KINGSMEAD
Achieving through Caring

KS3 Sequence of Learning (Year 8) - Mathematics

Key Stage 3		Set 1	Set 2	Set 3 & 4
Learning Cycle 1	Term 1 - 2 (September - December)	**1 Factors and Powers** Prime factor decomposition Laws of indices Powers of 10 Calculating and estimating **2 Working with Powers** Simplifying expressions; powers and roots More simplifying - using index laws Expanding brackets and factorising Substituting and solving equations **Building on:** Prime numbers, using powers, rounding, knowledge of like terms, multiplying expressions, factors. **Assessment:** Progress check 1	**1 Number** Calculations Calculating with negative integers Powers and roots Powers, roots and brackets Multiples and factors **2 Area and Volume** Area of a triangle Area of a parallelogram and trapezium Volume of cubes and cuboids 3D shapes Surface area of cubes and cuboids Problems and measures - real world use **Building on:** The 4 operations, the number line, order of operations, substitution. **Assessment:** Progress check 1	**Title:** **1 Number Properties and Calculations** Adding and subtracting with larger numbers More calculations Negative numbers Writing ratios Using ratios to solve problems Multiplicative reasoning **2 Shapes and Measures in 3D** 3D solids Nets of 3D solids Surface area Volume Working with measures **Building on:** The 4 operations, the number line, language of shape, finding areas, concept of volume **Assessment:** Progress check 1

		3 2D Shapes and 3D Solids Plans and elevations Surface area of prisms Volume of prisms Circumference of a circle Area of a circle Cylinders - volume and surface area Pythagoras' theorem **4 Real life graphs** Direct proportion Interpreting financial graphs Distance-time graphs Rates of change & real life graphs Misleading graphs **Building on:** Area of shapes, language of shapes, concept of volume, substitution, drawing graphs and axes. **Assessment:** Assessment 1	**4 Expressions and Equations** Algebraic powers Expressions and brackets Factorising expressions One-step equations Two-step equations The balancing method Writing expressions and formulae **Building on:** Multiplying, factors, substitution. **Assessment:** Assessment 1	**3 Statistics** Planning a survey Data collection sheets Interpreting bar charts Drawing bar charts Pie charts **4 Expressions and Equations** Simplifying expressions Functions Solving equations Using brackets **Building on:** Tallying, drawing graphs, angles round a point, knowledge of like terms, substitution. **Assessment:** Assessment 1

Key Stage 3		Set 1	Set 2	Set 3 & 4
Learning Cycle 2	Term 3 - 4 (January -March)	**5 Transformations** Reflection and translation Rotation Enlargement More enlargement - negative & fractional Combining transformations 2D shapes and 3D solids - volume and surface area after enlargement **6 Fractions, Decimals and Percentages** Recurring decimals Using percentages Percentage change Repeated percentage change **Building on:** Knowledge of degrees and orientation, multiplication, volume and surface area, calculating simple percentages. **Assessment:** Progress Check 2	**5 Real-life Graphs** Conversion graphs Distance-time graphs Line graphs Complex line graphs Graphs of functions - distance-time, conversion More real-life graphs - solve problems and make predictions **6 Decimals and Ratio** Ordering decimals and rounding Place-value calculations Calculations with decimals Ratio and proportion with decimals Using ratios **Building on:** Ratio, drawing graphs, substitution, reading graphs, decimals. **Assessment:** Progress Check 2	**5 Decimal Calculations** Adding and subtracting decimals Multiplying decimals Ordering and rounding decimals Problem-solving with decimals **6 Angles** Measuring and drawing angles Vertically opposite angles Angles in triangles Drawing triangles accurately Designing nets **Building on:** The 4 operations, rounding, using a protractor, basic angle facts, using a compass. **Assessment:** Progress Check 2

		7 Constructions and Loci Accurate drawings Constructing shapes Constructions 1 - bisect lines & perpendicular lines Constructions 2 - bisect angles Loci **Building on:** Using a compass **Assessment:** Assessment 2	**7 Lines and Angles** Quadrilaterals Alternate angles and proof Geometrical problems Exterior and interior angles Solving geometric problems **Building on:** Language of shape, angles on straight lines and round a point, angles in triangles. **Assessment:** Assessment 2	**Title:** **7 Number Properties** Squares, cubes and roots Calculating with brackets and indices Lowest common multiples Highest common factors Prime factor decomposition **Building on:** Number knowledge, factors, multiples, primes. **Assessment:** Assessment 2

Key Stage 3		Set 1	Set 2	Set 3 & 4
Learning Cycle 3	Term 5 - 6 (April - July)	**Title: Multiplicative Reasoning** Metric and imperial units Writing ratios Sharing in a given ratio Proportion Proportional reasoning Using the unitary method **Building on:** Multiplying and dividing by powers of 10, fractions **Assessment: no assessment**	**Title: Lines and Angles** Lines, angles and triangles Estimating, measuring and drawing angles Drawing triangles accurately Calculating angles Angles in a triangle Quadrilaterals **Building on:** Angle properties of shapes, types of angle, using a protractor **Assessment: no assessment**	**Title: Measuring and Shapes** Shapes Symmetry in shapes More symmetry Regular polygons Perimeter Area **Building on:** Reflection, names of shapes, area and perimeter **Assessment: no assessment**

		Title: Perimeter, Area, Volume, Sequences and Graphs Triangles, parallelograms and trapeziums Perimeter and area of compound shapes Properties of 3D solids Surface area Volume Measures of area and volume Sequences The nth term Pattern sequences Co-ordinates and line segments Graphs **Building on:** Properties of 2D and 3D shapes, names of shapes, writing expressions, drawing graphs **Assessment:** END OF YEAR EXAM	**Title: Sequences, Graphs and Transformations** Sequences Pattern sequences Co-ordinates Extending sequences Straight-line graphs Position-to-term rules Congruency and enlargements Symmetry Reflection Rotation Translations and combined transformations **Building on:** Substitution, properties of shapes, reflection **Assessment:** END OF YEAR EXAM	**Title: Fractions, Decimals, Percentages and Transformations** Comparing fractions Equivalent fractions Calculating with fractions Adding and subtracting fractions Introducing percentages Finding percentages Reflection Translation Rotation Congruency Quadrilaterals **Building on:** Multiplication, division, factors, multiples, percentages, reflection **Assessment:** END OF YEAR EXAM