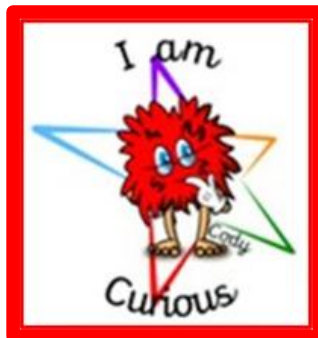




Wheelwright Lane Primary School

Fluency Policy





Fluency Policy

The Importance of Fluency in Mathematics

Mathematical fluency is one of the **5 Big Ideas** in teaching for mastery (NCETM) and is an essential component of children's mathematical attainment. Having mathematical fluency is the ability to perform mathematical procedures quickly, accurately, and with understanding. This foundation allows learners to access more complex problem-solving tasks and mathematical reasoning with confidence and flexibility.

Fluency encompasses three key components:

- ✓ **Efficiency** - choosing and using appropriate methods to solve problems without wasting time or resources.
- ✓ **Accuracy** - ensuring solutions are correct by minimizing errors in calculation and reasoning.
- ✓ **Flexibility** - applying a range of strategies to approach and solve problems, adapting as needed to new situations or challenges.

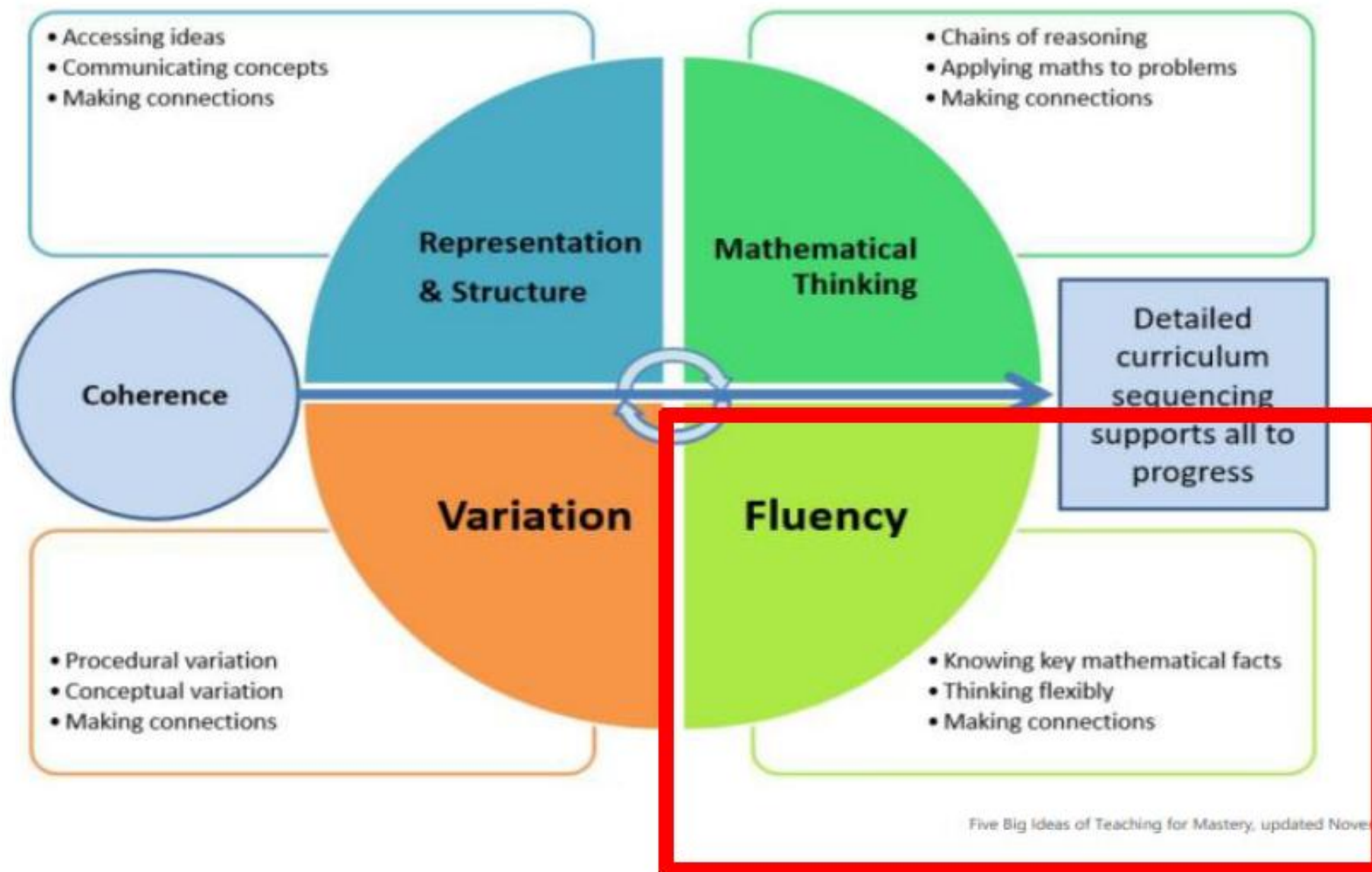
Fluency is explicitly highlighted in the National Curriculum for England (2014) as a fundamental aim:

