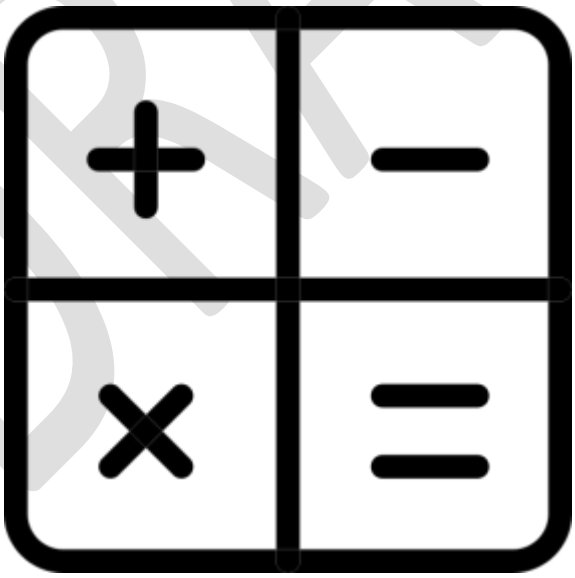
Swaffham Primaries Partnership



Mathematics Curriculum

Mathematics Intent

High-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically and a sense of enjoyment and curiosity about the subject.

Through the curriculum our children will:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time (NC)
- develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately (NC).
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions (NC aim)
- develop independence and resilience, make mistakes and know that it is ok to do so and learn from them.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. Pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving problems. They should apply their mathematical knowledge to science and other subjects. The expectation is that the majority of pupils will move through the scheme of work at broadly the same pace. However, decisions about when to progress should always be based on the security of pupil's understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged to 'dive deeper' and draw it, explain it, make a mistake, tell a maths story and prove it, before an acceleration through new content. Those who are sufficiently confident with earlier material should consolidate their understanding, including additional practice, before moving on.

Mathematics Implementation

We follow the Mathematics Mastery approach to teaching maths. Our mathematics curriculum is designed to meet the needs of teaching mixed-age classes. Long term and medium term plans are written using NCETM materials to help expose the structures of the maths to support children to break down maths into small steps. White Rose planning schemes are used to support short-term planning and resources. We have created our school calculation policy building new learning from prior teaching. Where differences occur between the NCETM, White Rose and the school calculation policy, the school calculation policy is taught.

The schools ongoing engagement with the Cambridge Maths Hub SSIF project continues to ensure that staff at all levels understand the pedagogy of the approach. Through our teaching, and the ethos that all

pupils have the potential to attain well in maths, we aim to remove the barriers associated with being classed as low or high ability. Mastery of maths involves pupils being able to understand and use different representations of concepts. When introduced to a new concept, children have opportunity to follow the concrete-pictorial-abstract approach. Concrete objects and manipulatives help them understand what they are doing and support children's understanding of abstract methods.

- Maths mastery is a whole-school curriculum that creates continuity and progression in the teaching of mathematics from EYFS to year 6.
- Pupils study mathematics daily covering a broad and balanced mathematical curriculum including elements of number, calculation, geometry, measures and statistics.
- All children in year 1 and year 2, Year 3 and 4, and year 5 and year 6 are taught together in their own mixed ability classes, through the same curriculum at broadly the same pace.
- All children in one class are exposed to both year group maths objectives throughout the year and the same objectives are then repeated the following year.
- Alongside daily maths sessions an additional 15minutes a day is spent focusing on the four main operations (addition, subtraction, multiplication, division and fractions) to build fluency in these areas and to think about numbers in the fun context of a game.
- We focus not only on the mathematical methods but also focus on mathematical vocabulary and the use of stem sentences to broaden and deepen mathematical understanding.
- To support children in year 4 with their multiplication practice for the multiplication tables check (MTC) we use 'Times Table Rockstars' as an online and fun learning platform.
- Classrooms are equipped with learning walls to aid in maths lessons. The content of learning walls is flexible and contains key vocabulary, concepts and knowledge.

See following pages for the mathematic objectives for each individual year group

Mathematics Impact

Throughout each lesson formative assessment takes place and feedback is given to the children, verbal and through marking, to ensure they are meeting the specific learning objective. Teachers use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress.

Teacher judgements are supported by the White Rose Maths planning and assessment materials and guidance from the NCTEM.

- They teaching of maths is monitored on a termly basis through book scrutinies, learning walks and lesson observations.
- Each term Children from year 1 –year 6 complete a summative assessment in addition and subtraction and place value (DEMAT) to help them develop their testing approach and demonstrate their understanding of the topics covered.
- In EYFS baseline assessment is completed during the first 6 weeks of Autumn term and at the end of the year every child's level of development is assessed against the Early Learning Goal using teacher's formative assessment.
- Results from formative and summative assessment is then used to determine children's progress and attainment
- Children in year 2 and year 6 complete National Statutory tests in summer term. This measures their progress across the key stage.
- Children are reasoning with increased confidence, independence, resilience and accuracy.

Core Concepts

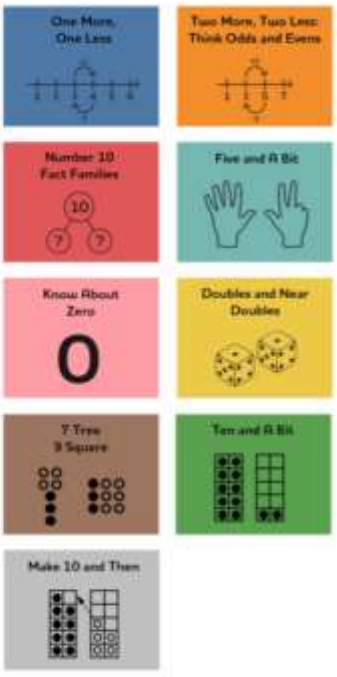
The DFE mathematics guidance key stage 1 and 2 (2020) identifies the most important conceptual knowledge and understanding that pupils need as they progress from year 1 to year 6. These important concepts are referred to as ready-to-progress (RTP) criteria.

The POS statements do not need to be taught in the year group in which they appear in the national curriculum, some have been moved to bring greater coherence.

