

Department		Year 7						
Term	Topic	Disciplinary Knowledge	Vocabulary	Assessment	Cross-Curricular Links	Golden Threads	Personal Development	Rationale
1	Sequences Algebraic Knowledge Equality & Equivalence	Generalizing linear numerical patterns; recognizing structural equivalence vs calculating answers; formulating general rule expressions (\$n\$-th term); rigorous variable manipulation	Sequence, Term, Variable, Expression, Equation, Identity, Inverse		Computer science: Algorithms.	Linear patterns, algebraic structure, and \$n\$-th term rules.		Overcomes algebra anxiety; sets early secondary baseline
2	Equality & Equivalence Four operations Averages Rounding	Applying commutative, associative, and distributive laws; evaluating central tendency measures (mean, median, mode, range); estimating and rounding to appropriate significant figures.	Commutative, Distributive, Mean, Median, Mode, Range, Outlier	Autumn test	Geog: Climate stats.	Four operations, basic statistics, and estimation	In Term 2 statistics, students learn how data can be presented or misrepresented in news media, fostering healthy scepticism and data literacy.	Critical media evaluation of data claims.
3	Graphing data Fractions, decimals and percentages	Converting fluently between visual, fractional, decimal, and percentage representations; plotting linear relationships on Cartesian axes; interpreting bivariate data trends	Bivariate, Axis, Quadrant, Denominator, Multiplier		Science: Data graphing.	Fractions, decimals, percentages, and Cartesian graphs	Terms 3 and 4 embed practical consumer calculations—percentages of amounts, rates, discounts, and compound budgeting—preparing students for economic independence	Financial literacy (rates, discounts, value).
4	Directed number Fractions and percentages of an amounts Perimeter & area	Operating with negative quantities using zero-pair models; applying multiplicative operators for percentage change; geometrically deriving area formulas for compound 2D shapes	Directed Number, Multiplier, Perimeter, Area, Perpendicular	Spring test	Design Technology: Material measurement.	Directed numbers, percentage change, and 2D area.		Spatial constraints in design & consumer math.
5	Speed distance and time Properties of number	Compound ratio problem with speed. Prime factor decomposition using Venn diagram to find HCF and LCM	Compound Measure, Rate, Prime, Factor, HCF, LCM		Physics: Kinematics.	Speed rates, prime factors, HCF, and LCM		Travel planning & systematic problem solving
6	Add & subtract fractions Angles & polygons	Constructing common denominators using LCM; formal geometric deduction for interior/exterior polygon angles; building multi-step logical angle proofs.	Common Denominator, Mixed Number, Polygon, Tessellation	Summer test	Art: Tessellations.	Fraction operations, polygon angles, and geometric proofs	Term 6 connects angle properties and tessellations to historical architecture, art, and natural symmetry, instilling wonder in mathematical structures.	Appreciation of geometry in architecture & nature.

