Fairfield High School for Girls

Mathematics – Year 7

Long-Term Plan 2025-2026

Calendar	Topic	Assessment	Sequencing and Coherence *concepts - themes - skills*	Literacy *reading - vocabulary - oracy - writing*
Autumn - Half Term 1	**Negative Numbers** • Ordering and comparing Negative Numbers • Four operations with negative numbers **Algebraic Expressions** • Algebraic Notation • Simplifying Expressions • Substitution **Number Properties** • Factors, Multiples, Prime and Composite Numbers • Prime Factorisation • Highest Common Factor (HCF) and Lowest Common Multiple (LCM)	A 30 minute in-class, non-calculator Key Topic Test *(mini-summative assessments with formative follow-up)* based on: • Negative Numbers • Algebraic Expressions • Number Properties *Note: Throughout the year, pupils complete short, focused assessments called Key Topic Tests. These help classroom teachers quickly identify any gaps in understanding so they can address them before moving on to new content. The tests also help us monitor how pupils are progressing over time, allowing subject leaders to provide additional support or interventions where needed.*	Starting with negative numbers helps pupils revisit and extend their understanding of cardinality and ordinality in the rational number system covered in detail at KS1 and KS2. It lays the groundwork for later arithmetic, algebra, and problem solving by broadening their conceptual grasp of number lines, differences, and opposites. An early introduction to algebra builds on pupils' familiarity with numbers and extends them into using letters to represent them, called variables. An algorithm for Prime Factorisation will be taught as it lays the foundation for efficiently calculating the HCF/LCM of large numbers, simplifying surds effectively and solving problems involving indices.	**Negative Numbers** **Vocabulary:** positive, negative, additive inverse, less than, greater than, difference **Oracy:** Use number lines for paired discussion—"Which is greater, -7 or -3? Why?" **Literacy Strategies:** Sentence stems: "I know this number is lower because…" **Algebraic Expressions** **Vocabulary:** expression, term, variable, coefficient, simplify. **Oracy:** Pupils explain how they simplified an expression to a partner **Reading:** Interpreting algebraic expressions from written contexts **Literacy Strategy:** Matching key terms to definitions and examples **Number Properties** **Vocabulary:** factor, multiple, prime, square number, composite **Oracy:** "Think-Pair-Share": Is 1 a prime number? Explain your reasoning.

Autumn - Half Term 2	**Order of Operations and Integer Arithmetic** • Formal methods for addition, subtraction, multiplication and division of integers • Understand and use order of operations **Powers of 10 and Decimal Arithmetic** • Multiply and divide by 10, 100 and 1000 • Formal methods for addition, subtraction, multiplication and division of decimals • Divide decimals by decimals using equivalent fractions **Equivalent Fractions** • Find equivalent fractions • Compare fractions • Find a fraction of an amount • Find the whole given the fraction	A 30 minute in-class, non-calculator Key Topic Test based on: • Order of Operations • Integer Arithmetic • Powers of 10 • Decimal Arithmetic	This unit on equivalent fractions revisits key fraction concepts such as equivalence and simplifying, forming the foundation for all fraction operations. Understanding equivalence is essential before performing operations with fractions, especially addition and subtraction with different denominators.	**Order of Operations and Integer Arithmetic** **Vocabulary:** the language associated with elements in the four main binary operations, such as "dividend, divisor and quotient". **Literacy Strategy:** Use of structured reasoning: "I performed the calculation in the brackets first because…" **Powers of 10 and Decimal Arithmetic** **Vocabulary:** power, exponent/index, base **Reading:** Word problems with real-life context such as measures and cost. **Literacy Strategy:** Matching powers to written number descriptions **Equivalent Fractions** **Vocabulary:** numerator, denominator, equivalent, simplify, vinculum. **Literacy Strategy:** Encourage full-sentence justification: "These are equivalent because…" **Oracy:** Oral Justifications explaining common misconceptions "$\frac{6}{8}$ is not twice as big as $\frac{3}{4}$ because…"

Spring - Half Term 3	**Fraction Operations** • Add and subtract, both proper and improper, fractions • Multiply fractions • Divide fractions • Interpret and calculate worded problems involving fractions **Fractions, Decimals and Percentages (FDP)** • Order and compare FDP • Write fractions of amounts as percentages • Find percentages of amounts • Increase and decrease by a percentage	A 30 minute in-class, non-calculator Key Topic Test based on: • Equivalent Fractions • Four operations with Fractions • FDP	Pupils now apply their understanding of equivalence to add, subtract, multiply, and divide fractions. By this point, pupils have studied in depth - integers, decimals and fractions which supports the next topic involving percentages. Pupils will be introduced to decimal multipliers, for finding percentages of amounts which will be vital in fluently solving more difficult problems such as Reverse Percentages and Growth and Decay in years 8 and 9 respectively.	**Fraction Operations** **Vocabulary:** mixed number, improper, reciprocal, common denominator **Literacy Strategy:** Decoding worded problems and inference of key words **Fractions, Decimals and Percentages** **Vocabulary:** percentage, proportion, equivalent. **Reading:** Financial contexts, discounts, interest
Spring - Half Term 4	**Solving Equations** • Function Machines • Solve one and two step equations using a balance method • Solve equations with variables on both sides • Form and solve simple equations in different contexts e.g. angles, perimeter **Averages**	A 30 minute in-class, non-calculator Key Topic Test based on: • Non-calculator Percentages • Solving Equations • Averages	Having a strong knowledge of the four operations, which have been covered in detail by this point, enables pupils to apply inverse operations to solve one- and two-step equations. Pupils will now encounter equation-solving in interleaved practice, alongside unrelated topics such as angle rules and area, helping them to recognise when and how to	**Solving Equations** **Vocabulary:** equation, inverse, solution, balance, unknown. **Reading:** Interpreting and constructing equations from worded contexts **Literacy Strategy:** Sentence stems: "To solve the equation, I first…" **Averages**

