Beamont Collegiate Academy Curriculum Map

Year 8 Mathematics

Intent	Implementation	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Knowledge	Units Taught	Geometric understanding • Angles • Decimals and measure • Compound area and perimeter	Working in 3-dimensions • Rules of indices • Volume of shape	Algebraic thinking • Expressions and formulae • Solving multi-step equations	Fractional Understanding • Working with fractions • Application of ratio • Developing probability	Working with Number • Working with percentages • Proportion • Averages and Statistical data	Linear Graphs • Sequences • Linear Graphs
	Sequencing	Building on learning from year 7, this term aims to deepen the understanding in geometry, and build on those skills previously taught. In angles, students will use their basic understanding of angle properties to look at angles in parallel lines and angles in polygons. In decimals and measure students will draw on their knowledge of decimals and units of measure from Year 7 to look for the first time at how to calculate speed.	Building on learning from year 7, students will recap their knowledge of squares and cubes and index notation, before looking at laws of indices for the first time. This knowledge of cubing and cube numbers is linked to the following unit on volume of a cube. Students will build on their knowledge of volume from Year 7 by looking at more complex 3D shapes such as Triangular and L-Shaped Prisms.	This term is focussed on ensuring that students have competency in working with algebra. Students first look at writing and simplifying algebraic expressions, drawing on knowledge from the work on indices in the last half term. Students will learn to expand and factorise simple expressions. The teaching of solving equations includes equations with terms on both sides and equations with fractions. This is also a good opportunity to include applied style questions involving the topics of angles, perimeter, area and volume.	All these units are linked with fractions this term- ratio can be worked out with a fractional method and probability can be written as a fraction. Learners will have worked with fractions in primary school and this topic will build students' knowledge in greater depth.	This term focuses on Number and a lot of multiplying and dividing. This builds on student's previous knowledge from primary school and also Year 7. Students can relate to real life problems during this topic.	These units aims to provide links with algebra. Learners have previously covered algebraic thinking this year and also coordinates from primary school so this is encouraging knowledge recall and retention.

