Curriculum Map – Maths – Year 10

Immanuel College
Church of England Academy

(H) = Higher-tier extension/development

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Key focus	• Algebraic manipulation • Equations, inequalities and formulae • Quadratic expressions and equations	• Percentages • Ratio and scale • Work with fractions	• Non-calculator methods • Straight line graphs • Probability	• Rounding and estimation • Perimeter, area and volume • Interpret and represent data • Non-linear graphs	• Angles • Graphs and diagrams • Vectors	• Factors, powers and surds • Pythagoras' theorem and trigonometry • Simultaneous equations
Key knowledge and skills	**Algebra** • Simplify, expand and factorise algebraic expressions • Use identities and algebraic proof • Form and solve equations and inequalities • Rearrange formulae • Expand and factorise quadratic expressions and solve quadratic equations • **(H) Extend to more complex algebraic manipulation where appropriate**	**Number and proportion** • Convert fluently between fractions, decimals and percentages • Calculate percentage change, repeated change and reverse percentages • Simplify and share ratios and use ratio in context • Use scale and proportional reasoning • Calculate accurately with fractions and solve multi-step problems	**Number** • Use efficient mental and written calculation methods • Work exactly and estimate/check answers **Graphs** • Plot and interpret straight lines and find gradients/intercepts • Find equations of lines; **(H) parallel and perpendicular lines** **Probability** • Use sample spaces, frequency and probability trees • Calculate combined probabilities; (H) conditional probability	**Number and geometry** • Round to appropriate accuracy and estimate calculations • **(H) Calculate and use upper/lower bounds** • Calculate perimeter, area, surface area and volume in complex contexts **Statistics and graphs** • Use sampling and a range of statistical representations • Compare distributions using averages and spread • **(H) Interpret cumulative frequency, box plots and histograms** • Draw and interpret quadratic, cubic, reciprocal and other non-linear graphs	**Geometry** • Use angle facts in parallel lines and polygons to solve multi-step problems • Interpret scale diagrams, plans/elevations and real-life graphs • Use vector notation and arithmetic • **(H) Use vectors in geometric proof and more complex reasoning**	**Number** • Use prime factors, indices, roots and standard form confidently • **(H) Simplify and calculate with surds** **Geometry** • Apply Pythagoras and trigonometry in 2-D contexts • **(H) Extend trigonometry to more complex contexts as appropriate** **Algebra** • Solve simultaneous linear equations algebraically and graphically • **(H) Extend to linear/quadratic systems where appropriate**
Key words/ vocabulary	Expression, identity, expand, factorise, equation, inequality, formula, subject, quadratic, root, solution, proof.	Percentage, multiplier, compound change, reverse percentage, ratio, scale, proportion, fraction, reciprocal, exact value.	Exact, estimate, gradient, intercept, linear, equation of a line, parallel, perpendicular, probability, mutually exclusive, independent, conditional.	Significant figure, bound, perimeter, area, surface area, volume, sample, distribution, cumulative frequency, histogram, quadratic, cubic, reciprocal.	Alternate, corresponding, co-interior, bearing, scale diagram, plan, elevation, vector, magnitude, direction, scalar, resultant.	Prime factor, index, root, surd, Pythagoras, hypotenuse, sine, cosine, tangent, simultaneous, eliminate, substitute, intersection.
Assessment method	Topic tests; exit tickets and formative assessment.	Topic tests; exit tickets; Assessment Point 1.	Topic tests; exit tickets and formative assessment.	Topic tests; exit tickets and formative assessment.	Topic tests; exit tickets and formative assessment.	Topic tests; exit tickets; Assessment Point 2 / end-of-year assessment.
Wider links	Science - rearranging formulae. Computing - symbolic rules and functions.	Finance - interest and percentage change. Geography/Design - scale and proportional models.	Science - straight-line relationships. Economics/science - probability and risk.	Science - measurement error, volume and data. Geography - data analysis.	Geography - scale diagrams and navigation. Physics - vectors and resultant quantities.	Science - indices, standard form and trigonometric relationships. Construction - right-angled triangles.

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Enrichment opportunities	NRICH algebra problems; GCSE problem-solving challenges.	Financial maths investigations; ratio and scale problems.	Graphing investigations; probability simulations.	Data investigation; graph interpretation challenges.	Geometric reasoning challenges; vector investigations.	GCSE challenge problems; STEM outreach; independent revision/Sparx.
Careers links	Engineer; software developer; quantitative analyst.	Financial adviser; architect; surveyor.	Scientist; economist; risk analyst.	Statistician; engineer; research scientist.	Air traffic controller; engineer; surveyor.	Engineer; physicist; architect.

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