Maths Year 10 Curriculum End Points and key vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Unit of Work	• Brackets • Solve and rearrange equations • Indices and standard form • Surds • Linear graphs and sequences	• Quadratics • Fractions, decimals and ratio • Area, surface area and volume	• Area, surface area and volume • Angles and bearings	• Pythagoras • Similar shapes • Trigonometry •	• Percentages, growth and decay	• Averages, charts and graphs • Compound units and real-life graphs • Direct and inverse proportion
Ethos Links	STEM – Use of linear graphs within science	Milton Keynes – use of quadratics to manage crowds at the Bowl	STEM – use of bearings in travel and transport	STEM – Application of trigonometry to engineering	STEM – growth and decay of bacteria	STEM, Sustainability and Milton Keynes – all used in relation to charts and graphs and statistical measures and averages. Use values within context
Knowledge	By the end of this unit students will know and understand: Brackets (expanding and factorising)	By the end of this unit students will know and understand: Quadratics	By the end of this unit students will know and understand: Continuation of area, surface area and	By the end of this unit students will know and understand: Pythagoras	By the end of this unit students will know and understand: Percentages, growth, and decay	By the end of this unit students will know and understand: Averages, Charts and graphs

	By the end of this unit students will know and understand: • How to expand a single bracket • How to use common factors to factorise a single bracket • How to expand double brackets • How to factorise quadratics including the difference of two squares • ***How to factorise quadratics with coefficient greater than 1*** • ***How to expand triple brackets*** Solve and rearrange equations	By the end of this unit students will know and understand: • How to solve quadratic equations by factorising • How to find approximate solutions on a graph • ***The quadratic formula*** • ***How to factorise by completing the square*** • ***How to solve quadratics by completing the square*** • How to plot quadratic graphs • Roots, intercepts and turning points of quadratic functions and how to identify them • ***How to deduce turning points***	volume – see half term 2 Angles and bearings By the end of this unit students will know and understand: • Basic angle rules and how to use them to solve problems • Angles on parallel lines and how to solve problems involving parallel lines • How to calculate the angles in polygons – using both formulae and triangles • How to measure bearings and apply angle rules to solve problems without measuring	By the end of this unit students will know and understand: • Pythagoras Theorem • How to solve problems with Pythagoras theorem • ***How to calculate in 3D using Pythagoras*** Similar shapes By the end of this unit students will know and understand: • How to identify congruent shapes • How to recognise similar shapes • The basic congruence criteria for triangles (SSS, SAS, ASA, RHS) • How to calculate missing lengths in similar shapes using scale factors	By the end of this unit students will know and understand: • How to write percentages as decimals and use them as multipliers • How to calculate percentage of an amount • How to calculate percentage increases and decreases • How to calculate percentage change • Reverse percentages • Compound interest • ***Growth and decay***	By the end of this unit students will know and understand: • The difference between discrete and continuous data • How to construct tables and charts including bar charts, pie charts, pictograms, and line graphs for ungrouped discrete data • How to construct time series graphs • How to construct and interpret histograms for grouped continuous data • Scatter graphs and

	By the end of this unit students will know and understand: • The concepts and language of expressions, equations, formulae, and identities • How to solve linear equations with one unknown • How to solve linear equations with unknowns on both sides • How to form and solve linear equations • How to change the subject of a formula Indices and Standard Form By the end of this unit students will know and understand: • How to apply the laws of indices to simplify expressions	***by completing the square*** Fractions, Decimals, and Ratio By the end of this unit students will know and understand: • How to order positive and negative integers, decimals, and fractions • How to apply addition, subtraction, multiplication and division to decimals and fractions • How to convert between fractions, decimals, and percentages • ***How to change recurring decimals into fractions*** • Ratio notation	• How to apply bearings to scale diagrams, maps, and scale factors	• ***The relationship of similarity with lengths, area and volumes*** Trigonometry By the end of this unit students will know and understand: • Trigonometry in right angled triangles • How to calculate lengths and angles using Trigonometry • How to solve problems with Trigonometry • How to solve problems linking Pythagoras and Trigonometry • ***How to calculate in 3D using Trigonometry*** • Exact values and apply them • ***Sine rule*** • ***Cosine rule***		how to identify correlation • Extrapolation and interpolation • Sample size and limitations of sampling • How to calculate and interpret mean, mode, median and range • Quartiles and inter-quartile range • How to draw and interpret box plots • How to draw and interpret cumulative frequency diagrams Compound units and real-life graphs By the end of this unit students will

	• ***How to use fractional indices with expressions and numerical values*** • How to convert between real numbers and standard index form • How to add, subtract, multiply and divide with numbers in standard index form Surds By the end of this unit students will know and understand: • Positive integer powers and associated real roots • ***How to estimate powers and roots of any given number*** • ***How to calculate***	• How to share in ratios • How to solve ratio problems • ***How to simplify algebraic fractions*** • ***How to solve algebraic fractions*** Area, Surface area and Volume (including circles) By the end of this unit students will know and understand: • Properties of 2D shapes • How to calculate the area of 2D shapes • How to calculate the area of a circle including exact calculations • How to calculate the		• ***Area of a triangle formula***		know and understand: • How to use standard units of mass, length, time, and other measures • How to convert between compound units • How to read timetables • How to calculate speed, distance, and time • How to calculate density, mass and volume • How to calculate pressure • Plot and interpret real life graphs (reciprocal and ***exponential***)

	exactly with surds • ***How to simplify surds*** • ***Rationalising the denominator*** • ***Expand double brackets involving surds*** Linear graphs and sequences By the end of this unit students will know and understand: • Common sequences including geometric progression • Fibonacci sequences and be able to apply and use them • How to deduce the nth term of linear sequences • ***How to deduce the nth term of quadratic sequences***	perimeter of 2D shapes • How to calculate circumference of a circle including exact calculations • Properties of 3D shapes • How to calculate the volume and surface area of prisms • *How to calculate the volume and surface area of spheres, pyramids and cones* • *Properties of circles* • *How to calculate arc lengths and areas of sectors* •				• ***How to calculate or estimate gradients of graphs and areas under graphs and interpret results*** Direct and inverse proportion By the end of this unit students will know and understand: • How to recognise direct and inverse proportion • How to interpret worded problems involving direct and inverse proportion • How to construct equations for direct and inverse proportion

	• ***Continue and interpret sequences with surds*** • How to plot straight line graphs • Parallel lines and how to identify them • *How to find the equation of a line given 2 points* • ***How to use y=mx+c to identify perpendicular lines*** •					
Key Vocabulary	Expand Factorise Quadratic Coefficient Subject Index Base Fractional Reciprocal Parallel Perpendicular Gradient	Expressions Equations Formula Identity Inverse Expand Factorise Recurring Terminating Denominator Numerator Proportion	Straight line Point Alternate Corresponding Co-interior Bearing	Scale factor Congruence Similar Hypotenuse Opposite Adjacent Sine Cosine Exact	Multiplier Increase Decrease Growth Decay	Frequency Frequency density Class width Proportion Product rule Correlation Frequency tree Intersection Complement Mutually exclusive Averages Spread

	Intercept	Algebraic fraction Volume Surface area Cross section Exact Arc Sector				Cumulative Quartiles Inter-quartile range Speed Density Pressure Direct Inverse