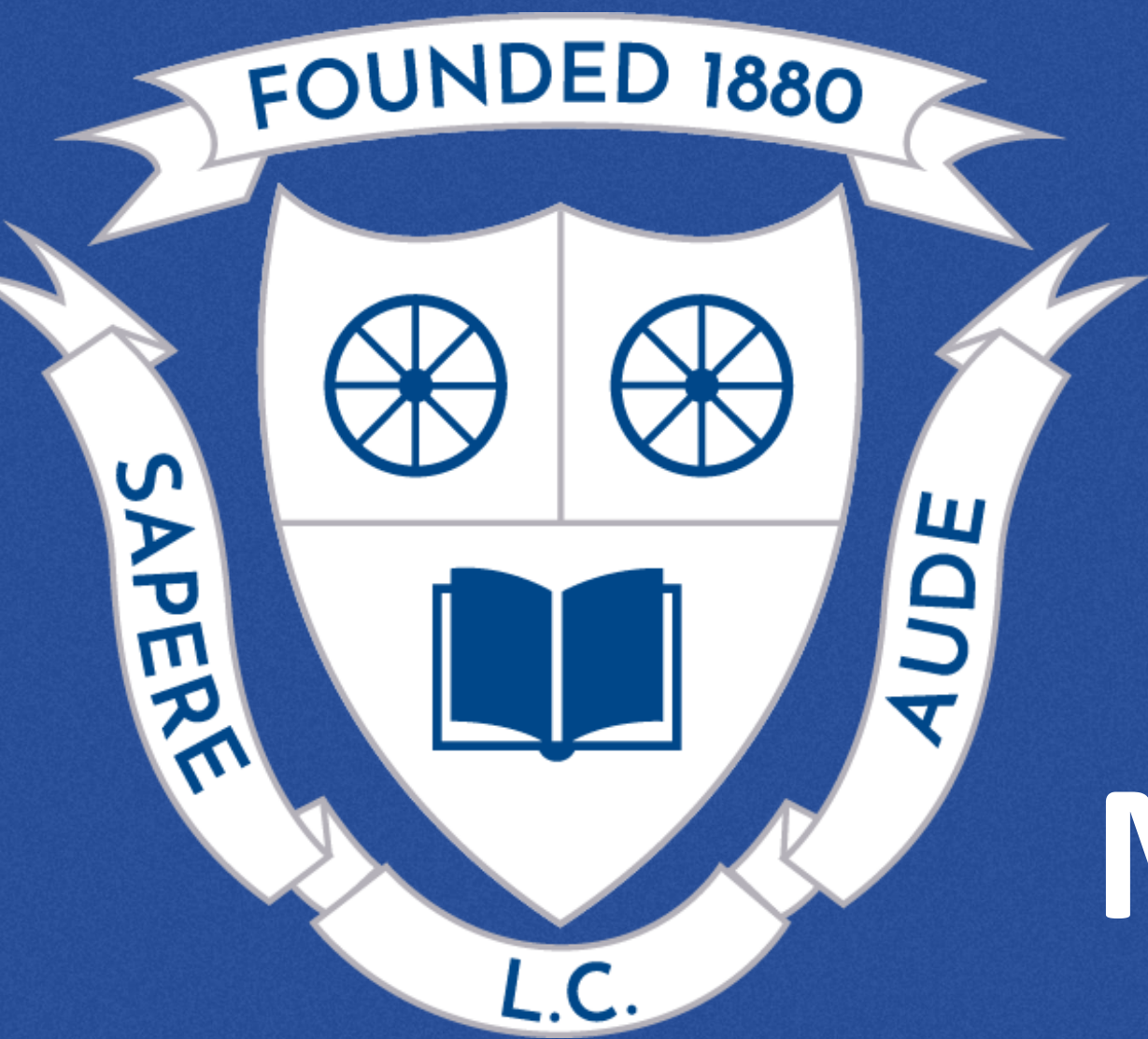




KS3 ASSESSMENT FRAMEWORK:

MATHEMATICS

MATHEMATICS: Year 7 Assessment Framework

	Number	Algebra	Ratio and Proportion	Geometry and Measure	Statistics
Developing	Uses place value with integers and decimals; carries out basic calculations with positive numbers; recognises simple fractions, decimals and percentages.	Uses simple algebraic notation; substitutes positive integers into expressions; collects straightforward like terms and continues simple sequences.	Recognises simple ratios and uses unitary reasoning in familiar contexts; converts between common metric units with support.	Measures and draws angles; uses a ruler, protractor and compasses for simple constructions; identifies properties of common 2-D and 3-D shapes; calculates perimeter and area of rectangles and triangles in familiar problems.	Reads and constructs simple tables, bar charts and pictograms; finds mode, median and range from small data sets.
Approaching	Orders integers, decimals and fractions; uses the four operations with integers and decimals; converts between common fractions, decimals and percentages; rounds appropriately.	Simplifies expressions, substitutes into formulae and solves one-step linear equations; generates sequences from term-to-term rules and uses coordinates in four quadrants.	Simplifies ratios, divides quantities in a given ratio and solves straightforward proportion and percentage problems; uses scale factors in familiar contexts.	Uses angle facts on a line, at a point and vertically opposite; interprets and uses three-figure bearings in familiar contexts; calculates areas of triangles, parallelograms and trapezia and volumes of cuboids; performs simple transformations.	Constructs and interprets frequency tables, bar charts and pie charts; calculates mean, median, mode and range and makes simple comparisons.
Secure	Calculates fluently with positive and negative integers, decimals and fractions; uses powers, roots, factors and multiples; applies fractions and percentages as operators in multi-step problems and explains why a chosen method works.	Manipulates expressions including expanding a single bracket; solves linear equations requiring more than one step; finds nth terms of arithmetic sequences and interprets straight-line graphs in context; uses algebra to justify patterns and relationships.	Uses ratio, fractions and percentages interchangeably; solves multi-step ratio and percentage problems; uses scale drawings and rates such as speed or unit price; justifies proportional methods and conclusions.	Uses properties of triangles, quadrilaterals and parallel lines to solve angle problems; constructs triangles and simple loci accurately; solves problems involving bearings; calculates areas of composite shapes and volumes of prisms; gives clear reasons for each step in a geometric argument.	Selects suitable representations for data; compares distributions using averages and range; interprets simple scatter graphs, including describing correlation; supports conclusions with evidence and recognises when the evidence is limited.
Extending	Chooses efficient strategies in unfamiliar multi-step problems involving fractions, percentages, powers and negative numbers; justifies estimates and checks reasonableness.	Generalises numerical structures algebraically; forms and solves equations from contexts; links sequences, coordinates and linear relationships and explains patterns using algebra.	Solves unfamiliar multiplicative and proportional problems, including reverse percentage and scale; explains why a method is multiplicative rather than additive.	Combines angle facts, symmetry, transformations and measures in non-routine problems; gives clear chains of geometric reasoning and begins to justify results.	Chooses and critiques statistical representations; compares distributions in context and draws cautious conclusions from bivariate data.