	Substantive Knowledge *Declarative : "I Know that.."* *Proceedural : "I Know How"* *Conditional : "I Know When.."*	<u>Angles</u> • Basic angles recap • Angles in triangles • Multistep problems • Angles in quadrilaterals • Parallel lines • Angles in polygons <u>Decimals and measure</u> • Place value, size • Ordering decimals • Rounding decimals • Add/subtract decimals • Time • Speed, distance, time <u>Compound area and perimeter</u> • Perimeter of shapes • Problem solving using perimeter • Area of rectangle and triangle, parallelogram, trapezium • Area and perimeter problems	<u>Rules of indices</u> • Squaring numbers and decimals • Square roots • Cube numbers, cube roots • Index notation • Powers • BIDMAS • Algebraic powers • Laws of indices <u>Volume and surface area</u> • Name 3D shapes and prisms • Nets of cubes and cuboids • Plans and elevations • Surface area of cubes/cuboids, triangular prism • Volumes of cubes, cuboids, triangular prisms	<u>Expressions and formulae</u> • Simplify algebraic expressions • Algebraic expressions in context • Expanding • Factorising • Expanding double brackets • Substitution <u>Solving multi-step problems</u> • One step equations • Two steps equations • Equations with angles • Equations involving area and perimeter • Multi-step equations • Equations with terms on both sides	<u>Working with fractions</u> • Fraction of an amount • Multiplying fractions • Dividing Fractions • Multiplying and dividing Improper fractions <u>Application of ratio</u> • Writing & understanding ratio • Simplifying ratio • Dividing in a ratio • Ratio and fractions • Given another part of a ratio <u>Developing probability</u> • Listing outcomes, sample space • Finding probability of events • Mutually exclusive events • Experimental probability • Probability scale	<u>Working with percentages</u> • Fractions/decimals and percentages • Percentage of an amount • Increase and decrease by a percentage • Expressing as a percentage <u>Proportion</u> • Direct Proportion • Unitary Method • Best Value • Recipe Problems • Inverse Proportion (higher) • Similar shapes • Enlargement <u>Averages and Statistical data</u> • The mode, median, mean and range • Comparing averages • Averages from frequency tables • Stem and leaf diagrams • Pie charts	<u>Sequences</u> • Inequality notation • Understanding negatives • Linear sequences • Non linear sequences • Visual sequences • Generate sequences from an algebraic rule • Nth term • Special sequences <u>Linear Graphs</u> • Coordinates in all quadrants • Midpoint of a line • Lines parallel to x and y axis • Reflection on a grid • Lines in the form y = kx • Lines in the form y = x + a • Plotting lines in form y = mx + c
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	-Angles, bearings, equations -Decimals, distance time graphs -Area, perimeter, surface area and volume	-Algebra, laws of indices -Volume, surface area, plans and elevations, drawing 3D shapes	-Algebra, area, perimeter, volume, angles, problem solving	- Percentages - Proportion - Averages	- Fractions - Ratio	- Algebra - Fractions
	Cross-Curricular Links	In art, links can be made with tessellations and why some shapes fit together. In technology during technical drawing. Speed will be covered in science.	In technology when looking at packaging and design. Students will study surface area in science (often of animals) and in art, students will study 3D shapes.	A competent knowledge of algebra will give students confidence in science. Algebra will feature during solving equations and substitution. Formulas will be used in ICT when using excel	Fractions and ratio are used in food tech when mixing ingredients or art when mixing paints.	Averages and statistical data cross over with Science and Geography.	Graphs are used in Science, Design Tech and Geography to show and analyse data. Sequences are used in IT for coding and also music to create melodies and tunes.
	Links to the Real World / Careers / P.D.	<u>Real life links:</u> Architecture Landscaping Design <u>Careers</u>: Architect Gardener Construction	<u>Real life links:</u> Production Packaging Adaptations of species <u>Careers</u>: Scientist Manufacturing	<u>Real life links:</u> Science IT Problem solving <u>Careers</u>: Software design Analyst Scientist	<u>Real life links:</u> Fractions and ratio are seen in everyday life. They are used in mixing solutions from painters to beauticians and hairdressers to farmers. <u>Careers</u>: Hair dresser Engineer Lab worker Accountant	<u>Real life links:</u> Percentages are seen widely in retail, from food packaging to mark up on products or sales. Percentages can be seen in banking. <u>Careers</u>: Banker Shop keeper/owner Accountant Statistician	<u>Real life links:</u> Graphs can be seen on the news on a regular basis, mainly by scientists to describe, analyse and show data. <u>Careers</u>: Science Medicine Pharmacist IT
Vocabulary	Key words	<u>Angles</u> Interior/exterior Parallel Alternate Corresponding regular / irregular <u>Decimals and measure</u> Inequality tenths, hundredths Round Speed / Distance / Time <u>Area / perimeter</u> Compound Quadrilateral Triangle	<u>Rules of indices</u> power index indices roots cube square / cube number <u>Volume and surface area</u> Cubed / Cubic / Cube Prism Cuboid Triangular Prism Face, Vertex / Vertices Edges Cross Section Area / Surface Area	<u>Expressions and formula</u> Expand Factor / Factorise Simplify Expression Substitute Integer Positive / Negative Variable <u>Solving equations</u> Equality Equation Inverse Operation	<u>Working with fractions</u> Numerator /denominator Product unit fraction integer/whole <u>Application of ratio</u> Parts Simplify Proportion <u>Developing probability</u> Likely/unlikely Impossible, certain, even chance Mutually exclusive	<u>Working with percentages</u> Profit / Loss Increase / Decrease <u>Proportion</u> Recipe Best value Similar/similarity Unitary <u>Averages and Statistical data</u> Average Spread Consistent Distribution	<u>Sequences</u> Arithmetic Term Rule Finite Linear Non- linear <u>Linear Graphs</u> Coordinate Axis Parallel Slope Negative Quadrant