What is Mathematics?

How do mathematicians work and learn?

Our Subject Leader's Policy & Guide

'I Dream Of Being'….created by us to meet the needs of our children, create aspiration and deliver our core intention.

Intent For Our Mathematics Curriculum

Vision For Mathematics

At Mayfield, we believe mathematics is a powerful influence on the future lives and opportunities of our children. Being a confident mathematician enables children to navigate and solve real-life problems. We are committed to equipping our pupils with the necessary knowledge and understanding to succeed in the next phase of their mathematics education and beyond. We have designed our maths curriculum with our children's long-term futures in mind and know that we are laying the foundations they will need in future employment and as financially literate citizens.

As teachers, we want our children to know that the maths they learn inside and outside of the classroom has the potential unlock doors in their futures as scientists, engineers and designers. We also believe that a rapid recall of 'mental arithmetic' strategies and the underlying concepts of number are particularly important to this future success and confidence in daily life. When children leave us to take their next steps as mathematicians, we work to ensure they have the underlying reasoning and subsequent fluency and problem solving knowledge and skills to succeed.

Intent For Our Mathematics Curriculum

How We Plan For, And Teach, Mathematics

Children's starting point position is central to our Classroom Craft philosophy and is a core driver for the following ways in which we deliver mathematics in the classroom.

* The use of **pre-learning diagnostic assessments** to determine starting children's points for every unit of work. No child is pre-set to a seat or group. We use our pre-learning judgements to personalise where our children begin. Nothing is assumed. Nothing is generic. Our mathematics teaching requires reflective and pro-active teaching.

* **Children 'peel off' at relevant points within the lesson.** Starting at either **PURPLE 1, PURPLE 2 (Initial Reasoning)** or **GREEN (Increasing Fluency and Competence)** based upon our pre-assessment and live marking during guided learning - GREEN forms the expected standard for the year group. **GOLD** is the layer that follows **(which specifically focuses upon applied, extension problem solving).** There is an emphasis at **GOLD** upon demonstrating understanding and applying in different ways rather than simply making numbers bigger!

* **Modelled learning** gathers relevant groups together within lessons and targets just those children who require that input. Then at each level of guided learning our children then 'peel off' and apply their learning to the relevant level of reasoning or fluency. It is personalised. It challenges - but is never requires our children to repetitively complete endless questions. Let's make our children think, learn from mistakes and move them forward at the correct pace.

* **Self marking and immediate live marking** is applied as often as possible. We embrace mistakes and corrections. Trial and error is encouraged. Less may be more!

* **Another adult is another teacher!** Adults work together so that the teacher can lead learning, whilst the additional adult monitors, intervenes and offers live feedback. It becomes a 'team' philosophy that really works - when the staffing and budgets levels enable this to happen!

* **FAST TRACK is a key strategy.** This is deployed for those children who can immediately move to a higher starting point based upon pre-assessment. We don't waste time moving children through levels - we move immediately to the correct stage. Our teaching assistant team are vital in enabling this dynamic starting point - where available. **Our horseshoe philosophy** is so important to the successful teaching and learning approach in mathematics and is particularly the case when considering **FAST TRACK**. **GOLD questions are key to fast track direction**.

* **Groups within the room are dynamic.** They can change from unit to unit and within lessons. Intervention is enabled within lessons as a way of brining children with common errors or misconceptions together for additional input. Intervention is pro-active and live, rather than re-active or detached from the lesson.

* Each room has a **Mathematics Station**. Built as a hub for practical resources and key message reminders and prompts for independent support.

* **Marking Bays** have been established to increase independence and apply appropriate pace to learning. All layers of activity have limited questions meaning that progress, rather than quantity, is a measure of impact. Just doing 25 of the same questions is wasted time. Learning, building confidence and then moving on to the next challenge is our aim.

This philosophy looks carefully at applying learning in different ways and encourages wider ways of showing understanding. It is not about making bigger numbers - the depth of the challenge is key. We feel that this system teaches a little less but really embeds the key mathematical concepts.

Mathematics' presence is maintained through the central position of the **Mathematics Stations** in each classroom, whilst the profile of mathematical reward, achievement and celebration throughout the school year is maintained via the role of **Student Subject Champions, Subject Celebrations** and **Subject Achievement Displays**. Rewards always have a specific eye upon personal progress rather than summative attainment.

Mathematics continues via our enrichment, wider curriculum opportunity: **Flanimals: Mental Arithmetic Games** which runs during the year.

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How We Assess Mathematical Progress

How we plan and teach mathematics on the previous page covers much of our daily approach to assessment in the subject: **pre-learning assessments; peel off starting points; modelled direction; fast track; live and self-marking; deployment of additional adults.** These all demonstrate our starting point assessment methods in mathematics classrooms. As a result, teachers plan responsively for next steps - often using the aforementioned strategies and build a picture as to each child's progress and attainment from unit to unit and across broader periods of time.