	• Understand the data handling cycle • Find the averages and range from a list of data • Compare data given averages **Angles and Quadrilaterals** • Draw and measure angles • Calculate angles adjacent on a straight line • Calculate angles around a point • Know the properties of triangles and quadrilaterals • Calculate angles in a triangle • Calculate angles in a quadrilateral		apply inverse operations in different contexts Knowing how to calculate and interpret averages supports later work with statistical graphs and analysis, such as working with Frequency Tables, Histograms and Cumulative Frequency Graphs. Pupils will use dynamic visualisations to understand angles as measures of rotation. Pupils will develop their understanding of mathematical notation as they will learn the labelling conventions for geometric figures. Pupils will be **carefully** exposed to the many misconceptions that arise when working with angles, to better avoid making them later on. They will also encounter problems where algebra can be used to solve them more efficiently.	**Vocabulary:** mean, median, mode, range, data set. **Oracy:** Discussions on which average is most suitable for a data set **Reading:** Real-world data scenarios (e.g. sports statistics, surveys) **Literacy Strategy:** Comparative writing: "The mode is more suitable than the mean here because…" **<u>Angles and Quadrilaterals</u>** **Vocabulary:** acute, obtuse, reflex, straight line, adjacent. **Oracy:** Pupils describe angle types and relationships in diagrams Pupils will be expected to justify their reasoning for their calculations in full sentences. Pupils will be expected to make justifications akin to: "Although these angles are all on a straight line, they do not sum to 180 degrees because, one of them is not adjacent"

Summer - Half Term 5	**Units** • Convert between units of time • Identify sensible units of measure • Convert metric units • Read scales • Draw and read conversion graphs **Perimeter and Area** • Understand and calculate perimeter of various 2D shapes • Find the area of rectangles, triangles, parallelogram and trapezium • Find the area and perimeter of compound shapes • Calculate area or perimeter in real-life contexts (e.g., painting a room). **Probability** • Understand the probability scale • Calculate probabilities of single events • Construct a sample space diagram	A 30 minute in-class, non-calculator Key Topic Test based on: • Angles and Quadrilaterals • Units • Area and Perimeter	Pupils now apply number and proportion skills in a real-world context, reinforcing multiplication/division and decimal understanding, for converting units. This skill will also be required in the next unit, calculating perimeter and area. Probability is a rich topic now first formally studied in Key Stage 3. Teaching will begin with an intuitive, experiential understanding of chance, using real-world contexts such as coins, spinners, and everyday decisions. A labelled probability scale — from Impossible (probability 0) to Certain (probability 1) — will be introduced early and used consistently to emphasise that all probabilities lie between 0 and 1. The scale will help pupils connect informal language to numerical values, supporting the understanding that probability is a quantitative measure of likelihood, often expressed as a fraction, decimal, or percentage.	**Units** **Vocabulary:** conversion, metric, imperial, scale, rate. **Reading:** Real-life tasks (e.g. converting miles to kilometres in journey planning) **Perimeter and Area** **Vocabulary:** perimeter, area, length, width, formula **Reading:** Word problems involving fencing, flooring, etc. **Probability** **Vocabulary**: certain, impossible, likely, unbiased, equally likely **Oracy:** Probability scale discussions using real-life examples. Oral justifications: "As I increase the number of trials, I would expect that….." **Reading:** Problems involving risk, games, weather forecasts

			Pupils will then be introduced to theoretical probability using equally likely outcomes, as well as relative frequency, by carrying out short experiments and comparing observed outcomes with theoretical expectations.	
Summer - Half Term 6	**Coordinates** • Draw and locate coordinates in all 4 quadrants • Use properties of 2D shapes to locate and draw coordinates • Find the midpoint of a line segment **Statistical Graphs** • Construct and interpret tally charts, bar charts, pictograms and line charts • Describe trends given a time series graph	End of Year KSA. (Knowledge and Skills Assessment) This will be a summative two 45-minute papers based on all the content covered in Year 7. A 30 minute in-class, non-calculator Key Topic Test based on: • Probability • Coordinates • Statistical Graphs	Coordinate geometry is a bridge between algebraic representations and geometrical objects. Pupils, with the aid of graphing calculators such as Desmos, will see that positions in space can be defined with numbers. Pupils develop their knowledge of the Cartesian plane - using conventions (origin, axes, ordered pairs). This promotes mathematical discipline and structure. Coordinate geometry lays the groundwork for: • Linear graphs and equations • Gradient and y-intercept • Transformations (translations, reflections,	**<u>Coordinates</u>** **Vocabulary:** x-coordinate, y-coordinate, co-ordinates, plane, axis, scale, point, mid-point. **<u>Statistical Graphs</u>** **Vocabulary:** bar chart, line graph, pictogram, axis, scale, interval. **Oracy:** Presenting and interpreting data in groups Reading: Analysing real charts (from newspapers, science, etc.) **Literacy Strategy:** Write summaries of trends: "This graph shows that as x increases…"

			rotations and enlargements) • Equations of lines and curves in KS4 Visualising and manipulating coordinates builds spatial awareness, helping with area, symmetry, shape classification, and more. The final topic on Statistical Graphs, consolidates skills in data handling, including bar charts, line graphs, and pictograms. Pupils interpret data, apply averages, and connect number with real-life representation.	