



Progression Map - Maths

Curriculum Intent:

The secondary curriculum at Bradford Academy intends to:

- Develop individuals who are respectful, responsible and resilient and encourage them to be a shining light in their community._
- Ensure that learners develop knowledge and skills that lead to academic success and future opportunities._
- Create a culture of reading by maximising opportunities to read and broaden vocabulary during the school day and at home._
- Provide a breadth of subjects and experiences so that every individual can find and nurture their strengths and talents._
- Be ambitious for all of our learners by carefully planning for excellent achievement._
- Make use of a sound evidence base to ensure that lessons and teaching techniques are effective._

Maths at Bradford Academy

We offer a curriculum that inspires our learners to become confident, resilient, lifelong mathematicians who recognise effort as the path to mastery. Our rationale is that everyone can achieve in maths. As such, teaching at all key stages is founded on the need to teach for understanding, rather than teaching mathematics procedurally.

Our curriculum has been designed to be purposeful and accessible to all learners. Lessons are sequenced clearly to consider and build on prior learning whilst also recognising some students will be able to move faster through content than others. Topics are not taught in isolation but interleaved and applied in different contexts ensuring blocks of work are broad and balanced. For example, learners are expected to use algebra within geometry, decimals and fractions within probability. Maximum opportunities are then available to secure understanding and aid memory whereby topics are revisited and reinforced through spaced repetition homework, class work and cumulative assessments.

Developing confident, resilient mathematicians with skills for life begins in year 7 and is nurtured and developed in the 4 years that follow. By building confidence, resilience and a passion for maths, students learn that whatever their prior starting points they all can enjoy and succeed in maths.

The maths curriculum follows the White Rose Maths (WRM) 5-year Scheme of Learning (SOL). The Scheme and sequence of lessons was implemented in the academic year 2023-2024 for all year groups. All the National Curriculum (N.C) Key Stage 3 objectives and KS4 objectives are provided for. An additional National Curriculum Progression document provides guidance on how the NC objectives progress against key strands over the 5 years. As such it also shows how key strands are interleaved and revisited.

The study of mathematics enables students to make sense of the world around them. We encourage, through investigation, discussion, analysis and reasoning tasks, our students to explore the connections between their numeracy skills and every-day life. Developing deep thinking and an ability to question the way in which the world works promotes the spiritual growth of students. Students are encouraged to see the sequences, patterns, symmetry, scale equivalence both in the man-made and the natural world and to use maths as a tool to explore it more fully.

The moral development of students is an important thread running through the mathematics curriculum. Students are provided with opportunities to use their maths knowledge in real life contexts, applying and exploring the skills required in solving various problems. For example, students are encouraged to analyse data and consider the implications of misleading or biased statistical calculations. All students are made aware of the fact that the choices they make lead to various consequences. They must then make a choice that relates to the result they are looking for. The logical aspect of this relates strongly to the right/wrong responses in maths.

Problem solving skills and teamwork are fundamental to mathematics through creative thinking, discussion, explaining and presenting ideas. Students are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Over time they become more independent and resilient learners.

Mathematics is a universal language with a myriad of cultural inputs throughout the ages. Various approaches to mathematics from around the world are used and this provides an opportunity to discuss their origins. We try to develop an awareness of both the history of maths alongside the realisation that many topics we still learn today have travelled across the world and are used internationally. Specific links are made in the Curriculum Mapping table below.