Summative judgements are submitted formally twice a year using the **Key Milestones Assessment Document**, using the evidence gathered in children's work, stating whether each child is working at the expected standard, towards the expected standard, at greater depth within the expected standard or at a pre-key stage standard.

Supplementing each of the above is our **Brain Gym** opportunities which are devised as a planned opportunity for daily review and to recap upon prior learning - keeping knowledge fresh and aiding long term retention.

Flanimal Games are used to keep those mental arithmetic skills fresh and to monitor progress in this vital area. **Key Knowledge Mats** provide essential checklists, fundamentals and guides for all stakeholders (including families) to follow in terms of mathematical attainment for each academic year.

How We Record Outcomes in Mathematics

Our children offer a huge range of daily starting points and school readiness, therefore we have carefully considered ways of demonstrating progress and outcomes and how these must be adaptable to suit the needs of learners and the requirements of the subject. Therefore each subject has its own bespoke way of gathering evidence from learners that are not simply restricted to traditional pupil exercise books - **otherwise recording work becomes a barrier to learning rather than a chance to celebrate children's achievements and specialist skills and knowledge in areas where they may otherwise excel.**

As such, teacher's have created their own working exercise books that have been used across school.

In mathematics, children's work is gathered in:

Individual Exercise Books/Work Books

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Flanimals: Mental Arithmetic Games & Animals!

Gum Spudlet

Bond Masher

Eats number bonds. Its favourite is 6 and 4. It hates 27 and 73.

Puddloflaj

Decimal and Zero Muncher

The only thing it eats is zeros and decimal points. It stores them all over its' body when questions don't need them – then pops his skin and puts them back at the end.

Honk

10, 100 and 1000 Mover

Multiplies and divides numbers by 10, 100 and 1000. It does the sum and squeaks the answers followed by a large honk – sometimes works with the Glonk.

Grundit

Partition Monster

It's always angry! It rips up any numbers it finds on trees and splits them up into hundreds, tens and units. It's very naughty!

Sprog

Times Tables Bouncer

Bounces around whilst doing times table practice.

Eats multiplication grids with brown sauce.

Fe-Fi-Flanimals

They're Number Animals

And They Help Me!

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Flanimals: Mental Arithmetic Games & Animals!

Sprot Guzzlor

Near Multiple Maker

Big and bossy! Takes numbers that end in 9 or 1 and changes them into a ten.

19 x 6 20 x 6 = 120 120 – 6 = 114

Munty Flumple

Counter Upper

Picks big numbers out of its' toe nails and chews them until they land in its' belly. Then adds on a smaller number.

Coddleflop

Double and Halve Sponge

This is a giant sponge, which soaks up numbers left on the floor.

After a week it burps and the number is now doubled or halved.

Glonk

Place Value Snatcher

Catches numbers from fresh air and gives them a position on his place value chart which he keeps at home behind the fridge!

Plamglotis

Division Inside Outer

Is best friends with Sprog. They always play together. It shares Sprog's times tables and does them backwards using a division.

