



Raynville Academy
Guide to
Maths



Curriculum statement

At Raynville we are committed to creating an environment where our children love learning. Through our curriculum, we endeavour to develop the skills, knowledge and learning attitudes of our pupils so that they are equipped to be the best that they can be. We value the importance of enriching our pupils' curriculum with real life experiences, through trips and visitors, so children have first-hand opportunities to embrace their learning. We set high expectations and strive for independence in all areas regardless of a child's starting point in life. At Raynville, we place our values at the core of everything we do and prioritise pupils' understanding of the necessity for being ready, respectful and responsible. We feel this is essential in preparing children to be tolerant and inclusive of all so that they can positively contribute to our wider community.

Intent:

At Raynville we want our children to enjoy Maths and become confident mathematicians. We want every child to become fluent in the fundamentals of mathematics, and to apply these skills to reason and to solve problems. We aim to create an environment that encourages independence and embraces mistakes as opportunities for further learning. Our aim is for all children to recall on previous learning and to apply skills and knowledge across a variety of mathematical concepts. Across school, maths learning will be engaging, relevant, practical and creative. This will allow children to understand and appreciate relationships and patterns and relate maths to their everyday life.

Implement:

At Raynville Academy we follow the White Rose scheme through EYFS - Year 6. We have adapted the White Rose long-term plans to ensure they are suitable for our needs. We follow each unit's small steps to sequence learning and to gradually develop and deepen children's understanding. Teaching takes a whole-class approach with all students moving through unit content at the same time. Flexible groupings allow for learning to be supported and deepened through question, resource and support given. We have a bespoke calculation policy which outlines concrete, pictorial and abstract methods to be used in each year group.

Each classroom has a stimulating maths area with access to concrete resources to support children's independence. In addition to this, each classroom will have a working wall with key vocabulary, examples and sentence stems to support unit learning. To support learning and recall over time 'Flashback 4' will be used daily encouraging children to recall prior knowledge 'from yesterday, last week, last term and last year.'

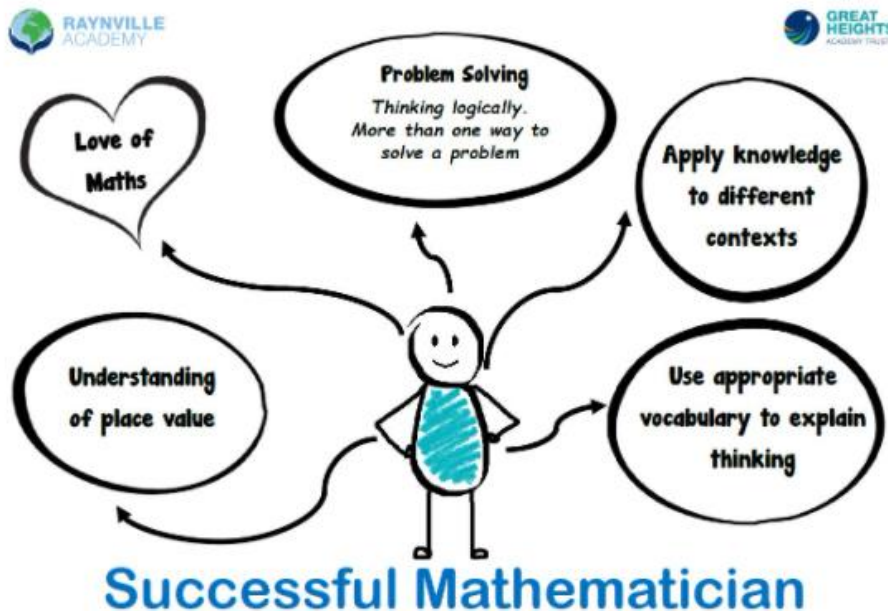
Additional arithmetic lessons are used across school to consolidate fundamental fluency skills and recall of key number facts. KS2 have 2 x 20–30-minute arithmetic lessons per week. KS1 have daily arithmetic slots, supplemented with songs and games. Having this secure understanding will allow children to be further equipped when reasoning and problem solving and reduce cognitive load.

Impact:

Assessment is used to ensure that targeted support is given, filling gaps that may arise in learning.

- Daily assessment – live feedback is given throughout lessons and if the daily objective has not been met, a same day intervention takes place.
- End of unit assessments – Pre and post-tests are used to gain a baseline assessment of where children are starting and ending a unit.
- Termly assessment – NFER tests are used at the end of each term to support teacher assessment.

EYFS



Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. At Raynville, children can count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from

which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

In Reception, we follow the White Rose scheme for Mathematics, supplemented by Numbersense. We take the objectives for each lesson and create activities that give children a hands-on experience in developing their understanding of numbers. We also support our lessons with the 'master the curriculum' scheme. This follows White Rose and allows us to teach the mastery approach and give the children opportunity to become deep thinkers.

