Maths Curriculum Plan – Overview
A macro-enabled excel version of this document with assessment week dates can also be found on the school website.

Maths at Kingstone High School embeds key knowledge and skills by delivering content in small manageable steps, repeated application of the skills and knowledge over time, making connections between topics, and teaching for mastery. The intent is that this builds a comprehensive understanding for students’ future success in maths, so that no matter their ability each student can demonstrate confidence in their maths.

Small Steps: following an adapted White Rose Maths scheme of work the maths curriculum focuses teaching in small steps that form a path of progress within a block of learning. This ensures students are not overwhelmed and supports using a lower cognitive load focused on the key knowledge and skills in each lesson. These small steps are delivered in the form of a Key Question, and Path of Progress that maps the lesson’s learning into a short-term learning journey.

Application: knowledge and skills are applied to varying topics and in novel contexts throughout the course of a block. For example a student may learn the knowledge of what a ‘term’ or ‘expression’ is and looks like, they will then be asked to practice the skill of ‘collecting like terms’ or ‘form an expression’. This is in turn applied into worded, pictoral or geometric contexts such as ‘Write an expression for the perimeter of this shape’ or ‘Danny has *x* 5p coins and *y* 10p coins. Write an expression for the total amount *T* he has.’. This path is followed through each block starting with knowledge, using it in a skill, and applying it within a context. As students progress through school the focus is increasingly on fluency across a range of mathematical skills to be applied into different contexts.

Connections: the curriculum is based around building a confident mathematician that can spot connections between common mathematical structures, and not simply memorise methods. Blocks focus on the mathematical structure of a problem and the connected topics around it. This intent is to support students in method selection by teaching appropriate representations of the mathematical structure inherent in the topic. By using similar representations student will develop increasingly high-resolution schema of their maths by making connections and synthesis of knowledge of skills. For example in Year 8 students take knowledge of coordinates, function machines and expressions, the skills of substitution and plotting coordinates, and connect these previously separate areas of maths into ‘Plotting graphs in the form y = mx + c’.

Mastery: we use visuals and representations to aid students’ understanding, as a picture or model can often replace a lot of isolated methods or procedures. Through KS3, students will use manipulatives or draw out pictures of some of their problems to help embed the mathematical structure into their thinking. This is then built on at KS4 using pictoral prompts. Students will face both variety of questions and banks of questions to build fluency within a topic.

**Assessment Opportunities**

**Formative Assessment:**

Within the maths department we utilise many opportunities to check understanding of students through a block and throughout lessons. Use of *whiteboards* is commonplace as these allow immediate feedback, provide content for class discussion and help iron out misconceptions before they form into wrong thinking. *Starters* into lessons include recap and retrieval. For example *Flashback 4’s* make use of the ‘Last lesson, last week, last month, last year’ model of retrieval and recap. *Skills checks* focus on 10 skills to build up each half term. *Numeracy* starters help to build numerical calculation dexterity. *Questioning* and *class discussion* are vital elements for teachers of assessing students’ abilities and understanding. Students are expected to be able to talk about their maths.

**Summative Assessment:**

Students complete *block assessments* of key knowledge as well as a *termly assessments* covering the entirety of the term’s learning. Block assessments are mostly sat two at a time to encourage students to revise and increase the spacing for retrieval. This ultimately supports recall and preparation for undertaking the GCSE in Year 11. Block assessments are the same regardless of ability throughout Years 7-9, as this supports students to be Grade 5 Ready and continue their learning for KS4. End of Term assessments are divided into CORE or Foundation and Higher. This allows for students to still experience success whilst focusing on what are still key knowledge and skills to be retained.

In Year 10, block and end of term assessments divide into Higher and Foundation assessments, dependent on what is an aspirational best fit for the student to work towards. During Year 11 students move to taking regular short past papers to retrieve previous learning, alongside formative assessment in lesson to ensure learning of new content is still occurring.

