Higher

Year 11 (H)	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1
Units	Algebraic Fractions Algebraic Proof Simultaneous Equations Equation of a circle	Loci and Constructions Transformations Direct and Inverse Proportion Sequences	3D Shapes - Surface area and volume of 3D shapes: 3D Pythagoras and Trigonometry Compound measures and Bounds	Vectors Functions and Iterations Graphs Transformations Similarity and Congruence	Real life graphs Circle Theorems Probability Ratio
Key concepts and skills	• Algebraic fractions • Simplifying algebraic fractions • Multiplying and Dividing Algebraic Fractions • Adding and Subtracting Algebraic Fractions • Solving equations with algebraic fractions • Algebraic proofs • Recap – Solving linear and quadratic equations. • Completing the square • Quadratic formula • Solving simple simultaneous equations algebraically. • Solving two linear simultaneous equations in two variables graphically. • Solving linear and quadratic simultaneous • Recognize and construct the graph of a circle. • Recap – Equations of lines, perpendicular lines. • Find the equation of a tangent.	• Constructions. • Map scales. • Loci problems. • Translation of 2D shapes using column vectors. • Reflection 2D shapes on a coordinate grid. • Rotation of 2D shapes about a point on a coordinate grid. • Enlargement of 2D shapes on a coordinate grid with positive, fractional and negative scale factors. • Combination of transformations on a coordinate grid. • Describe the effect of combined transformations. • Proportionality using the unitary method. • Best buy. • Direct proportion • Inverse proportion • Recap - Linear sequences, finding the nth term. • Other sequences: Fibonacci, Triangular, Square and Cube numbers • Finding the nth term of the	• Calculating the volume of prisms including cylinders and solving problems involving these. • Calculating the surface area of prisms including cylinders. • Applying the formulae to calculate the volume of a pyramid. • Applying the formulae to calculate the volume of a sphere or hemisphere. • Applying the formulae to calculate the volume of a cone or frustum involving Pythagoras. • Applying the formulae to calculate the volume of composite solids. • Applying the formulae to calculate the surface area of a cone involving Pythagoras. • Applying the formulae to calculate the surface area of a composite solid. • Compound measures • Distance, Speed Time calculations • Density.	• Vectors and vector notation • Vector arithmetic • Vector geometry • Parallel vectors and collinear points • Solving geometric problems including midpoints and lines divided into a ratio. • Use vectors to construct geometrical proofs. • Changing the subject of the formulae. • Function notation. • Obtain the output and input of a function using function machines. • Inverse and Composite Functions. • Show that complex equation has a solution between two values. • Iterations and finding approximate solutions to equations. • Recap - Linear, Quadratic, Cube, Reciprocal and Exponential Graphs. • Complete the square to find the turning point of quadratic function. • Find the roots, intercepts and	• Real-life graphs. • Graphing rates of change. • Velocity time graphs. • Estimate the area under a quadratic graph. • Estimate the gradient of a quadratic or non-linear graph at a given point by sketching the tangent and finding its gradient. • Interpret the gradient of non-linear graph in curved distance–time and velocity–time graphs: • Interpret the gradient of a linear or non-linear graph in financial contexts. • Interpret the area under a linear or non-linear graph in real-life contexts. • Interpret the rate of change of graphs of containers filling and emptying. • Knowing and applying basic circle theorems • Find and give reasons for missing angles when combining circle theorems. • Proofing circle theorems.

		Quadratic sequence	• Pressure. • Convert compound units (e.g., m/s to km/h) • Error Intervals for Rounding and Truncation • Calculating with Bounds.	turning points of quadratic functions. • Use the sketch of a quadratic graph to find the equation using the roots, intercepts and turning point. • Graph of the sine function • Graph of the cosine function • Graph of the tangent function • Transforming graphs – describing translations of functions, stretches and reflections of functions. • Describe and sketch combined transformations of functions. • Congruence. • Geometric proof and congruence - using SSS, ASA and SAS to prove the triangles are congruent. • Similarity. • Linear, Area and Volume scale factors. • Similarity in 3D solids	• Product rule for counting. • Calculate probabilities from a two-way table, including conditional probabilities. • Complete Venn diagrams, including when the intersection needs to be calculated. • Find conditional probabilities from a Venn diagram. • Complete probability tree diagrams and find probabilities of combined events from these. • Complete probability tree diagrams without replacement and find probabilities of combined events from these. • Basic ratio – equivalent ratio, simplifying ratio to 1:n • Share in a given ratio. • Solving ratio problems.