Ridgewood High School – Curriculum Overview.

SUBJECT

Year Group	The Key Knowledge that will be explored is…	The Key Skills to be developed are… *(Assessment Objectives?)*	This will be assessed by… *(Formative or Summative?)*
Year 7	• Recognise the place value of any number in an integer up to one billion •Understand and write integers up to one billion in words and figures. • Work out intervals on a number line. • Position integers on a number line. • Round integers to the nearest power of 10. • Compare two numbers using inequality notation • Order a list of integers • Understand place value for decimals • Position decimals on a number line • Compare and order any number up to one billion • Round a number to 1 significant figure •Write 10, 100, 1000 etc as a power of 10 •Write positive integers in the form A x 10^n • Investigate negative powers of 10 • Write decimals in the form A x 10^n" • Properties of addition and subtraction • Mental strategies for 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, formal written or calculator • Solve problems in the context of perimeter • Solve financial maths problems • Add and subtract numbers given in standard form • Properties of multiplication and division • Understand and use factors • Understand and use multiples • Multiply and divide integers and decimals by powers of 10 • Multiply and divide by 0.1 and 0.01 • 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 • Understand and use representations of directed numbers • Order directed numbers using lines and appropriate symbols • Perform calculations that cross zero. • Add directed numbers • Subtract directed numbers • Multiplication of directed numbers • Multiplication and division of directed numbers • Use a calculator for directed number calculations • Use order of operations with directed numbers • Roots of positive numbers • Explore higher powers and roots	**Number 1** (Place Value, Calculations and Directed Numbers)	**Autumn 1** = KS2 Skills overview
	• Give a numerical input, find the output of a single function machine • Use inverse operations to find the input given the output • Use diagrams and letters to generalise number operations • Use diagrams and letters with single function machines • Find the function machine given a simple expression • Substitute values into single operation expressions • Find numerical inputs and outputs for a series of two function machines • Use diagrams and letters with a series of two function machines • Find the function machines given a two-step expression • Substitute values into two-step expressions • Generate sequences given an algebraic rule"	**Algebra** (Algebraic Notation, Solving, Simplifying)	**Autumn 2 =** Number 1 year 7 assessment

	• Understand the meaning of equality • Understand and use fact families, numerically and algebraically • Solve one-step linear equations involving +/- using inverse operations • Solve one-step linear equations involving x and / using inverse operations" • Understand the meaning of like and unlike terms • Understand the meaning of equivalence • Simplify algebraic expressions by collecting like terms		
	• Metric Units • Convert metric units • Calculate with metric units • Miles and kilometres • Imperial measures • Measure perimeter • Perimeter on a grid • Perimeter of rectangles • Perimeter of rectilinear shapes • Calculate perimeter • Counting squares • Area of rectangles • Area of compound shapes • Area of irregular shapes • What is volume? • Compare volume • Estimate volume • Estimate capacity • Shapes same area • Area and perimeter • Area of a triangle • Area of a parallelogram • What is volume? • Volume counting cubes • Volume of a cuboid • Calculate the area of triangles, rectangles and parallelograms • Calculate the area of a trapezium • Calculate the perimeter and area of compound shapes • Investigate the area of a circle • Calculate the area of a circle and parts of a circle without a calculator • Calculate the area of a circle and parts of a circle with a calculator	**Geometry & Measures** (Converting units, Perimeter and Area, Volume, Area of trapezia and circles)	**Spring 1** = Algebra year 7 Assessment
	• Identify different types of data. •Make tally charts • Set up a statistical enquiry • Design and criticise questionnaires • Two-way tables • Represent data in two-way tables • Read and interpret tables • Timetables • Ungrouped frequency tables. • Read and interpret grouped tables • Represent grouped discrete data • Draw pictograms • Interpret pictograms • Bar charts • Multiple bar charts • Introducing line graphs • Read and Interpret line graphs • Draw line graphs • Problems with line graphs • Find the range, mode and median from a list of numbers. • Choose an appropriate average. • Calculate the averages and range from graphs and charts • Mean from an ungrouped frequency table • Calculate the median from a frequency table • Identify Outliers • Compare distributions	**Statistics** (Data and Tables, Graphs, Averages)	**Spring 2 =** Geometry & Measures year 7 Assessment
	• Know and use mental addition and subtraction strategies for integers • Know and use mental multiplication and division strategies for integers • Know and use mental arithmetic strategies for decimals • Know and use mental arithmetic strategies for fractions • Use factors to simplify calculations • Use estimation as a method for checking mental calculations • Use known number	**Number 2** (Number Types and developing number sense, Primes, Indices and Index Laws)	**Summer 1** = Statistics year 7 Assessment

