Sandbach School Maths Curriculum

Year 10 Maths Curriculum Sequence

<u>Intent :</u> The curriculum will consolidate and extend the differing areas of mathematics covered, introducing trigonometry. Skills will be developed with the use of problem solving activities and the frequent use of 'problem solving' style GCSE questions.

HT1 Congruence, similarity & enlargement	HT1 Trigonometry	HT2 Representing solutions of equations & inequalities	HT2 Simultaneous equations	HT3 Angles & bearings Working with circles	HT3 Vectors	HT4 Ratios & fractions	HT4 Percentages & interest / Probability	HT5 Collecting, representing & interpreting data	HT5 Non-calculator methods	HT6 Types of number & sequences/ Indices & roots	HT6 Manipulating expressions
Prior Knowledge: Enlargement using positive scale factor. Introduction to congruency in Y9	**Prior Knowledge:** Knowledge of right angled triangle and notation.	**Prior Knowledge:** Forming & solving two step equations Drawing straight line graphs.	**Prior Knowledge:** Solving linear equations with one variable	**Prior Knowledge:** Draw & interpret scale diagrams. Recognise & label parts of a circle.	**Prior Knowledge:** Knowledge of coordinates	**Prior Knowledge:** Share into a given ratio. Links to ratio & scale	**Prior Knowledge:** Percentage increase/decrease. Finding original value. Working with sample spaces.	**Prior Knowledge:** Interpreting two way tables, pie charts & various diagrams. Averages from tables	**Prior Knowledge:** Mental/written methods for all four operations.	**Prior Knowledge:** Expressing as a product of prime factors. Nth term of linear sequences	**Prior Knowledge:** Simplifying algebraic expressions.
National Curriculum Links **Pupils will:** -Apply the concepts of congruence & similarity, including the relationships between lengths, areas & volumes in similar figures. -Interpret & use fractional and negative scale factors for enlargements.	**National Curriculum Links** **Pupils will:** -Apply Pythagoras' Theorem and trigonometric ratios to find angles and lengths in right-angled triangles in 2D figures. -Know the exact values of sinx, cosx and tanx for required angles. -Know and apply the sine rule an cosine rule to find unknown lengths/angles. -Know and apply to calculate the area, sides or angles of any triangle.	**National Curriculum Links** **Pupils will:** -Translate simple situations or procedures into algebraic expressions or formulae. -Solve linear inequalities in one or two variables, represent the solution set on a number line.	**National Curriculum Links** **Pupils will:** -Model situations mathematically and express the results using a range of formal mathematical representations. -Solve two simultaneous equations in two variable algebraically (linear/quadratic).	**National Curriculum Links** **Pupils will:** -Interpret & use bearings. -Apply Pythagoras' Theorem and trigonometric ratios to find angles & lengths in right-angled triangles. -Calculate arc lengths, angles & areas of sectors of circles. -Calculate surface area & volumes of spheres, pyramids, cones & composite solids.	**National Curriculum Links** **Pupils will:** -Describe translations as 2D vectors. -Apply addition & subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representation of vectors.	**National Curriculum Links** **Pupils will:** -Divide a given quantity into two parts in a given part : part or part : whole ratio. -Relate the language of ratios & the associated calculations to the arithmetic of fractions & to linear functions. -Use compound units such as speed, unit pricing and density to solve problems.	**National Curriculum Links** **Pupils will:** -Express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%. -Set up, solve and interpret the answers in growth and decay problems, including compound interest. Calculate & interpret conditional probabilities through representation using expected frequencies.	**National Curriculum Links** **Pupils will:** -Describe, interpret & compare observed distributions of a single variable. -Construct & interpret diagrams for grouped discrete data & continuous data i.e. histograms with equal and unequal class intervals. -Apply statistics to describe a population.	**National Curriculum Links** **Pupils will:** -Calculate exactly with fractions (surds) and multiples of pi. -Simplify surd expressions involving squares and rationalise denominators. -Change recurring decimals into their corresponding fractions and vice versa. -Apply & interpret limits of accuracy when rounding or truncating (including upper & lower bounds)	**National Curriculum Links** **Pupils will:** -Recognise & use sequences of triangular, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences, and simple geometric progressions. -Estimate powers & roots of any given positive number. -Simplifying expressions involving sums, products & powers.	**National Curriculum Links** **Pupils will:** -Simplify and manipulate algebraic expressions (including those involving surds {and algebraic fractions} by factorising quadratic expressions. -Argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments {and proofs}
This leads to: Problem solving including ratio questions using area & volume scale factor	**This leads to:** Trigonometry of non right angled triangles including ambiguous cases.	**This leads to:** Solving quadratic inequalities and being able to represent graphically.	**This leads to:** Simultaneous equations using quadratic equations and solving using a variety of methods.	**This leads to:** Apply trigonometry to problems solving bearings questions.	**This leads to:** Prove that vectors are parallel or that 2 or more points lie on the same line.	**This leads to:** Problem solving ratio questions for example when you are required to form and solve an equation	**This leads to:** Repeat percentages, further exponential growth or decay modelling.	**This leads to:** Work between various modes of representing data and comment on distributions.	**This leads to:** Continue to use surds in a problem solving context...i.e. finding the area of a rectangle.	**This leads to:** Use knowledge of sum / products to construct various proofs.	**This leads to:** Continue with working with expressions to complete further proofs using different methods : contradiction.
This links to: D&T – Producing accurate scale drawings that can be enlarged.	**This links to:** Geography – Applying trigonometry to find distances between places.	**This links to:** Science – Working with various formulae.	**This links to:** Business studies – Using simultaneous equations to maximise profits.	**This links to:** Geography – Applying trigonometry to find distances between places.	**This links to:** Physics – Working with forces and working out magnitudes.	**This links to:** Science – Working between units of measurement. D&T – Upscaling models & diagrams.	**This links to:** Business studies – Calculating with percentage increase/decrease, percentages profit and loss.	**This links to:** Science – Analysing and representing data and using diagrams to make conclusions.	**This links to:** Science – When calculating exact values.	**This links to:** Science – Calculating with large/small numbers ie space/atoms	**This links to:** Physics- Rearranging formulae