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|  | **Term** | **Duration**  | **Topic**  | **Key Skills, Content or Knowledge** | **Summative Assessment** | **Blended Learning** |
| **Year 7** | **Aut. 1**  | **1 weeks** | **Introduction** |   |  |  |
|  | **2 weeks** | **Sequences** | Describe & continue sequences Predict and check next terms Sequences in a table and graphically Linear and non-linear sequence Continue linear sequences Continue non-linear sequences Explain the term-to-term rule Find missing terms (H) | End of term assessment | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Understanding and Using Algebraic Notation** | Find output of single function machine Find input given the output Use diagrams and letter to generalise number operations Use diagrams and letters with single function machines Given an expression, find the function Substitution of values into simple expressions Two-step function machines Use diagrams and letters for two step function machinesGiven an expression, find the function (2 steps) Substitute values into two-step expressionsGenerate sequences from an algebraic ruleRepresent 1-2 steps graphically  | Joint block test during week 7. End of term assessment (penultimate week of term) | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Equality and Equivalence** | Understand equals symbol as 'equal', not 'answer' or an operationSolve one-step equations Understand like/unlike terms Understand 'equivalence' Collect like terms and correctly use 'equivalence' symbol  | MathsWatch weekly homeworks. |
| **Aut. 2** | **3 weeks** | **Fraction, Decimal and Percentage Equivalence** | Represent 10/100/1000'ths on diagrams and number lines Interchange between fraction and decimals on number lines (denominator 10/100/1000) Convert fractions and decimals - fifths and quarters, eighths and thousandths Understand percentage as 'placed out of 100' Convert fluently between simple fractions and percentages Use and interpret pie charts (proportional thinking)Represent fractions on a diagram and number linesIdentify and use simple equivalences in fractions Understand fractions signify division Convert fluently between FDP including calculatorExplore fractions and decimals and percentages >1 | Joint block test during week 3 – 40 minutes. End of term assessment  | MathsWatch weekly homeworks. |
|  | **3 weeks** | **Place value, ordering integers and decimals** | Recognise and write integers up to 1 billion Work out intervals on number lines Round integers to powers of 10 Compare two numbers using symbols, and order a list Find the range of a set of numbers Find the median of a set of numbers Understand decimal place value Position decimals on a number line Round to 1 sf Write 10, 100, 1000 as powers of 10 Investigate negative powers of 10 Write numbers in standard form  | MathsWatch weekly homeworks. |
| **Spr. 1** | **2 weeks** | **Addition and Subtraction** | Properties and mental strategies for of addition and subtractionUse formal methods for addition of integers Use formal methods for addition of decimals Use formal methods for subtraction of integers Use formal methods for subtraction of decimals Choose the most appropriate method: mental strategies, form written or calculator Solve problems in the context of perimeter Solve financial maths problems Solve problems involving tables and timetables Solve problems with frequency trees Solve problems with bar charts and line charts Add and subtract numbers given in standard form  |  | MathsWatch weekly homeworks. |
|  | **3 weeks**  | **Multiplication and Division** | Properties of multiplication and division Understand and use factors Understand and use multiples Multiply and divide integers and decimals by powers of 0.01, 0.1, 10Convert metric units Use formal methods to multiply integers Use formal methods to multiply decimals Use formal methods to divide integers Use formal methods to divide decimals Understand and use order of operations Solve problems using the area of rectangles and parallelograms Solve problems using the area of triangles Solve problems using the area of trapezia Solve problems using the mean Explore multiplication and division in algebraic expressions  | Joint block assessment during week 6 – 40 minutes. End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Fractions and percentages of amounts** | Find a fraction of a given amountUse a given fraction to find the whole and/or other fractionsFind a percentage of a given amount using mental methodsFind a percentage of a given amount using a calculatorSolve problems with fractions greater than 1 and percentage greater than 100% | MathsWatch weekly homeworks. |