	facts to derive other facts • Use known algebraic facts to derive other facts • Know when to use a mental strategy, formal written method or calculator • Find and use multiples • Identify factors of numbers and expressions • Recognise and identify prime numbers • Recognise square and triangular numbers • Find common factors of a set of numbers including the HCF • Find common multiples of a set of numbers including LCM • Write a number as a product of its prime factors. • Use a Venn diagram to calculate the HCF and LCM • 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		
	• Using ratio language • Ratio and fractions • Introducing the ratio symbol • Calculating ratios • Using scale factors • Ratio and proportion problems • Understand the meaning and representation of ratio • Understand and use ratio notation • Solve problems involving ratios in the form 1:n (or n:1) • Solve proportional problems involving the ratio m:n • Express ratios in their simplest form • Express ratios in the form 1:n • Compare ratios and related fractions • Understand Pi as the ratio between diameter and circumference • Understand gradient of a line as a ratio • Identify and represent sets • Interpret and create Venn diagrams • Understand and use the intersection of sets • Understand and use the union of sets • Understand and use the complement of a set • Know and use the vocabulary of probability • Generate sample spaces for single events • Calculate the probability of a single event • Understand and use the probability scale • Know that the sum of probabilities of all possible outcomes is 1	**Ratio & Proportion and Probability** (Ratio, Ratio and scale, Sets and Probability)	**Summer 2 =** Number 2 year 7 assessment
Year 8	• Represent tenths and hundredths as diagrams • Represent tenths and hundredths on number lines • Interchange between fractional and decimal number lines • Convert between fractions and decimals - tenths and hundredths • Convert between fractions and decimals - fifths and quarters • Convert between fractions and decimals - eighths and thousandths • Understand the meaning of percentage using a hundred square • Convert fluently between simple fractions, decimals and percentages • Represent any fraction as a diagram • Represent fractions on number lines • Identify and use simple equivalent fractions • Understand fractions as division • Convert fluently between fractions, decimals and percentages • Explore fractions above one, decimals and percentages • 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 percentages greater than 100%	**Number** (Fractions, Decimals and Percentages, Fractions and Percentages of Amounts, Calculations with fractions)	**Autumn 1** = Ratio & proportion and Probability (Sum 2 year 7 content

	• Understand representations 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 fractions with any denominator • Add and subtract improper fractions and mixed numbers • Use equivalence to add and subtract decimals and fractions • Represent multiplication of fraction • 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		
	• Form algebraic expressions • Use directed number with algebra • Multiply out a single bracket • Factorise into a single bracket • Expand and multiple single brackets and simplify • Expand a pair of double brackets • Solve equations, including with brackets • Form and solve equations with brackets • Understand and solve simple inequalities • Form and solve inequalities • Solve equations and inequalities with unknowns on both sides •Form and solve equations and inequalities with unknowns on both sides • Identify and use formulae, expressions, identities and equations	**Algebra** (Expand and Factorise, Solving Equations and Inequalities)	**Autumn 2 =** Number year 8 assessment
	• Understand and use letter and labelling conventions including those for geometric figures • Draw and measure line segments including geometric figures • Understand angles as a measure of turn • Classify angles • Measure angles up to 180 • Draw angles up to 180 • Draw and measure angles between 180 and 360 • Identify perpendicular and parallel lines • Recognise types of triangle • Recognise types of quadrilaterals • Understand and use the sum of angles at a point • Understand and use the 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 • Know and apply the sum of angles in a quadrilateral • Solve angle problems using properties of triangles and quadrilaterals • Solve complex angle problems • Find and use the angle sum of any polygon • Investigate angles in parallel lines • Understand and use parallel line angle rules • Use known facts to obtain simple proofs • 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 co-interior, alternate and corresponding angles • Solve complex problems with	**Geometry & Measures** (Constructions and Measuring, Angle rules and Geometric Reasoning, Angles in parallel lines and Polygons)	**Spring 1** = Algebra 1 year 8 Assessment