Ready-to-progress criteria strands	Code
Number and place value	NPV
Number facts	NF
Addition and subtraction	AS
Multiplication and division	MD
Fractions	F
Geometry	G

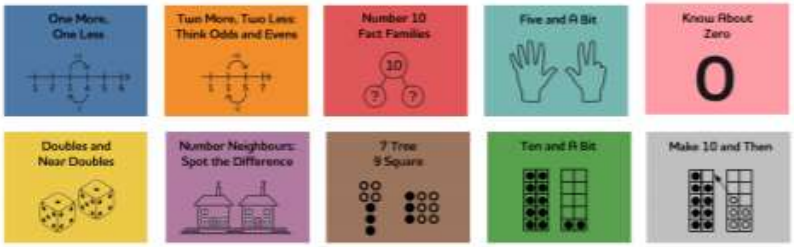
The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table below. Pupils must also be able to solve the corresponding subtraction calculations by applying the relationship to addition facts so 5 – 2 = 3 because 3 + 2 = 5

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10



Number Sense Maths

+	0	1	2	3	4	5	6	7	8	9	10
0	0 – 0										
1	1 – 0	1 – 1									
2	2 – 0	2 – 1	2 – 2								
3	3 – 0	3 – 1	3 – 2	3 – 3							
4	4 – 0	4 – 1	4 – 2	4 – 3	4 – 4						
5	5 – 0	5 – 1	5 – 2	5 – 3	5 – 4	5 – 5					
6	6 – 0	6 – 1	6 – 2	6 – 3	6 – 4	6 – 5	6 – 6				
7	7 – 0	7 – 1	7 – 2	7 – 3	7 – 4	7 – 5	7 – 6	7 – 7			
8	8 – 0	8 – 1	8 – 2	8 – 3	8 – 4	8 – 5	8 – 6	8 – 7	8 – 8		
9	9 – 0	9 – 1	9 – 2	9 – 3	9 – 4	9 – 5	9 – 6	9 – 7	9 – 8	9 – 9	
10	10 - 0	10 - 1	10 – 2	10 – 3	10 – 4	10 – 5	10 - 6	10 - 7	10 - 8	10 – 9	10 – 10
11		11 – 1	11 – 2	11 – 3	11 – 4	11 – 5	11 – 6	11 – 7	11 – 8	11 – 9	11 – 10
12			12 – 2	12 – 3	12 – 4	12 – 5	12 – 6	12 – 7	12 – 8	12– 9	12 – 10
13				13 – 3	13 – 4	13 – 5	13 – 6	13 – 7	13 – 8	13 – 9	13 – 10
14					14 – 4	14 – 5	14 – 6	14 – 7	14 – 8	14 – 9	14 – 10
15						11 – 5	15 – 6	15 – 7	15 – 8	15 – 9	15 – 10
16							16 – 6	16 – 7	16 – 8	16 – 9	16 – 10
17								17 – 7	17 – 8	17 – 9	17 – 10
18									18 – 8	18 – 9	18 – 10
19										19 – 9	19 – 10
20											20 – 10

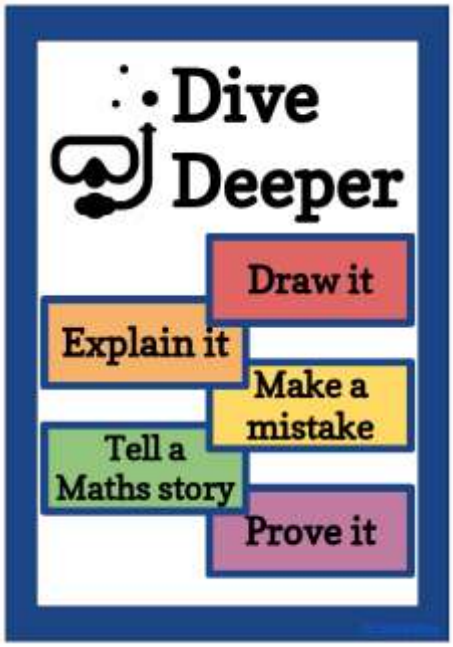


The full set of multiplication calculations that pupils need to be able to solve by automatic recall are shown in the table below. Pupils should also be able to recall division facts using known multiplication facts. The 36 highlighted facts are those required for short and long multiplication.

1 × 1	1 × 2	1 × 3	1 × 4	1 × 5	1 × 6	1 × 7	1 × 8	1 × 9	1 × 10	1 × 11	1 × 12
2 × 1	2 × 2	2 × 3	2 × 4	2 × 5	2 × 6	2 × 7	2 × 8	2 × 9	2 × 10	2 × 11	2 × 12
3 × 1	3 × 2	3 × 3	3 × 4	3 × 5	3 × 6	3 × 7	3 × 8	3 × 9	3 × 10	3 × 11	3 × 12
4 × 1	4 × 2	4 × 3	4 × 4	4 × 5	4 × 6	4 × 7	4 × 8	4 × 9	4 × 10	4 × 11	4 × 12
5 × 1	5 × 2	5 × 3	5 × 4	5 × 5	5 × 6	5 × 7	5 × 8	5 × 9	5 × 10	5 × 11	5 × 12
6 × 1	6 × 2	6 × 3	6 × 4	6 × 5	6 × 6	6 × 7	6 × 8	6 × 9	6 × 10	6 × 11	6 × 12
7 × 1	7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7	7 × 8	7 × 9	7 × 10	7 × 11	7 × 12
8 × 1	8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	8 × 9	8 × 10	8 × 11	8 × 12
9 × 1	9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9	9 × 10	9 × 11	9 × 12
10 × 1	10 × 2	10 × 3	10 × 4	10 × 5	10 × 6	10 × 7	10 × 8	10 × 9	10 × 10	10 × 11	10 × 12
11 × 1	11 × 2	11 × 3	11 × 4	11 × 5	11 × 6	11 × 7	11 × 8	11 × 9	11 × 10	11 × 11	11 × 12
12 × 1	12 × 2	12 × 3	12 × 4	12 × 5	12 × 6	12 × 7	12 × 8	12 × 9	12 × 10	12 × 11	12 × 12

Greater Depth

'Dive Deeper' is used across all year groups and in all areas of Maths. It allows teachers to pitch tasks to be accessible to all students, with the understanding that some will require support. Though it is aimed at the 'quick graspers', it's a great approach for students of all abilities and could even be used as an effective method in intervention groups



If students complete an activity before the rest of the class is ready to move on, they choose one of the Dive Deeper tasks and complete it in connection with the work they've just finished. For example;

- If the class was engaged in a fluency activity, such as one which explored the concept of multiplying unit fractions, a student who completed the task early could then write a Maths story which could cement a connection between the abstract algorithm and the real world, i.e. three friends each had ⅓ of the ½ of a cake left over from a party, ⅓ x ½ = ⅙.
- If the reasoning task asked for the student to explain why the product of two fractions is smaller than the factors, they could extend their learning by drawing a pictorial representation, proving why this is true.
- After completing a problem solving task requiring them to apply their understanding in a new context, they could then deepen their learning by demonstrating what they deem to be a common mistake, such as adding the denominators rather than multiplying them, and they could explain why this error sometimes occurs.