		By the end of Year 7	By the end of Year 8	By the end of Year 9	By the end of Year 10	By the end of Year 11
Knowledge and Skills	Term 1	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. Given 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. Represent one- and two-step functions graphically. Understand the meaning of equality. Understand and use fact families, numerically and algebraically. Solve one-step linear equations involving $\pm$ using inverse operations. Solve one-step linear equations involving $\times/\div$ using inverse operations. Understand the meaning of like and unlike terms. Understand the meaning of equivalence.	Understand the meaning and representation of ratio. Understand and use ratio notation. Solve problems involving ratios of the form $l:n$ (or $n:l$). Solve problems involving ratios of the form $m:n$. Divide in a given ratio. Express ratios in their simplest integer form. Express ratios in the form $l:n$. Compare ratios and fractions. Understand π and the ratio between diameter and circumference. Understand gradient of a line as a ratio. 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 ratio. 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. 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 $y=kx$.	Solving one and two-step equations and inequalities Solve equations and inequalities with brackets Solve inequalities with negative numbers. Solve equations with unknowns on both sides. Solve inequalities with unknowns on both sides. Equations and inequalities in other mathematical contexts. Formulae and equations. Rearrange formula. Rearrange complex formula Equations of lines parallel to the axes, $y=x$ and $y=-x$. Using tables of values. Compare gradients. Compare intercepts. Understand and use $y=mx+c$. Solve problems involving parallel lines. Write an equation in the form $y=mx+c$. Find the equation of a straight line from a graph. Gradient and intercept of real life graphs. Model real-life graphs including inverse proportion. Explore perpendicular lines Factors, multiples and primes. True or false? Show that... Conjectures with numbers. Expand two binomials. Conjectures with algebra. Explore the 100 square. Know the names of 2-D and 3-D shapes Recognise prisms. Accurate nets of cuboids and other 3-D shapes. Sketch and recognise nets of cuboids and other 3-D shapes. Draw plans and elevations. Find the area of 2-D shapes. Surface area of cubes and cuboids. Surface area of triangular prisms. Surface area of a cylinder (including terms of π). Volumes of cubes and cuboids.	Form and solve equations and inequalities in a variety of contexts, including with unknowns on both sides. Represent solutions to inequalities on a number line. Represent solutions to equations graphically. Use set notation for solutions. Solve Inequalities in two variable, identifying regions. Solve quadratic equations and inequalities (by factorisation only). Understand the difference between congruence and similarity. Enlarge a shape about a given point; understand and use similarity. Find missing sides in similar shapes including pairs of similar triangles. Understand and use the conditions for a pair of congruent triangles. Area and volume of similar shapes. Formal proof of congruency of triangles. Enlarge a shape by a negative scale factor. Use trigonometry in 3-D shapes Understand trigonometric ratios. Work out missing lengths and angles in right-angled triangles. Know and use the exact values of key angles. Derive and use the sine and cosine rules. Use the formula $12ab \sin C$ to find the area of non-right angled triangles. Understand the meaning of solution, appreciating that some equations have multiple solutions. Form and solve a pair of linear simultaneous equations graphically. Form and solve a pair of linear simultaneous equations algebraically. Solve simultaneous equations with one linear and one quadratic.	Factorise complex quadratic expressions. Solve quadratic equations by factorisation. Solve complex quadratic expressions by factorisation. Complete the square. Solve quadratic equations using the quadratic formula. Solve any linear equation. Solve any linear inequality. Form and solve equations and inequalities in the context of geometry problems. Change the subject of a simple formula. Change the subject of a recognisable formula. Change the subject of a complex formula. Change the subject of a formula where the subject appears more than once. Solve equations by iteration. Use function machine to represent expressions. Substitute into expressions and formulae. Use function notation to describe functions, substitute into them and solve equations involving functions. Create and use composite functions. Create and use inverse functions. Draw graphs for quadratic functions and use them. Solve quadratic inequalities. Interpret trigonometric formulae as trigonometric functions.



