type: none"> • Convert between numbers in ordinary and standard form • Compare numbers given in standard form
<p>Multiplying and dividing fractions</p> <ul style="list-style-type: none"> • Multiply and divide fraction by an integer 	<p>Probability</p> <ul style="list-style-type: none"> • List outcomes using sample space diagrams for one and two events 	<p>Indices</p> <ul style="list-style-type: none"> • Form expressions using indices • Understand and use the addition and subtraction rules 	<p>Number sense</p> <ul style="list-style-type: none"> • Develop mental strategies • Convert between metric measures and units

KS3 Assessment – Year 8 Progress Grid

- Multiply and divide fraction by a fraction

- Find probabilities using tables and Venn diagrams

- Estimation, including rounding to a given number of decimal places
- Use the order of operations

Half term 3A Developing Geometry

Angles in parallel lines and polygons

- Review Y7 angles rules
- Understand and use parallel lines and angles
- Revisit geometric notation
- Work out angles in special quadrilaterals

Area of a trapezia and circles

- Review area of shapes covered in year 7
- Calculate the area of a trapezium
- Calculate the area of a circle, and parts of a Circle, i.e. Semi-Circle, Quarter of a Circle.
- Use significant figures
- Calculate the area of compound shapes

Line of symmetry and reflection

- Recognise line symmetry in polygons and other shapes
- Reflect shapes in horizontal and vertical lines

Half term 3B Reasoning with Data

The data handling cycle

- Understand and use primary and secondary sources of data
- Collect data, including using questionnaires
- Interpret and construct statistical diagrams, including multiple bar charts

Measures of location and dispersion

- Revisit the median and mean, including finding the total given the mean
- Choose the appropriate average