

What are the aims and intentions of this curriculum?

The aim of our Key Stage 4 curriculum is to ensure that all pupils: i) become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. ii) reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language iii) can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	Statistics	<ul style="list-style-type: none"> Pictogram (Review) Bar Chart including dual/comparative Pie Chart Stem and Leaf Frequency Polygon Scatter Graph <p>(Respectful Relationships Cyberbullying and Performance)</p> <p>Career Integration- Economists, Scientists, Researchers and Data Journalists</p> <p>Key Words: Mean, mode, median, range, midpoint, frequency, pictogram, stem and leaf, bar chart, composite. midpoint, frequency, correlation, extrapolation, estimate, interpolation, causation, line of best fit.</p>	<ul style="list-style-type: none"> Calculate averages from a set of data and from tables. Draw and interpret a pictogram, bar chart, pie chart and stem and leaf diagram. Draw and Interpret Frequency Polygons Interpret a scatter diagram 	<p>Exam questions carousel</p> <p>Prove it</p> <p>Peer Assessment</p> <p>Reflection Paragraph</p> <p>Teacher Assessment</p> <p>Exit Cards</p>

	<p>Probability</p> <ul style="list-style-type: none"> • Sampling • Probability Scales • Sample Space Diagrams • Two-way tables • Frequency Tree • Tree Diagram • Venn Diagram 	<ul style="list-style-type: none"> • Sampling • Expected Outcomes • Probability Scales (Review) • Frequency of outcomes of probability experiments using tables and frequency trees. • Randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments. • Relate relative expected frequencies to theoretical probability, using appropriate language and the 0–1 probability scale • Enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams. <p>Key Words: Certain, Unlikely, Likely, Impossible, Probability Scale, Equally Likely, Biased, Fair, Relative Frequency, Expected Frequency, Trial, Outcome, Event, Probability, Dependent, Independent, mutually exclusive Conditional, Tree Diagrams, Sample Space, Outcomes, Union, Intersection, Sets, Universal, Abstract, Notation, Probability, Outcomes, Complement</p> <p>Career Integration: Meteorologist, Insurance agents, researchers, etc.</p> <p>Intervention Session: Construction and Loci</p>	<ul style="list-style-type: none"> • Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling • Distinguish between events which are impossible, unlikely, even chance, likely, and certain to occur. • Represent events and/or probabilities on a probability scale. • Write probabilities in words or fractions, decimals and percentages. • Construct sample space tables and using them to calculate probabilities • Complete and use two-way tables • Using frequency trees to show probabilities of two events and calculate the probability of independent and dependent events. • Calculate theoretical probabilities and expected frequencies • Recognising mutually exclusive events and know that the probabilities of mutually exclusive exhaustive events sum to 1. • Construct and identify relationships amongst sets in Venn diagrams. 	<p>Roll the Dice Q&A table session</p> <p>Statistics Project</p> <p>Transum Online Activity</p> <p>On-going worksheets (RAG)</p> <p>Self-Assessment-Success Criteria</p> <p>Workbook Activities</p> <p>Summative Assessments</p> <p>MathsWatch Activities</p> <p>Step by Step Round Table</p> <p>Peer Assessment Board</p> <p>Mini whiteboards/Traffic Cards</p> <p>One Question Quiz</p> <p>Online Quizzes</p>
--	---	--	--	---

			<ul style="list-style-type: none"> Find probability from frequency trees, tree diagrams and Venn diagrams. 	
<p>Autumn 2</p>	<p>Ratio, Proportion and Rates of Change and Graph</p> <ul style="list-style-type: none"> Simple Ratio Exchange Currency Direct and Inverse Proportion Distance, Speed, Acceleration Compound Units 	<ul style="list-style-type: none"> Writing and using ratio Basic first aid- CPR Use a variety of measures in ratio and proportion problems: currency conversion, rates of pay; Direct and Inverse Proportion Distance, speed, acceleration Calculations Distance-time Graphs Calculations with Density and Pressure <p>(Career Integration – Employers, Accountants)</p> <p>Key Words: Distance, Speed, Acceleration, Gradient, Tangent, Force, Density, Pressure, Ratio, Equivalent, Newton, Area, Square units, Metres</p>	<ul style="list-style-type: none"> Write ratios in their simplest form. Share a quantity in a given ratio including three-part ratios. Write ratios in form 1: m or m: 1. Convert currency from one to another. Solving problems involving direct and inverse proportion, including graphical and algebraic representations. Performing calculations with distance, speed and acceleration. Using compound units such as speed, density and pressure 	<p>Self-Assessment T-chart: ‘Separate what you do and don’t understand’</p> <p>‘Detect and correct the error’</p> <p>Step by Step Round Table</p> <p>3-2-1</p> <p>Reflection Paragraph</p> <p>Workbook Activities</p> <p>MathsWatch/ Transum Online activities</p> <p>Summative Test</p>
<p>Spring 1</p>	<p>Vectors</p> <p>Measurement and Geometry (Review)</p>	<ul style="list-style-type: none"> Calculations with vectors. Representing vectors on graphs. <p>Key Words: vector, translation, movement, scalar</p> <p>Career Integration- CAD Engineer, Researcher, Interior Designer</p>	<p>Applying addition, subtraction and multiplication of vectors (by a scalar) and diagrammatic and column representations of vectors.</p> <ul style="list-style-type: none"> Calculate perimeter and area of 2D shapes Calculate the surface area and volume of 3D shapes 	<p>Self-Assessment- Success Criteria</p> <p>Student Portfolio</p> <p>Ticket out the door</p> <p>‘Talking Math’ Talk Show-Students on the panel answer questions related to the topic</p>

		<ul style="list-style-type: none"> • Find area and perimeter of shapes • Surface Area and Volume of 3 dimensional shapes • Plans and Elevation 	<ul style="list-style-type: none"> • Draw the plan and elevation of 3D shapes 	<p>Summative Test</p> <p>Workbook activities</p>
Spring 2	Closing the Gaps	Topic selected based on Gap Analysis	Develop mastery in areas of weaknesses across a wide variety of topics	<p>Reflection Journal</p> <p>Past Paper Questions</p> <p>Peer Assessment-Step by Step Round Table</p> <p>Summative Test</p>
Summer 1	Exam Revision	Revision for GCSE exam	<ul style="list-style-type: none"> • Selecting and applying mathematical and exam techniques to solve problems. • Making deductions and inferences and drawing conclusions. 	<p>Peer and Teacher assessment worksheet</p> <p>Summative Test</p> <p>MathsWatch Activities</p> <p>Online Quiz</p>