



THE WELLS ACADEMY

Maths Curriculum Overview 2022 - 2023

Year	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
7	<p>Overarching Theme: Algebraic Thinking</p> <p>Students will develop a deep understanding of basic algebraic forms.</p> <p>Topics:</p> <ol style="list-style-type: none"> Exploring sequences. Understanding and using algebraic notation. Equality and equivalence. 	<p>Overarching Theme: Place Value and Proportion</p> <p>Students will develop a deep understanding and fluency of numbers in their various forms, exploring powers of 10, and moving freely between different numerical representations.</p> <p>Topics:</p> <ol style="list-style-type: none"> Place value and ordering. Fraction, decimal and percentage equivalence. 	<p>Overarching Theme: Applications of Number</p> <p>Students will build on formal methods of arithmetic and apply these to other areas of maths, such as geometry.</p> <p>Topics:</p> <ol style="list-style-type: none"> Solving problems with addition and subtraction. Solving problems with multiplication and division. Fractions and percentages of amounts. 	<p>Overarching Theme: Directed Number and Fractional Thinking</p> <p>Students will have limited knowledge from KS2 of directed number. This will include working with earlier units of work now including directed number such as algebra. The fractions unit builds on HT2.</p> <p>Topics:</p> <ol style="list-style-type: none"> Directed number. Addition and subtraction of fractions 	<p>Overarching Theme: Lines and Angles</p> <p>Students will build and extend their KS2 knowledge by using various measuring and drawing equipment, they will solve complex problems and use mathematical notation before deepening their understanding by forming chains of reasoning on geometric shapes.</p> <p>Topics:</p> <ol style="list-style-type: none"> Constructing, measuring, and using geometric notation. Developing geometric reasoning. 	<p>Overarching Theme: Reasoning with Number.</p> <p>Students will review and extend their mental strategies and explore ways to simplify complex calculations. FDP will be revisited and applied to the probability unit, meaning students will use their learning and apply to the context of probability. Prime numbers will be explored by using prime factorisation to solve HCF and LCM problems.</p> <p>Topics:</p> <ol style="list-style-type: none"> Developing number sense. Sets and probability. Prime numbers and proof.
Assessment	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests PUMA (standardised maths age test)
8	<p>Overarching Theme: Proportional Reasoning</p> <p>Students will develop their understanding of ratio and scale, apply this learning to gradients and circles before extending their learning by applying to direct proportion. Students have a change to extend their fraction knowledge by revisiting them by multiplying and dividing.</p> <p>Topics:</p> <ol style="list-style-type: none"> Ratio and Scale. Multiplicative change. Multiplying and dividing fractions. 	<p>Overarching Theme: Representations</p> <p>Students will plot coordinates in all four quadrants, plotting straight lines and parallel lines, identifying the equations of those lines. Students will be able to record and interpret data using the appropriate method, know the difference between grouped, ungrouped frequency tables and discrete and continuous data.</p> <p>Topics:</p> <ol style="list-style-type: none"> Working in the cartesian plane Representing data Tables and probability 	<p>Overarching Theme: Algebraic Technique</p> <p>Students will build upon prior knowledge of algebra, they will apply this learning to simplifying, and solving algebraic expressions/equations with brackets, solve and form simple inequalities, generate sequences using a given rule or identify the rule.</p> <p>Students will also use their knowledge of indices and apply this to index laws.</p> <p>Topics:</p> <ol style="list-style-type: none"> Brackets, equations, and inequalities Sequences Indices 	<p>Overarching Theme: Developing Number</p> <p>Students will build upon their knowledge of fractions, decimals and percentages and practise conversions, percentage increase and decrease. Students will also be required to record large and small numbers in standard form and complete calculations. Students will round and estimate calculations using the correct order of operations using varying units of measure.</p> <p>Topics:</p> <ol style="list-style-type: none"> Fractions and percentages Standard Index form Number sense 	<p>Overarching Theme: Developing Geometry</p> <p>Students will develop their knowledge from year 7. Students will be able to calculate the angles in parallel lines and polygons, calculate area of trapeziums and circles and recognise lines of symmetry and reflect shapes through horizontal, vertical, and diagonal lines.</p> <p>Topics:</p> <ol style="list-style-type: none"> Angles in parallel lines and polygons Area of trapezia and circles Line symmetry and reflections 	<p>Overarching Theme: Reasoning with Data.</p> <p>Students will use their knowledge of number and data. Students will demonstrate an ability to draw, interpret and compare distributions using pictograms, bar charts, pie charts and line graphs. Averages including mean, median, mode and range will be explored.</p> <p>Topics:</p> <ol style="list-style-type: none"> The data handling cycle Measure of location
Assessment	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests PUMA (standardised maths age test)



