

Year 9 Spring Term					
Sequenced	Maths and money	Straight line graphs	Ratio and proportion	Similarity	Algebraic manipulation
Key Knowledge	To know that: • Money calculations involve wages, salaries, tax, National Insurance, net pay, and gross pay. • Simple interest stays constant over time, whereas compound interest compounds iteratively on accumulated totals. • Unit pricing and exchange rates allow direct value comparisons between products and foreign currencies. • Value Added Tax (VAT), inflation, bank statements, and utility bills follow percentage and arithmetic operations.	To know that: • The general equation of a linear graph is $y = mx + c$, where m is the gradient and c is the y-intercept. • Gradient represents steepness or rate of change, calculated as $\text{Gradient} = (\text{Change in } y) / (\text{Change in } x)$. • Parallel lines have identical gradients ($m_1 = m_2$); perpendicular lines have gradients whose product is -1 ($m_1 \times m_2 = -1$). • Real-life linear graphs use the y-intercept as fixed initial cost and gradient as unit rate of change.	To know that: • Ratios compare quantities in the form $a : b$ and can represent part-to-part or part-to-whole relationships. • Direct proportion means two quantities increase at the same multiplicative rate where $y = kx$. • Inverse proportion means as one quantity increases, the other decreases proportionally where $y = k / x$. • Ratios can be simplified, shared into given totals, or expressed as fractions and percentages.	To know that: • Similar shapes have identical corresponding angles and proportional corresponding side lengths. • The linear scale factor k dictates how much lengths are enlarged. • If the linear scale factor is k, the area scale factor is k^2 and the volume scale factor is k^3.	To know that: • Expanding single brackets multiplies the outer term across all inner terms: $a(b + c) = ab + ac$. • Expanding double brackets produces quadratic expressions: $(x + a)(x + b) = x^2 + (a + b)x + ab$. • Factorising is the inverse of expanding, writing expressions into single or double brackets. • Difference of two squares follows the algebraic pattern $x^2 - a^2 = (x + a)(x - a)$.
Key Skills	To be able to: • Calculate gross pay, tax, National Insurance deductions, and net pay from payslips. • Calculate simple interest using $I = P \times r \times t$ and compound interest using $\text{Total} = P(1 + r/100)^n$. • Convert between currencies using exchange rates and evaluate best-buy options using unit pricing. • Calculate original prices before VAT or discounts using reverse percentage calculations.	To be able to: • Plot and draw straight-line graphs using tables of values or $y = mx + c$. • Find the gradient and y-intercept directly from equations, tables, or graphs. • Determine equations of lines given a gradient and a point, or given two points. • Identify parallel and perpendicular lines from their algebraic equations • Interpret real-life distance-time, velocity-time, and conversion graphs.	To be able to: • Divide amounts into two or more parts using given linear ratios. • Solve multi-step direct and inverse proportion problems using the unitary method or constant k. • Convert fluently between ratios, fractions, and linear equations. • Solve real-life recipe, scale diagram, exchange, and compound rate proportion tasks.	To be able to: • Identify similar 2D shapes and calculate missing lengths using linear scale factor k. • Calculate missing areas of similar 2D shapes using area scale factor k^2. • Calculate missing volumes of similar 3D shapes using volume scale factor k^3 • Prove geometric similarity using angle rules and proportional side lengths.	To be able to: • Expand single and double brackets, simplifying expressions by collecting like terms. • Factorise linear expressions and quadratic expressions of the form $x^2 + bx + c$. • Factorise difference of two squares expressions of the form $x^2 - a^2$. • Simplify algebraic fractions and rearrange complex formulae.
Subject specific vocabulary	Balance, best buy, calculate, compare, compound interest, deduction, estimate, evaluate, exchange rate, gross pay, net pay, optimal, simple interest, tax, VAT	Axis, coordinate, gradient, identify, intersect, interpret, linear graph, parallel, perpendicular, rate, rate of change, relationship, steepness, x-intercept, y-intercept	Combine, constant, constant of proportionality, direct proportion, inverse proportion, link, multiplicative, part-to-part, part-to-whole, portion, proportional, ratio, scale, simplify, unitary method	Area scale factor, congruence, corresponding, enlarge, identify, linear scale factor, prove, ratio, relationship, scale, scale factor, similarity, transform, volume scale factor	Algebraic fraction, binomial, combine, difference of two squares, double brackets, expand, expression, factorise, inverse, manipulate, quadratic, simplify, substitute, term