The Grange School KS3 Level Descriptors – Maths

Maths	Number	Algebra	Ratio & Proportion	Geometry & Measure	Statistics & Probability
TR Steps Transition	• Multiply integers by 10, 100, 1000 • Writing Integers in words and figures • Mental and written methods for simple addition & subtraction • Mental and written methods for simple multiplication and division • Using the Number line • Ordering whole numbers • Begin to use decimal notation- working with money. • Working with common fractions • Simple calculations using a calculator	• Using diagrams to spot patterns in a sequence.		• Perimeter of simple shapes. • The area of shapes by counting squares. • Naming 2D and 3D shapes	• Know and use the vocabulary of probability such as likely, equally likely, fair, unfair, certain when describing likelihood. • The mode and range of small data.
Progress Step 1	• Place value of integers and decimal numbers • Comparing Integers and Decimal Numbers • Estimating Numbers • Reading Scales • Simple Mathematical notation • Interpreting real life tables - time, timetables, distance tables. • Reading the calendar	• Introduction to algebraic conventions • Co-ordinates • Finding missing terms in simple sequences • Understand equality and equivalence	• Ratio Notation	• Simple Geometric Definitions • Naming angles • Draw and measure line segments • Classifying angles • Identify parallel and perpendicular lines • Types of triangles and quadrilaterals • Identifying polygons • Names of angles • Symmetry • Congruency: congruent shapes	• Probability scale • Statistical charts: bar charts, line graph, pictograms, frequency tree

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Progress Step 2 Including the above	• Represent numbers on a number line: decimal, integers • Adding and Subtracting Integers • Adding and subtracting decimal numbers • Inverse Operations • Introduction to fractions • Understanding fractions as a division • Representing Fractions - diagrams and number lines • Simplifying fractions • Equivalent Fractions • Half-way values • Factors, multiples and Prime Numbers • Introduction to Powers/Indices • Multiplying and Dividing by Powers of 10 • Rounding to the Nearest 10, 100, 1000 • Rounding to Decimal places	• Recognise types of sequences • Represent sequences: tables, diagram, graphs. • Function machines • Understanding equality and equivalence • Collecting Like Terms	• Introduction to Ratio • Simplifying ratios • Introduction to Percentages • Value for money • Introduction to proportion	• Properties of Solids • Nets of solids • Angles on a Line and at a Point • Measuring and drawing Angles • Drawing Triangles using a protractor • Reflections • Rotations • Rotational symmetry • Translations	• The averages and the range • Frequency Tables- grouped and ungrouped • Discrete and continuous data • Two-way tables • Listing Outcomes • Calculating Probabilities • Identify and represent sets • Venn Diagrams • The intersections and union of sets • Sample space • Use and interpret pie charts, line graphs, multiple bar charts
Progress Step 3 Including the above	• Problem solving with financial mathematics • Fractions, decimals, percentages. • Estimating answers • Rounding numbers to significant figures • Using formal methods for multiplying and dividing decimal numbers	• Solving Linear Equations • Like and unlike terms • Identify and use formulae, expressions, identities and equations • Factors and expressions • Substitution and expressions • Expanding Brackets; single • Factorisation • Substitution • Straight Line Graphs • The Gradient of a Line	• Understanding ratio - n:1 and 1: n, circumference, diameter • Dividing into a ratio • Ratio and Fractions • Direct Proportion graphs and problems • Conversion graphs • Currency conversion • Scale diagrams • Maps and Scale factors • Percentage increase and decrease	• Angles in parallel lines • Angle facts-angles on a straight line, at a point, vertically opposite angles. • Properties of triangles and quadrilaterals • Angles in a triangle and quadrilateral. • Interior and exterior angles in polygons • Angles and parallel lines • Perimeter of shapes	• Venn Diagrams and probability • The complement of a set • Choosing the most appropriate average • Misleading graphs • Scatter Graphs and correlation • Identify outliers • Representing Data - Pie Charts • Representing Data - Stem and Leaf Diagrams

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	• Working with negative numbers - adding, subtracting, multiplying and dividing • Calculator questions • Finding fraction of amounts • Adding and subtracting Fractions • Working with reciprocals • Multiplying and Dividing fractions • Converting between improper and mixed fractions and vice versa. • Calculating mixed fractions. • The order of operations (BODMAS/BIDMAS) • Highest Common Factor • Lowest Common Multiple • Percentages of amounts using mental methods and a calculator. • Prime Factorisation • Types of numbers - prime numbers, square numbers, triangular numbers. • Working with Squares, roots and cubes • Introduction to Indices	• Drawing Quadratic Graphs • Sketching Functions • Changing subject of a Formula • Term-to-term rule • Generating a Sequence from the nth Term • Finding the nth Term • Special sequences	• Percentage change • Repeated percentage • Percentage change • Reverse percentages • Simple Interest	• Area of 2D shapes (rectangles, triangle, parallelogram, compound shapes) • Circle definition • Circumference of circle • Area of circle • Surface area of prisms • Surface area of cylinders • Converting between metric units of length, weight and capacity. • Volume of prisms and cylinders • The four quadrants • Draw equation of lines on a grid. • Comparing gradients and intercepts • The equation of a line • Interpret gradients and intercepts • Lines parallel to axes. • The mid-point of line segment. • Plans and Elevations • Problems on Coordinate Axes • Bearings	• Averages from a table - Basics • Averages from a table - Estimate for the Mean • Grouped & ungrouped frequency table • Compare distributions using averages and the range

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Progress 4 including the above	• Laws of indices • Standard form • Calculations with standard form • Calculating Simple Interest and Compound Interest • Converting metric units of area and volume • Index Notation • Comparing numbers in index form • Calculating numbers written in index form (positive and negative index)	• Expanding and Simplifying Single Set of Brackets • Expanding and Simplifying Brackets Double Set of Brackets • Forming & Solving Equations • Forming Expressions • Rearranging Simple Formulae • Forming Formulae and Equations • Representing inequalities on a Number Line • Forming inequalities • Solving Linear Inequalities • Simultaneous Equations Graphically • Interpreting Graphs including Reciprocal graphs and piecewise. • Fractions in algebraic contexts • Adding and subtracting algebraic fractions • Multiply and divide algebraic fractions • Algebraic fractions with directed numbers • Algebra and sequences	• Compound Units • Best Buy • Ratio and algebra problems • Inverse proportion • Distance-Time Graphs • Rates of change and units • Solve problems with inverse proportion • Graphs of inverse relationships • Similar Shapes	• Enlargement and scale factor • Construct perpendicular bisectors • Construct a perpendicular from a point • Construct a perpendicular to a point • Construct an angle bisector • Congruent triangles • Interior and Exterior angles of polygons	• LCM /HCF using Venn Diagrams • Probabilities from Venn diagrams • Misleading graphs • Represent and interpret grouped data • Relative Frequency • Expected outcomes • Independent events