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.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **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 machines  Given an expression, find the function (2 steps)  Substitute values into two-step expressions  Generate sequences from an algebraic rule  Represent 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 operation  Solve 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 lines  Identify and use simple equivalences in fractions  Understand fractions signify division  Convert fluently between FDP including calculator  Explore 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 subtraction  Use 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, 10  Convert 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 amount  Use a given fraction to find the whole and/or other fractions  Find a percentage of a given amount using mental methods  Find a percentage of a given amount using a calculator  Solve 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 number  Order directed numbers using lines and appropriate symbols  Perform calculations that cross zero  Add directed numbers  Subtract 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 minutes  End 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 fractions  Use factors to simplify calculations  Use estimation to check mental calculations  Use known number facts to derive other facts | End of term assessment | MathsWatch weekly homeworks. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **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 quadrants  Identify and draw lines parallel to axes (x = a, y = b)  Recognise and use the line y = x  Recognise and use lines of the form y = kx  Link 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:n  Divide 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 correlation  Draw 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 fractions  Find the product of a pair of any fractions  Divide 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 operation  expand a number over a single bracket  expand a variable over a single bracket  expand a term over a single bracket and simplify powers  expand 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 same  Understand the value of ‘x’ is known as a ‘solution’  Solve one step equations including solutions as fractions  Solve two step equations  Solve 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 words  Generate sequences given a simple algebraic rule  Generate sequences given a complex algebraic rule  Find 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 indices  Simplifying algebraic expressions by multiplying indices  Simplifying algebraic expressions by dividing indices  Using the addition law for indices  Using the addition and subtraction law for indices  Exploring powers of powers | MathsWatch weekly homeworks. |
|  | **1 week** | **Inequalities** | Understand use of the four inequality symbols and use with place value questions  Find integer solutions to simple inequalities  Solve one and two-step inequalities  Solve 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 percentages  Calculate key fractions, decimals and percentages of an amount without a calculator  Calculate fractions, decimals and percentages of an amount using calculator methods  Convert between decimals and percentages greater than 100%  Percentage decrease with a multiplier  Calculate percentage increase and decrease using a multiplier  Express one number as a fraction or a percentage of another without a calculator  Express one number as a fraction or a percentage of another using calculator methods  Work with percentage change  Choose appropriate methods to solve percentage problems  Find 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 10  Work with numbers greater than 1 in standard form  Investigate negative powers of 10  Work with numbers between 0 and 1 in standard form  Compare and order numbers in standard form  Mentally calculate with numbers in standard form  Add and subtract numbers in standard form  Multiply and divide numbers in standard form  Use a calculator to work with numbers in standard form  Understand and use negative indices  Understand and use fractional indices | End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Number Sense** | Round numbers to power of 10, and 1 significant figure  Round numbers to a given number of decimal places  Estimate the answer to a calculation  Understand and use error interval notation  Calculate using the order of operations  Calculate with money  Convert metric measures of length  Convert metric units of weight and capacity  Convert metric units of area  Convert metric units of volume  Solve 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 notation  Investigate angles between parallel lines and the transversal  Identify and calculate with alternate and corresponding angles  Identify and calculate with cointerior angles  Solve complex problems with parallel lines and angles  Construction of triangle and special quadrilaterals  Investigate the properties of special quadrilaterals  Identify and calculate with sides and angles in special quadrilaterals  Understand and use sum of exterior and interior angles of any polygon  Calculate missing interior angles of regular polygons  Prove simple geometric facts  Construct 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 parallelograms  Calculate area of a trapezium  Calculate perimeter and area of compound shapes  Investigate area of a circle  Calculate area of a circle and parts of a circle with and without a calculator  Calculate the perimeter and area of compound shapes inc. circles | Joint block test with Angles in Parallel Lines and Polygons  End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Lines of Symmetry and Reflection** | Recognise line symmetry  Reflect a shape in a horizontal or vertical touching the shape  Reflect 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 andmode  Choose most appropriate average  Find the mean from an ungrouped freuqnecy table (H)  Find mean from grouped frequency table (H)  Identify Outliers  Compare distributions using averages and the range | Block test – 20 minutes  End of term assessment | MathsWatch weekly homeworks. |
|  |  | **2 weeks** | **Data Handling Cycle** | Set up a statistical enquiry  Design and criticise questionnaires  Draw and interpret pictograms, bar charts and vertical line charts  Draw and interpret multiple bar charts  Draw and interpret pie charts  Draw and interpret line graphs  Choose most appropriate diagram for given set of data  Represent and interpret grouped quantitative data  Find and interpret the range  Compare distribution using charts  Identify misleading graphs | End of term assessment | MathsWatch weekly homeworks. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **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 inequalities  Equations and inequalities with brackets  Using negative numbers in inequalities  Solve equations with unknowns on both sides  Solve inequalities with unknowns on both sides  Equations in mathematical contexts (perimeter, area etc)  Formulae and equations using substitution  Rearrange 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 intercepts  Understand and use y = mx+c  Write equations in the form y = mx+c  Find equation of a line from a graph  Interpret gradient and intercept in real-life graphs  Model real-life graphs involving inverse proportion  Explore 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 LCM  Adding 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 roots  Identify the hypotenuse of a right-angled triangle  Determine whether a triangle is right-angled  Calculate the hypotenuse of a right-angled triangle  Use Pythagoras Theorem on coordinate axes  Explore proofs of Pythagoras' Theorem  Use 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 convergence  Expected 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 minutes  End of term assessment | MathsWatch weekly homeworks. |
|  | **1 week** | **Statistics recap** | Mode, Median, Range (R)  Choosing Appropriate average given the data  Mean from tables  Missing mean problems  Interpreting Charts and Graphs | Joint block test with statistics recap - 40 minutes  End 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 minutes  End of term assessment |  |
|  | **1 week** | **Rates** | SDT problems without a calculator (fractions)  SDT problems with a calculator  Use distance-time graphs  DMV problems  Rates of flow problems  Rates of change and units  Convert compound units | Joint block test with statistics recap - 40 minutes  End 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 SF  Enlarge 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 graphs  Interpreting quadratic graphs  Investigate graphs of simultaneous equations  Represent simple inequalities on a graph |  | MathsWatch weekly homeworks. |
|  | **2 weeks** | **End of Year Review** |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **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. Pythagoras  Work 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) algebraically  Solve 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 Factor  Enlarge 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 angles  Draw 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 fractions  Review sum of probabilities and equally likely outcomes  Use experimental data to estimate probabilities  Find probabilities from tables, Venn diagrams and frequency trees  Construct and interpret sample spaces for more than one event (R)  Calculate probability with independent events  Use tree diagrams for independent events  Use 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 conversion  Link 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 interest  Repeated 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 sequences  Explore other sequences  Describe 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.