By engaging in these deepening tasks, students are able to sit with their learning just a little bit longer, devoting more thinking time to understanding the structure of the concept as well as unpicking any of their own misconceptions.

Mathematics Early Learning Goals

Number:

Children at the expected level of development will:

- Have a deep understanding of number to 10, including 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.

Numerical Patterns ELG:

- 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

On The Boil

In addition to the main 45minutes maths lesson, children spend 15minutes recapping learning from the prior year. It is a planned session using the Ready to progress criteria statements. This is not a teaching session, children are actively participating in their learning using manipulatives and discussion. Activities and questions can be used from Gareth Metcalfe "I see reasoning" (this document can be found in Google Drive-SPP Curriculum – Maths – Problem Solving).

Key learning points and discussion can be recorded in a whole class "Big Book of Mathematical Thinking".

I See Reasoning – KS1 is written to provide rich, visual maths prompts to help build children's conceptual understanding. Open, varied images and tasks allow children to explore big mathematical ideas in KS1 maths.

Concepts are represented visually in ***'Read the picture'*** tasks. Attention is drawn to key ideas in ***'Spot the difference'*** prompts. Opportunities to deepen learning are presented in ***'Different ways'*** challenges.

The resource is comprised of 281 varied tasks, linked to all areas of the KS1 mathematics curriculum. Screenshots of tasks can be used within presentations or printed and given to children.

I hope that ***I See Reasoning*** enriches the maths learning in your classroom!

Gareth Metcalfe www.iseemaths.com

I See Reasoning – UKS2 is written to provide rich, open contexts for mathematical discussion and enquiry.

Children apply their current understanding to solve ***'I know... so...'*** questions. They discuss key concepts to respond to ***'Rank by difficulty'*** tasks. Friends work systematically to find all possible solutions for the ***'How many ways?'*** challenges.

The resource is comprised of 176 varied tasks, linked to all different areas of the upper KS2 mathematics curriculum. These activities correspond to US grades 4-5 and Australia year 5-6 objectives. Screenshots of tasks can be used within presentations or printed and given to children.

I hope that ***I See Reasoning*** enriches the maths learning in your classroom!

Gareth Metcalfe

I See Reasoning – LKS2 is written to provide rich, open contexts for mathematical discussion and enquiry.

Children build on their current understanding when solving ***'I know... so...'*** questions. Concepts are represented visually in ***'Read the picture'*** tasks. Friends work systematically to find all possible solutions for the ***'How many ways?'*** challenges.

The resource is comprised of 240 varied tasks, linked to all different areas of the lower KS2 mathematics curriculum. These activities correspond to US grades 2-3 and Australian years 3-4. Screenshots of tasks can be used within presentations or printed and given to children.

I hope that ***I See Reasoning*** enriches the maths learning in your classroom!

Gareth Metcalfe www.iseemaths.com

Curriculum Maps- Mixed age

We use the NCETM PD materials to help provide quality CPD to help expose the structures of the maths to support children to break down maths into small steps. The curriculum has been split up into a small number of areas – called 'spines'. Spine 1: Number, Addition and Subtraction. This is followed by Spine 2: Multiplication and Division and Spine 3: Fractions. Each spine is composed of a number of segments, and the NCETM have provided a recommended teaching sequence for segments across the three spines. For each area there are PowerPoints and teacher guidance notes that may be used and adapted into your lesson.

- Children are allowed to choose their own level of challenge depending on how confident they are feeling. Here are always tasks available that will deepen conceptual understanding and allow children to progress from where they were the previous year.
- The older year group can have a key role guiding their younger partner by checking their understanding. They have to think of questions to ask and guide their partner without giving them the answer.

https://www.ncetm.org.uk/classroom-resources/cp-curriculum-prioritisation-in-primary-maths/

