Beamont Collegiate Academy Curriculum Map

Year 7 Mathematics

Intent	Implementation	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Knowledge	Units Taught	Mathematical Notation • Geometry (Angles) • Powers & Roots • Intro to Algebra	Proport. Understanding • Calculating Percentages • Understanding Ratio	Measuring in 2D and 3D • Decimals & Measure • Working with 2D Shape • 3D Shape	Equality • Fractions • Equations	Use of Number • Probability • Averages • Sequences	Co-ordinate Geometry • Co-ordinates • Congruency
	Sequencing	The over-riding theme for the half term is building a strong foundation of mathematical knowledge to further deepen and build upon these skills in future units of work. The powers and Algebra unit are linked through mathematical notation, using powers when multiplying. When finding missing angles students are exposed to the concept of representing numbers as letters, this is then fully explored during the algebra topic. Further shapes and rules for angle are introduced to students. Square numbers are extended to higher powers of numbers in this half term. Students would not have encountered much algebra in primary school but knowledge may be built from symbols and pictures used in equations, for example ☺ + 5 = 9 so ☺ = 4.	The over-riding theme for this half term is understanding proportion, and the relationships between numbers. The units are closely related as they both explore the relationships between numbers. Percentage is a 'share' in relation to a whole. Ratio is a comparison of two or more numbers. Both also have common links in fractions and decimals and can be converted between each. Students have been exposed to equivalent decimals and fractions, this is developed in to converting and ordering fdp. Knowledge of ratio is also developed through more complex questions like units of measure, money and time. The bar model is something that has been taught in primary school and this is deepened in these topic.	The over-riding theme for this half term is geometry and units of measure. The 2D and 3D shape units are heavily linked, knowledge from both units will be intertwined with one another and referred to during the teaching of them respectively. In 2D shapes we teach the concepts of area and this is then extended to surface area and volume. The use of decimals will be evident when working with perimeter, area and volume. Formal methods of arithmetic are practiced and developed to apply them to decimals. The concept of perimeter is newly applied to compound shapes. Whilst their knowledge of area can be extended to trapezia and compound shapes. Knowledge of Volume is extended to problem solving questions where the dimensions are different units.	The over-riding theme for this half-term is fractions and equations. Solving systems of linear equations is dependent on the ability to form equivalent equations and manipulate fractions, which often are part of the solution. Students have covered much of the fraction work in Year 6. The fractions unit is about securing depth of knowledge. Fractions can be linked to equation work when 1/2x = x/2 X + 2/5 = 5	The over-riding theme for this half-term is probability, averages and sequences. What is calculated as the expected probability, can be called the mean when talking about averages. While probability deals with predicting the likelihood of future events, while statistics involves the analysis of the frequency of past events. In regard to averages, students will have come across most of the content barr the mean	The over-riding theme for this half-term is co-ordinates and congruency. Coordinates will be a stepping-stone to plotting linear graphs. Substitution into equations has been covered previously. Congruency can link into co-ordinates when plotting shapes. Different properties can be discussed such are corresponding angles and area. Students will have covered directed number, coordinates and some linear symmetry at KS2.