"Pupils should become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately."

Without fluency, pupils may struggle to engage with deeper mathematical concepts, as cognitive resources are consumed by basic calculation. Developing fluency frees mental capacity, enabling children to focus on reasoning and problem-solving as well as building upon prior learning.



Teaching for Mastery





Aims of this Fluency Policy

Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools).

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

Lower Key Stage 2 - Years 3-4

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.



Aims of this Fluency Policy

Upper Key Stage 2 - Years 5-6

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Mathematics Programme of Study KS 1 & 2 (Feb 2013)



Aims of this Fluency Policy

This policy is based on expected age related progress. This document is to support differentiation within your classroom. Therefore, it is purely guidance and should be used to support the stage at which each child within your class is working.

In the Mathematical Programme of Study there is an emphasis on vocabulary and it will be expected that all appropriate vocabulary is shared with the children both orally and in written form.

School overall aims:

- For children to become fluent in the formal written methods for addition, subtraction, multiplication and division.
- Children will apply their knowledge of taught methods for addition, subtraction, multiplication and division, therefore using these as a tool to problem solve.
- Children will gain a varied and established range of appropriate mathematical vocabulary, which they will confidently use when conjecturing and convincing during mathematical lessons.



Addition and Subtraction

Fluency in addition and subtraction is about developing efficient, accurate and flexible calculation strategies, rather than simply working quickly. In line with the National Curriculum and the **NCETM Five Big Ideas**, children are supported to develop deep conceptual understanding alongside automatic recall of key number facts.

In **Reception, Year 1 and Year 2**, children take part in a daily **15-minute Mastery of Number** session. These short, focused sessions develop strong number sense, helping children understand the '**fiveness of five**' and '**teness of ten**', while building automatic recall of number bonds and early calculation facts.

Across the school, the **first half of the autumn term** is dedicated to developing a secure understanding of **place value**, as this underpins all addition and subtraction. Children build on their knowledge of the composition of numbers, enabling them to calculate efficiently using mental and written methods.

Addition and subtraction are taught **together**, not in isolation, so that children recognise them as inverse operations. They are encouraged to make links between calculations, use known facts to derive unknown facts and explain their mathematical thinking. This connected approach develops confidence, efficiency and fluency, enabling children to solve increasingly complex problems with understanding.



Addition - Nursery

Children begin to develop early addition skills through practical play, songs, stories and everyday experiences.

- Begin to have an understanding of numbers to 5
- We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.

Subitise to 3

Subitising is the ability to recognise how many objects are in a small group without needing to count them one by one. For example, when a child sees three dots on a dice and instantly knows there are three, they are subitising.

This important early maths skill helps children develop a strong understanding of number and quantity. As children become more confident, they learn to recognise larger groups by seeing patterns. For example, they may see five dots arranged as "three and two" or "four and one".

How many do you see?





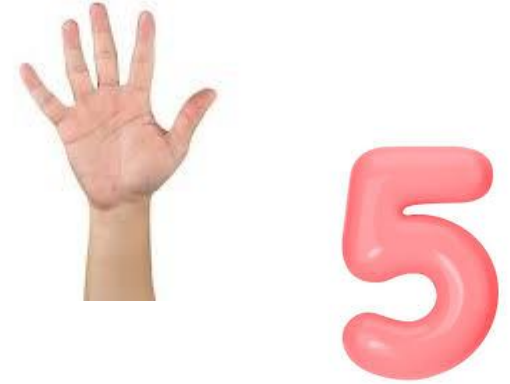
Addition - Nursery

1-1 correspondence

One-to-one correspondence is the understanding that each object being counted represents one number and that each object should only be counted once. For example, when a child counts three blocks, they touch or move each block as they say the numbers "one, two, three", matching one number word to one object.