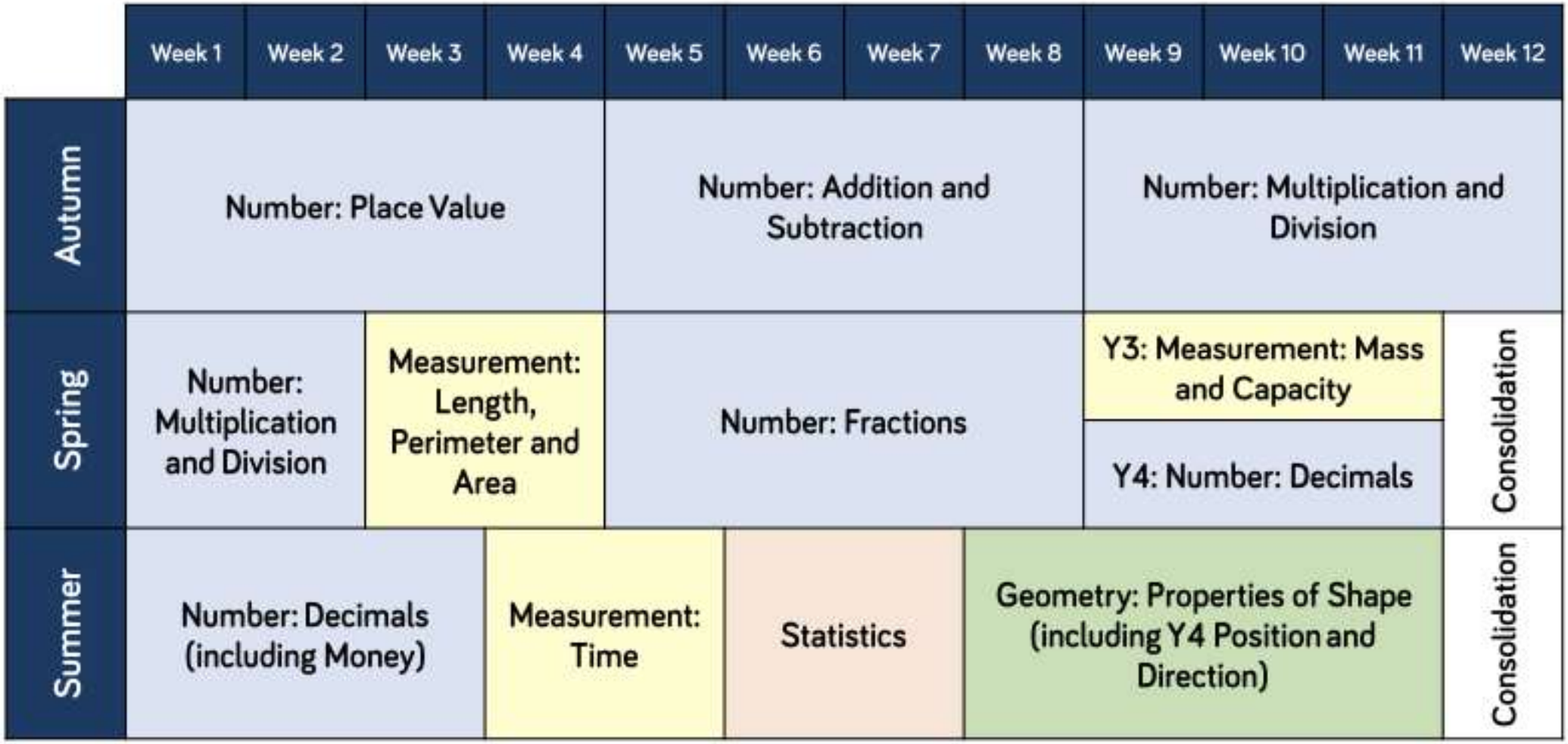
In the EYFS Number blocks will be used to support the early concepts of maths and deepen the children's number knowledge to create deep foundations to build number knowledge on. https://www.ncetm.org.uk/classroom-resources/ey-numberblocks-support-materials/

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Amazing Me !	**Celebrations**	**Amazing Animals**	**Ticket to Ride**	**Outside**	**Water**
Maths	Developing a **strong grounding in number** is essential so that all children develop the necessary **building blocks** to excel mathematically. Children should be able to **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 double sided counters 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.					
Maths Mastering Number	**Mastering Number** Subitise 1-3 Counting1:1 correspondence Composition within 4. Language of Comparison	**Mastering Number** Subitise within 5 Count beyond 5 - cardinality of 5 Composition of numbers within 5 Compare sets	**Mastering Number** Subitise structured and random arrangements 1 more patterns Counting to 20 and beyond represent quantities between 5 and 10 Composition of 6 '5 and a bit mathematical structure Compare equal and unequal sets	**Mastering Number** Subitise symmetrical patterns, linking this to doubles Count beyond 20. Composition of odd and even numbers doubles composition of numbers within 10. Compare numbers, reasoning about which is more	**Mastering Number** Subitise arrangements, which expose '1 more' or 'doubles' patterns Develop verbal counting to 20 and beyond, including counting from different starting numbers Composition of 10. Order sets of objects	**Mastering Number** children consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.
White Rose Scheme	**White Rose-** ***'Just like me'-6 weeks***	**White Rose-** ***'It's 1,2,3'' – 5 weeks*** ***"Light and Dark" -2 weeks***	**White Rose-** ***'5 alive' -3weeks*** ***'Growing 6,7,8' -3 weeks***	**White Rose-** ***'Growing 6,7,8' 2 weeks*** ***'9 and 10' 1 week*** ***'Find my Pattern' 3 weeks***	**White Rose-** ***'To 20 and Beyond'***	
(Numberblocks episode) **(Mastering Number wk)** **Weeks 1-7**	Baseline (One) **match** (How to count) **sort** (Another one) **sort** (Two) **compare** (Three) **(MN1) Patterns** (One, Two Three) **(MN2) Representing 1,2,3**	(Three little pigs) **(MN3) Circles and Triangles** (Four) **(MN4) 4** (Five) **(MN5) 5** (Off We Go) **(MN6) One more** (Stampolines) **(MN7) one less (time)** (The Whole of Me) **(MN8) Shapes with 4 sides** (The terrible twos) **(MN9) 3,4,5**	(holes) **(MN10) comparing numbers to 5** (Hide and Seek) **(MN11) Composition of 5** (Six) **(MN12) Capacity** (Seven) **(MN13) 5,6,7** (Once upon a time) **(MN14) Combining two groups** (Fluffies) **(MN15) Length and Height**	(Eight) **(MN16) more/less, pairs** (Peekaboo) **(MN17) 7, 8** (Nine) **(MN18) comparing numbers within 10** (double trouble) **(MN19) double** (Odds and evens) **(MN20) Odd and Even** (I can count to 20) **(MN21) No's to 20**	(Counting Sheep) **(MN22)** (Numberblock Express) **(MN23)** (Ten again) **(MN24)** (Numberblock castle) **(MN25)** (Five and friends) **(MNYr1-wk2)** (Ten Green Bottles) **(MNYr1 - wk3)**	Value – No's to 20 **Measure** **Consolidation** **Consolidation**