Fe-Fi-Flanimals

They're Number Animals

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Mathematics Overview

	Autumn	Spring	Summer
EYFS	Getting To Know You Just Like Me! It's Me! 1, 2, 3! Light & Dark (All 15 Day Units)	Alive in 5! Growing 6, 7, 8! Building 9 & 10 Consolidation (All 15 Day Units)	To 20 and Beyond First, Then, Now Find My Pattern On The Move (All 15 Day Units)
Year One	20 Days - Number: Place Value (Within 10) 25 Days - Number: Addition & Subtraction (Within 10) 5 Days - Geometry: Shape 10 Days - Number: Place Value (Within 20)	5 Days - Consolidation 15 Days - Number: Addition & Subtraction (Within 20) 15 Days - Number: Place Value (Within 50) 10 Days – Measurement: Length & Height 10 Days – Measurement: Mass & Volume 5 Days - Consolidation	5 Days - Consolidation 15 Days - Number: Multiplication & Division 10 Days - Number: Fractions 5 Days – Geometry: Position & Direction 10 Days - Number: Place Value (Within 100) 5 Days – Measurement: Money 10 Days – Measurement: Time
Year Two	15 Days - Number: Place Value 25 Days - Number: Addition & Subtraction 10 Days – Measurement: Money 5 Days - Number: Multiplication & Division 5 Days – Consolidation	20 Days – Number: Multiplication & Division 10 Days - Statistics 15 Days – Geometry: Properties of Shape 15 Days – Number: Fractions	10 Days – Measurement: Length & Height 10 Days – Geometry: Position & Direction 10 Days – Consolidation & Problem Solving 10 Days – Measurement: Time 15 Days – Measurement: Mass, Capacity & Temperature 5 Days - Consolidation
Year Three	15 Days - Number: Place Value 25 Days - Number: Addition & Subtraction 20 Days - Number: Multiplication & Division	15 Days – Number: Multiplication & Division 5 Days – Measurement: Money 10 Days - Statistics 15 Days – Measurement: Length & Perimeter 10 Days – Number: Fractions 5 Days - Consolidation	15 Days – Number: Fractions 15 Days – Measurement: Time 10 Days – Geometry: Properties of Shape 15 Days – Measurement: Mass & Capacity 5 Days - Consolidation
Year Four	20 Days - Number: Place Value 15 Days - Number: Addition & Subtraction 10 Days – Measurement: Length & Perimeter 15 Days - Number: Multiplication & Division	15 Days – Number: Multiplication & Division 5 Days – Measurement: Area 20 Days – Number: Fractions 15 Days – Number: Decimals 5 Days - Consolidation	10 Days – Number: Decimals 10 Days – Measurement: Money 10 Days – Measurement: Time 5 Days – Statistics 10 Days – Geometry: Properties of Shape 10 Days – Geometry: Position & Direction 5 Days - Consolidation
Year Five	15 Days - Number: Place Value 10 Days - Number: Addition & Subtraction 10 Days – Statistics 15 Days - Number: Multiplication & Division 10 Days – Measurement: Perimeter & Area	15 Days – Number: Multiplication & Division 30 Days – Number: Fractions 10 Days – Number: Decimals & Percentages 5 Days - Consolidation	5 Days - Consolidation 15 Days – Number: Decimals 15 Days – Geometry: Properties of Shape 10 Days – Geometry: Position & Direction 10 Days – Measurement: Converting Units 5 Days – Measurement: Volume
Year Six	10 Days - Number: Place Value 25 Days - Number: Addition, Subtraction, Multiplication & Division 20 Days – Number: Fractions 5 Days – Geometry: Position & Direction	10 Days – Number: Decimals 10 Days – Number: Percentages 10 Days – Number: Algebra 5 Days – Measurement: Converting Units 10 Days – Measurement: Perimeter, Area & Volume 10 Days – Number: Ratio 5 Days - Consolidation	10 Days - Statistics 15 Days – Geometry: Properties of Shape 35 Days – Consolidation & Theme Projects

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Intent For Our Mathematics Curriculum

An Awareness Of Year 7 Coverage & Direction

We have designed our curriculum with a view upon the learner's progression into KS3 in mind.
As such, we have considered the curriculum of our feeder high school where almost all of our learner's attend upon leaving Mayfield.
Therefore our coverage has a constant eye upon what is to come next in our children's mathematical learning journey.

Year 7 Mathematics Curriculum overview

Overview	Assessed piece/skills
Each term pupils will cover topics from each of the strands in the KS 3 program of study: • Number • Algebra • Ratio, proportion and rates of change • Geometry and measures • Statistics and probability	Pupils will be assessed every four units of work. They will be tested on their ability to: • apply standard techniques • reason, interpret and communicate Mathematically • solve problems Assessment 4: End of year Summative examinations Non-calculator and Calculator skills will be assessed.

Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Negative numbers	Perimeter and area	Fractions	Presenting data	Volume	Transformations
Algebraic manipulation	Ratio	Angles	Measures	Equations	Decimals
Averages	Sequences	Graphs	Surface area	Percentages	Constructions
Number types	Probability				

Mathematics year 7 Assessment summary for parents

	Topic		Type of assessment
Assessment 1 September to mid-November	Topic 1: Number: Negative numbers	25%	Formal 1 hour exam **Not part of summative**
	Topic 2: Algebraic manipulation	25%	
	Topic 3: Statistics: Averages	25%	
	Topic 4: Number: calculations, primes	25%	
Assessment 2 Mid-November to end of January	Topic 5: Geometry: Perimeter and area	25%	Formal 1 hour exam **Not part of summative**
	Topic 6: Number: Ratio and proportion	25%	
	Topic 7: Algebra: Arithmetic progressions	25%	
	Topic 8: Probability	25%	
Assessment 3 February to mid-April	Topic 9: Number: Fractions	25%	Formal 1 hour exam **Not part of reporting**
	Topic 10: Geometry: Angles	25%	
	Topic 11: Algebra: Graphs	25%	
	Topic 12: Statistic: Diagrams and charts	25%	
Summative Assessment Mid-April to July	End of Year Assessment: Covering all topics covered since September		Formal 2 x 1 hour exam **100% of summative**
	Non-calculator paper	50%	
	Calculator paper	50%	