|  | **1 weeks** | **Operations with Directed Number** | Understand and use representations of directed numberOrder directed numbers using lines and appropriate symbolsPerform calculations that cross zeroAdd directed numbersSubtract directed number |  | MathsWatch weekly homeworks. |
| **Spr. 2** |  **2 weeks** | **Operations with Directed Number** | Multiplication and division of directed numbers Use a calculator for directed number calculations Evaluate algebraic expressions with directed number Introduce to two-step equations Solve two-step equations Use order of operations with directed numbers Roots of positive numbers Explore higher powers and roots  | Joint block test during week 2 – 40 minutesEnd of term assessment  |  |
|  | **2 weeks** | **Addition and Subtraction of Fractions** | Understand presentations of fractions Convert between mixed numbers and fractions Add and subtract unit fractions with the same denominator Add and subtract fractions with the same denominator Add and subtract fractions from integers expressing the answer as a single fraction Understand and use equivalent fractions Add and subtract fractions where denominators share a simple common multiple Add and subtract improper fractions and mixed numbers Use fractions in algebraic contexts Use equivalence to add and subtract decimals and fractions Add and subtract simple algebraic fractions  | MathsWatch weekly homeworks. |
| **Sum 1** | **3 weeks**  | **Constructing, measuring and using Geometric Notation** | Use labelling conventions for shapes, lines and angles Draw and measure line segments Understand an angle is a measure of a turn and classify types of angle Draw and measure angles up to 360' Identify perpendicular and parallel lines Recognise types of triangles and quadrilaterals Identify polygons up to a decagon Construct triangles using SSS, SAS and ASA Construct more complex polygons Interpret pie charts using proportion Interpret pie charts accurately using a protractor Draw pie charts  | Joint block test during last week of half-term. End of term assessment  | MathsWatch weekly homeworks. |
|  | **3 weeks** | **Developing Geometric Reasoning** | Understand and use sum of angles at a point Understand and use sum of angles on a straight line Understand and use the equality of vertically opposite angles Know and apply the sum of angles in a triangle and quadrilateral Solve angle problems using properties of triangles and quadrilaterals Solve complex (multi-step) angle problems Find and use the angle sum of any polygon (H) Investigate angles in parallel lines (H) Understand and use parallel line angles rules (H)Use known facts to obtain simple proofs (H)  | MathsWatch weekly homeworks. |
| **Sum 2** | **2 weeks** | **Sets and Probability** | Identify and Represent Sets Interpret and create Venn Diagrams Understand the intersection and union of sets Understand the complement of a set (H) Know and use the vocabulary of probability Generate samples spaces for single events Calculate the probability of a single event Understand and use the probability scale Know that the sum of probabilities for all possible outcomes is 1  | Joint block assessment during week 3 – 40 minutes.End of term assessment  | MathsWatch weekly homeworks. |
|  |  | **2 weeks** | **Prime numbers and Proof** | Find and use multiples Identify factors of numbers and expressions Recognise and identify prime numbers Recognise square and triangular numbers Find common factors and the HCF Find common multiples and the LCM Write a number as a product of prime factors Use a Venn diagram to find HCF and LCM Make and test conjectures Use counterexample to disprove a conjecture  | MathsWatch weekly homeworks. |
|  |  | **1 week** | **Developing Number Sense** | Know and use mental strategies for all four operations for integers, decimals and fractionsUse factors to simplify calculationsUse estimation to check mental calculationsUse known number facts to derive other facts | End of term assessment | MathsWatch weekly homeworks. |