Year 1 and 2 Long Term Plan

<table>
<tr><th></th><th>Week 1</th><th>Week 2</th><th>Week 3</th><th>Week 4</th><th>Week 5</th><th>Week 6</th><th>Week 7</th><th>Week 8</th><th>Week 9</th><th>Week 10</th><th>Week 11</th><th>Week 12</th></tr>
<tr><td>Autumn</td><td colspan="3">Number: Place Value
Y1 – Numbers to 20
Y2 – Numbers to 100</td><td colspan="5">Number: Addition and Subtraction
Year 1- Numbers within 20 (including recognising money)
Year 2- Numbers within 100 (including money)</td><td colspan="3">Number:
Year 1: Place Value to 50 and Multiplication
Year 2: Multiplication</td></tr>
<tr><td>Spring</td><td colspan="2">Number:
Year 1: Division & consolidation
Year 2: Division</td><td colspan="2">Year 1: Place Value to 100
Year 2: Statistics</td><td>Measurement: Length and Height</td><td colspan="3">Geometry:
Year 1: Shape and Consolidation
Year 2: Properties of Shape</td><td colspan="2">Number:
Year 1: Fractions and Consolidation
Year 2: Fractions</td><td>Consolidation</td></tr>
<tr><td>Summer</td><td>Geometry: Position and Direction</td><td colspan="2">Measurement: Time</td><td colspan="2">Year 1: Place Value recap
Year 2:Problem solving</td><td colspan="3">Measurement:
Year 1: Weight and Volume
Year 2: Mass, Capacity and Temperature</td><td colspan="2">Year 1: Four Operations recap
Year 2: Consolidation and Investigations</td><td>Consolidation</td></tr>
</table>

Year 3 and 4 Long Term Plan



Year 5 and 6 Long Term Plan

<table>
<tr><th></th><th>Week 1</th><th>Week 2</th><th>Week 3</th><th>Week 4</th><th>Week 5</th><th>Week 6</th><th>Week 7</th><th>Week 8</th><th>Week 9</th><th>Week 10</th><th>Week 11</th><th>Week 12</th></tr>
<tr><td>Autumn</td><td colspan="2">Number: Place Value</td><td colspan="5">Number: Four Operations</td><td colspan="5">Number: Fractions</td></tr>
<tr><td rowspan="2">Spring</td><td colspan="2">Y5: Number: Fractions</td><td colspan="4" rowspan="2">Number: Decimals and Percentages</td><td colspan="2">Y5: Number: Decimals</td><td rowspan="2">Measurement: Converting Units</td><td colspan="2" rowspan="2">Measurement: Perimeter, Area and Volume</td><td rowspan="2">Statistics</td></tr>
<tr><td colspan="2">Y6: Number: Ratio</td><td colspan="2">Y6: Number: Algebra</td></tr>
<tr><td rowspan="2">Summer</td><td colspan="2" rowspan="2">Geometry: Properties of Shape</td><td rowspan="2">Geometry: Position and Direction</td><td colspan="3">Y5: Four Operations consolidation</td><td colspan="2">Y5: FDP consolidation</td><td colspan="2">Y5: Measure consolidation</td><td>Consolidation</td></tr>
<tr><td colspan="2">Y6: SATS</td><td colspan="6">Investigations</td></tr>
</table>

Manipulatives

	EYFS	KS1	KS2
Addition & Subtraction	Number Blocks Staircase Tens frame Double-sided counters Number track Part-whole model Linking cubes	Part-whole model Pictorial bar model Double-sided counters Multi-link cubes Dienes Rekenrek (0-20)	Part-whole model Bar model Place value counters Double-sided counters Dienes Rekenrek
Multiplication & Division		Counters linking cubes	Numberlink boards Dienes 100 square
Fluency Manipulatives	Tens frame Hungarian dice frames double sided counters Linking cubes Summer – Rek-en-Rek	Tens frame double sided counters Rekenrek (0-20)	Tens frame & double sided counters - showing two addends, bridging 10 Rekenreks - visualising bridging 10, double facts, near doubles

Fluency Expectations

What is fluency?

- ***Teaching*** procedural and factual knowledge
- Developing ***number sense*** to be able to work with numbers in different ways
- Building ***visualisation***
- Increasing ***confidence*** to ***solve problems efficiently***
- ***Making connections*** and ***rapid recall***

What does it look like?

- ***Daily 15/20min*** whole class fluency lessons from EY to Yr6
- Lessons are ***structured*** and ***progressive***
- Teaching of ***difficult points*** is the focus of sessions
- Careful choice of ***representations and manipulatives***

Lesson structure and resources

- Use of progression overview to ensure coverage of fluency objectives
- Each session begins with teaching with use of ***manipulatives*** followed by a ***game***
- Games played daily to focus on ***difficult points***
- Tens frame and Rekenrek are used to teach addition and subtraction
- Numberlink boards are used to teach multiplication

Assessment:

- Rainbow Quiz sheets are used to ***identify teaching points***
- Multiplication booklets in Y3/4 assess children recall of multiplication facts and their understanding of the links between multiplication and division

Long Term Fluency Plans

EYFS Fluency Programme

EYFS	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Autumn 1	Counting principles	Counting principles	Counting principles	Counting principles	Counting principles	Counting principles
	Number blocks 1	Number blocks 1	Number blocks 2	Number blocks 2	Number blocks 3	Number blocks 3
Autumn 2	Counting principles	Subitise	Subitise	subitise	subitise	subitise
	Matching numerals to objects in a set	perceptually Subitise 2 (dice)	perceptually Subitise 3 (dice)	perceptually Subitise 4 (dice)	perceptually Subitise 5 (dice)	perceptually Subitise 6 (dice)
Spring 1	subitise	subitise	subitise	subitise	subitise	subitise
	perceptually subitise non-standard arrangements (3)	perceptually subitise non-standard arrangements (4)	conceptually subitise non-standard arrangements (5)	conceptually subitise non-standard arrangements (6)	conceptually subitise non-standard arrangements (6)	conceptually subitise non-standard arrangements (7)
Spring 2	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction
	Partition numbers up to 5 into pairs - 3	Partition numbers up to 5 into pairs - 4	Partition numbers up to 5 into pairs - 5	5 and a bit numbers to 9 - five frame	5 and a bit numbers to 9 - build it/throw it/show it	5 and a bit numbers to 9 - bunny ears
Summer 1	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction
	1 more than	1 less than	*Introduce Rekenrek*	*Rekenrek – Bonds to 5*	composition of numbers 5+ (6, 7, 8)	composition of numbers 5+ (9)
Summer 2	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Addition/Subtraction	Multiplication/Division	Multiplication/Division
	number bonds to 5	adding and subtracting 0 will result in no change	number bonds to 10	number bonds to 10	doubles	odds and evens

