KS3 Maths Curriculum

Learning Plan	Number	Algebra	Geometry and Measures	Handling Data and Statistics	Ratio and Proportion
TPS 6	• round numbers to given degree of accuracy • work out problems involving upper and lower bounds • change fractions to decimals and write them in order of size • add, subtract, multiply, and divide decimals and solve word problems • convert recurring decimals into fractions using algebra • efficiently to answer mathematical problems	• write down equations of straight lines parallel and perpendicular to a given line • solve simultaneous equations with both variables having unequal coefficients • work out the nth term of quadratic sequences • work out terms of a recursive sequence	• convert metric units including those of area and volume • work out problems involving angle facts • show that two triangles are congruent using SAS, SSS, RHS, or ASA • enlarge 2D shapes with a negative scale factor • solve problems that involve similar shapes • construct triangles • solve loci problems • solve problems that involve Pythagoras' Theorem • use Trigonometry to calculate acute angles of right- angled triangles	• interpret, analyse, and deduce conclusions from time series graphs • compare the distribution of two box plots • draw histograms and interpret them • calculate the probability of two independent events • calculate experimental probabilities • draw Venn diagrams and calculate probabilities from them	• work out problems that involve a fraction of a quantity • use fractions, decimals, and percentages to describe proportions • work out problems using reverse percentages • work out compound interest and depreciation question • solve problems that involve the application of direct proportion • interpret and deduce conclusions from distance time graphs • use maps and scale drawings to represent real life distances • read and interpret real life graphs

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TPS 5	● write numbers in terms of their factors, LCM, and HCF ● write ordinary numbers in standard form and vice versa ● round numbers to 1 significant figure and perform estimations and approximations ● work out upper and lower bounds of given quantities ● multiply and divide fractions and mixed numbers ● apply the laws of indices ● simplify surds	● change the subject of a formula ● derive algebraic formulae and plot them on a graph ● work out the gradient of a straight line graph ● draw quadratic and cubic graphs from a table of values ● expand double brackets ● factorise algebraic expressions with double brackets ● solve linear equations which involve brackets and fractions ● solve simultaneous equations with one of the variables having equal coefficients ● solve inequalities ● work out the nth term of an arithmetic sequence	● work out interior and exterior angles in a polygon ● calculate the arc length and area of a sector ● solve problems that involve bearings and parallel line ● perform and specify translations, rotations, reflections of 2D shapes ● enlarge a 2D shape with a centre of enlargement ● calculate the surface area and volume of a prism	● calculate the mean from grouped data ● interpret scatter graphs and describe correlation ● draw cumulative frequency curves and estimate quartiles from them ● draw box plots ● estimate quartiles from box plots and describe their distribution ● represent probabilities on a tree diagram ● calculate probabilities from tree diagrams	● work out percentage increase and percentage decrease ● solve problems involving ratio ● share a quantity in a given ratio and solve problems ● use direct proportion to answer best buy problems ● calculate compound measures (speed, density, and pressure)

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TPS 4	• Round to a given number of decimal places • Round to a given number of significant figures • Read numbers of any form written in standard from • Write numbers of any form in Standard Form • Use efficient methods to apply the four operations to calculations with decimals • Multiple & divide by 0.1 & 0.01 • Use a calculator, interpreting a sensible degree of accuracy • Use BIDMAS with negative values, indices & roots • Use prime factorisation • Use index notation x^0, x^1, x^n with whole numbers • Use Venn Diagrams to find HCF & LCMs • Multiply & divide proper fractions	• Identify & use expression, equation, formula & identity • Simplify expressions involving indices & brackets • Use the laws of indices • Explore powers of powers • Substitute & simplify algebraic fractions • Expand & factorise a single bracket • Expand two or more binomials • Plot graphs y = *n*, x = *n*, y = *n*x, y = x + *n*, y = mx + c • work out position to term rules of sequences • Recognise geometric sequences & special sequences	• Recognise & use geometric notation • Find the area of a trapezium • Calculate the circumference of a circle • Find the area of a circle • Calculate the area of compound shapes • Find the surface area of cuboids & cylinders • Explore the properties of the diagonals of quadrilaterals • Enlarge simple shape by scale factors • Reflect shapes in a given line • Rotate points about a given point • Calculate & give reasons for angles in parallel lines • Know simple angle proofs • Find & prove simple geometric proofs	• organise data into the following: categorical data, discrete data, continuous data • compare & interpret multiple & composite bar charts • draw frequency polygons and interpret them • Calculate missing values with mean, median & mode • Construct & interpret frequency tables using grouped & ungrouped data • Find the mean from an ungrouped frequency table • read from two-way tables • calculate the probability of equally likely outcomes • Use sample space diagrams for more than one event • Use simple probability trees	• Express one number as a fraction of another • Explore calculator & non-calculator methods of interchanging fractions & decimals • Find percentage increase & decrease • Use multipliers • Express one quantity as a % of another • Compare quantities using % • Understand and use scale factors in scale diagram and maps • Construct and interpret conversion graphs and currency graphs • Recognise similar shapes • Understand and recognise ratio notation • Divide into a ratio • Work out parts and whole • Use the unitary method to solve problems • Solve problems with compound measures - speed