MATHEMATICS: Year 8 Assessment Framework

	Number	Algebra	Ratio and Proportion	Geometry and Measures	Probability	Statistics
Developing	Calculates with integers, decimals and common fractions. Uses factors, multiples, powers and roots in familiar questions. Converts common fractions, decimals and percentages.	Simplifies expressions, expands a single bracket, substitutes into formulae and solves simple linear equations. Finds terms of arithmetic sequences.	Simplifies and shares in ratios; solves direct proportion and percentage problems in familiar contexts; uses common compound measures such as speed.	Uses angle facts including parallel lines; carries out accurate constructions with ruler and compasses; calculates areas of common shapes and volumes of prisms; and carries out transformations on grids.	Uses the 0-1 probability scale and appropriate probability language; calculates probabilities of single events; understands that probabilities of exhaustive outcomes sum to 1. Begins to use lists, tables and diagrams for simple combined events.	Calculates and interprets averages and range; constructs common charts and begins to interpret scatter graphs.
Approaching	Works confidently with positive and negative fractions and decimals; uses index notation, roots, standard form in simple cases and percentage change; estimates using rounding.	Expands and factorises simple expressions; solves equations with unknowns on one side; finds nth terms and plots/interprets linear graphs of the form $y = mx + c$.	Solves multi-step ratio, percentage change and direct proportion problems. Uses scale factors and compound units accurately.	Uses properties of polygons and parallel lines in multi-step angle problems. Uses bearings and loci in familiar problems; calculates circumference and area of circles and volumes of prisms. Constructs and describes transformations.	Calculates theoretical probabilities for single and combined events; uses systematic lists, two-way tables, sample spaces and tree diagrams. Identifies mutually exclusive outcomes and compares theoretical probability with experimental results.	Compares distributions using appropriate averages and spread. Selects and interprets charts for discrete and continuous data; describes correlation.
Secure	Calculates fluently with rational numbers, powers and roots; uses standard form; solves reverse percentage and error or estimation problems; selects efficient methods in unfamiliar contexts and justifies the accuracy and reasonableness of results.	Manipulates expressions including expanding products and factorising; solves equations requiring rearrangement; rearranges simple formulae; interprets gradients and intercepts, links equations to graphs and constructs algebraic arguments to justify relationships.	Solves direct and inverse proportion problems numerically and graphically; tackles repeated percentage change, best-buy, speed and density problems using multiplicative reasoning. Explains and justifies the assumptions and methods used.	Uses congruence, similarity, Pythagoras and properties of polygons to solve problems. Solves problems involving constructions, loci and bearing. Works with circles, prisms and compound shapes. Develops structured geometric proofs in which each conclusion follows from stated facts.	Uses tables, grids, Venn diagrams and tree diagrams to enumerate outcomes systematically. Solves multi-stage probability problems, including equally and unequally likely outcomes. Justifies probability models and interprets experimental evidence critically.	Selects appropriate statistical diagrams and measures; compares distributions with reference to context and spread. Interprets bivariate data, supports conclusions with evidence and explains the limitations of any inference.
Extending	Connects number structures, bounds, standard form and proportional reasoning in complex multi-step problems; communicates rigorous justification and evaluates alternative methods.	Forms and manipulates algebraic models; solves equations from unfamiliar contexts; explores linear and quadratic relationships and uses graphs to estimate solutions and justify conclusions.	Models unfamiliar proportional situations algebraically and graphically, including inverse proportion. Combines ratios, rates and percentage change flexibly.	Constructs deductive arguments using angle facts, congruence, similarity and Pythagoras. Solves unfamiliar 2-D/3-D problems and explains why results follow.	Reasons systematically about unfamiliar combined events; distinguishes assumptions about mutual exclusivity, equal likelihood and independence where appropriate, and explains discrepancies between theoretical and experimental probability.	Critiques data collection and representation, compares complex distributions and evaluates what can and cannot reasonably be inferred from statistical evidence.