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|  | **Term** | **Duration**  | **Topic**  | **Key Skills, Content or Knowledge** | **Summative Assessment** | **Blended Learning** |
| **Year 8**  | **Aut. 1**  | **3 weeks** | **Working in the Cartesian Plan** | Work with coordinates in all four quadrantsIdentify and draw lines parallel to axes (x = a, y = b) Recognise and use the line y = xRecognise and use lines of the form y = kxLink y = kx to direct proportion problems Explore the gradient of the line Recognise y = x + a Explore negative gradients inc. x + y = a Link graphs and sequences Plot graphs of y = mx+c Explore non-linear graphs Find the midpoint of a line segment  | End of term assessment | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Ratio and Scale** | Understand meaning and representation of ratio Use ratio notation Solve problems starting with 1:n Solve problems with ratio in the form m:nDivide in a given ratio Express ratios in their simplest integer form Express ratios in the form 1:n Compare ratios and fractions Understand pi as a ratio Understand gradient as a ratio  | Joint block test end - 40 mins.End of term assessment. | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Multiplicative Change** | Solve direct proportion problems Explore conversion graphs Convert between currencies Explore direct proportion in graphs Explore relationships between similar shapes Understand scale factors as multiplicative representations Draw and inter[ret scale diagrams Interpret maps using scale factors and ratios  | Joint block test - 40 mins.End of term assessment | MathsWatch weekly homeworks. |
| **Aut. 2** | **2 weeks** | **Representing Data** | Draw and interpret scatter graphs Understand and describe linear correlationDraw and use line of best fit Identify non-linear relationships Identify different types of data Read and interpret ungrouped frequency tables Read and interpret grouped frequency tables Represent grouped discrete data Represent continuous data grouped into equal classes Construct and interpret two-way tables  | Joint block test - 40 mins.End of term assessment (penultimate week of term) | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Tables and Probability** | Construct sample spaces for one or more events Find probabilities from a sample space Find probabilities from two-way tables Find probabilities from Venn Diagrams use the product rule for finding total number of possible outcomes  | Joint block test - 40 mins.End of term assessment | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Multiplying and Dividing Fractions** | Represent multiplication of fractions Multiply a fraction by an integer Find the product of a pair of unit fractionsFind the product of a pair of any fractionsDivide an integer by a fraction Divide a fraction by a unit fraction Understand and use the reciprocal Divide any pair of fractions Multiply and divide improper and mixed fractions Multiply and divide algebraic fractions  | End of term assessment | MathsWatch weekly homeworks. |
| **Spr. 1** | **1 week** | **Brackets** | Understand expansion of a bracket is a multiplicative operationexpand a number over a single bracketexpand a variable over a single bracketexpand a term over a single bracket and simplify powersexpand two linear expressions and simplify | Short assessment of a large range of skills and applications of brackets.End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Equations** | Understanding the equals sign means both sides are the sameUnderstand the value of ‘x’ is known as a ‘solution’Solve one step equations including solutions as fractionsSolve two step equationsSolve equations with brackets | Short assessment of a large range of skills and applications of solving equations.End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Sequences** | Generate sequences given a rule in wordsGenerate sequences given a simple algebraic ruleGenerate sequences given a complex algebraic ruleFind the rule for the nth term in a linear sequence | Joint block test with Indices after teaching both units.End of term assessment (penultimate week of term) | MathsWatch weekly homeworks. |
|  | **1 week** | **Indices** | Adding and subtracting expressions with indicesSimplifying algebraic expressions by multiplying indicesSimplifying algebraic expressions by dividing indicesUsing the addition law for indicesUsing the addition and subtraction law for indicesExploring powers of powers | MathsWatch weekly homeworks. |
