

Mathematics
Key Stage 3 Curriculum Map

Woolwich Polytechnic School for Boys

YEAR 8 CURRICULUM EXPECTATIONS

KEY KNOWLEDGE	KEY SKILLS
By the end of Year 8, pupils know: • Equivalence and proportional relationships among fractions, decimals, percentages and ratios, including percentage change, scale and money. • Number structure involving powers, roots, index laws, standard form, significant figures, estimation and recurring decimals. • Algebraic structure across sequences, formulae, equations, inequalities, expansion, factorisation and algebraic fractions. • Coordinate and graphical representations, including midpoints, transformations and equations of straight lines. • Geometrical and measurement relationships involving angles, shapes, circles, area, surface area, volume and unit conversion. • Statistical set and number concepts, including averages, diagrams, Venn diagrams, factors, primes, HCF and LCM.	By the end of Year 8, pupils can: • Calculate fluently with integers, decimals, fractions, percentages, ratios, powers and standard form using appropriate methods. • Select and combine methods to solve multi-step numerical, financial and proportional problems. • Generate sequences; solve equations and inequalities; expand, factorise and simplify algebraic expressions and fractions. • Plot and interpret coordinates and straight-line graphs; calculate midpoints and perform transformations accurately. • Apply angle facts and formulae to solve problems involving circles, area, surface area and volume. • Construct and interpret tables, statistical and Venn diagrams; justify conclusions, estimate, check and correct solutions.

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	AUTUMN 1 Units 1 - 4	AUTUMN 2 Units 5 - 8	SPRING 1 Units 9 - 12	SPRING 2 Units 13 - 16	SUMMER 1 Units 17 - 20	SUMMER 2 EOY + Units 21 - 24
KNOWING WHAT	Fraction, decimal and percentage equivalence; percentages of amounts and percentage change. Decimal operations and the principles used to compare value for money. Roots, powers, positive and negative indices, index laws and common algebraic factors. The structure of linear equations, including brackets, unknowns on both sides and denominators.	Term-to-term and position-to-term rules for arithmetic and pattern sequences. Equivalent ratios, sharing, scale diagrams and links between ratio, fractions and percentages. Significant figures and the role of rounding in estimation. Coordinates, line segments and the midpoint of two points.	Area formulae for compound shapes, parallelograms and trapeziums; units of area. Circle vocabulary and the formulae for circumference and area. Standard form with positive and negative powers of ten. Sets, Venn diagrams, factors, multiples, primes, HCF, LCM and prime factor decomposition.	Properties and nets of three-dimensional shapes. Surface area of cubes, cuboids and prisms. Volume of cubes, cuboids and prisms; units of volume. Horizontal, vertical and diagonal lines; straight-line equations and graphs.	Translations and reflections on coordinate grids. Angle facts involving lines, points, triangles, quadrilaterals, parallel lines and polygons. Pie charts, line graphs, stem-and-leaf diagrams and averages from diagrams. Linear inequalities, inequality notation and number-line representations.	Expansion and factorisation of single and double brackets, including quadratic expressions. Operations with fractions and mixed numbers. The structure and manipulation of algebraic fractions. Recurring decimal notation and the relationship between fractions and recurring decimals.
KNOWING HOW	Convert between fractions, decimals and percentages; calculate fractions, percentages and percentage change. Calculate accurately with decimals and compare financial options. Apply index laws and simplify expressions and algebraic fractions by cancelling common factors. Construct and solve linear equations in a range of forms.	Generate and use term-to-term and position-to-term rules. Simplify ratios, share amounts, find unknown quantities and interpret scale diagrams. Round to significant figures and estimate calculations. Plot coordinates, calculate midpoints and solve coordinate problems.	Calculate compound areas and convert area units. Substitute into circle formulae and calculate circumference and area. Convert between ordinary numbers and standard form and calculate with powers of ten. Complete and interpret Venn diagrams and use prime factors to find HCF and LCM.	Identify and describe 3D shapes and construct or interpret their nets. Calculate surface areas from nets and formulae. Calculate volumes of cubes, cuboids and prisms and convert volume units. Plot straight-line graphs and determine their equations.	Translate and reflect shapes accurately using coordinates. Combine angle facts to solve multi-step problems. Draw, interpret and compare statistical diagrams and calculate averages from them. Represent and solve single linear inequalities.	Retrieve and apply Year 8 knowledge in cumulative assessment and problem solving. Expand, simplify and factorise algebraic expressions. • Calculate with numerical and algebraic fractions. Use written division and recurring notation to convert fractions to recurring decimals.
PLANNED ASSESSMENT	Unit tests for Units 1-4. End-of-half-term cumulative assessment after Unit 4, supported by ongoing formative assessment.	Unit tests for Units 5-8. Autumn assessment after Unit 7, followed by Unit 8 and responsive consolidation	Unit tests for Units 9-12. Ongoing formative assessment through retrieval, questioning, classwork and homework.	Unit tests for Units 13-16. Spring assessment after Unit 15, followed by Unit 16 and responsive consolidation.	Unit tests for Units 17-20. Ongoing formative assessment through retrieval, questioning, classwork and homework.	Revision and end-of-year assessment at the start of Summer 2, followed by unit tests for Units 21-24.

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