MATHEMATICS: Year 9 Assessment Framework

	Number	Algebra	Ratio and Proportion	Geometry and Measures	Statistics and Probability	Reasoning and Problem Solving
Developing	Calculates with positive and negative integers and decimals; rounds to a stated degree of accuracy and estimates calculations. Identifies factors, multiples and prime numbers. Uses index notation and writes ordinary numbers in standard form with support.	Substitutes into expressions and formulae; collects like terms; expands a single bracket and factorises simple linear expressions. Solves straightforward linear equations; continues arithmetic sequences, plots coordinates and interprets simple real-life graphs.	Calculates with fractions and mixed numbers in familiar contexts and converts between common fractions, decimals and percentages. Calculates percentages of amounts; simplifies ratios and uses direct scaling, proportion and exchange rates with support.	Uses angle facts at a point, on a straight line and in parallel lines; applies Pythagoras in right-angled triangles; calculates perimeter and area of common shapes and volumes of prisms. Performs and describes simple transformations; follows basic constructions.	Calculates mean, median, mode and range from raw data. Rads frequency tables; constructs and interprets bar charts, pie charts, stem-and-leaf diagrams and scatter graphs. Uses appropriate language to describe correlation.	Identifies the information needed in a familiar problem; and selects a taught method. Records working clearly and checks whether an answer is sensible.
Approaching	Calculates accurately with integers, decimals and fractions; rounds to significant figures and uses estimates to check results. Applies index laws in straightforward calculations; uses prime factorisation to find HCF and LCM; converts to and from standard form.	Expands and factorises linear expressions; solves linear equations requiring rearrangement and changes the subject of simple formulae. Finds nth terms of arithmetic sequences; calculates gradients and midpoints and writes equations of straightforward straight-line graphs.	Uses the four operations with fractions and mixed numbers; solves percentage change, reverse percentage, ratio, scale and exchange-rate problems. Applies multiplicative reasoning and interprets answers in context.	Uses parallel-line and polygon angle facts in multi-step problems; applies Pythagoras and trigonometric ratios to find missing sides and angle. Calculates areas of composite shapes, circle measures and volumes of prisms. Uses bearings, scale drawings, constructions and loci.	Calculates averages from frequency tables and estimates averages from grouped data. Selects, constructs and interprets statistical diagrams; analyses scatter graphs, describes correlation and comments on limitations in the data or representation.	Connects two or more areas of mathematics in structured problems. Selects from familiar strategies; explains key steps, interprets results and refines an approach when prompted.
Secure	Uses estimation and accuracy checks appropriately; applies index laws and prime factorisation in multi-step calculations; works confidently with HCF, LCM and standard form. Applies upper and lower bounds in context and explains the accuracy of a result.	Manipulates expressions and formulae; solves multi-step linear equations; generates and analyses arithmetic sequence. Links coordinates, gradients and equations of straight lines; plots quadratic and other non-linear graphs and uses graphs to find approximate solutions. Justifies algebraic steps.	Uses fractions, percentages and ratios interchangeably; solves multi-step problems involving percentage change, scaling, exchange rates and direct proportion. Selects an efficient multiplicative method and explains why it is appropriate.	Solves multi-step problems involving angles, Pythagoras and right-angled trigonometry. Calculates arc length, sector area, surface area and volume of standard solids. Converts units; performs transformations accurately; completes constructions and loci and solves bearing problems, giving reasons.	Calculates and estimates averages from raw, frequency and grouped data. Chooses suitable representations; compares distributions and analyses bivariate data. Supports conclusions with evidence and explains the limitations of any inference.	Tackles multi-step and less familiar GCSE-style problems independently. Plans and refines a strategy; represents situations mathematically; justifies conclusions using clear notation, logical reasoning and appropriate checks.
Extending	Combines index laws, prime factorisation, standard form, estimation and bounds in unfamiliar GCSE-style problems. Selects efficient approaches, evaluates alternatives and justifies the accuracy and reasonableness of results.	Forms equations and formulae from unfamiliar contexts; links sequences, coordinates, gradients, straight-line equations and non-linear graphs. Uses graphical evidence to estimate solutions; generalises patterns and communicates a clear algebraic argument.	Solves unfamiliar multi-step problems involving fractions, repeated percentage change, ratio, scale and exchange rates. Compares strategies, models proportional situations and evaluates whether conclusions are valid in context.	Combines angle reasoning, Pythagoras, trigonometry, circle measures, surface area, volume, transformations, constructions, loci, bearings and bounds in non-routine problems. Produces a coherent chain of geometric reasoning.	Critiques the calculation and presentation of raw, grouped and bivariate data; compares possible conclusions, evaluates the effect of the representation used and explains precisely what can and cannot be inferred.	Solves non-routine problems by combining knowledge across domains. Compares alternative strategies; forms and tests simple conjectures; evaluates assumptions, methods and results and communicates a coherent mathematical argument.