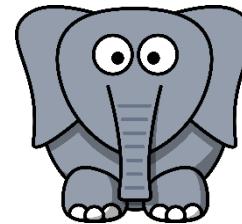


Make me 5



Add 1 more

This should be done through stories, songs and rhymes.



<https://www.youtube.com/watch?v=wQf6yWEScB8>

<https://www.youtube.com/watch?v=5RKxFio4Tq4>



Addition - Reception

In Reception, children continue to build on their early understanding of addition by using practical resources, games and structured activities to combine groups and find the total. They begin to use number language more confidently.

- Have a deep understanding of numbers 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 and some number bonds to 10, including double facts.

Subitise to 5

As children develop their subitising skills, they move on from recognising small groups instantly to seeing how larger numbers are made up of smaller parts.

For example, when children see a group of 5 objects, they may begin to notice that it can be seen as 2 and 3. Instead of counting each object one by one, they can recognise the smaller groups within the whole and understand that 2 and 3 together make 5.

How many do you see?



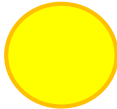


Addition - Reception

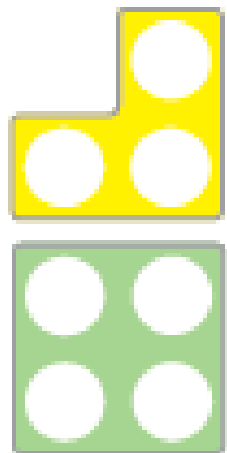
Composition of numbers with 10

Composition of number is the understanding that any number can be made up of two or more smaller numbers. For example, 7 can be made from 3 and 4, or 5 and 2.

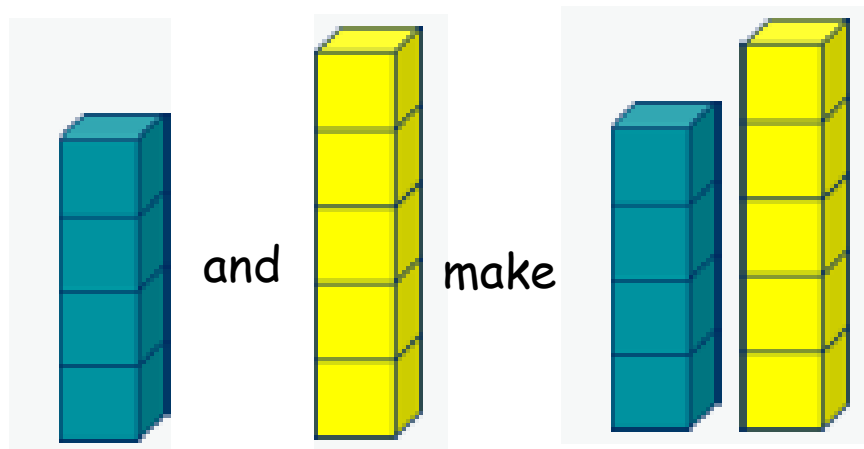
1 more

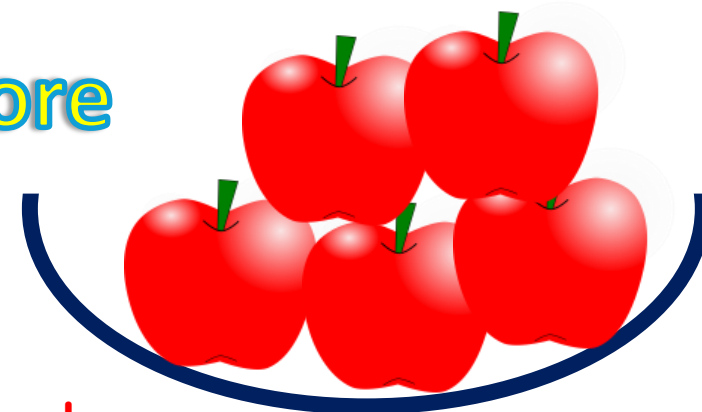
7



Combining 2 groups



Add more



I have **3 apples**

I add **2** more **apples**.

Now I have **5 apples**.