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Mathematician's Vocabulary

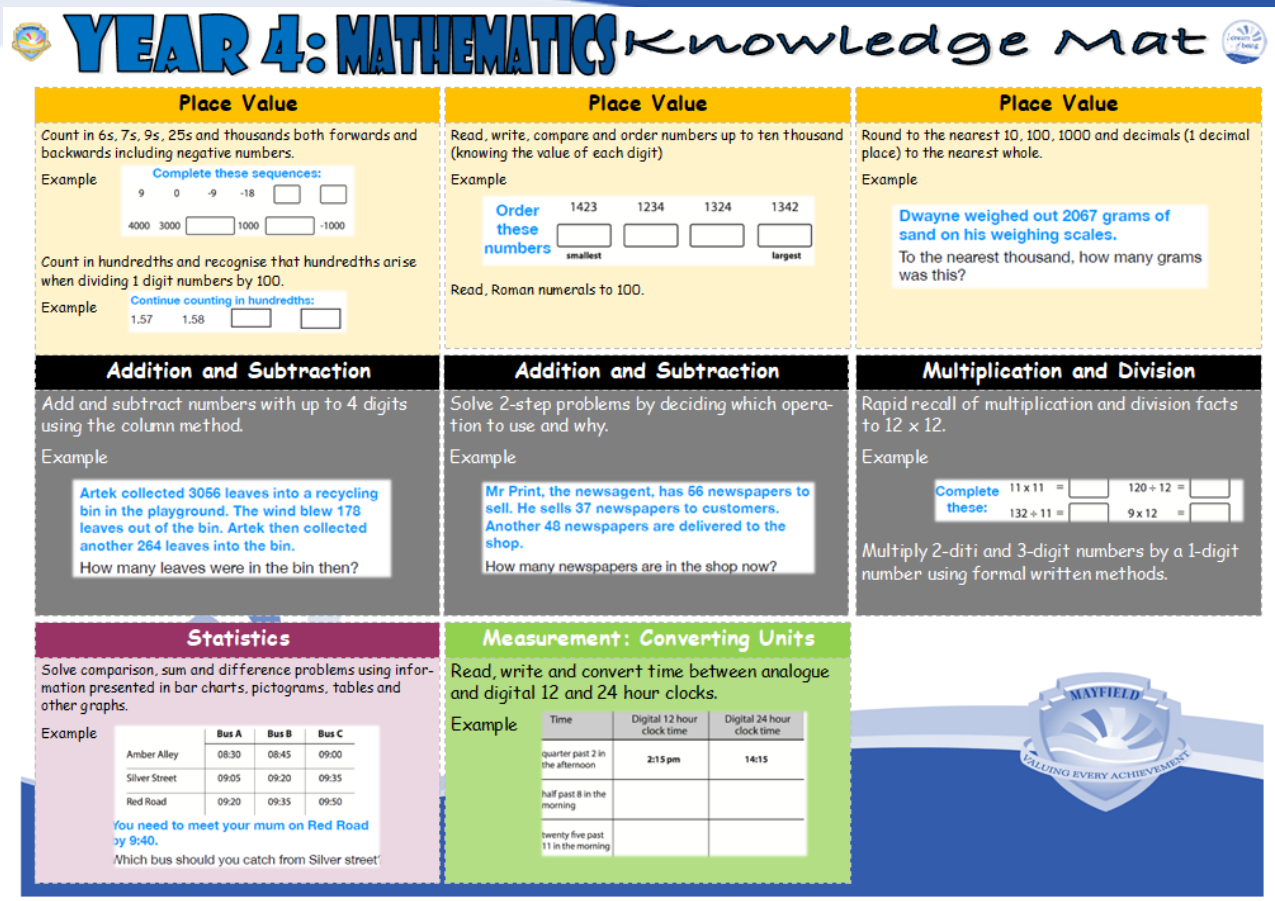
A core set of mathematical based terminology is highlighted within each unit on our **Mathematics Stations** within each classroom and displayed on the **Key Knowledge Mats** for each year group.

This 'set of terminology' has been created by the **Mathematics Leader** who has considered progression and when to introduce new terms, however repetition of key words is also central to our thinking. Therefore you will find a mixture of new words and consistently recurring ones across school.

In all cases, the use of terminology links to the units being studied.

You can find this terminology on the relevant year group Key Knowledge Mat.

Key Knowledge Mats



These documents have been introduced to aid with pitch, coverage and core knowledge for each year group. They act as an aide for staff across school. They are also designed for reminders for families around coverage and knowledge in mathematics for their child's specific year group. They are not planning tools.

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