KS3 Mathematics Curriculum Coverage: 2023 – 2024

Sequenced	Block 1: Area of a trapezium and circles	Block 2: Straight line graphs and quadratic curves	Block 3: Forming and solving	Block 4: Testing conjectures	Block 5: 3D shapes
Key Knowledge	To know: • Pi is the ratio between the diameter and circumference of a circle • Pi (π)=3.14 to 2 decimal places • parts of a circle • the relationship between the diameter and the radius is D = 2r • the formula for the area of a trapezium, parallelogram and circle • the location of relevant buttons on a calculator, including Pi • that multiples of Pi and integers are not like terms • to state the correct units for area and perimeter	To know: • lines x = a , y = b, y=x and y=-x • the shape of linear and quadratic graphs • the equation of a line is y=mx +c • m is the gradient, understand how this affects the steepness of the line • c is the y intercept • lines with the same gradient are parallel • **the product of the gradients of perpendicular lines will always =-1 (H)** • **gradients of perpendicular lines are the negative reciprocal (H)** • **A quadratic curve form a U-shape (H)**	To know: • understand and how to use inverse operations • meaning of inequality signs • to reverse an inequality when multiplying or dividing by a negative number • method to solve equations with unknowns on both sides by keeping equality • the difference between formulae and equation	To know: • what a counterexample is • what a conjecture is • how and when to use negative Numbers and fractions within counterexamples and examples • that expressions and calculations can be written in different ways • what a binomial is • the difference between numerical and algebraic factors • the expansion of a pair of binomials is called a quadratic	To know: • the names of 2d and 3d shapes • how to identify prisms • know the meaning of plan view and elevation views of 3d shapes • the nets of 3d shapes • formulae for volume and surface area of a prism, cylinder, cone, pyramid, sphere
Key Skills	To be able to: • calculate the area of a rectangles, parallelograms, triangles, trapezia and circles • calculate missing lengths given the area of the above shapes • calculate the area of circles and parts of circles with and without a calculator • give answers as multiples of Pi and rounded to a given degree of accuracy • calculate the area of compound shapes, including those with parts of circles	To be able to: • find the equation of horizontal and vertical lines • plot a linear graph from a table of values • spot patterns in tables • identify the effect of the gradient on a line • compare intercepts • identify parallel lines from their equations • find the gradient of a line • find the equation of a line • **identify perpendicular lines from their equations (H)** • interpret the gradient of a line to a given context • interpret the y-intercept of a line to a given context • **Plot a quadratic curve (H)**	To be able to: • apply skills to solve 1 and 2 step equations and inequalities including with fractions and brackets • check solutions by testing values either side of an inequality • check by substituting when solving equations • form and solve equations in mathematical concepts • re-arrange simple formulae to change the subject	To be able to: • express a number as a product of prime factors • show a conjecture to be true or false by providing examples or proof • develop more formal demonstrations that a statement is true or not • use proof algebraically or using counterexamples • calculating with directed numbers • expanding single brackets (multiple methods) • expanding double brackets (multiple methods) • **expanding triple brackets (multiple methods)** • simplifying algebraic terms	To be able to: • draw the plan and elevation of 3d shapes. sketch and label a 3d shape given the plan and elevation • draw the nets of 3d shapes • calculate the volume and surface area of or missing lengths given the volume of surface area of prisms, cylinders, cones, pyramids, spheres. • calculate the volume and surface area of compound 3d shapes
	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary
Subject specific	area triangle rectangle parallelogram formula units square rhombus trapezium/trapezia parallel perpendicular compound component shapes sector estimate infinite pi π circle radius diameter squared in terms of pi significant figures decimal place calculate substitute	table of values, x axis, y axis, horizontal, vertical, parallel, intercept, y-intercept, straight line, equation, graph, coordinate, perpendicular, gradient, negative reciprocal, real life, direct proportion, inverse proportion	equation, inequality, solution, greater, less than, unknown, inverse, solve, expand, reverse, satisfy, coefficient, check, rearrange, subject, formulae	factor, multiple, prime, common, odd, even, express, conjecture, verify, counterexample, demonstrate, prove, binomial, quadratic, factorise, expression, expand, term, simplify	face edge vertex polygon prism cross section net dimensions area plan front/side elevation face perspective isometric solid perpendicular height units formulae compound dimensions surface open/closed cylinder pi curved surface area cube cuboid units commutative width length constant pyramid cone sphere base