THE WELLS ACADEMY

9F	<p>Students will build on the work they did in Y7 HT6 by formalising their methods of LCM and HCF with Venn diagrams. Students will revisit and extend their work on expressions.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Primes, factors and multiples. 2. Algebraic manipulation. 	<p>Students will extend their knowledge of rounding with an introduction to error intervals. Students will build on the work they did in Y7 and Y8 in geometry to be able to calculate perimeters, areas and volumes of different 2D and 3D shapes leading to a focus on Pythagoras and trigonometry.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Accuracy and rounding. 2. Mensuration 	<p>Students will build on what they did in Y7 on construction where they will be familiar with loci and other construction techniques. Students will also build on previous work on proportion and then be able to use that to solve problems involving different types of proportion</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Geometric constructions and calculations 2. Direct and Inverse Proportion 	<p>Students will build on what they did in Y7 and Y8 on percentages and use that knowledge to be able to calculate percentage changes in a variety of scenarios. This will be extended to look at real life financial situations. Students will build on work they did in Y7 and Y8 on fractions and decimals building on their skills to be able to manipulate between the two and extend their knowledge.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Percentage Change 2. Financial Capability 3. Fractions and Decimals 	<p>Students will also build on work in Y7 and Y8 from solving simple equations to solving equations of higher difficulty. Students will apply their understanding of fractions from Y9 in the topic of probability – how likely events are, and how we analyse that likelihood.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Solving of Equations 2. Probability 	<p>Students will formulate algebraic expressions and look at simple proofs. Students will build on the work they did in Y8 with scales and formalise their learning to include isometric drawing. Students will also build on previous work on indices to then be able to apply that knowledge to work out standard form problems.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Proofs and Formulae 2. 2D and 3D representations 3. Indices and Standard Form
Assessment	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests PUMA (standardised maths age test)
9H	<p>Students will build on the work they did in Y7 HT6 by formalising their methods of LCM and HCF with Venn diagrams. Students will revisit and extend their work on expressions.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Primes, Factors and multiples 2. Algebraic Manipulation 3. 	<p>Students will extend their knowledge of rounding by using estimation techniques and lower and upper bounds to find a maximum or minimum answer for a calculation. Students will study formal ways to find missing angles and sides using Pythagoras and Trigonometry in right angled triangles before building on formal compass and ruler constructions from Y8.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Accuracy and Bounds 2. Pythagoras and Trigonometry 3. Construction and Loci 	<p>Students will develop their understanding of both 2D and 3D shapes, by building on the work from last term using Pythagoras and trigonometry. Students will apply their understanding of fractions from Y7 in the topic of probability – how likely events are, and how to analyse that likelihood. Students will build on previous work on proportion and then be able to use that to solve problems involving different types of proportion and looking the relationship in graphical form</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Circles, Spheres and Pyramids 2. Probability 3. Direct and Inverse Proportion 	<p>Students will build on the percentage work they did in year 8 HT4 on percentages to now be able to find the percentage change between two values. This work will be built on to apply into financial situations.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Percentage change 2. Financial Capability 3. Fractions and Decimals 4. 	<p>Students will extend the Y7 and Y8 work on equations before returning to more formal proofs in geometry.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Algebraic solutions of Equations 2. Geometric Proofs 3. 	<p>Work on proof and algebra will continue with algebraic proof. Students will work with very large and small numbers and how to write these in a comparable form called standard form, also discussing how we can use this technique of writing numbers in scientific examples. This will extend from their work in Y8.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Proofs and Formulae 2. Transformations 3. Standard Form and Indices
Assessment	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests	Unit Tests PUMA (standardised maths age test)	Unit Tests	Unit Tests PUMA (standardised maths age test)