	parallel line angles • Investigate the properties of special quadrilaterals • Identify and calculate with sides and angles in special quadrilaterals • Understand and use the properties of diagonals of quadrilaterals • Understand and use the sum of exterior angles of any polygon • Calculate and use the sum of the interior angles in any polygon • Calculate missing interior angles in regular polygons • Prove simple geometric facts		
	• Ungrouped frequency tables. • Represent Continuous Data • Grouped Quantitative data • Mean, median and mode • Find and Interpret the range • Mean from an ungrouped frequency table • Mean of grouped data. • Choose an appropriate average • Pictograms, bar and vertical line charts. • Compare distributions using charts • Identify misleading graphs • Read and Interpret Pie Charts • Pie Charts with percentages • Draw Pie Charts • Stem and Leaf Diagrams • Draw and interpret scatter graphs • Linear correlation • Draw and use a line of best fit (1) • Draw and use a line of best fit (2) • Identify non-linear relationship	**Statistics** (Continuous Data, Representing Data, Scatter Graphs)	**Spring 2 =** Geometry and measures year 8 assessment
	• Work with coordinates in all four quadrants • Identify and draw lines that are parallel to the axes • 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 y = kx • Recognise and use lines of the form y = x + a • Explore graphs with negative gradient (y = -kx, y = a - x, x + y = a) • Link graphs to linear sequences • Plot graphs of the form y = mx + c • Explore non-linear graphs • Find the midpoint of a line segment • Describe and continue a sequence given diagrammatically • Predict and check the next term(s) of a sequence • Represent sequences in tabular and graphical forms • Recognise the difference between linear and non-linear sequences • Continue numerical linear sequences • Continue numerical non-linear sequences • Explain the term-to-term rule of numerical sequences in words • Find missing numbers within 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 of a linear sequence	**Algebra 2** (Working in the Cartesian Plane, Sequences)	**Summer 1** = Statistics year 8 Assessment
	LO: 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	**Ratio & Proportion and Probability** (Percentages, Multiplicative Change, tables and Probability)	**Summer 2 =** Algebra 2 year 8 assessment

	• Solve problems involving direct proportion • Explore conversion graphs • Convert between currencies • Explore direct proportion graphs • Explore relationships between similar shapes • Understand scale factors as multiplicative representations • Draw and interpret scale diagrams • Interpret maps using scale factors and ratios • Construct sample spaces for 1 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 the total number of possible outcomes		
Year 9	• Round numbers to powers 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 • Find and use multiples • Identify factors of numbers and expressions • Recognise and identify prime numbers • Recognise square and triangular numbers • Find common factors of a set of numbers including the HCF • Find common multiples of a set of numbers including LCM • Write a number as a product of its prime factors. • Use a Venn diagram to calculate the HCF and LCM • Make and test conjectures • Use counterexamples to disprove a conjecture • 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 • Square and Cube numbers • Calculate higher powers and roots • The addition and subtraction rules for indices • Understand and use the power zero and negative indices • Work with powers of powers • Understand and use fractional indices	**Number** (Number sense, prime numbers and proof, Standard form, Indices and roots)	**Autumn 1 =** Ratio and proportion and probability year 8 assessment
	• Solve one- and two-step equations and inequalities • Solve one- and two-step equations and inequalities with brackets • Inequalities with negative numbers • Solve equations with unknowns on both sides • Solve inequalities with unknowns on both sides • Solving equations and inequalities in context • Substituting into formulae and equations •Rearrange formulae (one-step) • Rearrange formulae (two-step) •Rearrange complex formulae including brackets and squares • Factors, Multiples and Primes • True or False? • Always, Sometimes, Never true • Show that • Conjectures about number •Expand a pair of binomials •Conjectures with algebra • Explore the 100 grid • Lines parallel to the axes, y = x and y = -x • Using tables of values • Compare gradients • Compare intercepts • Understand and use y = mx + c • Write an equation in the form y = mx + c •	**Algebra** (Forming and solving equations, Testing conjectures, Straight line graphs)	**Autumn 2 =** Number year 9 assessment