	Simplify algebraic expressions by collecting like terms, using the $\equiv$ symbol. 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 ten. Compare two numbers using $=$, $\neq$, $<$, $>$, $\leq$, $\geq$ Order a list of integers. Find the range of a set of numbers. Find the median of a set of numbers. 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 powers of ten. Write positive integers in the form $A \times 10^n$ Investigate negative powers of ten. Write decimals in the form $A \times 10^n$. 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. Use and interpret pie charts. 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.	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. 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 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 the total number of possible outcomes.	Volume of other 3-D shapes – prisms and cylinders. Explore volumes of cones, pyramids and spheres. Draw and measure angles. Construct and interpret scale drawings. Find the locus of distance from a point. Locus of distance from a straight line/shape. Construct a perpendicular bisector. Construct a perpendicular line from a point. Locus of distance from two lines. Construct an angle bisector. Construct triangles from given information. Identify congruent figures. Explore congruent triangles.		
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Term 2	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. 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. Properties of multiplication and division. Understand and use factors. Understand and use multiples. Multiply and divide integers and decimals by powers of 10. Multiply 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. 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. Find a fraction of a given amount.	Form algebraic expressions. Form algebraic expressions. Multiply out a single bracket. Factorise into a single bracket. Expand multiple single brackets and simplify. Expand a pair of binomials. 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. 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. 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. Percentage decrease with a multiplier. Convert between decimals and percentages greater than 100%. 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.	Types of number, including rational and real numbers. Fraction arithmetic. Highest common factor. Lowest common multiple. Standard form. Percentage increase and decrease. Use percentages over 100%. Find percentage changes. Use multipliers. Solve “reverse percentage” problems. Work with repeated percentage change. Bills and bank statements. Interest. Unit pricing. Angle rules, including within special quadrilaterals. Find angles using algebraic methods. Use chains of reasoning to evaluate angles. Develop more complex geometrical proofs. Identify the order of rotational symmetry of a shape. Find the result of rotating shapes. Translate points and shapes by a given vector. Understand variance and invariance in the context of transformations. Find the results of a series of transformations. Identify the hypotenuse of a right-angled triangle. Determine whether a triangle is right-angled. Calculate missing sides in right-angled triangles. Explore proofs of Pythagoras’ theorem. Use Pythagoras’ theorem in 3-D shapes.	Review Phase 1 and 2 angles rules. Understand and use bearings. Review area and circumference. Name parts of a circle and perform related calculations. Find areas and volumes related to circles – cylinder, cone, sphere etc. Derive, use and prove first four circle theorems. Understand and use the equation of a circle. Understand vector notation. Vector arithmetic – addition, subtraction and multiplication by a scalar. Vectors and translations. Construct geometric proofs with vectors. Use ratios, including with mixed units. Fractions in ratios. Fractions from ratios. Combining ratios. Unit pricing (“best buys”). Currency conversions. Revise area and volume ratios. Convert fractions, decimals and percentages. Find percentages and percentage changes. Find one number as a percentage of another. Calculate simple and compound interest. Evaluate exponential change e.g. depreciation. Find original values. Review of single event probability – comparing theoretical and experimental. Understand and work with mutually exclusive and independent events. Construct and interpret tree diagrams. Find probabilities from frequency trees, tables and Venn diagrams. Calculate and interpret conditional probabilities.	Use scale factors with similar shapes. Understand the meaning of direct proportion and solve problems numerically. Find equations to represent direct proportions and solve problems algebraically. Use direct proportion to calculate pressure and density. Understand the meaning of inverse proportion and solve problems numerically. Find equations to represent inverse proportions and solve problems algebraically. Solve problems involving ratio. Solve problems involving angles meeting at point in a variety of ways. Solve problem involving angles in a diagram with parallel lines. Solve problem involving interior and exterior angles in polygons. Use explanations and algebra to prove geometric facts. Know how to write, draw, use and calculate with column vectors. Know the circle theorems involving angles in a semi-circle, same segment, cyclic quadrilateral or at the centre/circumference; know how to prove the theorems; and use them to solve problems. Know the circle theorem involving the angle between a radius and a chord and use it to solve problems. Know the circle theorem involving the angle between a radius and a tangent and use it to solve problems. Know the circle theorem involving the two tangents meeting at a point and use it to solve problems. Know the alternate segment theorem and use it to solve problems. Use a mixture of Pythagoras and trigonometry to solve problems. Simplify complex expressions. Find the rule for the nth term of a linear sequence.	



Use a given fraction to find the whole and/or other fractions.
Find a percentage of a given amount – mental methods.
Find a percentage of a given amount using a calculator.
Solve problems with fractions more than 1 and percentages over 100%.
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.
Applying directed numbers to bank statements.
Evaluate algebraic expressions with directed number.
Introduction to two-step equations.
Solve two-step equations.
Use order of operations with directed numbers.
Understand that positive numbers have more than one square root.
Explore higher powers and roots
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 fractions in algebraic contexts.
Use equivalence to add and subtract decimals and fractions.

