

Subject: Maths KS3 Curriculum Mapping

	Year 7	Year 8	Year 9
HT1	<p>Calculations</p> <ul style="list-style-type: none"> - Use place value to order and compare integers, fractions and decimals. - Round numbers to 2 d.p. and 1 s.f. - Multiply and divide numbers by powers of 10 without a calculator. - Multiply and divide decimals by transposing them to integers first - Fluency and application of the four operations within a variety of problems including money, angle, perimeter, area and volume problems - Properties of numbers and sets of numbers including, prime factors, highest common factors and lowest common multiples - Square and cube numbers and their roots and raising a number to a positive power - Applying order of operations to calculations - 	<p>Calculations</p> <ul style="list-style-type: none"> - Multiplying and divide a fraction by an integer, by a unit fraction and by a general fraction - Solve problems involving calculating with negative numbers. - Increase and decrease a number by a - % using a decimal or fraction multiplier. <p>The number system</p> <ul style="list-style-type: none"> - Convert improper and mixed fractions to decimals and percentages. - Estimate answers to check if an answer is of the correct size. - Use the answer to a given calculation to determine the answer to another. 	<p>Calculations</p> <ul style="list-style-type: none"> - Use multipliers to solve problems involving repeated percentage change, compound interest and reverse percentages. - Convert between fractions, decimals and percentages to find the most appropriate method to use in a calculation. <p>The number system</p> <ul style="list-style-type: none"> - Solve problems involving numbers expressed in standard index form with and without a calculator. - Recognise that measurements given to the nearest whole unit may be inaccurate by up to half a unit in either direction.
HT2	<p>The number system</p> <ul style="list-style-type: none"> - Rapidly recall the decimal and percentage equivalencies of common fractions - Find equivalent fractions and simplify fractions - Convert between mixed numbers and improper fractions - Add and subtract proper fractions and mixed numbers with different denominators and be able to predict if the answer will be greater or less than a whole. - Calculate a percentage of a quantity and solve simple interest problems. - Multiply and divide fractions by integers - multiply fractions by fractions - find the reciprocal of a fraction - divide fractions by fractions - Fluency and application of the four operations with fractions within a variety of problems including money, angle, perimeter, area and volume problems - - 	<p>Indices</p> <ul style="list-style-type: none"> - Write functions from words and diagrams using function notation and substitute in positive and negative integers, fractions and decimals - Rearrange formulae expressed in algebraic form where the subject appears only once - Use and understand prime decomposition for LCM and HCF. <p>Equations and formulae</p> <ul style="list-style-type: none"> - Expand the product of two linear expressions and simplify - Factorise quadratic expressions by identifying a common factor - Solve fractional equations and equations with unknowns on both sides using balancing correctly 	<p>Indices</p> <ul style="list-style-type: none"> - Understand that even powers and roots are always positive but odd can be positive or negative. - Substitute values into complex expressions and formulae involving powers and roots - Simplify algebraic expressions using multiplication and division of integer powers. - Use algebraic manipulation skills to prove simple identities (using $2n$ and $2n+1$ to represent odd and even numbers) and multiples. <p>Equations and formulae</p> <ul style="list-style-type: none"> - Factorise and solve quadratic expressions including the difference of two squares. - Solve pairs of linear simultaneous equations through elimination and substitution.

