



East Midlands Academy Trust Math Curriculum Overview - Overview



Why Teach Mathematics?

We believe that mathematics will allow students to establish life-long skills to make informed decisions and choices throughout their lives. Our curriculum aims to support children in securing conceptual understanding through:

- making rich connections across mathematical ideas to develop fluency, reasoning and solving increasingly sophisticated problems
- using concrete manipulatives to support conceptual understanding
- the use of variation to help children notice and understand pattern and structure
- fostering and maintaining a curiosity about mathematics in the world around us
- creative teaching approaches and rich tasks
- developing an appreciation of the beauty and elegance of mathematics
- applying their mathematical knowledge to other areas of the curriculum

We want our children to be able to think like mathematicians and provide them with the necessary financial literacy and mathematical knowledge in preparation for the next step in their educational journey and ultimate employment.

Substantive Topic & Year Taught	1	2	3	4	5	6
Number						
Calculations						
Fractions, Decimals, Percentages and Ratio						
Measures						
Time						
Geometry						
Position						
Statistics						
2a + 3						

Curriculum Progression Maps by Topic

Set out the progression through each key topic by each year.

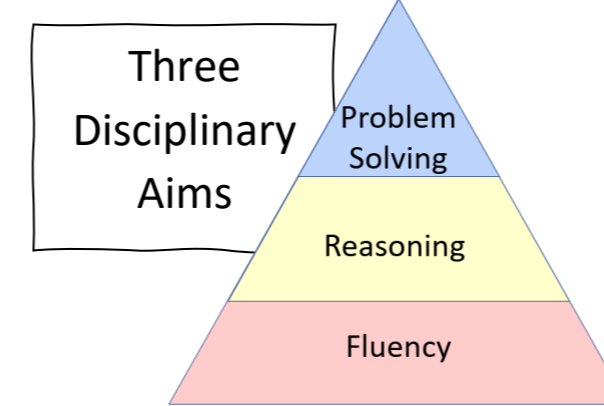
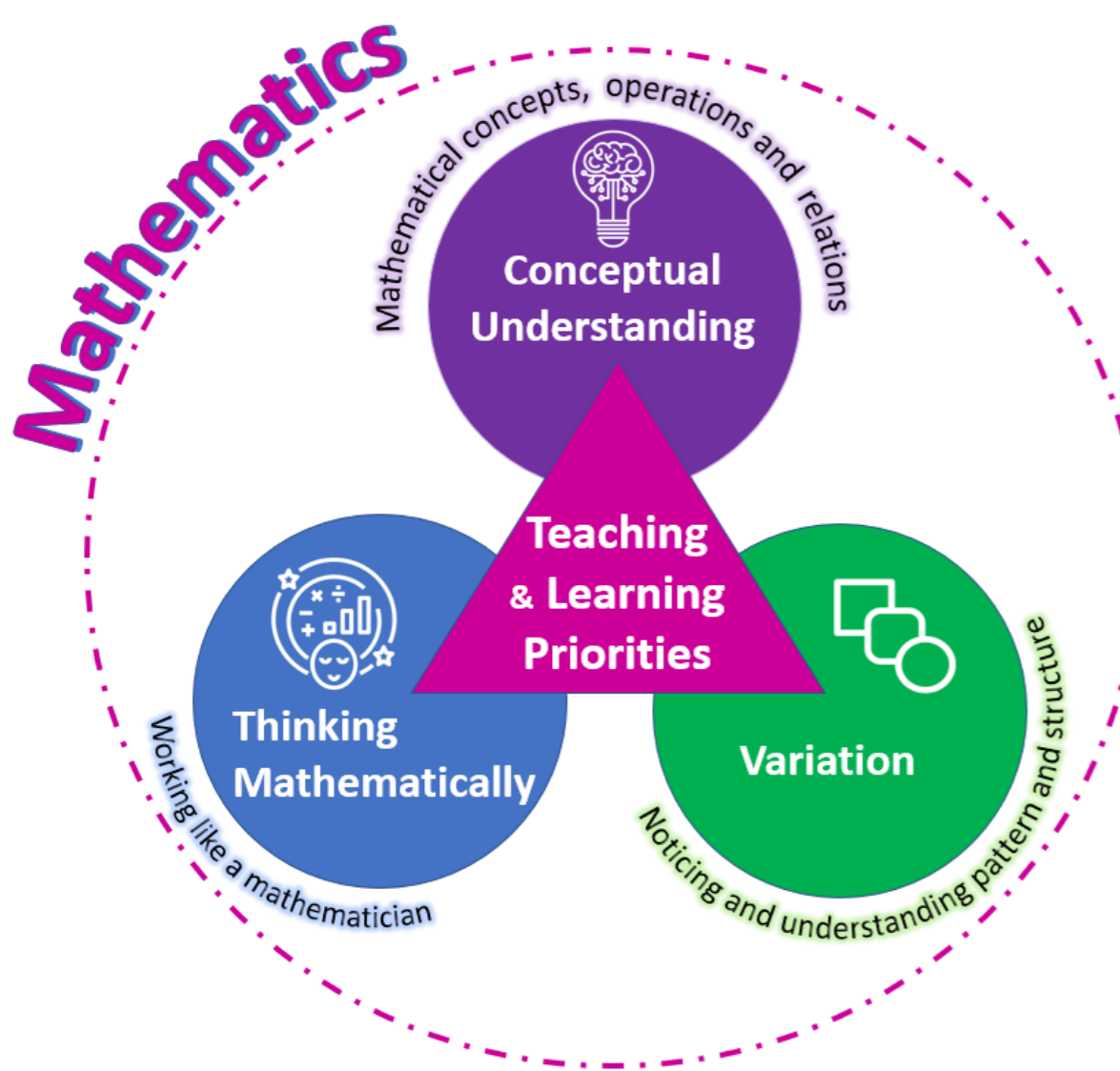
Long Term Planning and Scheme of Work