THE WELLS ACADEMY

<p style="text-align: center;">10F (Year 10 studied different units to the current Y9 units that are displayed above)</p>	<p>Students will build on their geometry work from the end of Y10 further by reviewing work from both y7 and y8 all their angle facts, circles and extending into sectors. Students will further continue their geometry work by extending their transformation work from Y8.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Geometry Review 2. Transformations 	<p>Students will extend the vector work they met in transformations to include vector arithmetic. Students will spend some time reviewing important number units to ensure fluency before moving onto using these within bivariate data.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Vectors 2. Direct and Inverse proportion review. 3. Percentage change Review 4. Bivariate Data. 	<p>Students will build on their foundation in data handling from Y8, to be able to understanding the whole data process. Students will build on the work they did in transformations and proportion by looking at similarity.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Collecting, Organising, Presenting and Analysing Data 2. Similar Figures 	<p>Students will build on the work they did in Y8 with scales and formalise their learning to include isometric drawing. Students will build on work in Y7 working on equalities and build that to be able to use inequalities fluently. They will continue to look at linear equations as graphs ahead of the next unit.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. 2D and 3D representations 2. Equations and Inequalities 3. Graphs 	<p>Students will continue looking at non-linear graphs, building on work from Y8 and the last unit. Students will also build on previous work done on different units of measure, using that knowledge to combine them into compound units of speed, density, and pressure.</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Functions and Graphs 2. Compound Units 	<p>Students will take part in their first full set of GCSE papers. Time will be spent revisiting and preparing for these during this term. This work will be determined on a class-by-class basis from their performance over the year so far.</p>
Assessment	Unit Tests	Unit Tests	Unit Tests	Unit Tests	Unit Tests	Full GCSE set of papers
<p style="text-align: center;">10H (Year 10 studied different units to the current Y9 units that are displayed above)</p>	<p>Students will review and extend their understanding of sequences, linking these two straight lines and curves. Students will build on their Y8 work on transformations.</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Sequences 2. Transformations 	<p>Students will review their understanding of straight-line graphs from Y8 ahead of HT3. Students will extend prior learning on compound units ahead of HT3.</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Straight Line review 2. Inequalities 3. Compound Units 	<p>Students will build on the work they did in Y9 on graphical solutions to understand graphs in contexts, including straight-line graphs and those from the real world. Building links with the previous half term. They will further extend the work on vectors from HT1.</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Straight Line graphs 2. Real World Graphs 3. Vectors 	<p>Students will build on their graphing work, to understand all non-linear graphs, including trigonometrical graphs. Students will build on their foundation in data handling from Y8, to be able to understanding the whole data process.</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Non-Linear graphs 2. Bivariate Data 3. Organising, Presenting and Analysing Data 	<p>Students will return to function machines from Y7, to build onto composite functions. Their work from last HT and HT1 will be linked together by transforming graphs. They will further build their geometrical and proportional reasoning in similar figures.</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Functions 2. Transformations of graphs 3. Similar Figures 	<p>Students will formally study circle theorems, links being made to geometric proof and angle facts, trigonometry, and Pythagoras. Probability will be revisited from Y7 and extended.</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Circle Theorems 2. Probability
Assessment	Unit Tests	Unit Tests	Unit Tests	Unit Tests	Unit Tests	Full GCSE set of papers
<p style="text-align: center;">11F (Year 11 studied different units to the current Y9 and Y10 units that are displayed above)</p>	<p>Topics:</p> <ol style="list-style-type: none"> 1. Equations review and solving inequalities 2. Graphs 	<p>Topics:</p> <ol style="list-style-type: none"> 1. Transformations (review) 2. Similar Figures 3. Mensuration (review) 	<p>Topics:</p> <ol style="list-style-type: none"> 1. Compound Units (review) 2. Direct and Inverse Proportion (review) 	<p>Topics:</p> <ol style="list-style-type: none"> 1. Percentage change(review) 2. Fractions and Decimals (review) 3. Functions 	Revision	
Assessment		PPE (Mock exam full set of papers)		PPE (Mock exam full set of papers)		
<p style="text-align: center;">11H (Year 11 studied different units to the current Y9 and Y10 units that are displayed above)</p>	<p>Topics:</p> <ol style="list-style-type: none"> 1. Pythagoras and Trigonometry 2. 3d Trigonometry 3. Trigonometry in Non-right-angled triangles 	<p>Topics:</p> <ol style="list-style-type: none"> 1. Circle Theorems 2. Accuracy and Bounds (review) 3. Circles, spheres, and Pyramids 	<p>Topics:</p> <ol style="list-style-type: none"> 1. Histograms, cumulative frequency, and Box Plots (review) 2. Direct and Inverse Proportion (review) 3. Vectors 	<p>Topics:</p> <ol style="list-style-type: none"> 1. Functions 2. Straight Lines (review) 	Revision	
Assessment		PPE (Mock exam full set of papers)		PPE (Mock exam full set of papers)		