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1	Ratio Proportion and scale Algebraic manipulation	Understanding multiplicative relationships, simplifying ratios, dividing into a given ratio, scale drawing models; expanding single brackets, factorising linear expressions, and algebraic substitution	atio, Proportion, Scale Factor, Multiplicative, Equivalent, Variable, Coefficient, Expression, Expand, Factorise, Simplify		eography (map scale & coordinates), Science (chemical ratios, concentrations & scaling), Art/DT (scaling & technical drawing).	Proportional Reasoning, Algebraic Representation & Multiplicative Thinking.	Financial literacy (comparing best buys) and logical precision in problem-solving	Establishes early Key Stage 3 ratio & algebraic manipulation foundations, enabling students to model real-world relationships and preparing them for linear graphs and physics equations
2	Co-ordinate and graphs Multiply and divide fractions Symmetry	Plotting and interpreting straight-line graphs $y = mx + c$ across four quadrants; fraction arithmetic (multiplication and division by reciprocals); line and rotational symmetry in 2D shapes	Quadrant, Gradient, Intercept, Numerator, Denominator, Reciprocal, Symmetry, Reflection, Rotation, Order of Symmetry	Autumn test	Physics (distance-time graphs & kinematics), Geography (grid references), Art (tessellation & symmetry)	Visual Representation, Structural Number Fluency & Spatial Reasoning	Visual precision, attention to detail, and spatial confidence.	Linking algebraic equations visually via coordinates grounds abstract algebra, while fraction operations solidify the numerical fluency necessary for probability and proportional reasoning.
3	Area, Volume and Density Equations Percentages	Calculating compound shape areas, surface area & volume of prisms, compound measures ($\text{Density} = \frac{\text{Mass}}{\text{Volume}}$); solving multi-step linear equations (unknowns on both sides); percentage change, percentage increase/decrease, and reverse percentages.	Compound Shape, Prism, Surface Area, Volume, Density, Mass, Equation, Inverse, Subject, Multiplier, Percentage Change		Science/Chemistry (density, mass, volume calculations), Business/Economics (interest rates, profit/loss, percentage change).	Algorithmic Problem Solving, Multiplicative Thinking & Mathematical Modelling.	Practical consumer literacy, financial budgeting, and economic awareness.	Connects 2D/3D geometry with physical real-world quantities (density) and equips students with crucial lifelong financial skills through percentages.
4	Indices Standard form	Applying index laws (multiplication, division, powers, zero index); expressing numbers in scientific standard form ($A \times 10^n$); performing calculations with large and small numbers in standard form.	Index / Exponent, Base, Power, Index Laws, Standard Form, Scientific Notation, Order of Magnitude, Significant Figures.	Spring test	cience/Biology (cell sizes & microscopic scales), Physics/Astronomy (planetary distances & speed of light).	umber Structure & Scale, Scientific Representation.	Appreciation of scale in the universe (microscopic to astronomical) and scientific rigor.	aster handling extremely large and small quantities essential for STEM subjects, bridging arithmetic fluency with algebraic index laws.
5	Interpret represent data Angles in parallel lines and polygons Probability	Constructing and interpreting scatter graphs, pie charts, correlation, and outliers; angle relationships (alternate, corresponding, co-interior) and polygon angle sums; theoretical probability, relative frequency, and sample space diagrams.	Scatter Graph, Correlation, Outlier, Alternate, Corresponding, Co-interior, Polygon, Interior Angle, Exterior Angle, Theoretical Probability, Relative Frequency, Sample Space.	Formative data analysis tasks and angle deduction tasks	Geography/Humanities (demographic data representation), Design & Architecture (polygon structural properties), Biology/Sociology (statistical data & risk).	Statistical Literacy, Geometric Proof & Reasoning Under Uncertainty.	Critical evaluation of data presented in media, understanding risk, and avoiding statistical fallacies.	Empowers students to become critical consumers of data in society and develops rigorous geometric deduction skills required for formal mathematical proof.
6	Circles Graphs and charts Sequences	Circumference ($C = \pi d$) and area ($A = \pi r^2$) of circles; constructing and interpreting time-series graphs; generating linear sequences and finding the n^{th} term rule.	Radius, Diameter, Circumference, Pi (π), Area, Time Series, Trend, Sequence, n^{th} Term, Position-to-Term Rule.	Summer test	Engineering (circular motion and mechanics), Computer Science (algorithms & iterative loops), Economics (trend analysis over time).	Pattern Generalisation, Continuous Measurement & Non-Rectilinear Geometry.	Pattern recognition, logical rule-following, and appreciation of mathematical constants in nature	Completes Year 8 by mastering non-rectilinear geometry (circles) and formalising algebraic generalisation through the n^{th} term, creating a smooth transition to Key Stage 4 / GCSE.

