Maths Curriculum Knowledge Map- Year 9

Threshold Knowledge	Core Knowledge
Unit 1: Linear graphs and Linear equations/inequalities Multiples and Factors Substitution Key Words: Parallel, Perpendicular, Gradient, Linear, equations and expressions Collecting Like terms Coordinate and quadrants Two step equations Understanding the difference between equation and expression and term How to draw bar models	**Unit 1: Linear graphs and Linear equations/inequalities** ● Linear graphs y=mx+c general formula ● Plotting coordinates given an equation (substitution) ● Find an equation given a coordinates ● Parallel lines ● Equations and expressions- collecting like terms, representations of equations and inequalities ● Balancing and solving equations and inequalities
Unit 2: Geometry A clear understanding of 2D shapes before moving onto 3D Constructing and measuring angles using a protractor Angles of a straight line, angles Area and perimeter of triangles and rectangles Identifying the perpendicular height of a triangle Naming different quadrilaterals	**Unit 2: Geometry** ● Properties of 3D shapes: vertices, faces and edges ● Area of 2D shapes: rectangles, triangles, parallelogram, trapezium ● Nets of 3D shapes ● Volume and surface area: prisms and pyramids ● Construction and congruency
Unit 3: reasoning with number To be able to find the fraction/decimal/percentage of a number using a calculator Converting between FDP Finding the HCF and LCM of at least two numbers Identifying the multiplier of a percentage An awareness of exchange rates (the definition) Operations with directed numbers Using ratios for calculations	**Unit 3: reasoning with number** ● Calculating with fractions, decimals and percentages ● Directed numbers ● Highest common factor and lowest common multiple ● Percentage calculations: percentages of an amount (cal/non-cal), reverse percentages, percentage increase and decrease, exchange rates
Unit 4: reasoning with geometry Parallel lines Using a compass and protractor to measure angles Knowledge of squaring and square rooting numbers Finding lines of symmetry Plotting coordinates on a graph Solving equations Using a ruler to draw straight lines	**Unit 4: reasoning with geometry** ● Angles on a parallel line ● Constructions: constructing triangles (SSS, SAS, ASA) and bisecting lengths and angles ● Transformation of shapes- translation, reflection and rotation ● Pythagoras theorem
Unit 5: enlargement and similarity Being able to solve ratios Interpret and understand Ratios Being able to multiply negative and positive numbers Converting between units for time, distance, mass	**Unit 5: enlargement and similarity** ● Recognise similar shapes using scale factor ● Enlargement: negative and positive scale factor ● Direct and inverse proportion ● Ratios: whole, parts and difference ● Compound measures: speed distance and time and density mass and volume
Unit 6: statistics and probability Multiplying fractions Directed number calculations Properties of dice Understand that a probability is out of 1 Converting between Fractions and decimals	**Unit 6: statistics and probability** ● Calculate probability ● Probability scale ● Experimental probability vs theoretical probability ● Relative frequency ● Sample space diagrams ● Tree diagrams

Maths Curriculum Knowledge Map- Year 8

Threshold Knowledge	Core Knowledge
Unit 1: Proportional Reasoning Structure of a cartesian plane Recall names of common charts like bar chart, scatter graph Ratio notation Bar modelling Common factors for simplifying ratios Number line and calculating missing parts Multiplication Division	**Unit 1: Proportional Reasoning** ● Representing ratios ● Simplifying ratios ● Direct proportion and conversion graphs ● Similar shapes and scale factor ● Multiplying and dividing fractions
Unit 2: Representations Structure of a cartesian plane Coordinates and plotting points along the x and y axis on all four quadrants Substitution into expressions, simplifying, function machines Sequences and nth term Linear equations Averages Fractions, decimals and percentages Inequality symbols Understanding of probability which is out of 1 whole Using ratios to represent proportion	**Unit 2: Representations** ● Linear graphs ● Gradient ● Y intercept ● Nth term of linear and non linear sequences ● Scatter graphs, line of best fit and Correlation ● Discrete and continuous data ● Grouped data and ungrouped data ● Representing data: Two way tables, Sample space diagrams and Venn diagrams ● Calculating probability from Two way tables, Sample space diagrams and Venn diagrams
Unit 3: Algebraic techniques Using function machines Four operations (add, subtract, multiply and divide) Algebra notation Collecting like terms to simplify algebra Bar modelling to represent algebra Substitution Definition of sequences Powers and roots	**Unit 3: Algebraic techniques** ● Form algebraic expressions ● Simplifying algebra ● Expanding single brackets ● Solve linear equations and form and solve linear equations ● Understand inequalities and form and solve inequalities ● Identify formula, expression, identity and equation ● Generate sequences ● Nth term of linear sequences ● Laws of indices
Unit 4: Developing Number Basic fractions, decimals and percentages 10%, 20%, 25%, 50% and 75% Equivalent fractions decimals and percentages Percentage of an amount non-calculator and calculator methods Powers and roots Calculations with Four operations Multiplication and division with integers and decimals Place value Powers of 10 Rounding integers to nearest 10, 100, 1000 Know metric units of measure	**Unit 4: Developing Number** ● Converting between Fractions, decimals and percentage ● Fractions, decimals and percentage calculations ● Increase and decreasing amounts given a percentage ● Powers of 10 ● Writing in standard form and ordinary form ● Calculations in standard form (addition, subtraction, multiplication and division) ● Negative indices ● Rounding to decimal places and significant figures ● Error intervals and Estimating calculations ● Converting metric units of length, area and volume
Unit 5: Developing Geometry Angle sum of triangles and quadrilaterals Naming triangles Naming quadrilaterals Naming polygons Addition and subtraction with integers Naming properties of circles: diameter, radius and circumference	**Unit 5: Developing Geometry** ● Angles in parallel lines: vertically opposite, co-interior, corresponding and alternate ● Constructing triangles ● Properties of quadrilaterals ● Angles in quadrilaterals ● Regular and irregular polygons ● Exterior and interior angles in polygons ● Geometric proofs ● Area of 2D shapes and compound shapes ● Area and circumference of circles ● Lines of symmetry ● Reflection
Unit 6: Reasoning with Data Addition and subtraction of numbers Naming types of angles (acute/obtuse/reflex/right angle) Creating a tally chart Using a compass Measuring and drawing angles using a protractor Understanding types of data	**Unit 6: Reasoning with Data** ● Pictograms ● Bar charts ● Pie charts ● Line graphs ● Grouped data ● Comparing distribution on graphs ● Averages: mean, median, mode and range ● Mean from ungrouped frequency table