|  | **1 week** | **Inequalities** | Understand use of the four inequality symbols and use with place value questionsFind integer solutions to simple inequalitiesSolve one and two-step inequalitiesSolve inequalities with unknowns on both sides | Short assessment of a large range of skills and applications of inequalities.End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Forming and Solving Equations** | Understand difference between an expression, equation and a formula.Form simple expressions and equations from pictoral representations or worded problems.Form and solve multi-step equations including unknowns on both sides from worded problems and geometric problems.Form and solve equations from geometric problems including area and perimeter. | Short assessment of a large range of skills and applications of forming and solving equations.End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Fractions and Percentages** | Convert fluently between key fractions, decimals and percentagesCalculate key fractions, decimals and percentages of an amount without a calculatorCalculate fractions, decimals and percentages of an amount using calculator methodsConvert between decimals and percentages greater than 100%Percentage decrease with a multiplierCalculate percentage increase and decrease using a multiplierExpress one number as a fraction or a percentage of another without a calculatorExpress one number as a fraction or a percentage of another using calculator methodsWork with percentage changeChoose appropriate methods to solve percentage problemsFind the original amount given the percentage less than 100%Find the original amount given the percentage greater than 100%Choose appropriate methods to solve complex percentage problems |  | MathsWatch weekly homeworks. |
| **Spr. 2** | **2 weeks** | **Fractions and Percentages** | Block test – 20 minutes.End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Standard Index Form** | Investigate positive powers of 10Work with numbers greater than 1 in standard formInvestigate negative powers of 10Work with numbers between 0 and 1 in standard formCompare and order numbers in standard formMentally calculate with numbers in standard formAdd and subtract numbers in standard formMultiply and divide numbers in standard formUse a calculator to work with numbers in standard formUnderstand and use negative indicesUnderstand and use fractional indices | End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Number Sense** | Round numbers to power of 10, and 1 significant figureRound numbers to a given number of decimal placesEstimate the answer to a calculationUnderstand and use error interval notationCalculate using the order of operationsCalculate with moneyConvert metric measures of lengthConvert metric units of weight and capacityConvert metric units of areaConvert metric units of volumeSolve problems involving time and the calendar | End of term assessment | MathsWatch weekly homeworks. |
| **Sum 1** | **3 weeks**  | **Angles in Parallel Lines and Polygons** | Understand and use basic angles rules and notationInvestigate angles between parallel lines and the transversalIdentify and calculate with alternate and corresponding anglesIdentify and calculate with cointerior anglesSolve complex problems with parallel lines and anglesConstruction of triangle and special quadrilateralsInvestigate the properties of special quadrilateralsIdentify and calculate with sides and angles in special quadrilateralsUnderstand and use sum of exterior and interior angles of any polygonCalculate missing interior angles of regular polygonsProve simple geometric factsConstruct angle and perpendicular bisectors | Joint block test with Area of Trapezia and Circles after teaching next unit.End of term assessment | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Area of Trapezia and Circles** | Calculate area of triangles, rectangles and parallelogramsCalculate area of a trapeziumCalculate perimeter and area of compound shapesInvestigate area of a circleCalculate area of a circle and parts of a circle with and without a calculatorCalculate the perimeter and area of compound shapes inc. circles | Joint block test with Angles in Parallel Lines and PolygonsEnd of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Lines of Symmetry and Reflection** | Recognise line symmetryReflect a shape in a horizontal or vertical touching the shapeReflect a shape in a diagonal line | End of term assessment | MathsWatch weekly homeworks. |
| **Sum 2** | **2 weeks** | **Measures of Location** | Understand and use the mean, median andmodeChoose most appropriate averageFind the mean from an ungrouped freuqnecy table (H)Find mean from grouped frequency table (H)Identify OutliersCompare distributions using averages and the range | Block test – 20 minutesEnd of term assessment | MathsWatch weekly homeworks. |
|  |  | **2 weeks** | **Data Handling Cycle** | Set up a statistical enquiryDesign and criticise questionnairesDraw and interpret pictograms, bar charts and vertical line chartsDraw and interpret multiple bar chartsDraw and interpret pie chartsDraw and interpret line graphsChoose most appropriate diagram for given set of dataRepresent and interpret grouped quantitative dataFind and interpret the rangeCompare distribution using chartsIdentify misleading graphs | End of term assessment | MathsWatch weekly homeworks. |