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TPS 3	• Round numbers to powers of 10 • Use all four operations with positive integers & decimals • Multiply & divide by powers of 10 • Round to a given number of decimal places • Estimate answers by rounding to 1 significant figure • Solve problems involving money • Use a calculator • Order directed numbers • Use all four operations with directed numbers • Use the order of operations BIDMAS • Recall square & cube numbers & their roots • Determine prime numbers • Find factors, multiple & prime factors • Identify HCF & LCM • Prime factorisation • Add & subtract fractions including mixed numbers • Find fractions of amounts	• Recognise expressions, equations, inequalities • Complete function machines & work inversely • Recognise algebraic notation • Substitute positive & negative values into expressions • Construct expressions • Simplify expressions by collecting like terms • Multiply a single term over a bracket • Take out common factors • Form & solve two-step equations • Represent functions graphically • Use co-ordinates in all four quadrants • recognise linear & non-linear sequences • generate sequences from an algebraic rule	• Convert between units of metric measures • Solve perimeter problems • Find areas of rectangles, parallelograms & triangles • Identify parts of a circle • Calculate the volume of cuboids • Describe the properties of triangles & quadrilaterals • Recognise & use geometric notation • Recognise parallel & perpendicular lines • Name & construct polygons • Recognise line symmetry • Recognise rotational symmetry • Know the sum of angles at a point & on a straight line • Know that vertically opposite angles are equal • Know the sum of angles in triangles & quadrilaterals	• Construct & use tally charts & frequency tables • organise data into the following: categorical data, discrete data, continuous data • draw bar charts & vertical line charts to represent statistical data • draw a line graph to show trends in data • draw a pie chart from a given set of data (no rounding) • interpret information from a pie chart • work out the mean, median, mode & range for a list of data • use the language of probability • show accurately probability on a probability scale • calculate the probability of equally likely outcomes • Use sample space diagrams • Know the sum of all possible outcomes is 1 • Understand & use set notation, including Venn Diagrams	• Interchange between fraction & decimals • Use non-calculator methods to interchange fractions & decimals • Find fractions of amounts (up to 1) • Find percentage of amount using mental & calculator methods up to 100% • Convert between metric units of length, mass & capacity • Convert between units of time • Use multiplicative relationships between known facts • Understand & recognise ratio notation • Simplify ratio to its simplest form • Divide into a ratio • Express a fractions as ratio & vice versa • Solve unit price problems • Solve proportion problems with recipes

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TPS 2	• Round whole numbers to the nearest 10, 100 or 1000 • Add & subtract whole numbers with more than 4 digits • Multiply 2 digit by one & two digit numbers using a formal write method • Divide numbers up to 4 digits by a single digit using a formal written method of short division • Recognise negative numbers in context • Solve two step problems using different operations • Recognise square numbers • Recognise factor pairs • Recognise equivalent fractions • Order fractions of different denominators • Change mixed numbers to improper fractions & vice versa	• Express missing number problems algebraically • Recognise equivalent expressions e.g. a+b = b+a • Complete function machines & work inversely • Recognise algebraic notation • Substitute positive values into simple formulae • Substitute positive & negative values into expressions • Find pairs of numbers that satisfy an equation with two unknowns • Solve one-step equations • Generate terms of a sequences from a term-to-term rule • Generate terms of a sequence from a position-to-term rule	• Measure & calculate the perimeter of composite rectilinear shapes • Calculate the volume of cuboids • Distinguish between regular & irregular polygons based upon reasoning about equal lengths & sides • Identify, describe & represent the position of a shape following a reflecting or translation • Recognise that the shape has not changed after a reflection or translation • Describe co-ordinate positions in all four quadrants • Reflect simple shapes on & away from the mirror lin • Identify angles at point total 360°(whole turn) • Identify angles on a straight line total 180° (½ turn)	• Solve comparison sum & difference problems use line graphs & bar charts • Recognise the median of a set of data • Place events accurately on a probability line • Sort objects & numbers in a Venn Diagram	• Write % as decimals • Solve problems which require knowing % equivalents of ½, ¼, ,⅕ • Know % equivalents of fractions with a denominator of 10 or 25. • Convert between units of t • ime e.g. *how many seconds in two minutes?* • Complete diagrams to represent statements such as 'for every blue square there are 3 red squares' and explore different representations of this, including multiples

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TPS 1	• Read, write & order numbers to 1000 • Read & write whole numbers to 10 million • Use < & > to compare whole numbers • Multiply & divide mentally drawing upon known facts • Count backwards & forwards in whole numbers through zero • Recognise factor pairs • Order fractions of the same denominator	• Recognise that different symbols & letters can be used to represent variables & unknowns • Find missing numbers, lengths, co-ordinates & angles • Solve number puzzles e.g. what two different even numbers add up to 12, a + b = 12 • Describe & continue number sequences	• Convert between different units of metric measures • Calculate area of rectangles using cm^2 • Estimate area of irregular shapes • Estimate volume by counting cm^3 or other cubes • Identify 3D shapes from 2D representations • Know angles are measured in degrees • Estimate & compare acute, obtuse & reflex angles • Draw angles & measure them in degrees • draw the plan, front, and side elevation of 3D shapes	• Use tally charts to collect data • draw pictograms to represent statistical data • draw bar charts & vertical line charts to represent statistical data • Solve comparison sum & difference problems use line graphs & bar charts • Recognise the mode & range of a set of data • Use the language of probability • Draw a describe a probability line	• Read & write decimal numbers as fractions e.g. 0.71 as • Recognise the % symbol & understand that per cent relates to 'a number of parts per hundred' • Write % as fractions with denominator of 100 • Convert between metric units e.g. km to m, m to cm, cm to mm, g to kg, l to ml • Convert between units of t • ime e.g. *how many seconds in two minutes?*