	Find the equation of a line from a graph • Interpret gradient and intercepts of real-life graphs • Model real-life graphs involving inverse proportion •Explore perpendicular lines		
	• Calculate the area of triangles, rectangles and parallelograms • Calculate the area of a trapezium • Calculate the perimeter and area of compound shapes • Investigate the area of a circle • Calculate the area of a circle and parts of a circle without a calculator • Calculate the area of a circle and parts of a circle with a calculator • Know names of 2D and 3D shapes • Recognise prisms • Accurate nets of cuboids and other 3D shapes • Sketch and recognise nets of cuboids and other 3D shapes • Plans and Elevations • Find area of 2D shapes • Surface area of cubes and cuboids • Surface area of triangular prisms • Surface area of a cylinder • Volume of cubes and cuboids • Volume of other 3D shapes - prisms and cylinders • Explore volumes of cones, pyramids and spheres • Identify polygons up to a decagon • Construct triangles using SSS • Construct triangles using SSS, SAS and ASA • Construct more complex polygons • Draw and measure angles • Construct and interpret scale drawings • Locus of distance from a point • Locus of distance from a straight line/shape • Locus equidistant from two points • Construct a perpendicular bisector • Construct a perpendicular bisector from a point • Construct a perpendicular to a point • Locus of distance from two lines • Construct an angle bisector • Construct triangles from given information • Identify congruent figures • Explore congruent triangles • Identify congruent triangles	**Geometry & Measures** (Area of trapezia and circles, 3D Shapes, Construction, Constructions and congruency)	**Spring 1 =** Algebra year 9 assessment
	• Draw and Interpret pie charts • Draw and interpret line graphs • Choose the most appropriate diagram for given set of data • Population and samples • Primary and secondary data • Construct and interpret frequency tables and frequency polygons • Construct and interpret two-way tables • Construct and interpret line and bar charts (including composite bar charts) • Criticise charts and graphs • Find and interpret averages from a list • Find and interpret averages from a table • Construct and interpret time series graphs	**Statistics** (The data handling cycle, Delving into data)	**Spring 2 =** Geometry and Measures year 9 assessment
	• Squares and roots • Identify the hypotenuse of a right-angled triangle • Determine whether a triangle is right-angled • Calculate the hypotenuse of a right-angled triangle • Calculate missing sides in right-angled triangles • Use Pythagoras' theorem on coordinate axes • Explore proofs of Pythagoras' theorem • Use Pythagoras' theorem in 3D shapes • Recognise line symmetry • Reflect a shape in a horizontal or vertical line 1 (shapes touching the line) • Reflect a shape in a horizontal or vertical line 2 (shapes not touching the line) • Reflect a shape in a diagonal line 1 (shapes touching the line) • Reflect a shape in a diagonal line 2 (shapes not touching the line)	**Geometry & Measures** (Pythagoras' Theorem, Line Symmetry and reflection, Rotation and Translation, Enlargement and Similarity)	**Year 9 End of year Assessment** = KS3 review

	• Identify the order of rotational symmetry of a shape • Compare and contrast rotational symmetry with line symmetry • Rotate a shape about a point on a shape • Rotate a shape about a point not on a shape • Translate points and shapes by a given vector • Compare rotation and reflection of shapes • Find the result of a series of transformations • Recognise enlargement and similarity • Enlarge a shape by a positive integer scale factor • Enlarge a shape by a positive integer scale factor from a point • Enlarge a shape by a positive fractional scale factor • Enlarge a shape by a negative scale factor • Work out missing sides and angles in a pair of given similar shapes • Solve problems with similar triangles • Explore ratios in right-angled triangles		
	• Solve problems with direct proportion • Direct proportion with conversion graphs • Solve problems with inverse proportion • Graphs of inverse relationships • Solve ratio problems given the whole or a part • Solve 'best buy' problems •Solve problems ratio and algebra • Solve speed, distance and time problems without a calculator • Solve speed, distance and time problems with a calculator • Use distance/time graphs • Solve problems with density, mass and volume • Solve flow problems and their graphs • Rates of change and their units • Convert compound units • Single event probability • Relative frequency - include convergence • Expected outcomes • Independent events • Use tree diagrams • Use tree diagrams to solve 'without replacement' problems • Use diagrams to work out probabilities	**Ratio & Proportion** (ratio and Proportion, Rates, Probability)	
Year 10	• Understand the difference between factors and multiples • Understand primes and express a number as a product of prime factors •Find the HCF and LCM of a set of numbers •Describe and continue arithmetic and geometric sequence • Explore other sequences • Describe and continue sequences involving surds • Find the rule for the nth term of a linear sequence • Find the rule for the nth term of a quadratic sequence • Equations of lines parallel to the axis • Plot straight line graphs • Interpret y = mx + c • Find the equation of a straight line from a graph • Equation of a straight-line given one point and gradient • Equation of a straight line given two points • Determine whether a point is on a line • Solve simultaneous equations graphically • Recognise when straight lines are perpendicular • Find the equations of perpendicular lines	**Algebra** (Types of number and sequences, Gradients and Lines)	**Autumn 1 =** Key skills from KS3