<p style="text-align: center;">HT3</p>	<p>Indices, Equations and formulae</p> <ul style="list-style-type: none"> - Order negative numbers - Apply the four operations to sets of positive and negative numbers - Use index laws with numerical and algebraic expressions involving multiplication and division of integer powers. - Derive a formula from words or function machine and in simple cases, change its subject. - Form and solve simple linear equations and inequalities with integer coefficients and represent their solutions on a number line or using set notation. - Substitute integer and non-integer values into expressions to form sequences and plot linear functions - Manipulate algebraic expressions through factorising. - Understand the difference between expressions, equations, formulae and identities 	<p>Proportion</p> <ul style="list-style-type: none"> - Use equality of ratios to solve problems and represent ratios as linear equations and draw their graphs. - Understand and use fractions, decimals and percentages as multipliers when calculating the original amount after a % change, including improper fractions. <p>Mensuration</p> <ul style="list-style-type: none"> - Derive, recall and use formulae for area and circumference of circles and parts of circles, using pi in exact calculations. - Change freely between standard and compound units. - Use compound measures such as speed and density. 	<p>Proportion</p> <ul style="list-style-type: none"> - For problems involving direct and inverse proportion, write relationships and recognise graphs. <p>Mensuration</p> <ul style="list-style-type: none"> - Know and use formulae for volume and surface area of all prisms, pyramids, spheres and cones, including frustums. - Investigate Pythagoras' theorem, using a variety of media, through its historical and cultural roots, including 'picture' proofs.
<p style="text-align: center;">HT4</p>	<p><i>Time set aside to ensure the first three units of year 7s are fully consolidated.</i></p>	<p>Graphs and sequences</p> <ul style="list-style-type: none"> - Plot graphs of quadratic functions and identify their turning points, intercepts and lines of symmetry. - Understand $y = mx + c$ represents a straight line and the effects of changing m and c, including interpreting the gradient as a rate of change and the y intercept as the starting value in a real life graph. - Use the intersection of graphs to solve linear simultaneous equations. 	<p>Graphs and sequences</p> <ul style="list-style-type: none"> - Find gradient and intercept of line given in the form $y = mx + c$ and other forms such as $3x + 2y = 12$. - Find the equation of a line or the midpoint given two coordinates. - Find the equation of a line from a single coordinate and the equation of a parallel line. - Plot simple quadratic, cubic and reciprocal functions. Solve a quadratic by identifying its roots on a graph. <p>Transformations</p> <ul style="list-style-type: none"> - Recognise, visualise and construct enlargements using positive and fractional scale factors; identify the centre and scale factor of enlargement. - Understand and use column vectors. - Transform 2D shapes by a combination of reflection, rotation and translation including the use of vector notation. - Describe the resultant image as a single transformation.

HT5	<p>Proportion</p> <ul style="list-style-type: none"> - Understand and use common multiples when solving problems involving direct proportion. Share in a given ratio. - Understand and use fractions, decimals and percentages as multipliers when increasing and decreasing. - Simplify a ratio and write in the form 1:n or n:1 and interpret scales and maps using ratio. - 	<p>Angles</p> <ul style="list-style-type: none"> - Solve problems using properties of angles, of parallel and intersecting lines, and of triangles and other polygons, justifying inferences and explaining reasoning with diagrams and text - Derive the sum of angles in a triangle - Use bearings to describe position and draw given bearings. <p>Probability</p> <ul style="list-style-type: none"> - Solve probability problems involving theoretical models and relative frequency and calculate expected outcomes. - Construct tree diagrams and write the probability on the branches. 	<p>Angles</p> <ul style="list-style-type: none"> - Explore the angle and side ratios of equilateral and isosceles right angles triangles. - Use an understanding of similar shapes to find missing sides and angles within right angled triangles. - Know exact values of sin cos tan 30 45 60 and 90. <p>Probability</p> <ul style="list-style-type: none"> - Use Venn diagrams to solve problems with probability. - Use tree diagrams to calculate probabilities of successive or combined events. - Apply the AND/OR rule for combined or successive events.
HT6	<p>Statistics</p> <ul style="list-style-type: none"> - Calculate, use and interpret the statistical measures mode, median, mean and range for discrete data, including comparing distributions. - Interpret graphs representing real data, including pie charts and recognise misleading diagrams. <p>Constructions</p> <ul style="list-style-type: none"> - Construct triangles and other 2-D shapes using a ruler and a protractor, given information about their sides and angles 	<p>Statistics</p> <ul style="list-style-type: none"> - Draw and interpret graphs including scatter graphs. Know that correlation does not mean causation. - Identify modal class and median class and estimate the mean of grouped data. - Draw conclusions from data and consider outliers when drawing these conclusions. <p>Constructions</p> <ul style="list-style-type: none"> - Use straight edge and compasses to produce standard constructions including the midpoint and perpendicular bisector of a line segment, the perpendicular from a point to a line, and the bisector of an angle. 	<p>Statistics</p> <ul style="list-style-type: none"> - Select, construct and modify, on paper and using ICT suitable graphical representation to progress an enquiry including trends in time series and lines of best fit on scatter graphs. <p>Constructions</p> <ul style="list-style-type: none"> - Understand and use SSS, SAS, ASA and RHS condition to prove the congruence of triangles - Use congruence to show that translations, reflections and rotations preserve length and angle. - Use standard constructions to create a scale drawing.