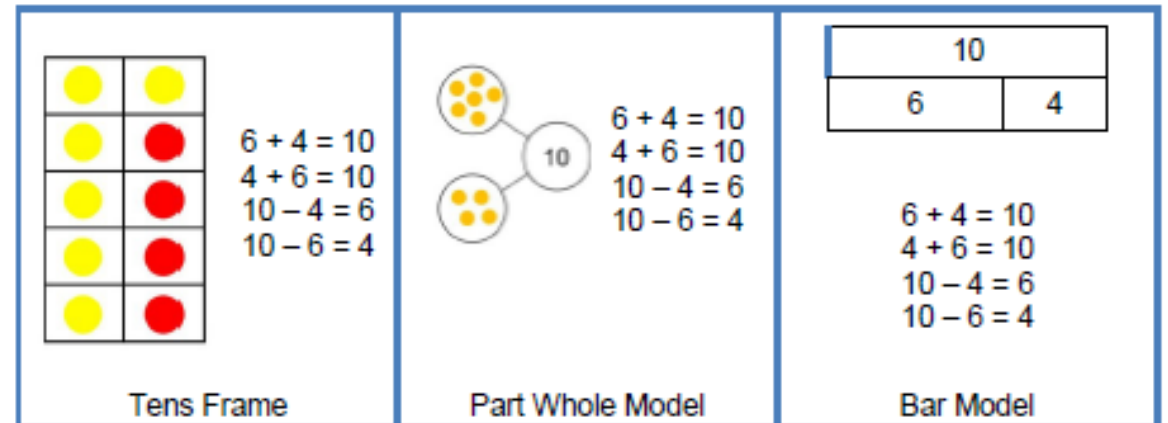
Addition – Year 1

In Year 1, children continue to use concrete resources such as counters, cubes and ten frames to explore how numbers within 10 can be made up of smaller parts. They build on their Early Years learning by confidently identifying and describing number bonds in different ways. As their understanding develops, children begin to apply this knowledge to numbers beyond 10, building up to 20.

- Read, write and interpret mathematical statements involving addition (+) and equals (=) signs.
- Represent and use number bonds within 20
- Add 1-digit and 2-digit numbers to 20, including zero.
- Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as $7 = ? + 2$

Representations

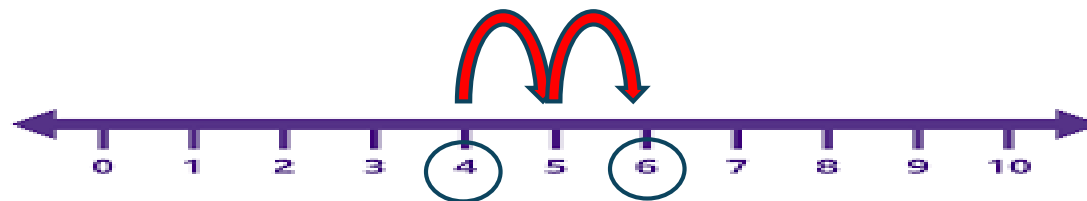
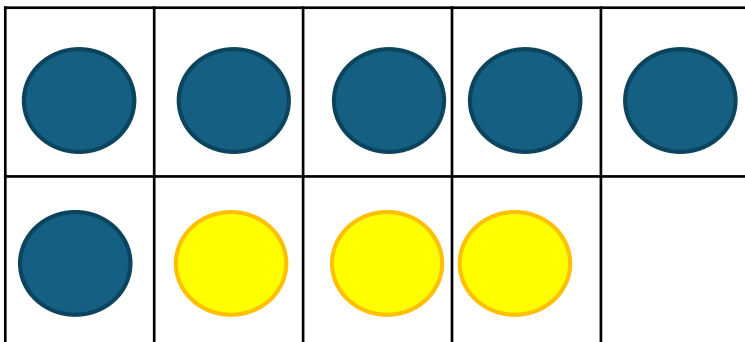
Children are taught using a variety of representations to help them develop a clear understanding of number, including concrete materials, pictorial models and abstract symbols. Teachers should highlight the connections between these representations, so that children understand the same mathematics is represented in different ways.





Addition – Year 1

Add more



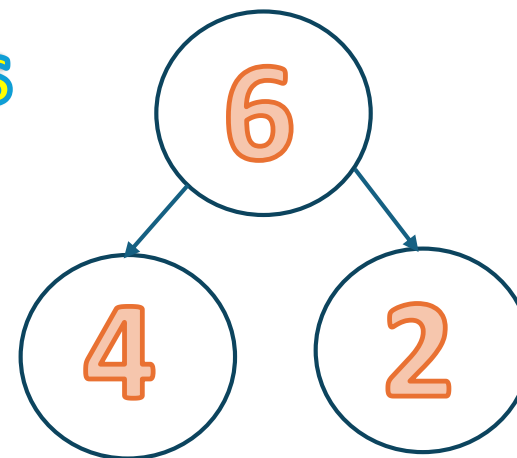
I start at 3.