We evidence work on Seesaw by uploading photos and videos of the children engaging in practical activities and using mathematical language. Weekly tasks are evidenced in books and shows children's consolidation of an objective.

Book layout



At Raynville we aim for all books to be clearly structured and consistent across the school. Each book will have a unit front cover that states the pre- and post-assessment scores and the steps for learning in that unit. This allows for progress to be clearly shown and helps teachers and students keep track of their learning journey.

Children across school have access to fluency, reasoning, and problem-solving questions throughout each unit.

Additional questions are provided to challenge children's understanding of a topic. These questions are colour coded so staff and pupils can identify what style of question they are working on, and which areas need more focus.

1) Circle 19 and 13 on the number line.

Write the missing phrase.

less than greater than equal to

19 is _____ 13

Fluency questions

Kim labels a number on the number line. She spills some paint over her number. What could Kim's number be?

Problem-solving questions

Kim is counting.

Explain the mistake that Kim has made.

Reasoning questions

Fill in the empty boxes using the numbers 2, 4, 6 and 8.

Challenge questions

Differentiation

Pre, Post-test assessments

Pre-tests will be used at the start of each unit as a baseline assessment. These will inform planning and how the children are grouped throughout the unit. For children with very low scores, pre-teaching will be used where necessary and an increased amount of varied fluency. For those who score highly, questions will mainly use reasoning and problem-solving skills.

Daily lessons

Learning will be differentiated by the type of question children complete and through resources and support.

For example:

Lower ability children complete a greater range of varied fluency, before moving on to reasoning and problem-solving. This may be supported by an adult.

Higher ability children will complete mainly reasoning and problem-solving questions independently. Additional challenge questions, which require children to apply learning across a unit, will be available to deepen understanding.

Concrete, Pictorial and Abstract

The CPA method involves children first using physical objects to access maths learning. They will then progress to using pictorial representations of the object and ultimately, abstract symbols. This approach helps children to visualise abstract concepts in a more familiar and tangible way.

SEND

Where possible, children will follow their year group's curriculum at the same pace as their peers. Learning will be adapted to suit the child's needs. Adaptations may include the following: appropriate level of question, use of concrete resources and pictorial representation, use of adult support and use of a supportive buddy. Reasoning questions may be recorded through use of audio recordings or teacher scribing. Additional support can be provided through pre-teaching key concepts and additional same day interventions.

For some it may be more appropriate for students to complete work from a different year group. In this case, children will need to be assessed using that year group's pre/post-tests and NFER papers (if appropriate). Daily work will reflect the objectives that are appropriate for that child.

Assessment

Each unit will use pre-tests to baseline children and post-tests to review progress. Baselines will inform groupings for that unit. If children have not made progress on their post-tests, additional interventions will be used to address gaps in learning. This must be noted on the front cover page of the unit.

NFER tests will be used to assess the children termly. These assess objectives across the curriculum. Raw scores will need to be converted to a standardised score using the tables in the back of the teacher handbook.

To inform assessment the following guidance should be used:

Above average = greater depth

High average or average = on track

Low average or below average = WTS

Anything below that = below (and you will probably have given the child a paper from a different year group or no paper at all)

For children on the boundary of different bands (or any unexpected scores) post-tests, additional arithmetic scores and class work should inform teacher judgement.

Arithmetic sessions

Arithmetic sessions will be used weekly to support the children's recall of key number facts. These sessions will ensure key number facts are overlearned and become automatic to reduce cognitive load during lessons.

Teachers will use our 'Key number facts long-term plan' to inform the content of their lessons as well as gaps identified throughout flashback 4s and math lessons.

KS1 – short sessions used daily using whiteboards, songs, iPad and games.

KS2- 2x 30-minute lessons using whiteboards, arithmetic books, tests, games and iPad.

Maths Marking Policy

All staff to mark in purple pen. Next steps marked where appropriate. Tick if correct, dot if incorrect.

Children to edit in green pen (except Y1).

LO to be highlighted green if achieved or orange if not achieved.

Work will be assumed to be independent unless:

P is marked for prompting (eg: check your working out)

S is marked for supported (focused support for a question)

This should be clearly marked next to individual questions or beside LO if support has been for the whole lesson.

Interventions:

Same Day Interventions used where possible. Marked clearly as 'Intervention' underneath days learning with staff initials. Children to complete intervention work in green pen.

If intervention is done on a later date or with concrete resources mark next to LO with intervention, short date and staff initials.

Concrete resources:

If used to support, no evidence needed.