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|  | **Term** | **Duration**  | **Topic**  | **Key Skills, Content or Knowledge** | **Summative Assessment** | **Blended Learning** |
| **Year 9**  | **Aut. 1**  | **weeks** | **Introduction** |  |  |  |
|  |  | **Forming and Solving Equations** | One and two step equations and inequalitiesEquations and inequalities with bracketsUsing negative numbers in inequalitiesSolve equations with unknowns on both sidesSolve inequalities with unknowns on both sidesEquations in mathematical contexts (perimeter, area etc)Formulae and equations using substitutionRearrange formulae (one-step)Rearrange formulae (two-step)Rearrange complex formulae (H) | Joint block test with straight line graphs around week 4-5.End of term assessment | MathsWatch weekly homeworks. |
|  |  | **Straight Line Graphs** | Use a table of values (R)Compare gradients and interceptsUnderstand and use y = mx+cWrite equations in the form y = mx+cFind equation of a line from a graphInterpret gradient and intercept in real-life graphsModel real-life graphs involving inverse proportionExplore perpendicular lines  | Joint block test with forming and solving equations around week 4-5.End of term assessment | MathsWatch weekly homeworks. |
|  |  | **Testing Conjectures** | Factors, multiples, primes (r) True/False Conjectures about number Expand a pair of binomials Conjectures about algebra Explore the 100 grid (forming patterns) Expand three binomials (H) | End of term assessment | MathsWatch weekly homeworks. |
| **Aut. 2** | **weeks** | **Three-dimensional Shapes** | Know names of 2d and 3d shapes (R)Recognise prisms, edges, vertices, faces etc (R)Draw accurate nets of cuboids and other 3D shapes Recognise nets of prisms Plans and elevations Find area of 2d shapes (R) Surface area of cubes/cuboids/ triangular prisms Surface area of cylinders Volume of cubes and cuboids Volume of prisms Volume of spheres, pyramids, cones (H)  | Block test – 20 minutes.End of term assessment | MathsWatch weekly homeworks. |
|  |  | **Constructions and Congruency** | Draw and measure angles (R) Construct and interpret scale drawings (R)Locus from a point Locus from two points Construct perpendicular bisector Construct perpendicular from a point Locus from two lines Construct angle bisector Construct triangles Identify congruent shapes Identify and explore congruent triangles  | End of term assessment  | MathsWatch weekly homeworks. |
| **Spr. 1** | **2 weeks** | **Numbers** | Integer, real and rational numbers Understand and use surds Work with directed number Solve problems with integers Solve problems with decimals HCF and LCMAdding and subtracting fractions Multiplying and dividing fractions Solving problems with fractions Numbers in standard form  | Joint block test with percentages around week 4-5. 40 minutes.End of term assessment  | MathsWatch weekly homeworks. |
|  |  | **Percentages** | Use the equivalence of fractions, decimals and percentages Calculate percentage increase and decrease Express a change as a percentage Solve 'reverse' percentage problems Recognise and solve percentage problems (NC) Recognise and solve percentage problems (C) Solve problems with repeated percentage change  | Joint block test with Number around week 4-5. 40 minutes.End of term assessment  | MathsWatch weekly homeworks. |
|  |  | **Banking and Finances** | Solve problems with bills and bank statements Calculate simple interest Calculate compound interest Solve problems with VAT Calculate wages and taxes Solve problems with exchange rates Solve unit pricing problems  | End of term assessment  | MathsWatch weekly homeworks. |
|  |  | **Pythagoras Theorem** | Squares and square rootsIdentify the hypotenuse of a right-angled triangleDetermine whether a triangle is right-angledCalculate the hypotenuse of a right-angled triangleUse Pythagoras Theorem on coordinate axesExplore proofs of Pythagoras' TheoremUse Pythagoras Theorem in 3D-shapes |  |  |
| **Spr. 2** |  **weeks** | **Pythagoras Theorem** | Block test. 20 minutes.End of term assessment | MathsWatch weekly homeworks. |
|  |  | **Deduction** | Angles in parallel lines Solving angles problems (using chains of reasoning)Angles problems with algebra Conjectures with angles Conjectures with shapes Link constructions and geometrical reasoning  | End of term assessment  | MathsWatch weekly homeworks. |
| **Sum 1** | **2 weeks**  | **Probability** | Single event probability (R) Relative frequency - including convergenceExpected Outcomes Independent Events Use Tree Diagrams (H) Use Tree Diagrams without replacement (H) Use Diagrams to work out Probabilities  | Joint block test with statistics recap - 40 minutesEnd of term assessment  | MathsWatch weekly homeworks. |
|  | **1 week** | **Statistics recap** | Mode, Median, Range (R)Choosing Appropriate average given the dataMean from tablesMissing mean problemsInterpreting Charts and Graphs | Joint block test with statistics recap - 40 minutesEnd of term assessment  | MathsWatch weekly homeworks. MathsWatch weekly homeworks. |
|  | **2 weeks** | **Ratio and proportion** | Solve problems with direct proportion (R)Direct proportion and conversion graphs Solve problems with inverse proportion Graphs of inverse relationships (H) Solve ratio problems given whole or part or difference Solve best buy problems Solve problems involving ratio and algebra (H)  | Joint block test with statistics recap - 40 minutesEnd of term assessment  |  |
|  | **1 week** | **Rates** | SDT problems without a calculator (fractions)SDT problems with a calculatorUse distance-time graphsDMV problemsRates of flow problemsRates of change and unitsConvert compound units | Joint block test with statistics recap - 40 minutesEnd of term assessment  |  |
| **Sum 2** | **1 week** | **Rates** | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Enlargement and Similarity** | Recognise enlargement and similarity Enlarge a shape by a positive SF Enlarge a shape by a positive SF from a point Enlarge a shape by a positive fractional SFEnlarge by a negative scale factor (H) Work out missing sides and angles in a pair of similar shapes Solve problems with similar triangles Explore ratios in right-angled triangles | Block test – 20 minutes.End of term assessment  | MathsWatch weekly homeworks. |
|  | **1 week** | **Algebraic Representation** | Drawing non-linear graphsInterpreting quadratic graphsInvestigate graphs of simultaneous equationsRepresent simple inequalities on a graph |  | MathsWatch weekly homeworks. |
|  | **2 weeks** | **End of Year Review** |  |  |  |