	Substantive Knowledge *Declarative : "I Know that.."* *Proceedural : "I Know How"* *Conditional : "I Know When.."*	<u>Geometry (Angles)</u> • Measuring / Drawing • Classifying • Angles on Straight Line • Angles around Point • Angles in a Triangle <u>Powers & Roots</u> • Operations with negative numbers • Using BIDMAS • Square and square root • Cube and cube roots • Powers of 2 and 10 <u>Intro to Algebra</u> • Simplifying expressions • Expanding single brackets • Forming expressions • Substitution	<u>Calculating percentages</u> • Basic percentage of amounts • Complex percentages with and without calc • Percentages as decimals and fractions • Ordering FDP • Expressing a number as a percentage of another <u>Understanding ratio</u> • Writing a ratio • Simplifying a ratio • Writing a ratio in the form 1:n, n:1 • Writing a ratio as a fraction • Dividing in a ratio	<u>Decimals and Measure</u> • 4 operations with decimals • Solving money problems • Using time and timetables <u>Working with 2D shapes</u> • Perimeter of 2D shapes - Triangle - Square/Rectangle - Named regular polygons up to Decagon • Perimeter of compound shapes • Area of 2D shapes; - Square/rectangle - Triangle - Parallelogram <u>3D shapes</u> • Propertied of 3D shapes • Volume of cubes and cuboids • Volume problem solving • Capacity • Nets • Surface area of cubes and cuboids	<u>Fractions</u> • Improper Fractions • Comparing Fractions • Addition of fractions • Subtraction of fractions • Equivalence Fr/Dec/% <u>Equations</u> • Function machines • Solving one step equations • Concept of Inequalities • Solving inequalities	<u>Probability</u> • Language of Prob • Sample Space • Probability Scale • Probability of a single event • Relative Frequency <u>Averages</u> • Displaying Data • Averages • Range • Comparative Data <u>Sequences</u> • Linear, non-linear sequences • Term to term rule • Finding missing terms • Sequences with decimals & fractions • Generating a sequence	<u>Coordinates</u> • Negative numbers • Coordinates in 4 quadrants • Parallel lines • Line y=x • Line y = kx <u>Congruency</u> • Symmetry • Reflections
Assessment	Summative assessment	Each unit of work within this half term is assessed using a formal assessment.	Each unit of work within this half term is assessed using a formal assessment.	Students will sit a formal, cumulative assessment during this half term.	Each unit of work within this half term is assessed using a formal assessment.	Each unit of work within this half term is assessed using a formal assessment.	Students will sit formal, cumulative assessments during this half term.

Links	Main Links across the Curriculum	- Perimeter using algebra - Area using algebra	- Decimals - Fractions - Angles (when sharing in a ratio)	- Negative numbers - Unit conversions - Time - Properties of 2D shapes (coordinates)	- Using inequality signs correctly - Multiples - Venn Diagrams	- Inverse operations - Equivalence - Negative numbers - Decimals - Fractions - Substitution	- Negative numbers - Substitution - Equation work
	Cross-Curricular Links	Negative numbers are used in Food tech and Science (temperature), they are also used in Geography when relating to sea levels.	Percentage is a widely used topic and can be seen in many different subjects including Science and Geography.	Units of measure are used in Tech and Art. Decimals can be used in any subject with numerical applications (Science, Geography)	Equation work using function machines, balancing equations & equivalence is relevant to Science.	Statistics is relevant to all subjects, eg Geography	Graphs, using scale, is relevant to Science and Geography
	Links to the Real World / Careers / P.D.	Real life links: Weather (temperature) Careers: Meteorologist Coding heavily uses algebra.	Real life links: Percentages are seen throughout the world of retail Careers: Accountant Banker Hospitality worker Stock analyst/investor Real estate lender	Real life links: Timetables are seen at bus and train stations. Money problems link to everyday life. Careers: Builder Landscape gardener Painter/Decorator Accountant Chemist Doctor Architect	Real life links: Equations are seen in computer programming, computerised appliances and paying taxes. Careers: Engineering Medicine Computing Traffic control	Real life links: Statistics is a crucial process behind how we make discoveries in science, make decisions based on data, and make predictions. Careers: Insurance Actuary Real Estate Sports Science Gambling Food industry	Real life links: Coordinates systems are used to specify the position of a point, but they may also be used to specify the position of more complex figures Careers: Medicine Pharmacy Chemistry Biology
Vocabulary	Key words	**Geometry (Angles)** - Adjacent - Intersect - Reflex, Obtuse, Acute **Powers & Roots** - Negative - Square - Cube - Root - Operation **Intro to Algebra** - Simplify - Variable - Coefficient - Expand	**Calculating percentages** - Percent - Fraction - Decimal - Equivalent **Understanding ratio** - Ratio - Part - Simplify - Share	**Decimals and Measure** - Decimal - integer - Place value **Working with 2D shapes** - Area - Perimeter - Units - Dimension **3D shapes** - Face, Edge, Vertex - Volume - Depth - Prism	**Fractions** - Equivalent - Improper - Denominator - Common multiple **Equations** - Solve - Equation - Inequality - Function - Input/Output - Inverse	**Probability** Likely/ Certain/Impossible - Bias - Random **Averages** - Average - Tally - Frequency - Compare **Sequences** - Linear - Term - Position - Ascending/Descending	**Co-ordinates** - Quadrant - Horizontal/Vertical - Coordinate - Origin - Axis **Congruency** - Reflection - Diagonal - Image - Congruent