Year 1 Fluency - Mastering Number Programme

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison	Addition and subtraction/ Number facts
1 **Children will:**	• revisit subitising within 5 using perceptual subitising • practise conceptual subitising of bigger numbers as they become more familiar with patterns made by the numbers 5–10.	• explore the linear number system within 10, looking at a range of ordinal representations • explore the link between the 'staircase' pattern and a number track.	• focus on the composition of numbers within 10, with a particular emphasis on the composition of numbers 6, 7, 8 and 9 as '5 and a bit', as well as exploring the composition of numbers 5 and 6 in-depth • explore the composition of odd and even numbers, identifying that even numbers are made of 2s and odd numbers have 'an extra 1' – they will link this to the 'shape' of these numbers.		Although children will not be looking at number bonds expressed as equations, their work on the composition of numbers within 10 will be developing their knowledge of number bonds.
2 **Children will:**	• continue to practise conceptually subitising numbers they have already explored the composition of.	• review the linear number system to 10 as they compare numbers.	• continue to explore the composition of the numbers 7–9 in-depth, linking this to their understanding of odd and even numbers • explore the composition of 10, developing a systematic approach to finding pairs that sum to 10.	• revisit what is meant by 'comparing' and see that quantities can be compared according to different attributes, including numerosity.	As above.
3 **Children will:**	• continue to practise conceptually subitising numbers they have already explored the composition of.		• review the composition of numbers within 10, linking these to part-part-whole representations • practise recalling missing parts for numbers within 10.	• compare numbers within 10, linking this to their understanding of the linear system • use the inequality symbol to create expressions, e.g. 7 > 2, and use the language of 'greater than' and 'less than' • reason about inequalities, drawing on their knowledge of the composition of numbers, e.g. Is this true or	• develop their recall of number bonds within 10, through the use of exercises which use written numerals but not the symbols +, – , or =.

				false? 3 and 2 is less than 4.	
4 **Children will:**	● continue to practise conceptually subitising numbers they have already explored the composition of.	● review the linear number system to 10, looking at a range of representations, including a number line ● explore the use of 'midpoints' to enable them to identify the location of other numbers.	● review the composition of odd and even numbers, linking this to doubles and near doubles ● explore the composition of the numbers 11–20, seeing representations which show the structure of these numbers as 'ten and a bit'.		● continue to develop their recall of bonds within 10, through the use of exercises which do NOT involve written equations, such as 4 + 3 = ? ● identify doubles and near doubles through visual representations of odd and even numbers.
5 **Children will:**	● continue to practise conceptually subitising numbers they have already explored the composition of. ● conceptually subitise numbers within 20 as they become more familiar with the composition of numbers within 20.	● review the linear number system to 20, looking at a range of representations, including a number line ● explore the use of 'midpoints' to enable them to identify the location of other numbers.	● continue to explore representations which expose the composition of numbers within 20.	● compare numbers within 20, including questions which use the symbols +, <, >, or =, such as: True or false? 10 + 4 < 14 10 + 4 = 14 10 + 4 > 14	● develop their fluency in additive relationships within 10, using a range of activities and games ● draw on their knowledge of the composition of numbers to complete written equations ● revisit strategies for addition and subtraction within 10 and apply these to a range of questions, including written equations.
6 **Children will:**	● continue to use conceptual subitising, especially when using a rekenrek.		● apply their knowledge of the composition of numbers, to calculations within 10 and 20.	● continue to draw on their knowledge of the relative size of numbers when answering questions using the inequality symbol.	● continue to practise recalling additive facts within 20, applying their knowledge of the composition of numbers within 20 and strategies within 10.

Year 2 Fluency - Mastering Number Programme

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison	Addition and subtraction/ Number facts
1 **Children will:**	• develop conceptual subitising skills as they become more familiar with patterns made by numbers within 10 and understand their composition • use perceptual and conceptual subitising when using a rekenrek.	• explore the linear number system within 10, looking at a range of representations • compare number tracks and number lines and explore the use of 'midpoints' to enable them to identify the location of other numbers.	• focus on the composition of numbers within 10, with a particular emphasis on the composition of numbers 6, 7, 8 and 9 as '5 and a bit', as well as exploring the composition of numbers 5 and 6 in-depth • explore the composition of odd and even numbers, identifying that even numbers are made of 2s and odd numbers have 'an extra 1' – they will link this to the 'shape' of these numbers.		• link their growing understanding of the composition of numbers within 10 to the related additive facts, including adding 2 to an odd or even number • practise recalling facts in a variety of ways, including through solving simple picture problems and completing equations with a missing sum or addend,
2 **Children will:**	• continue to practise conceptually subitising numbers they have already explored the composition of.	• review the linear number system as they compare numbers.	• continue to explore the composition of the numbers 7–9 in-depth, linking this to their understanding of odd and even numbers	• compare numbers within 10, linking this to their understanding of the linear number system • use the inequality symbols to create expressions, e.g. $7 > 2$, and use the language of 'greater than' and 'less than' • draw on their knowledge of number bonds to answer questions in the form: True or false? $5 + 3 > 7$	• continue to practise recalling additive facts for numbers within 10, using a range of equations, games and picture problems.
3 **Children will:**	• continue to practise conceptually subitising numbers they have already explored the composition of,		• review the composition of 11 to 19 as 'ten and a bit' and explore ways to represent this.		• focus on number bonds within 10 presented in the part-part-whole structure, including identifying a missing 'part' and relating this to subtraction equations

	including 'teen' numbers when they have reviewed the composition of 11–19.				• review strategies for adding 1 and 2 to odd and even numbers to subtraction facts presented in different ways • apply their knowledge of the composition of 11–19 to calculations in which 10 is a part • apply their knowledge of composition to facts involving 3 addends.
4 **Children will:**	• continue to conceptually subitise the numbers 11–19 using a range of representations, which expose the structure of these numbers as 'ten and a bit'.	• revisit the structure of the linear number system within 20, making links between the midpoints of 5 and 10, and 15.	• review the composition of odd and even numbers, linking this to doubles and near doubles.	• continue to compare numbers within 20, including questions which use the symbols +, <, >, or =, such as: Write the correct symbol: 10 + 4 ☐ 15 10 + 4 ☐ 14 10 + 4 ☐ 13	• draw on their knowledge of the linear number system and apply this to calculations involving 1 more and 1 less, and pairs of numbers with a difference of 1 • use their understanding of the composition of odd and even numbers to find doubles and near doubles • apply known facts to calculations involving larger numbers, e.g. 5 + 2, 15 + 2, 25 + 2.
5 **Children will:**	• revisit previous activities which develop their subitising skills.	• review the linear number system to 100, applying their knowledge of midpoints to place numbers on a structured number line – they will identify the multiples of 10 that come before and after a given number.	• revisit previous activities which develop their understanding of the composition of numbers within 10 and 20.	• reason about equalities and inequalities using equations and answering questions, such as: True or false? 5 + 3 = 6 + 2 9 + 4 > 9 + 5 9 + 6 < 10 + 5 This will help them become fluent in the use of the inequality symbol as well as practising their number bond knowledge.	• become fluent in a range of strategies involving calculations within 20, using 'make 10' strategies to add, and subtracting through the tens boundary • practise recalling number bonds through a range of activities and games which will encourage them to reason about sums and differences.
6	As above.		As above.		• develop their fluency in additive relationships within

