KOINONIA FEDERATION – ALL THROUGH SUBJECT MAP

SUBJECT: Mathematics

CURRICULUM INTENT: To produce numerate, logical, problem-solving students who can apply their mathematical knowledge both in further study within mathematics and other disciplines, and in real-life situations.

Please identify what the key themes / concepts are, that all students at all key stages will study in your subject.

These will obviously get progressively more challenging in terms of content / expectations as the years progress and different language might be used to describe them however, they should still be able to fit under a blanket heading.

Please allocate a colour to each of these themes so that it is clear how they are revisited and built upon throughout the curriculum. Please add or remove as appropriate

Probability & Statistics	Algebra	Geometry & Measures	Number / Ratio & Proportion

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	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
NURSERY – KEY THEMES / CONCEPTS	Counting, representation	Addition	Geometry and position	Measures	Subtraction	Consolidation
NURSERY – KEY CONTENT / LEARNING	Subitizing to 5 Show finger numbers to 5, composition, one to one recognition.	Compositions of 5 and simple addition. Groups of objects. Comparative language Repetitive patterns	Explore 2d shapes. Understand position under, on etc	Compare size and length	Consolidate numbers 0 to 5 and extending it t to 10. Comparative language	Consolidation of addition, subtractions. use of manipulatives,
RECEPTION - KEY THEMES / CONCEPTS	Recognition of number and ordering	Recognising number and operations				
RECEPTION - KEY CONTENT/ LEARNING	Getting to know you Just like me! Number mastery composition of numbers 1 to 4, one to one recognition.	Its me 1,2,3, Light and dark Number Mastering magic 5. Subsitizing addition and subtraction.	Alive in 5! Growing 6, 7, 8 Number mastery Understanding composition of numbers 5, 6,7 and 8 including number sentences	Building 9 & 10 Number mastery Understanding composition of numbers 9 and 10 including number sentences	To 20 and beyond First, then, now Number mastery Problem solving – Solve problems involving arrays, Exploring numbers 11, 12, 13, 14, and 15 and Other numbers made of consecutive numbers (3, 6, 10 and 15)	Find my pattern On the move Number mastery Learning about 2d shapes, looking at patterns, Multiplication as repeated addition
YEAR 1 - KEY THEMES / CONCEPTS	Place value up to 10	Addition and subtraction to 10	Addition and subtraction to 20 Place vlaue to 20	Place value to 50 Measures	Multiplication and division	Place value to 100 Measure and time

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YEAR 1 - KEY CONTENT/ LEARNING	Place Value and number (up to 10)	Addition and Subtraction (within 10) Geometry	Place value (within 20) Addition and subtraction (within 20)	Place value (to 50) Measurement (length and height) Measurement (weight and volume)	Multiplication and Division. Make equal groups number fractions Geometry: position and direction	Place Value to 100 Measurement time
YEAR 2 - KEY THEMES / CONCEPTS	Place Value Addition	Addition and Subtraction Geometry	Money Multiplication and division	Measurement	Fractions Time	Statistics Position and directions.
YEAR 2 - KEY CONTENT/ LEARNING	Place Value, (to 100), Paritioning numbers to 100, comparing and ordering numbers, Counting in 2s,5s,10s and 3s. Number bonds (recap 10 then to 100), adding ones	Adding and subtracting across 10s, Adding and subtracting 2-digit numbers Comparing number sentences. 2-D and 3D shapes Lines of symmetry	Pounds and pence Comparing amounts Finding change Equal groups Sharing and grouping 2,5 and10 times tables Doubling and halving	Length Height Mass Capacity Temperature	Half, quarter, third Unit fractions Non-unit fractions Equivalence O'clock, half past, quarter past and to. To 5 minutes. Hours and days Duration of time	Tally, pictogram Describing position, movement and turns Making patterns.
YEAR 3 - KEY THEMES / CONCEPTS	Number and place value	Recognising Multiplication nd division	Multiplicationa nd divison operations	Measures,	fractions and time	Shape and measures
YEAR 3 - KEY CONTENT/ LEARNING	Number and Place Value, Addition and Subtractions: multiples of 100 3 digit +/- 1 and 2 digit numbers	Multiplication and Division Arrays, 2,5,10, 3, 4, 8 times tables	Multiplication and Division, 2 digit by 1 digit division and multiplication Measurement with Money, Statistics	Measurement, Length and Perimeter, Fractions, Consolidation	Fractions, Time	Geometry, Properties of Shape, Measurement, Mass and Capacity