Details the sequencing of knowledge to build mathematical understanding systematically over time. This reflects a higher proportion of teaching time on 'high value' areas: number, place value and calculations.

Shorter Term Planning and Retrieval

Allows teachers to focus on planning the sequence of learning.

Maths Objective Planning: Year 1 Autumn 1 2019-20				Maths Objective Planning: Year 1 Spring 1 2019-20			
Topic	Objectives	Connections	Curriculum Aims	Topic	Objectives	Connections	Curriculum Aims
Number 1 (3 weeks)	Count to and across 10, forwards and backwards, beginning with 0 or 1, or from any given number.	• EYF E2 - working with numbers to 10 • Focus on individual numbers looking at the "thirdeens" of three etc.	Counting	Number 1 (3 weeks)	Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	• Geometry 1 and 2 - 2D and 3D shapes when describing position, direction and movement.	Geometry
Calculations 1 (3 weeks)	Represent and use number bonds and related subtraction facts within 20.	• EYF E2 - understand four single digit numbers • Number 1 - numbers to 10	Calculations	Calculations 1 (3 weeks)	Count, read and write numbers to 10 in numerals.	• Number 2 - building on numbers to 10	Number
Geometry 1 (3 weeks)	Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	• Geometry 1 - number of sides	Geometry	Geometry 1 (3 weeks)	Count, read and write numbers to 10 in numerals.	• Number 2 - numbers to 10	Number
Number 2 (3 weeks)	Count to and across 10, forwards and backwards, beginning with 0 or 1, or from any given number.	• EYF E2 - understand four single digit numbers • Number 1 - numbers to 10	Number	Calculations 2 (3 weeks)	Represent and use number bonds and related subtraction facts within 20.	• Number 2 - numbers to 20	Calculations
Calculations 2 (3 weeks)	Represent and use number bonds and related subtraction facts within 20.	• EYF E2 - understand four single digit numbers • Number 1 - numbers to 10	Calculations	Geometry 2 (3 weeks)	Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	• Geometry 1 - number of sides	Geometry



Arithmetic Focus

Arithmetic tests are taken in the first week of each half term with each question assessing a particular skill to show progress directly between corresponding questions in each test. Question Level Analysis (QLA) helps to identify where pupils need additional support to achieve the expected age-related objectives by the end of the academic year.



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Maths Curriculum Map – EYFS & KS1