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|  | **Term** | **Duration**  | **Topic**  | **Key Skills, Content or Knowledge** | **Summative Assessment** | **Blended Learning** |
| **Year 10**  | **Aut. 1**  | **3 weeks** | **Representing Solutions and Equations and Inequalities** | Understand meaning of 'solution' in mat Form and solve one and two step equations Form and solve one and two step inequalities Show solutions to inequalities on a number line Interpret representation on number lines as inequalities Represent solutions to inequalities using set notation (H) Draw straight line graphs Find solutions to equations using straight line graphs Represent solutions to inequalities on a graph (H) Solve quadratic equations by factorisation (H) Solve quadratic inequalities in one variable (H)  | Joint block test.End of term assessment | MathsWatch weekly homeworks. |
|  | **3 Weeks** | **Trigonometry** | Explore ratio in similar right-angled triangles Work fluently with hypotenuse, opposite and adjacent sides Use tangent ratio to find missing side lengths Use the sine and cosine ratios to find missing side lengths Use sine, cosine and tangent ratios to find missing lengths Use sine, cosine and tangent to find missing angles Select appropriate method to solve right-angled triangle problems inc. PythagorasWork with Key Angles in right-angled triangles Use trigonometry in 3D shapes (H) Understand and use the Sine rule for area of a triangle Understand and use sine rule for lengths and angles (H) Understand and use cosine rule to find lengths and angles (H)  | Joint block test.End of term assessment | MathsWatch weekly homeworks. |
| **Aut 2** | **3 Weeks**  | **Simultaneous Equations** | Understand that equations can have more than one solution and determine whether (x,y) is a solution to a pair of equations Solve a pair of linear simultaneous equations by substituting a known variable Solve a pair of linear simultaneous equations by substituting an expression Solve a pair of linear simultaneous equations using graphs Solve a pair of linear simultaneous equations by subtracting or adding equations Use a given equation to derive related facts Solve linear simultaneous equations by multiplying one or two equations Form and solve linear simultaneous equations from given information Check an (x,y) solution to simultaneous equations one linear and one quadratic Solve a pair of simultaneous equations (linear, quadratic) using graphs Solve pair of simultaneous equations (linear, quadratic) algebraicallySolve pair of simultaneous equations involving a third unknown  | Block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **3 Weeks**  | **Congruency, Similarity and Enlargement** | Enlarge a Shape by a Positive Scale FactorEnlarge a shape aby a fractional scale factor Enlarge a shape by a negative scale factor (H) Identify Similar Shapes Work out missing sides and angles in similar shapes Use angles on parallel lines to find missing angles Explore similar triangles Explore area and volume in similar shapes (H) Understand difference between congruency and similarity Understand and use conditions for congruent triangles Prove a pair of triangles are congruent (H)  | End of term assessment | MathsWatch weekly homeworks. |
| **Spr 1** | **2 Weeks** | **Angles and Bearings** | Use cardinal directions and related anglesDraw and interpret scale diagrams Understand and represent bearings Measure and read bearings Make scale drawings using bearings Calculate bearings using angle rules Solve bearings problems using Pythagoras and trigonometry Solve Bearing problems using sine and cosine rules  | Joint block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **2 Weeks** | **Working with Circles** | Recognise and label parts of a circle Calculate fractional parts of a circle Calculate the length of an arc Calculate the area of a sector Circle theorems: angle at centre and circumference (H) Circle Theorems: Angles in a semi-circle (H) Circle Theorem: Angles in the same segment (H) Circle Theorem: Angles in a Cyclic Quadrilateral (H) Understand and use volume of cylinder and cone Understand use volume of sphere Understand and use surface area of a sphere Understand and use surface area of cylinder and cone Solve area and volume problems involving similar shapes (H)  | Joint block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Vectors (Higher classes 2 weeks, Foundation 1 week)** | Understand and represent vectors Use and read vector notation Draw and understand vectors multiplied by a scalar Draw and understand addition and subtraction of vectors Explore vector journeys in shapes (H) Explore quadrilaterals using vectors (H) Understand parallel vectors (H) Explore co-linear points using vectors (H)Use vectors to construct geometric arguments and proofs (H)  | Joint block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **1 week** | **Probability** | Review 4 operations with fractionsReview sum of probabilities and equally likely outcomesUse experimental data to estimate probabilitiesFind probabilities from tables, Venn diagrams and frequency treesConstruct and interpret sample spaces for more than one event (R)Calculate probability with independent eventsUse tree diagrams for independent eventsUse tree diagrams for dependent evens (non-replacement)Construct and interpret conditional probabilities (tree diagrams) (H)Construct and interpret conditional probabilities (Venn and two-way) (H) | Joint block test.End of term assessment. | MathsWatch weekly homeworks. |