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.
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.
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.

Find the rule for the n th term of a quadratic sequence.
Use the n th term to make inferences about a sequence.
Solve pairs of linear simultaneous equations.
Solve pairs of simultaneous equations where at least one is non-linear.
Use algebraic manipulation to complete formal algebraic proofs.
Shade in regions of a graph to represent inequalities in two variables.
Perform and describe line symmetry and reflection.
Perform and describe rotation/rotational symmetry.
Perform and describe translations of shapes.
Perform and describe positive 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 during transformations.
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 graphs of a given function.
Sketch and identify reflections of the graphs of a given function.
Work with organised lists to solve problems involving combinations and statistics.
Use sample spaces to solve problems with probability.
Use Venn diagrams to solve problems involving sets, discrete quantities and probability.
Use plans and elevations to solve problems involving 2D representations of 3D shapes.
Use charts and tables to solve problems involving distributions.
Use scatter graphs to make inferences regarding bivariate data.



	Add and subtract simple algebraic fractions.				Show that two calculations or numbers that are represented differently (e.g., a fraction and a recurring decimal) are equal. Show that two algebraic expressions are identical. Show that a geometric claim regarding length, area, volume or similarity is true/false. Show that a geometric claim regarding angles is true. Show that a claim, interpretation or inference regarding data or probability is true/false. Show that two vectors are/are not the same, parallel or collinear. Show that a geometric claim regarding congruence or similarity is true/false, using formal proof.
Term 3	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 quadrilateral. Identify polygons up to a decagon. Construct triangles using SSS. Construct triangles using SSS, SAS and ASA. Construct more complex polygons. Interpret simple pie charts using proportion. Interpret pie charts using a protractor. Draw pie charts. 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.	Understand and use basic angle 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 Constructions triangles and special quadrilaterals 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. Calculate the area of triangles, rectangles and parallelograms. Calculate the area of a trapezium.	Enlarge shapes by a positive scale factor, including from a given point. Calculate the lengths of missing sides in similar shapes. Enlarge shapes by a negative scale factor. Direct proportion problems and graphs. Conversion graphs. Solve ratio problems given the whole or a part Simple inverse proportion. Unit pricing problems. Similar triangles – exploring ratios. Inverse proportion graphs. Work with speed, distance, time. Solve problems involving density. Work with compound units. Converting compound measures Calculate single event probabilities Work with relative frequency and expected outcomes Find the probabilities of independent events Find probabilities from Venn diagrams and two way tables Use tree diagrams to list outcomes from a series of events (with and without replacement) Revisit data measures, charts and graphs. Revisit alternative representations of sequences.	Understand sampling, including the possible limitations. Construct and interpret tables and line graphs for time series data. Understand and represent with grouped data. Understand and identify correlation. Use lines of best fit, understanding the dangers of extrapolation. Construct and interpret frequency polygons. Evaluate measures of location and dispersion. Use statistical diagrams and measures to compare distributions. Construct and interpret cumulative frequency diagrams, box-plots and histograms. Understand quartiles; use and interpret the inter-quartile range. Use four operations with integers (positive and negative), decimals and fractions with and without context Work with exact answers e.g. area and volume. Evaluate calculations involving percentages. Calculate with surds Use factors, multiples, primes and prime factorization. Recognise arithmetic and geometric sequences.	Revision and Examinations



