Curriculum Map – Maths – Year 9

Immanuel College
Church of England Academy

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Key focus	Reasoning with algebra	Constructing in 2 & 3 dimensions	Reasoning with number	Reasoning with geometry	Reasoning with proportion	Representations & revision
Key knowledge and skills	Lines parallel to the axis, v Using tables of values Compare gradients and intercepts Understand and use $y=mx+c$ Find the equation of a line from a graph Interpret gradients and intercepts of real-life graphs Inequalities with negative numbers Solve equations and inequalities with unknowns on both sides Solving equations and inequalities in context Substituting into formulae and equations Rearranging formulae Factors, multiple and primes Conjectures about a number Expand a pair of binomials Conjectures with algebra The 100 grid	Know names of 2-D and 3-D shapes Recognise prisms (including language of edges/vertices) Sketch and recognise accurate nets of cuboids and other 3-D shapes Plans and elevations Find area of 2-D shapes Surface area of cubes, cuboids, triangular prisms, and cylinders Volume of cubes, cuboids, prisms, and cylinders Locus of distance from a point and straight line/shape Locus equidistant from a straight line/shape and two points Construct a perpendicular bisector Construct a perpendicular from a point Construct a perpendicular to a point Locus of distance from two lines Construct an angle bisector Construct triangles Identify congruent figures Explore and identify congruent triangles	Integers, real and rational numbers Work with directed number Solve problems with integers and decimals HCF and LCM Adding, subtracting, multiplying, and dividing fractions Solve problems with fractions Calculate percentage increase and decrease Express a change as a percentage Solve 'reverse' percentage problems Recognise and solve percentage problems Solve problems with bills and bank statements Calculate simple and compound interest Solve problems with Value Added Tax Calculate wages and taxes Solve problems with exchange rates Solve unit pricing problems	Angles in parallel lines Solving angle problems using chains of reasoning Angle problems with algebra Conjectures with angles and shapes Identify the order of rotational symmetry of a shape Compare and contrast rotational symmetry with lines of symmetry Rotate a shape about a point Translate points and shapes by a given vector Compare rotation and reflection of shapes Identify and calculate the hypotenuse of a right-angled triangle Determine whether a triangle is right-angled Calculate missing sides in right-angled triangles Use Pythagoras theorem on coordinate axes Explore proofs of Pythagoras' theorem	Recognise enlargement and similarity Enlarge a shape by a scale factor Work out missing sides and angles in a pair of given similar shapes Solve problems with direct and inverse proportion Conversion graphs Solve 'best buy' problems Solve speed, distance, and time problems Use distance-time graphs Solve problems with density, mass, and volume Solve flow problems and their graphs Rates of change and their units	Relative frequency Expected outcomes Independent events Use diagrams to work out probabilities Draw and interpret quadratic graphs Interpret other graphs - including reciprocal Represent inequalities

Key words/ vocabulary	Parallel, horizontal, vertical, straight line, axis, equation, graph, intercept, linear, table of values, function, slope, steep, positive, negative, coordinate, y-intercept, rearrange, direct proportion Inequality, satisfy, reverse, solve, greater/less than (or equal), balance, coefficient, unknown, check, substitute, form, formula, variable, subject, make the subject of, inverse operation Factor, multiple, prime, common, odd, even, express, conjecture, true, false, verify, counterexample, demonstrate, prove, expand, factorise, binomial, term, expression, quadratic, simplify	Dimensions, cube, cuboid, cylinder, cone, sphere, pyramid, tetrahedron, face, edge, vertex, polygon, cross-section, net, area, plan, front/side elevation, perspective, isometric, solid, surface area, units, open, closed, perpendicular height, circumference, width, length, commutative, constant Locus, path, equidistant, construction lines, point, stadium, arc, perpendicular, bisector, line segment, congruent, identical, invariant, reflection, unique, corresponding side, side-side-side, side-angle-side, angle-side-angle, right angle-hypotenuse-side	Integer, real, rational, irrational, root, operation, quotient, product, sum, difference, decimal, remainder, adjust, compensate, fraction, numerator, denominator, mixed number, improper Increase, decrease, reduce, multiplier, profit, loss, original, change, bar model Total, debit, credit, balance, expense, bill, percentage, interest, annual, deposit, principle, rate, compound, per annum, tax, VAT, valued added, income, salary, wage, exemption, overtime, currency, convert, exchange, cost, proportion, unitary	Angles at a point, alternate, corresponding, parallel, co-interior, isosceles, interior, exterior, regular, polygon, sum, total, parallelogram, rhombus, kite, diagonal, bisect, regular Shape, rotational, symmetry, order, regular, irregular, line, mirror, direction, invariant, clockwise, object, image, centre, anti-clockwise, translate, vector, horizontal, vertical, move Hypotenuse, right-angled triangle, opposite, adjacent, square root, origin, gradient	Similar, ratio, enlargement, scale factor, corresponding, object, image, integer, positive, centre, fraction, greater than 1, between 0 and 1 Inverse, variables, constant, product, proportional, relationship, unit cost, factor, multiple Speed, distance, time, per, hours, minutes, convert, rounding, accuracy, average, gradient, axis, origin, density, mass, volume, units, substitute, rearrange, constant rate, straight line, curve, flow rate, prism, rate of change	Experiment, outcome, biased/unbiased, trial, frequency, relative frequency, event, expected, probability, trial, product, affect, Venn diagram, intersection, union, sample space, two-way table Quadratic, parabola, curve, vertex, turning point, symmetry, reciprocal, exponential, curve, discontinuous, inequality, solution set, satisfy, test point, included/excluded
Assessment method	Topic Assessments	Topic Assessments	Topic Assessments	Topic Assessments	Topic Assessments	Topic Assessments
Wider links	Animation (IT) Best buys (better value for money)	Architecture Construction Gardening	Best buys (better value for money) Wages Tax VAT Insurance Pensions	Construction Design Gardening Art Sculptures Paintings	Building models Science – Physics Mechanics	Statistics Writing reports Delivering reports
Enrichment opportunities	Maths Challenge BDAT Team Maths Challenge www.nrich.maths.org, Suggested further activities: STEM outreach team at the University of Leeds, Bletchley Park, Bank of England Museum, The Royal Observatory.					
Careers links	Analyst (data, investment, …), engineer, architect, actuary, accountant, software engineer, maths teacher					

"Perseverance produces **character,** and character, **hope**" (Romans 5:4)