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YEAR 4 - KEY THEMES / CONCEPTS	Number and place value	Measures, multiplication and division	Multiplication ad division	FDP	Measures and time	Shapes
YEAR 4 - KEY CONTENT/ LEARNING	Number and Place Value, Addition and Subtractions: 4 digit numbers with up to one exchange	Measurement, equivalent lengths cm and mm Length and Perimeter, Measure perimeter Multiplication and Division Multiply and divide by 3,6,9, 11,12,1,0 Multiply 3 digit numbers	Multiplication and Division, Multiply and divide by 10,100 Multiply by 2 and 3 digit numbers by 1 digit. Divide 2 digit and 3 digit numbers by 1 digit number Length, Fractions	Decimals and Place Value, Fractions	Decimals, Measurement, Money, Time	Properties of Shapes, Consolidation
YEAR 5 - KEY THEMES / CONCEPTS	Place value	Multioplicaton and division A	Multipkciation and divisons	FDP	Decimal, angels	Measures, trigonometry
YEAR 5 - KEY CONTENT/ LEARNING	Number and Place Value, Addition and Subtractions: 4 digit numbers with up to one exchange	Multiplication and division, prime, square numbers Prime factors, common factors, cube numbers multiply and divide by 10, 100, 1000, multiples of 10,100,1000	Multiply 4 digits by 1 digit Multiply 3 digits by 2 digits improper fractions & mixed numbers compare & order fractions	add & subtract fractions multiply fractions Decimals as fractions thousandths Percentages as fractions & decimals	add & subtract decimals multiply and divide decimals angles, protractors, drawing lines & angles	co-ordinates, translation & reflection converting units of measure
YEAR 6 - KEY	Place value	Four operations, trigomonmery	FDP	Measures	Statistics	Consolidation and real life maths

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THEMES / CONCEPTS						
YEAR 6 - KEY CONTENT/ LEARNING	place value: numbers to 10,000,000 four operations: multiply 4 digit by 2 digit numbers long division	four operations, fractions on a number line. 4 operations using fractions geometry: position & direction, quadrants, translations, reflections	Mulitply & divide decimals by integers, equivalent FDP, percentages of amounts algebra, formula, substitution	measures: coverting units, metric measures, miles to KM area of a triangle volume of a cuboid ratio & scale factors	Statistics: line graphs, pie charts, the mean properties of shape, angles, nets	consolidation' and themed projects budgets & bills, profit & loss,
YEAR 7 - KEY THEMES / CONCEPTS	Place value and Operations.	Algebra basics	2D shapes and Decimals	Properties of 2D shapes	Fractions and percentages	Ratio and data
YEAR 7 - KEY CONTENT/ LEARNING	Place value (inc conversion of units), operations with integers, order of operations, rounding, powers and roots, time	Forming expressions, manipulating expressions, expanding and factorising single brackets, forming and solving simple equations, Substitution	Area and perimeter of 2D shapes, ordering and operations with decimals and money	Symmetry, angles, using a compass, plans and elevations	Calculating Fractions and Percentages, comparing, of amounts, finding the original, multiplying and dividing)	Ratio, sharing, simplifying, writing, working with data- types of data, bar chart, line graphs, pie charts
YEAR 8 - KEY THEMES / CONCEPTS	Directed numbers, factors, multiples and primes, rounding and estimating (decimal place and sig fig, truncation?)	Substitution, sequences, graphs (plotting and recognising gradient, horizontal/vertical), and solving linear equations, rearranging formulae	Circles, volume, surface area of prisms and cylinders	Angles on parallel lines, constructions, transformations	Calculations with fractions, FDP conversions, probability	Ratio & Statistics - averages from lists and tables, stem and leaf diagrams.
YEAR 8 - KEY CONTENT/ LEARNING	Directed Number. Including factors multiples and primes. Rounding and estimating to both	Algebra, including equations and rearranging formulae. Substitution. Graphing, including recognising	Review of decimals. Geometry study, including circles, volume and surface	Geometry review. angles in straight lines and parallel lines. Constructions and	Working with Fractions, decimals and percents and being able to convert between each.	Ratio and proportion. Finding mean, median, mode and range of a data set, including working