	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. 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 facts to derive other facts. Use known algebraic facts to derive other facts. Know when to use a mental strategy, formal written method or a calculator. 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 a probability scale. Know that the sum of probabilities of all possible outcomes is 1. Find and use multiples. Identify factors of numbers and expressions. Recognise and identify prime numbers. Recognise square and triangular numbers.	Calculate the perimeter and area of compound shapes (1). 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. Calculate the perimeter and area of compound shapes (2). 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). 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 lengths. Convert metric units of weight and capacity. Convert metric units of area. Convert metric units of volume. Solve problems involving time and the calendar. 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 the most appropriate diagram for given set of data. Represent and interpret grouped quantitative data. Find and interpret the range. Compare distributions using charts. Identify misleading graphs. Understand and use the mean, median and mode. Choose the most appropriate average.	Revisit frequency trees and other representations. Revisit conversion between standard form and ordinary form. Representing numbers as a product of primes. Expand a pair of binomials. Create and interpret tables and timetables. Solve problems involving speed, distance, time. Solve inequalities on number lines, including error intervals. Represent word problems in a variety of forms. Interpret graphs of any form. Compare theoretical and experimental probability of two or more events. Tree diagrams.	Recognise and use other sequences. Find the rule for the nth term of a quadratic sequence. Work out powers and roots. Use the rules of indices. Calculate with numbers in standard index form. Understand and use fractional indices. Work with rational and irrational numbers, including recurring decimals. Work with limits of accuracy, including upper and lower bounds. Simplify algebraic expressions. Understand the difference between equality and equivalence. Add and subtract algebraic fractions. Multiply and divide algebraic fractions. Solve equations and inequalities with fractions. Develop ideas of algebraic proof including representing odd and even numbers.	
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		Find common factors of a set of numbers including the HCF. Find common multiples of a set of numbers including the 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.	Find the mean from an ungrouped frequency table. Find the mean from and grouped frequency table. Identify outliers. Compare distributions using averages and the range.			
Assessment		How is the Maths curriculum assessed at Bradford Academy? At Bradford Academy the Maths Scheme of Work operates over three terms (Autumn, Spring and Summer), each term contains five or six teaching blocks (topics). - For Years 7, 8, 9 and 10, as each Teaching Block completes, students are assessed with an 'End of Block Assessment'. (Formative). - For Years 7, 8, 9 and 10, as each Term completes, students are assessed with an 'End of Term Assessment'. (Summative). - At Bradford Academy, for Years 7, 8, 9 and 10 there are 18 assessments per year group. - At Bradford Academy, for Year 11, throughout the Autumn and Spring terms, students are assessed 'Tri-Weekly' using bespoke GCSE exam papers (half papers) that relate to individual class QA analysis or are linked directly to the White Rose maths scheme of work. - At Bradford Academy for Year 11, throughout the Spring Term (Race to Easter), students are assessed 'Bi-Weekly' using GCSE exam papers (full papers) to inform a bespoke Scheme of Work. Six assessments. (Formative). - At Bradford Academy, Trial Exams (summative) are conducted Year 10 (November – 1 Paper), Year 10 (May – 1 Paper), Year 11 (November – 2 Papers) and Year 11 (February – 2 Papers). Implementation of assessment - The Bradford Academy Maths Scheme of Work is designed to explore and provide understanding of mathematical concepts 'in-depth'. The Scheme interleaves prior content from KS2 and provides opportunities for retrieval of KS2 content. The 'End of Block' assessment strategy is a continuation of KS2 assessment strategies used within Bradford Academy Partner Primaries. - The three main aims of the national curriculum are for children to be fluent, to reason and to problem solve. At Bradford Academy, mathematical fluency skills gained in KS2 are developed further throughout KS3 and KS4, with a focus on reasoning and problem-solving. All questions contain reasoning and problem-solving elements. Levels of challenge are varied to ensure an accessibility to every child, whilst stretching the thinking and deepening the understanding of the majority. - The Bradford Academy scheme of work contains all the material needed to attain GCSE Grade 5 (following the Bradford Academy 'Core' material) and GCSE Grade 9 (following the Bradford Academy 'Higher' material). - Phase Three qualifications are Edexcel, Foundation and Higher Tiers. Knowledge and Skills assessment - Taught skills are assessed using mini whiteboards within lessons. Lesson plenaries contain diagnostic questions to assess skills gained within the lesson. - Knowledge is assessed at the end of each topic block. The knowledge assessment is formative and assesses the knowledge retention of all skills taught. - End of term assessments revisit core knowledge and skills across all block assessments.				
Knowledge and Skills Revisited		Colour coding shows where content is revisited and built upon.	Colour coding shows where content is revisited and built upon.	Colour coding shows where content is revisited and built upon.	Colour coding shows where content is revisited and built upon.	Colour coding shows where content is revisited and built upon.