If entire lesson is purely concrete (KS1) pictures and captions in books.

Resources

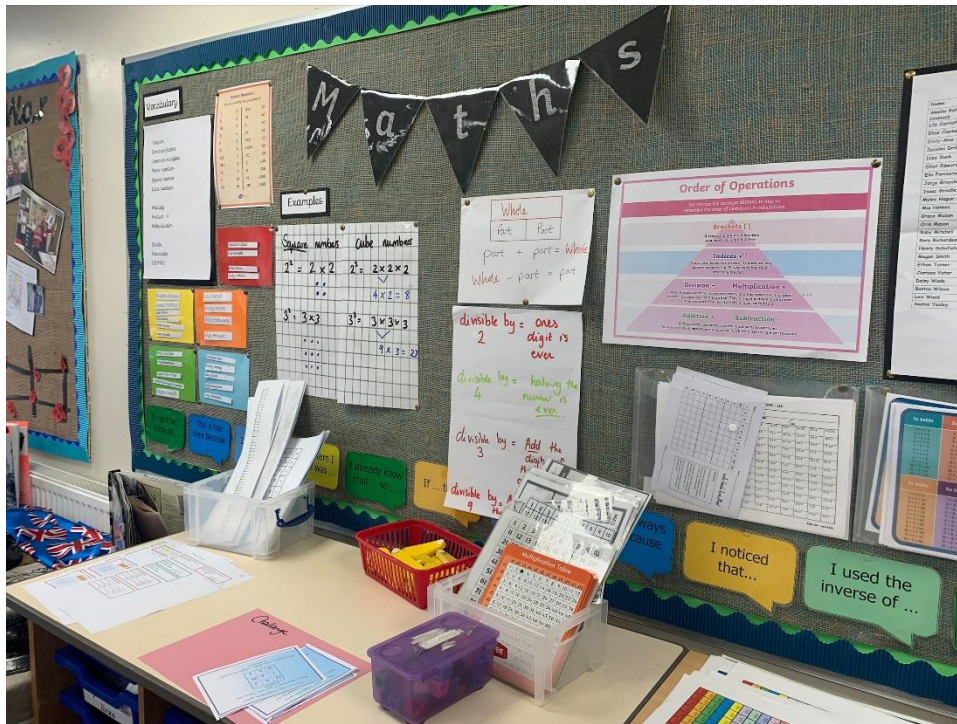


Children have access to a range of resources to support their learning throughout maths lessons. Each classroom has a maths area with basic resources (such as Numicon, counters, multi-link, number lines) as well as specific resources that are needed for that unit. These are stored in central resource areas across school within each phase.

Working Walls

Each class will have a maths working wall. This will act as an additional resource to support children's independence. Working walls will include the following:

- Key vocabulary
- Examples of learning for the unit
- Groups with children's names (determined by pre-test)
- Sentence stems to support reasoning questions



Times tables

All year 4 children will have their multiplication skills tested in the summer term.

In year 1, children are taught their 2s, 5s and 10 times tables.

In year 2, children are introduced to multiplication and division facts and repeated addition for 2s, 5s and 10s.

In year 3, children learn 3s, 4s and 8 times tables.

In year 4, children should learn all multiplication facts up to 12 x 12.



In school, children use Times Table Rockstars to support their times tables learning. All children create a rock star avatar and can play a variety of games to practice their times tables.

There are four main game types for single players:

Jamming: Children answer 10 questions on their choice of tables with no time limit.

Garage: Children choose tables based on the heatmap and choose their time limit.

Studio: Children answer a mix of tables to earn their studio speed.

Soundcheck: Similar to the MTC, children answer 25 questions with 6 seconds for each question.

A half termly competition will be used in KS2 to reward the use of Times Table Rockstars.

Numbots



Numbots is an online resource that we use in KS1 to support children's Mathematical concepts, in school and at home.

There are 2 modes:

Story Mode – Focus on mathematical concepts and is underpinned by a mastery approach to teaching. It includes visual representations, procedural variation, exposure to different calculation strategies and interleaved material all in very carefully sequenced order.

Challenge Mode – Focus on rapid responses to essential facts and simple sums, against the clock.

We aim to use Numbots 'little and often'.

At Raynvile, it is used during lessons, morning work and for interventions during the school day.