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	decimal place and signigicant figures.	gradient and y intercept. Sequences, recognising nth term.	area of prims and cylinders.	transformations of shape	Operation with fractions. Probability	backwards. Representing data on diagrams.
YEAR 9 - KEY THEMES / CONCEPTS	Prime factorisation and index laws	Algebra including quadratics and graphs	Volume and surface area	Angles, congruence and similarity	Fractions and percentages	Ratio and statistics
YEAR 9 - KEY CONTENT/ LEARNING	Calculations review, Prime Factors, Index Laws, Standard Form	Algebraic manipulation, quadratics, forming and solving equations, linear graphs	Decimals and area reviews, volume and surface area	Angles in parallel lines and in polygons, bearings, congruence and similarity, loci	Operations with fractions, Percentages, Percentage Change, Compound Interest, reverse percentages and fractions	Ratio, averages, statistics (pie charts, scatter graphs, stem-and-leaf diagrams) and probability (combined events)
YEAR 10 - KEY THEMES / CONCEPTS	F: Number; Algebra basics H: Number; Algebra basics	F: Fractions, decimals, and percentages; Equations H: Number, Ratio and proportion; Data basics	F: Angles, Perimeter Area and Volume H: Geometry, Accuracy and bounds	F: Data – Graphs, Charts and Averages H: Real-life graphs; Graphs and coordinate geometry	F: Real life graphs; Algebraic graphs; Ratio; Proportion H: Algebra, Multiplicative reasoning	F: Transformations; Probability H: Geometry and Probability
YEAR 10 - KEY CONTENT/ LEARNING	F: Integers and place value; Decimals; Indices, powers, and roots; Factors, multiples, and primes; Algebra basics; Expressions and substitution into formulae H: Calculations, checking and rounding; Indices, roots, and reciprocals; Factors, multiples, standard form, and surds;	F: Fractions, decimals, and percentages; Percentages; Equations and inequalities; Sequences H: Fractions and percentages; Ratio and proportion; Averages and range; Representing and interpreting data	F: Properties of shapes, parallel lines, and angle facts; Interior and exterior angles of polygons; Perimeter, area, and volume H: Polygons, angles, and parallel lines; Pythagoras' theorem and trigonometry; Perimeter, area, and circles; 3D forms and	F: Tables, graphs, and charts; Pie charts; Scatter graphs, Averages and range H: Real-life graphs; Linear graphs and coordinate geometry; Quadratic, cubic, and other graphs	F: Real life graphs; Straight line graphs; Ratio; Proportion H: Solving quadratic and simultaneous equations; Inequalities; Multiplicative reasoning	F: Transformations; Probability H: Transformations; Constructions, loci, and bearings; Probability; Similarity and congruence