I jump on 4.

I land on 7.

Missing numbers

If 6 is the whole
and 2 is a part,
the other part must be 4.





Addition – Year 2

In Year 2, children continue to use concrete resources such as base ten equipment, place value counters and hundred squares to support their understanding of number within 100. These practical resources help children to see how numbers are made up of tens and ones and to develop a secure understanding of place value.

Children begin to move from practical exploration to more formal recording.

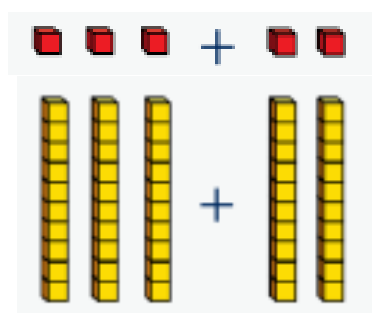
- Recall and use addition facts to 20 fluently, and derive and use related facts up to 100
- Add numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and 1s
 - a two-digit number and 10s
 - 2 two-digit numbers
 - adding 3 one-digit numbers
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.



Addition – Year 2

$$\begin{aligned} 5 + 8 &= 13 \\ 10 + 20 + 30 &= 60 \\ 60 + 3 &= 63 \end{aligned}$$

Add multiples of 10



$$3 + 2 = 5$$

$$30 + 20 = 50$$

Add 10s to
any number

$$34 + 20 = 54$$

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Add 2-digit numbers

T	O



Addition – Year 3

In Year 3, children build on their understanding of place value and number within 1,000 by continuing to use concrete resources such as base ten equipment and place value counters where needed to support their learning.

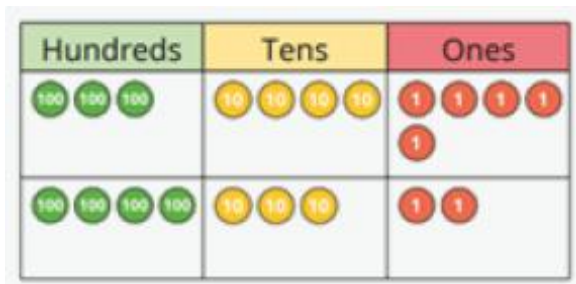
Children increasingly move towards more efficient written methods and begin to use formal column methods for addition.

- Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds.
- Add numbers with up to three digits, using formal written methods of columnar addition.
- Add fractions with the same denominator within 1 whole.
- Calculate the time taken by particular events or tasks.



Addition – Year 3

Add two numbers (no exchange)



	H	T	O	
	3	4	5	
+	4	3	2	
	7	7	7	

Add two numbers across a 10 or 100



	H	T	O	
	3	6	7	
+	1	6	4	
	5	3	1	
	1	1		

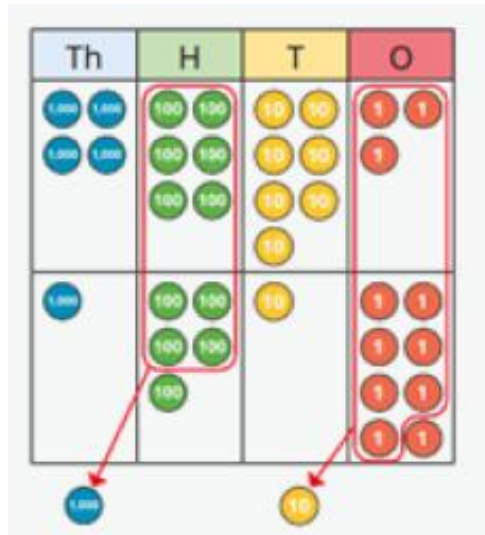


Addition – Year 4

In Year 4, children build on their secure understanding of formal column addition, applying it confidently to larger numbers, including those involving thousands. They continue to use concrete resources and place value representations where needed to support understanding and accuracy.

- Add numbers with up to 4 digits using a formal written method.
- Solve simple measure and money problems involving fractions and decimals to 2 decimal places.
- Add fractions with the same denominator.

Add up to two
4-digit
numbers



	Th	H	T	O	
	4	6	7	3	
+	1	5	1	8	
	6	1	9	1	
	1		1		



Addition – Year 5

In Year 5, children extend their understanding of addition to include larger whole numbers and decimals up to two decimal places. They build on secure place value knowledge to ensure accurate alignment of digits when using formal column methods, including when working with decimal numbers.