Children will:					20, using a range of activities and games and revisiting previously taught strategies where necessary.

Year 3 Fluency Programme

YEAR 3	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Autumn 1	Addition/Subtraction	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	RED Bridging ten facts	RED Bridging Ten Facts	10xs table recap	5 times table recap	RED Bridging fen facts	10s and 5xs table recap
Autumn 2	Addition/Subtraction	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	ORANGE 9+ facts	YELLOW 2dn partitioning	2xs table recap Difficult points from 5xs	2xs table recap Difficult points from 5xs	RED ORANGE YELLOW	2xs, 5xs, 10xs recap
Spring 1	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division	Multiplication/Division
	Green Doubles and Halves	4xs table new	4xs table new	Green Doubles and Halves + Difficult points from R, O, Y	4xs table Difficult points 5xs, 2xs	4xs table Difficult points 5xs, 2xs
Spring 2	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division	Multiplication/Division
	BLUE Doubling 11 to 20	4xs table Difficult points 5xs, 2xs	4xs table Difficult points 5xs, 2xs	BLUE Doubling 11 to 20 and Green Recap	4xs and 8xs table links	4xs and 8xs table links
Summer 1	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division	Multiplication/Division

	INDIGO Halving even numbers 20 to 40	8xs table	8xs table	INDIGO Halving even numbers 20 to 40 + Difficult points	8xs table and difficult points 5xs, 2xs, 4xs	8xs table and difficult points 5xs, 2xs, 4xs
Summer 2	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division	Multiplication/Division
	SILVER Adding multiples of 10 to 200	3xs table	3xs table	Difficult Points	3xs table and difficult points 5xs, 2xs, 4xs, 8xs	3xs table and difficult points 5xs, 2xs, 4xs, 8xs

Year 4 Fluency Programme

YEAR 4	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Autumn 1	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	RED + and – multiples of 10 to and from a 2dn	2xs, 4xs, 8xs linked tables – recap difficult points	2xs, 4xs, 8xs linked tables – recap difficult points	3xs table recap	ORANGE Complements to 100 – any 2dn	3xs table recap
Autumn 2	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	RED and ORANGE recap Difficult points	3xs and 6xs linked tables	6xs table	6 xs table	YELLOW 2dn + 1dn without bridging	All x facts so far
Spring 1	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	GREEN 2dn + 1dn with bridging	All x facts so far	All x facts so far	All x facts so far	RECAP + and – facts so far	All x facts so far
Spring 2	Addition/Subtraction	Multiplication/Division	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	BLUE Doubling up to double 50	9xs table	9xs table	All x facts so far	INDIGO Halving even numbers up to 100	All x facts so far

Summer 1	Multiplication/Division	Multiplication/Division	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	7xs table	7 xs table	All x facts so far	All x facts so far	VIOLET 2dn – 1dn	All x facts so far
Summer 2	Multiplication/Division	Multiplication/Division	Multiplication/Division	Multiplication/Division	Addition/Subtraction	Multiplication/Division
	11xs table	12xs table	12xs table	All x facts	RECAP and difficult points	All x facts so far

Year 5/6 Fluency Programme

YEAR 5/6	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Autumn 1	4xs and related	4xs and related	7+ facts	8xs and related	4xs; 8xs and related	8+ facts
	4xs; 40xs; 39xs; 14xs Numberlink Board Transum maths quiz Array – commutative/shift	Multiples Dots on NLB – not multiples Distributive Law 20xs 4 Jo Boaler 18 x 4	7+ Tens frame 7 + 3; 7 + 4 Number rack/Rekenrek Unitise beads are now 10	4xs; 40xs; 39xs; 14xs Numberlink Board Transum maths quiz Array – commutative/shift	Multiples Dots on NLB – not multiples Distributive Law 20xs 4 Jo Boaler 18 x 4	
Autumn 2	3xs and related	6xs and related	3xs; 6xs and related	Negative numbers	9+ facts	All x facts so far
	4xs; 40xs; 39xs; 14xs Numberlink Board Transum maths quiz Array – commutative/shift	Multiples Dots on NLB – not multiples Distributive Law 20xs 4 Jo Boaler 18 x 4	4xs; 40xs; 39xs; 14xs Numberlink Board Transum maths quiz Array – commutative/shift			
Spring 1	7xs and related	7xs and related	Rounding	9xs and related	Doubling/Halving factors	Column + and – Addends 7, 8, 9
Spring 2	x and divide by 10, 100, 1000	Factors and multiples	Prime numbers	Square numbers	Cube numbers	x and divide by 10, 100, 1000

Vocabulary Progression

Summer 1						
Summer 2						

Generic math vocabulary: Digit, integer, number, answer, solution, solve, work out, systematic, group, share, sort, diagram, represent, pattern, relationship, rule, sequence, explain, correct, incorrect, true, false, agree, disagree, same, different, bar model, part-whole model, formal method, equal to, more, less, greater than, fewer, less than, largest, greatest, least, most, estimate, approximately.