	• Understand the meaning of a solution • Form and solve one-step and two-step equations • Form and solve one-step and two-step inequalities • Show inequalities on a number line • Interpret representations on number lines as inequalities • Represent solutions to inequalities using set notation • Draw straight line graphs • Find solutions to equations using straight line graphs • Represent solutions to single inequalities on a graph • Represent solutions to multiple inequalities on a graph • Form and solve equations with unknowns on both sides • Form and solve inequalities with unknowns on both sides • Form and solve more complex equations and inequalities • Solve quadratic equations by factorisation • Solve quadratic inequalities in one variable" • Expand and factorise a single bracket • Expand binomials • Factorise quadratic expressions • Factorise complex quadratic expressions •Solve equations equal to 0 • Solve quadratic equations by factorisation • Solve complex quadratic expressions by factorisation •Complete the square •Solve quadratic equations using the quadratic formula • Solve linear equations • Solve inequalities • Form and solve equations and inequalities in the context of shape • Change the subject of a simple formula • Change the subject of a known formula • Change the subject of a complex formula • Change the subject where the subject appears more than once • Solve equations by iteration • Simplify algebraic expressions •Uses identities •Add and subtract algebraic fractions • Add and subtract complex algebraic fractions •Multiply and divide algebraic fractions • Multiply and divide complex algebraic fractions • Form and solve equations and inequalities with fractions • Solve equations with algebraic fractions • Represent numbers algebraically • Algebraic arguments and proof	**Algebra** (Solving equations and Inequalities, Expanding and Factorising, Changing the subject, Manipulating Expressions)	**Autumn 2 =** Algebra aut 1 year 10
	• Mental/written methods of integer/decimal addition and subtraction • Mental/written methods of integer/decimal multiplication and division • The four rules of fraction arithmetic • Exact answers • Rational and irrational numbers (convert recurring decimals here) • Understand and use surds • Calculate with surds • Rounding to decimal places and significant figures • Estimating answers to calculations • Understand and use limits of accuracy • Upper and Lower bounds •Use number sense • Solve financial maths problems • Break down and solve multi-step problems • Square and Cube numbers • Calculate higher powers and roots • The addition and subtraction rules for indices • Understand and use the power zero and negative indices • Work with powers of powers • Understand and use fractional indices •Calculate with numbers in standard form • Convert and compare fractions, decimals and percentages •Work out percentages of amounts (with and without a calculator) •Increase and decrease by a given percentage • Express one number as a percentage of another •Calculate simple and compound interest •Repeated percentage change •Find the original value after a percentage change • Solve problems involving growth and decay • Understand iterative processes • Solve problems involving percentages, ratios and fractions	**Number** (Non-calculator methods, Indices and Roots, Percentages and Interest)	**Spring 1 =** Algebra aut 2 year 10