| **Spr 2** | **2 Weeks** | **Ratios and Fractions** | Compare quantities using a ratio (R) Link ratios and fractions (R) Share in a given ratio - given total or one part (R) Use ratios and fractions to make comparisons Link ratios and graphs Solve problems with currency conversionLink ratios and scales (R) Use and interpret ratios of the form 1:n and n:1 Solve best-buy problems Combine a set of ratios Link ratio and algebra Ratio in area problems (H) Ratio in volume problems (H) Mixed ratio problems  | Block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **2 Weeks** | **Percentages and Interest** | Convert and compare FDP (R) Work out percentages with and without a calculator (R) Increase and decrease by a given percentage (R) Express one number as a percentage of another (R) Calculate simple and compound interestRepeated percentage change Find the original value after a percentage change (R) Solve problems involving growth and decay Understand iterative processes, ratios and fractions  | End of term assessment. | MathsWatch weekly homeworks. |
| **Sum 1** | **3 Weeks** | **Collecting, Representing and Interpreting Data** | Understand populations and samples Construct a stratified sample (H) Primary and secondary data Construct and interpret frequency tables and polygons, bar charts, two way tables Construct and interpret pie charts Criticise charts and graphs Find and interpret averages from a list and table (R) Construct histograms (H) Construct and interpret stem and lead diagrams Construct and interpret scumulatives frequency diagrams (H) Construct and interpret box plots and compare distributions Construct scatter graphs, understand line of best fit and extrapolation  | Joint block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **2 weeks** | **Non-calculator methods** | Mental and written methods for four operations including fractions (R) Exact answers Rational and irrational numbers (H) Understand and use surds (H) Calculate with surds (H) Rounding to dp's, sf's (R) Estimating calculations (R) Understand limits of accuracy Upper and lower bounds (H) Use number sense Solve financial maths problems Break down and solve multi-step problems | Joint block test.End of term assessment. | MathsWatch weekly homeworks. |
|  | **2 Weeks** | **Types of number and number sequences** | Understand factors, multiples, primes (R)Express number as a product of its prime factors (R)Find HCF and LCM of a set of numbers (R)Describe and continue arithmetic and geometric sequencesExplore other sequencesDescribe and continue sequences involving surds (H)Find nth term of a linear sequence (R)Find rule for nth term of a quadratic sequence (H) | End of term assessment. | MathsWatch weekly homeworks. |
| **Sum 2** | **2 Weeks**  | **Indices and Roots** | Square and cube numbers (R) Calculate higher powers and roots Powers of ten and standard form (R) The addition and subtraction rule for indices (R) Understand and use the power zero and negative indices Work with powers of powers Understand and use fractional indices (H)Calculate with numbers in standard form (R)  | End of year exam | MathsWatch weekly homeworks. |
|  | **2 Weeks** | **Manipulating expressions** | Simplify algebraic expressions (R) Use identities Add and subtract simple algebraic fractions (H) Add and subtract complex algebraic fractions (H) Multiply and divide simple algebraic fractions (H) Multiply and divide complex algebraic fractions (H) Form and solve equations and inequalities with fractions Solve equations with algebraic fractions (H) Represent numbers algebraically Algebraic arguments and proof.  |  | MathsWatch weekly homeworks. |

In Year 11 students complete their GCSE curriculum. Kingstone High School chooses EDUQAS for the maths exam board.

<https://www.eduqas.co.uk/qualifications/mathematics-gcse/#tab_keydocuments>

Students in their final year spend an increasing amount of time reviewing previous material alongside new content to be covered from the national curriculum. In their examination preparation students also are expected to be increasingly independent both in class and at home. This works out in practice as using past papers in lesson, longer time revising content at home, revision for practice assessments in class. To allow for flexibility a guide for teacher planning and student learning is to cover each of the main areas of the maths curriculum. There will be time spent on Algebra, Number (inc. Ratio), Geometry, Probability and Statistics each half-term, with the class teacher choosing appropriate but challenging content for the class, ensuring as much of the curriculum is covered as possible prior to the examinations in Summer.