Maths Curriculum Knowledge Map- Year 7

Threshold Knowledge	Core Knowledge
Unit 1: Algebraic thinking Defining a pattern Number bonds Calculations with four operations Times Tables 2, 5 and 10 Place value Plotting coordinates on four coordinate axis Bar modelling	**Unit 1: Algebraic thinking** • Describe and continue a Pictorial sequence • Work between graphical and tabular sequences • Linear and Non- linear sequences • Term to term rule in sequences • Using function machines with numbers or algebra • Substitution into expressions • Function machines leading to sequences and graphical representations • Algebraic fact families • Bar modelling with algebra • Solving one step equations • Simplifying and solving linear equations
Unit 2: Place value and proportion Place value table Integer numbers on a number line Using 100 grid Multiplication Division Addition Subtraction Bar modelling	**Unit 2: Place value and proportion** • Place value for integers • Intervals in number lines • Rounding to powers of 10 • Compare numbers using inequality symbols • Ordering a list of integers • Mean, median, mode and range • Fractions and decimals on a number line • Rounding to one significant figure • Powers of 10 • Converting between fractions, decimals and percentages • Understanding fractions as division • Equivalent fractions
Unit 3: Application of number/ Fractions and percentages of amount Fact families for integers Operations for calculations Powers Multiply and dividing integers by powers of 10 Name shapes Multiplication Fractions, decimals and percentages	**Unit 3: Application of number/ Fractions and percentages of amount** • Mental strategies to add and subtract integers • Written methods to add and subtract integers and decimals • Written methods to multiply and divide integers and decimals • Order of operations • Solve problems with area of a triangle or Trapezium • Solve problems with mean • Fractions of an amount • Percentages of an amount
Unit 4: Directed number and fractional thinking Using a number line Place value Equivalent fractions, decimals and percentages Order of operations Function machine Square numbers	**Unit 4: Directed number and fractional thinking** • Add and subtract directed numbers • Multiply and divide directed numbers • Solving algebraic equations with directed numbers • Understanding powers and roots • Converting between mixed fractions and improper fractions • Adding and subtracting fractions and mixed fractions • Adding and subtracting decimals with fractions
Unit 5: Lines and angles Classifying angles: acute, obtuse and reflex angles A full turn is 360 degrees Using a protractor Angles in a triangle Naming basic properties of shapes: square, triangle and rectangle	**Unit 5: Lines and angles** • Draw and measure angles using a protractor • Identify perpendicular and parallel lines • Name types of triangles and quadrilaterals • Name polygons and identify regular and irregular polygons • Calculate angles on a straight line • Calculate angles at a point, vertically opposite angles, angles in a triangle and quadrilateral
Unit 6: Reasoning with number Order of operations Place value Equivalent fractions Simplifying fractions Equivalent fractions, decimals and percentages Define factors, multiples and prime numbers Knowledge of basic probabilities e.g. when rolling a dice/tossing a coin/getting a certain card in a pack of cards	**Unit 6: Reasoning with number** • Mental and written methods to add and subtract integers, decimals and fractions • Estimate calculations • Interpret and create a venn diagram and understand the intersection on a venn diagram • Know key words to describe probability: impossible, unlikely, even chance, likely and certain • Sample space diagrams • Calculate probability out of 1 • Multiples, factors and prime numbers • Highest common factor and Lowest common multiple • Product of prime numbers and creating factor trees