	• 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 co-interior, alternate and corresponding angles •Solve complex problems with parallel line angles • Investigate the properties of special quadrilaterals •Identify and calculate with sides and angles in special quadrilaterals •Understand and use the properties of diagonals of quadrilaterals • Understand and use the sum of exterior angles of any polygon • Calculate and use the sum of the interior angles in any polygon • Calculate missing interior angles in regular polygons •Prove simple geometric facts •Construct an angle bisector • Construct a perpendicular bisector of a line segment • Enlarge a shape by a positive integer scale factor •Enlarge a shape by a fractional scale factor • Enlarge a shape by a negative scale factor • Identify similar shapes •Work out missing sides and angles in a pair given similar shapes • Use parallel line rules to work out missing angles • Establish a pair of triangles are similar •Explore areas of similar shapes • Explore volumes of similar shapes • Solve mixed problems involving similar shapes •Understand the difference between congruence and similarity • Understand and use conditions for congruent triangles •Prove a pair of triangles are congruent • Squares and roots • Identify the hypotenuse of a right-angled triangle • Determine whether a triangle is right-angled • Calculate the hypotenuse of a right-angled triangle •Calculate missing sides in right-angled triangles • Use Pythagoras' theorem on coordinate axes • Explore proofs of Pythagoras' theorem • Use Pythagoras' theorem in 3D shapes • Explore ratio in similar right-angled triangles • Work fluently with the hypotenuse, opposite and adjacent sides • Use the tangent ratio to find missing side lengths • Use sine, cosine and tangent to find missing side lengths •Use sine, cosine and tangent to find missing angles •Calculate sides in right-angled triangles using Pythagoras' Theorem • Select the appropriate method to solve right-angled triangle problems • Work with key angles in right-angled triangles • Use trigonometry in 3D shapes •Use the formula 1/2 ab sin C to find the area of a triangle • Understand and use the sine rule to find missing lengths • Understand and use the sine rule to find missing angles • Understand and use the cosine rule to find missing lengths •Understand and use the cosine rule to find missing angles • Choosing and using the sine and cosine rules • 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 bearings problems using the sine and cosine rules	**Geometry & Measures** (Angles in parallel lines and polygons, Congruence, Similarity and Enlargement, Pythagoras' Theorem, Trigonometry, Angles and Bearings)	**Spring 2 =** Number spr 1 year 10

	• Compare quantities using a ratio •Links ratios and fractions • Share in a ratio (given total or one part) • Use ratios and fractions to make comparisons • Link ratios and graphs • Solve problems with currency conversions • Links ratios and scales •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 • Ratio in volume problems •Mixed ratio problems • Solve problems with bills and bank statements • Calculate simple interest •Calculate compound interest • Solve problems with Value Added Tax • Calculate wages and taxes • Solve problems with exchange rates • Solve unit pricing problems	**Ratio & Proportion** (Ratios and Fractions, Maths and Money)	**Year 10 Mock Exam –** 2 papers; 1 non-calculator, 1 calculator
	• Understand population and samples • Construct a stratified sample • Primary and secondary data • Construct and interpret frequency tables and frequency polygons • Construct and interpret two-way tables • Construct and interpret line and bar charts (including composite bar charts) • Construct and interpret pie charts • Criticise charts and graphs • Construct histograms • Interpret histograms • Find and interpret averages from a list • Find and interpret averages from a table • Construct and interpret time series graphs • Construct and interpret stem and leaf diagrams • Construct and interpret cumulative frequency diagrams • Use cumulative frequency diagrams to find measures • Construct and interpret box plots • Compare distributions using charts and measures • Compare distributions using complex charts and measures • Construct and interpret scatter graphs • Draw and use a line of best fit • Understand extrapolation • Know, how to add, subtract and multiply fractions • Find probabilities using equally likely outcomes • Use the property that probabilities sum to 1 • Using experimental data to estimate probabilities • Find probabilities from tables, Venn diagrams and frequency trees • Construct and interpret sample spaces for more than one event • Calculate probability with independent events • Use tree diagrams for independent events • Use tree diagrams for dependent events • Construct and interpret conditional probabilities (Tree diagrams) • Construct and interpret conditional probabilities (Venn diagrams and two-way tables)	**Statistics & Probability** (Delving into Data, Probability)	
Year 11	• Know names of 2D and 3D shapes • Recognise prisms • Accurate nets of cuboids and other 3D shapes • Sketch and recognise nets of cuboids and other 3D shapes • Plans and Elevations • Find area of 2D shapes• Surface area of cubes and cuboids • Surface area of triangular prisms • Surface area of a cylinder • Volume of cubes and cuboids • Volume of other 3D shapes - prisms and cylinders • Explore volumes of cones, pyramids and spheres • 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 theorem: Angles at the centre and circumference • Circle theorem: Angles in a semicircle • Circle theorem: Angles in the same segment • Circle theorem: Angles in a cyclic quadrilateral • Understand and use the volume of a cylinder and cone • Understand and use the volume of a sphere • Understand and use the surface area of a sphere • Understand and use the surface area of a cylinder and cone • Solve area and volume problems involving similar shapes	**Geometry & Measures** (3D Shapes, Working with Circles, Vectors, Geometric Reasoning)	**Autumn 1 =** Statistics and Probability sum 2 year 10