	Number – Place Value	Number – Addition and Subtraction	Number – Multiplication and Division	Number – Fractions	Measurement	Geometry – Shape	Geometry – Position and direction	Statistics
Foundation	Number; zero; numbers to 20; count, forwards, backwards; how many, more, fewer, equal, group; order, largest, smallest, less; even, odd.	One more, one less, altogether, how many are left? Same, different, number bond, part-whole, add, take-away,	Double, half, halve, halving, pairs, twice as many, share, equal, unequal, group, left over	Half, halve, halving	Now, before, soon, later, after, next, fastest; time, yesterday, today, tomorrow, day, week, weekend, month, year;	Shape, circle, triangle, rectangle, square, side, straight, curved, cylinder, cube, cuboid, cone, sphere, pyramid, face, edge, vertices,	On, next to, over, under, around, through.	

					Days of the week: Monday, Tuesday, etc. Seasons: spring, summer, autumn, winter; birthday, holiday; Morning, afternoon, evening, night, midnight bedtime, dinner/lunch time, playtime; length, height, breadth, tall, short, long, tallest, shortest, longest, longer/shorter, taller/shorter, wider/narrower, weigh, weight, heavy, heavier, heaviest, light, lighter, lightest, balance	same, different, pattern.		
Year 1 (as foundation stage, plus)	Numbers to 100; place value; digit, integer; symbol; compare; equal to, more, less, greater than, fewer, less than, greatest, smallest;	Number bonds, part, whole; plus; fact family, addition sentence, number sentence; how many more; number line;	How many altogether? How may are there?; groups, groups of, equal groups, unequal groups; row, column, array; number sentence;	Whole, parts, equal parts, the same; split; groups; share; equally; quarter; four equal parts One half, two halves	Length, measure, measuring; ruler, cm; mass; balance, scale; volume, full, half full, quarter full, empty; capacity; holds,	Polygon, 2D, 3D, group, sort, corner (point, pointed) Face, side, edge Make, build, draw.	Turn, full, half, quarter, three quarter; direction; movement, move; position; left, right, up, down; top, bottom, middle, above, below,	

	first, second, third…last; ones, tens, partition, exchange; order, largest, smallest, biggest, least, most.	commutative; addition, more, make, sum, total, add together, altogether; calculation; Inverse equals, is the same as (including equals sign); subtract, , subtraction, take away, minus; difference between, what is the difference? how many more?, how many less? how much more is? how many fewer is?, how much less is?	double, doubles; equal groups of 2, equal groups of 5, equal groups of 10; share, sharing, equally, odd, even,	A quarter, two quarters	Container; money; value; coin; note; amount; 1p, 2p, 5p, 10p, 20p, 50p, £1, £2, £5, £10; hour, o'clock, half past, clock, watch, hands; hour, minute, second; before, after next, last now, soon, early, late quick, quicker, quickest, quickly, fast, faster, fastest, slow, slower, slowest, slowly old, older, oldest, new, newer, newest		between; in front, behind.	
Year 2	2-digit; base 10; pattern; sequence; Numbers to one hundred Hundreds Partition, recombine Hundred more/less	Bar model; operation, inverse operation; column; exchange; bridge; method;	Times-table; facts; multiples; repeated addition; lots of; of; multiply; multiplied by; times; commutative; twos, fives, tens, threes;	Two quarters, three quarters, one third, two thirds; unit fraction, numerator, denominator, vinculum; equivalence, equivalent.	Change, total; distance; metres; g/kg; ml/l; temperature, thermometer, degrees Celsius, increase, decrease, warmer, colder;	Pentagon, hexagon, octagon, quadrilateral; prism; vertices, vertex; rotate; Symmetry, symmetrical, line of symmetry;	Direction, forwards, backwards; right angle; rotation, Clockwise, anticlockwise.	Count, tally, tally chart, table; data, represent, sort; pictogram, symbol; block diagram, axis; label, title, scale;

			array; go into; divide, divide between, division, dividing; grouping, sharing;		quarter past/to, 5 past, 10 past, twenty to etc, start, duration, end, interval, how long…? When did it start /end /finish…?, seconds;	horizontal, vertical; Fold; pattern, repeating pattern.		most popular, most common, least popular, least common; Venn diagram, Carrol diagram.
Year 3	Numbers to one thousand; 3-digit; thousand; ascending, descending;	Column, column addition and subtraction; regroup; efficient; estimate.	Fours, eights; remainder; divisor, dividend, quotient.	Non-unit fraction; tenths, two tenths, three tenths etc; two thirds; fifth, sixth, ninth; decimal, decimal point;	mm; perimeter; leap year; minutes past/to; a.m., p.m.; analogue, digital; twelve-hour /twenty-four-hour clock; Roman numerals I to XIII.	Parallel, perpendicular; surface; acute angle, obtuse angle.	North, South, East, West; angle, point, acute, obtuse; ninety degrees Orientation (same orientation, different orientation)	Chart, bar chart; frequency table, Carroll diagram, Diagram
Year 4	Numbers to ten thousand; Roman numerals to one hundred; round, nearest; approximately; negative, minus, count through zero; tenths, hundredths, 0.25, 0.5, 0.75.	Formal method.	Sixes, sevens, nines; produce, poduct; associative law; commutativity; factor, factor pair; formal method;	Proper fraction, improper fraction, mixed number; hundredths; Gattegno chart.	Km; rectilinear; area, square centimetres; warmest, coldest.	Isosceles, scalene, equilateral; rhombus, parallelogram, trapezium; regular polygon; mirror line, reflect.	Coordinates, translation, first quadrant, x-axis, y-axis.	Continuous data, discrete data; line graph, x-axis, y-axis.

Year 5	Numbers to a million; Roman numerals to one thousand; powers of 10.	Place holder.	Common factor, prime number, composite number, prime factor, square number, cubed number; round up/down.	Common denominator; thousandth; simplify, simplified; convert; per cent, percentage, per hundred;	Imperial units, metric units, inches, lbs, pints; timetable; compound shape; volume, capacity, cm cubed/cubic cm.	Degrees, protractor, reflex angle; irregular polygon, dimensions; net.	Reflection, reflect.	
Year 6	Numbers to ten million. Algebra: Function, input, output; algebra, algebraic, rule; expression; substitute; formula, formulae; equation; value, possible values, enumerate.		Order of operations, BIDMAS; common multiple, lowest common multiple.	Cancel, highest common factor, common numerator. Ratio, proportion; for every_there are_, :(to); enlargement, scale factor.	Tonnes, ounces, stone, miles.	Vertically opposite (angles), internal angles; circumference, radius, diameter, centre.	Four quadrants.	Mean, pie chart.