Key Number facts

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2	Extra
Year 1	Addition and subtraction facts within 10	Know number bonds to 10	Count in 2s, 5s and 10s	Count within 100, forwards and backwards, from a given number	Know doubles and halves to 10	Know number bonds to 20	
Year 2	Recognise numbers 0-100 and beyond Number bonds to 100.	Fact families (addition and subtraction)	Count forwards and backwards in 10's from any number.	2, 3, 5 and 10 times table (key focus all year).	Doubles and halves to 20	Multiplication & division fact families	Time – quarter past and quarter to, (5 mins). Length of time.
Year 3	Consolidate number bonds to 10, 100	Consolidate 2,5 and 10 times table	3x table	4x table	8x table	Consolidate 2, 3, 4, 5, 8 and 10 times table	
Year 4	6x table	7x table	9 table	11 x table	12 x table	Consolidate all times table and division facts	
Year 5	Roman numerals up to 1000. Consolidate multiplication and division facts for all times tables.	Multiple and Divide by 10, 100 and 1000. Identify prime numbers up to 20 (2, 3, 5, 7, 11, 13, 17, 19) Find factor pairs for numbers up to 100 (use multiplication tables).	Know decimal bonds to 1 (0.1 and 0.9, 0.2 and 0.8, 0.3 and 0.7, 0.4 and 0.6, 0.5 and 0.5).	Know decimal, fraction and percentage equivalents (0.5=1/2=50%, 0.1=1/10=10%, 0.25=1/4=25%, 0.75=3/4=75%, 1=1=100%).	Know that 360 degrees = 1 full turn, 180 degrees = a straight line or half a turn, 90 degrees = a right angle.	Know that 'kilo' means 'thousand' (eg 1km=1000m, 1kg=1000g) and 'milli' means 'thousandth' (1l=1000ml, 1m=1000mm).	Recognise square numbers up to 144.
Year 6	Know all previous number bonds, including decimals.	Use all multiplication and division facts for the times tables up to 12x12 to derive x and ÷ of decimal numbers.	Multiply and divide decimal numbers up to 3 d.p by 10, 100 and 1000	Common multiples and factors of numbers.	Metric conversions	Convert between fractions, decimals and percentages	Consolidate square and cube numbers up to 144 and prime numbers up to 50 All four operations with fractions

Long-term plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Place value within 10 (5 weeks) Addition & Subtraction within 10 (7 weeks)	Addition & Subtraction within 10 (continued) 2-D & 3-D shapes (1 week)	Place value within 20 (4 weeks) Addition & Subtraction within 20(4 weeks)	Place value within 50 (4 weeks) Length & Height (1 week) Mass and Volume (1 week)	Multiplication & Division (4 weeks) Fractions(3 weeks)	Fractions (continued) Position & Direction (1 week) Place value within 100 (2 weeks) Money (1 week) Time (2 weeks)
Year 2	Place value (5 weeks) Addition and subtraction (2 weeks)	Addition and subtraction cont (3 weeks) Shape (2 weeks)	Money (3 weeks) Multiplication and division (3 weeks)	Multiplication and division cont (2 weeks) Fractions (3 weeks) Statistics (1 week)	Length and height Position and direction Time Mass, capacity and temperature (1 week on each)	Length and height Position and direction Time Mass, capacity and temperature (1 extra week on each) 2 weeks – review gaps from SATS
Year 3	Place value (4 weeks) Addition and subtraction (6 weeks)	Addition and subtraction cont. Multiplication and Division A (4 weeks)	Multiplication and division B (4 weeks)	Length and perimeter Fractions A Mass and capacity	Fractions B Money Time	Shape Statistics
Year 4	Place value (4 weeks) Addition and subtraction (4 weeks)	Area (1 week) Multiplication and division A (4 weeks)	Multiplication and division B (4 weeks) Length and Perimeter (2 weeks)	Fractions (4 weeks) Decimals A (3 weeks)	Decimals B (2 weeks) Money (2 weeks) Time (2 weeks)	Shape (2 weeks) Statistics (1 week) Position and direction (2 weeks)
Year 5	Place Value (3 weeks) Addition and Subtraction (2 weeks)	Multiplication and Division A (3 weeks) Fractions A (4 weeks)	Multiplication and Division B (3 weeks) Fractions B (2 weeks)	Decimals and percentages (3 weeks) Perimeter and Area (2 weeks) Statistics (1 week)	Shape (3 weeks) Position and Direction (2 weeks)	Decimals (2 weeks) Negative numbers (1 week) Converting Units (2 weeks) Volume (1 week))
Year 6	Place value (2 weeks)	Fractions A & B (5 weeks)	Decimals (2 weeks)	Area, perimeter and volume (2 weeks)	Statistics (1 week)	Algebra (2 weeks)

	Four calculations (5 weeks)	Converting Units (1 week)	Fractions, decimals and percentages (3 weeks)	Shape (3 weeks) Position and direction (1 week)	SATs revision (2 weeks) Ration (2 weeks)	Themed projects, consolidation and problem solving (4 weeks)
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