	• 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 • Explore quadrilaterals using vectors • Understand parallel vectors • Explore collinear points using vectors • Use vectors to construct geometric arguments and proofs • Angles at points • Angles in parallel lines and shapes • Exterior and interior angles of polygons • Proving geometric facts • Solve problems involving vectors • Review of circle theorems • Circle theorem: Angle between radius and chord • Circle theorem: Angle between radius and tangent • Circle theorem: Two tangents from a point • Circle theorem: Alternate segment theorem • Pythagoras' theorem and trigonometrical ratios		
	• Work with organised lists • Sample spaces and probability • Use the product rule for counting • Complete and use Venn diagrams • Construct and interpret plans and elevations • Use data to compare distributions • Interpreting scatter diagrams • Use scale factors • Understand direct proportion • Construct complex direct proportion equations • Calculate with pressure and density • Understand inverse proportion • Construct inverse proportion equations • Ratio problems • Reflect shapes in given lines • Construct and interpret conversion graphs • Construct and interpret other real-life straight-line graphs • Interpret distance/time graphs • Construct distance/time graphs • Construct and interpret speed/time graphs • Construct and interpret piece-wise graphs • Recognise and interpret graphs that illustrate direct and inverse proportion • Find approximate solutions to equations using graphs • Estimate the area under a curve	**Probability, Ratio & Proportion** (Listing and describing, Multiplicative Reasoning, Using Graphs)	**Autumn 2 =** Geometry and Measures Aut 1 year 11
	• Understand that equations can have more than one solution • Determine whether a given (x, y) is a solution to a pair of linear simultaneous equations • Solve a pair of linear simultaneous equations by substituting a known variable • Solve a pair of linear equations by substituting and expression • Solve a pair of linear simultaneous equations using graphs • Solve a pair of simultaneous equations by subtracting equations • Solve a pair of simultaneous equations by adding equations • Use a given equation to derive related facts • Solve a pair of linear simultaneous equations by adjusting one equation • Solve a pair of linear simultaneous equations by adjusting both equations • Form a pair of linear simultaneous equations from given information • Form and solve a pair of linear simultaneous equations from given information • Determine whether a given (x, y) is a solution to both a linear and a quadratic equation • Solve a pair of simultaneous equations (one linear, one quadratic) using graphs • Solve a pair of simultaneous equations (one linear, one quadratic) algebraically • Solve a pair of simultaneous equations involving a third unknown • Use function machines • Substitution into expressions and formulae • Use function notation • Work with composite functions • Work with inverse functions • Graphs of quadratic functions • Solve quadratic inequalities • Understand and use trigonometric functions	**Algebra** (Simultaneous Equations, Functions, Algebraic Reasoning, Non-Linear Graphs, Show that)	**January Mock – Full GCSE experience, 3 papers.**

	• Simplify complex expressions • Find the nth term of a linear sequence • Find the rule for the nth term of a quadratic sequence • Use rules for sequences • Solve simultaneous equations • Solve simultaneous equations with one quadratic • Formal algebraic proof Inequalities in two variables • Plot and read quadratic graphs • Plot and read cubic graphs Plot and read from reciprocal graphs • Recognise graph shapes • Identify and interpret roots and intercepts of quadratics • Understand and use exponential graphs • Find and use the equation of a circle centre (0, 0) • Find the equation of the tangent to any curve • 'Show that' with number • 'Show that' with algebra • 'Show that' with shape • 'Show that' with angles • 'Show that' with data • 'Show that' with vectors • 'Show that' with congruent triangles • Formal proof with congruent triangles		
	• Perform and describe line symmetry and reflection • Perform and describe rotation/rotational symmetry • Perform and describe translations of shapes • Perform and describe enlargements of shapes • Perform and describe negative enlargements of shapes • Identify transformations of shapes • Perform and describe a series of transformations of shapes • Identify invariant points and lines • Perform standard constructions using ruler and protractor or ruler and compasses • Solve loci problems • Understand and use trigonometrical graphs • Sketch and identify translations of the graph of a given function • Sketch and identify reflections of the graph of a given function	**Geometry** (Transforming and Constructing)	**Easter Mock – Full GCSE experience, 3 papers.**