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	Algebra basics; sequences		volume; Accuracy and bounds			
YEAR 11 - KEY THEMES / CONCEPTS	F: Right-angled Triangles; Multiplicative reasoning; Constructions, loci, and bearings H: More Trigonometry; Further Statistics	F: Quadratic Equations and Graphs; Perimeter Area and Volume, Fractions and Indices and Standard Form H: Equations and Graphs; Circle theorems; Surds;	F: Congruence, Similarity and Vectors; More Algebra H: Vectors and Geometric Proof; Graphs and Proportion	Revision	Exams	N/A
YEAR 11 - KEY CONTENT/ LEARNING	F: Right-angled triangles, Pythagoras, and trigonometry; Multiplicative reasoning; Plans and elevations; Constructions, loci, and bearings H: Graphs of trigonometric functions; Further trigonometry; Collecting data; Cumulative frequency, box plots, and histograms	F: Expanding and factorising quadratic equations; Quadratic graphs; Circles, cylinders, cones, and spheres; Fractions and reciprocals; Indices and standard form H: Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes, and quadratics; Circle theorems; Circle geometry; Changing the subject of formulae; Solving equations from algebraic fractions; Rationalising surds; Proof	F: Similarity and congruence; Vectors; Rearranging equations, graphs of cubic and reciprocal functions, and simultaneous equations H: Vectors and geometric proof; Reciprocal and exponential graphs; Gradient and area under graphs; Direct and inverse proportion	Revision	Exams	N/A

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YEAR 12 - KEY THEMES / CONCEPTS	Algebraic expressions, quadratics, equations and inequalities, graphs and transformations. Data Collection. Measures of location and spread. Representations of data	Straight line graphs, circles, algebraic methods, binomial expansion Modelling in Mechanics. Constant Acceleration.	Trigonometric ratios, Vectors trigonometric identities and equations, Correlation and probability	Differentiation, Integration, Hypothesis Testing	Exponentials and logarithms. Forces and motion. Variable acceleration.	Pure, Statistics and Mechanics revision.
YEAR 12 - KEY CONTENT/ LEARNING	Indices and surds, quadratics, simultaneous equations, graphing. Variance and standard deviation. Graphing	Equations of lines, parallel and perpendicular, equations of circles and tangent and chords. Algebraic fractions, polynomials. Vectors, modelling velocity-time graphs.	Sine/cosine rule. Triangle problems. Trigonometric ratios and identities. Representing vectors. Magnitude and direction, solving geometric problems. Venn diagrams, mutually exclusive/independent events.	Gradients of curves and derivatives. Increasing and decreasing functions. Integrals, areas under curves. Areas between curves and lines. Critical values. One and two tailed tests	Exponential functions, Exponential modelling, Logs, non linear data. Functions of time. Maxima and minima problems.	
YEAR 13 - KEY THEMES / CONCEPTS	Algebraic methods, functions and graphs, sequences and series, binomial expansion, regression, correlation, and hypothesis testing, conditional probability	Radians, trigonometric functions, trigonometry and modelling, moments, forces and friction	Parametric equations, differentiation, numerical methods, projectiles	Integration, the normal distribution	Vectors, applications of forces, applications of forces, further kinematics	N/A
YEAR 13 - KEY CONTENT/ LEARNING	Proof by contradiction, algebraic fractions, partial fractions, the modulus function, composite and inverse functions, graph	Radians, arc lengths and sector areas, solving trigonometric equations, reciprocal trigonometric functions and their graphs,	Parametric equations, curve sketching, modelling with parametric equations, differentiating trigonometric	Using trigonometric identities, reverse chain rule, integration by substitution, integration by parts, partial fractions, finding areas,	3D coordinates, vectors in 3D, solving geometric problems, application to mechanics, modelling with static particles, friction, rigid bodies,	N/A

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	transformations, arithmetic and geometric sequences and series, binomial expansions, exponential models, measuring correlation, hypothesis testing for zero correlation	trigonometric identities, addition and double-angle formulae, resolving forces, inclined planes and friction	functions, chain rule, product rule, quotient rule, parametric differentiation, implicit differentiation, locating roots, iteration, horizontal projection, components	trapezium rule, solving and modelling with differential equations, the normal distribution, finding probabilities, inverse and standard normal distribution, finding mu and sigma, approximating binomial distributions	dynamics and inclined planes, connected particular, vectors in kinematics, vector methods with projectiles, differentiating and integrating vectors	