Department

Year 9

Term	Topic	Disciplinary Knowledge	Vocabulary	Assess	Cross-Curricular Links	Golden Threads	Personal Development	Rationale
1	Properties of number Percentages Area & Volume	Prime factors, HCF/LCM, surds; compound interest & reverse percentages; surface area & volume of 3D shapes (prisms, cylinders, cones, spheres).	Prime Factor, HCF, LCM, Rational, Surd, Compound Interest, Multiplier, Reverse Percentage, Prism, Cylinder, Sphere, Surface Area, Volume		Science (scientific scale & physical volumes), Finance/Economics (interest calculation & asset depreciation).	Multiplicative Reasoning, Structural Number Fluency, Spatial & Measurement Representation.	Financial literacy (understanding debt, savings, and compound interest) and precision in structural analysis.	Builds advanced numerical fluency and geometric calculation methods required for GCSE STEM topics, bridging Key Stage 3 arithmetic with high-level algebraic and physical applications.
2	Equations, inequalities and formulas Fractions Rates. Standard form	Multi-step equations, inequalities, rearranging formulas; fraction operations; distance-time graphs & compound units; standard form arithmetic	Inequality, Rearrange, Reciprocal, Rate of Change, Compound Unit, Standard Form, Scientific Notation, Index.	Autumn test	Physics (speed, rates of change, compound units,), Biology/Chemistry (microscopic measurement in standard form).	Algebraic Representation, Proportionality & Scientific Scale.	Logical deduction, structured step-by-step problem-solving, and scientific rigor.	Consolidates fundamental algebraic manipulation and scientific notation needed for GCSE physics and higher-tier mathematics.
3	Maths and Money Straight line graphs Ratio & Proportion	Financial maths (VAT, loans, budgeting, interest); linear graphs graph inequalities; direct/inverse proportion & scale drawings.	Gradient, Intercept, Parallel,, Inverse Proportion, Scale Factor, VAT, Mortgage, Budget, Interest Rate, Investment.		Business Studies & Economics (budgeting, tax, interest rates), Geography (scale drawing, map reading, conversion graphs).	Mathematical Modelling, Multiplicative Reasoning, Financial Fluency.	Essential real-world adult financial capability, budgeting responsibility, and economic awareness.	Direct application of proportional and linear mathematics to real-world financial literacy and graphical modelling, preparing students for real-world independence and GCSE application problems
4	Construction & Congruence Similarity Algebraic manipulation	Bisectors, loci, & triangle constructions; congruence proofs & similarity scale factors; expanding double/triple brackets & solving quadratics.	Bisector, Perpendicular, Congruence, Similarity, Scale Factor, Quadratic, Factorise, Expand, Identity, Expression	Spring test	Engineering/DT (technical drawing, scale models, structural stability), Art (geometric scale & ratio).	Geometric Proof, Spatial Reasoning, Non-Linear Algebraic Manipulation.	Fine motor precision, visual-spatial reasoning, and rigorous logical proof writing.	Establishes formal geometric proof standards (congruence/similarity) alongside non-linear algebra (quadratics), bridging the transition into Higher GCSE tier topics.
5	Pythagoras Non linear graphs Set & probability Transformations	Hypotenuse, Pythagoras, Quadratic, Cubic, Reciprocal, Turning Point, Intersection, Union, Complement, Relative Frequency, Enlargement, Scale Factor, Vector.	Correlation, Outlier,Alternate, Corresponding, Co-interior, Polygon, Interior, Exterior , Theoretical Probability, Relative Frequency, Sample Space		Computer Science (set theory, logical operators, transformation matrices), Physics (trajectories, quadratic models, wave functions).	Son-Linear Modelling, Spatial Analysis, Reasoning Under Uncertainty	Critical evaluation of risk, probability fallacies, and structural visual intuition.	Expands mathematical representation beyond linear models into curved relationships, right-angled geometry, and advanced probability models essential for Key Stage 4 success.
6	Simultaneous Trigonometry	Solving simultaneous equations algebraically/graphically; right-angled trigonometry ($\sin$, $\cos$, $\tan$) in 2D/3D	Simultaneous, Elimination, Substitution, Tangent, Sine, Cosine, Opposite, Adjacent, Hypotenuse, Exact Value.	GCSE foundation Paper Aids setting for GCSE classes	Physics & Mechanics (vectors, resolving forces, wave motion), Geography/Surveying (bearings, clinometers, topography).	Multi-Variable Algebraic Modelling, Geometric Trigonometric Ratios	Analytical determination, multi-step problem solving, and preparation for Key Stage 4 academic pathways	inalises Key Stage 3 by introducing foundational GCSE higher-tier topics (simultaneous equations and trigonometry), ensuring accurate setting and smooth transition into Year 10 GCSE preparation