Fluency

Reasoning

Problem Solving

EYFS	KS1	Year 1	Year 2
<p>Early Learning Goal: Number Children at the expected level of development will:</p> <ul style="list-style-type: none"> – Have a deep understanding of number to 10, including the composition of each number; – Subitise (recognise quantities without counting) up to 5; – Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. <p>Early Learning Goal: Numerical Patterns Children at the expected level of development will:</p> <ul style="list-style-type: none"> – Verbally count beyond 20, recognising the pattern of the counting system; – Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; – Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. <p>Typical learning experiences include:</p> <ul style="list-style-type: none"> • Counting opportunities across environment, using concrete apparatus – eg fruit at snack time, jumps in a puddle, lunch boxes on the trolley etc. • Representing a total pictorially, with dots or a tally chart. • Recording opportunities e.g. in children’s invented games recording score, who has more points. • Playing games with dice and dominos to recognise dot patterns. • Using concrete resources e.g. Numicon and matching to a numeral • Reading story books e.g. 3 bears to elicit discussions of size. Connecting learning of size throughout the curriculum e.g. plates in the home corner. • Sharing resources equally • Cooking, measuring ingredients, time. • Capacity – e.g. water/sand tray (counting embedded across these opportunities) • Measuring – e.g. comparisons between towers, between each other • Positional language – embedded across the curriculum e.g. we’re going on a bear hunt • Time – visual timetable, talking about what comes next. Timers in activities (sand timers) or tidy up timers. • Shapes and patterns throughout the environment – exploring properties of 3D shapes in block play and construction area, junk modelling. Looking at patterns on animals, flowers, clothes etc. <p>The curriculum map for EYFS shows the progression through Autumn to Summer in the following areas.</p> <ul style="list-style-type: none"> <li style="width: 50%;">• Counting <li style="width: 50%;">• Pattern <li style="width: 50%;">• Cardinality <li style="width: 50%;">• Spatial Awareness <li style="width: 50%;">• Comparison <li style="width: 50%;">• Shape <li style="width: 50%;">• Composition <li style="width: 50%;">• Measures <li style="width: 50%;">• Statistics 	Number	<ul style="list-style-type: none"> • Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • Count, read and write numbers to 100 in numerals • Count in multiples of 2s, 5s and 10s • Given a number, identify 1 more and 1 less • Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least • Read and write numbers from 1 to 20 in numerals and words 	<ul style="list-style-type: none"> • Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward • Recognise the place value of each digit in a two-digit number (10s, 1s) • Identify, represent and estimate numbers using different representations, including the number line • Compare and order numbers from 0 up to 100; use <, > and = signs • Read and write numbers to at least 100 in numerals and in words • Use place value and number facts to solve problems
	Calculations	<ul style="list-style-type: none"> • Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs • Represent and use number bonds and related subtraction facts within 20 • Add and subtract one-digit and two-digit numbers to 20, including 0 • Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$ • Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher 	<ul style="list-style-type: none"> • Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures • Solve problems with addition and subtraction applying their increasing knowledge of mental and written methods • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and 1s, a two-digit number and 10s, 2 two-digit numbers and 3 one-digit numbers • Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems • Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs • Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
	Fractions	<ul style="list-style-type: none"> • Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity • Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity 	<ul style="list-style-type: none"> • Recognise, find, name and write fractions $1/3$, $1/4$, $2/4$ and $3/4$ of a length, shape, set of objects or quantity • Write simple fractions, for example $1/2$ of $6 = 3$ and recognise the equivalence of $2/4$ and $1/2$
	Measures	<ul style="list-style-type: none"> • Compare, describe and solve practical problems for lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] • Measure and begin to record lengths and heights • Compare, describe and solve practical problems for mass/weight [for example, heavy/light, heavier than, lighter than] • Measure and begin to record mass/weight • Compare, describe and solve practical problems for capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] • Measure and begin to record capacity and volume • Recognise and know the value of different denominations of coins and notes 	<ul style="list-style-type: none"> • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • Compare and order lengths, mass, volume/capacity and record the results using >, < and = • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • Find different combinations of coins that equal the same amounts of money • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
	Time	<ul style="list-style-type: none"> • Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later] • Measure and begin to record time (hours, minutes, seconds) • Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] • Recognise and use language relating to dates, including days of the week, weeks, months and years • Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times 	<ul style="list-style-type: none"> • Compare and sequence intervals of time • Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times • Know the number of minutes in an hour and the number of hours in a day
	Geometry	<ul style="list-style-type: none"> • Recognise and name 2-D shapes [for example, rectangles (including squares), circles and triangles] • Recognise and name 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] 	<ul style="list-style-type: none"> • Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces • Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] • Compare and sort common 2-D shapes and everyday objects • Compare and sort common 3-D shapes and everyday objects
	Position	<ul style="list-style-type: none"> • Describe position, direction, and movement, including whole, half, quarter and three-quarter turns 	<ul style="list-style-type: none"> • Order and arrange combinations of mathematical objects in patterns and sequences • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)
Statistics		<ul style="list-style-type: none"> • Interpret and construct simple pictograms, tally charts, block diagrams and tables • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • Ask-and-answer questions about totalling and comparing categorical data 	

Every child deserves to be the best they can be