Alongside accurate calculation, children are taught to solve missing number problems and use inverse operations to check their answers. They are encouraged to explain their reasoning clearly and choose efficient strategies, developing fluency, accuracy and flexibility in their mathematical thinking.

- Add whole numbers with more than 4 digits, including using formal written methods.
- Add numbers mentally with increasingly large numbers.
- Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1
- Add fractions with the same denominator, and denominators that are multiples of the same number.



Addition – Year 5

Add whole numbers with more than 4-digits

Add two numbers with missing numbers

	6	4	1	1	2	
+	2	5	8	1	4	
	8	9	9	2	6	

Add decimals with up to 2 decimal places

	4	.	4	5	
+	1	.	4	8	
	5	.	9	3	
			1		



Addition – Year 6

In Year 6, children apply their understanding of formal column addition confidently and efficiently to increasingly complex calculations involving whole numbers and decimals with different numbers of decimal places. They use their secure knowledge of place value to align digits accurately and understand the importance of using placeholders where necessary.

- Add larger numbers, using the formal written method of columnar addition.
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations.
- Calculate intervals across zero.
- Add fractions with different.



Addition – Year 6

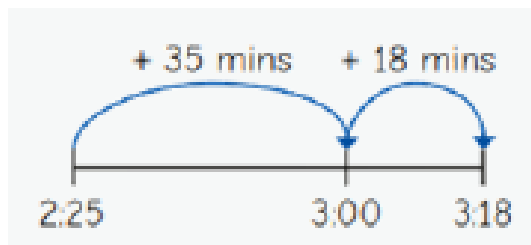
Add integers up to ten million

Add decimals with up to 3 decimal places

$$15.027 + 9.58 = 24.607$$

	1	5	.	0	2	7
+		9	.	5	8	0
	2	4	.	6	0	7
	1			1		

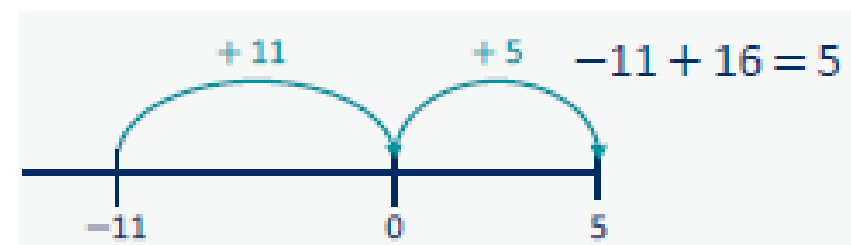
Knowing when to represent addition using a number line



TIME



MONEY



NEGATIVE NUMBERS



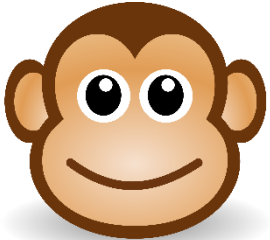
Subtraction - Nursery

Children begin to develop early subtraction skills through practical play, songs, stories and everyday experiences.

- Begin to have an understanding of numbers to 5
- We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.

Take 1 away

This should be done through stories, songs and rhymes.



<https://www.youtube.com/watch?v=b0NHrFNZWh0>



<https://www.youtube.com/watch?v=TtX8yVEF0-w>

How many do we have now?



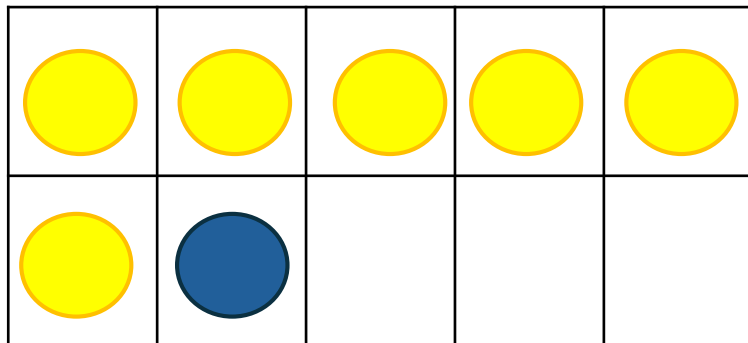


Subtraction - Reception

In Reception, children continue to build on their early understanding of subtraction by using practical resources, games and structured activities to combine groups and find the total. They begin to use number language more confidently.

- Have a deep understanding of numbers 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 (and some subtraction facts) and some number bonds to 10, including double facts.

1 less



1 less than 8 is 7.

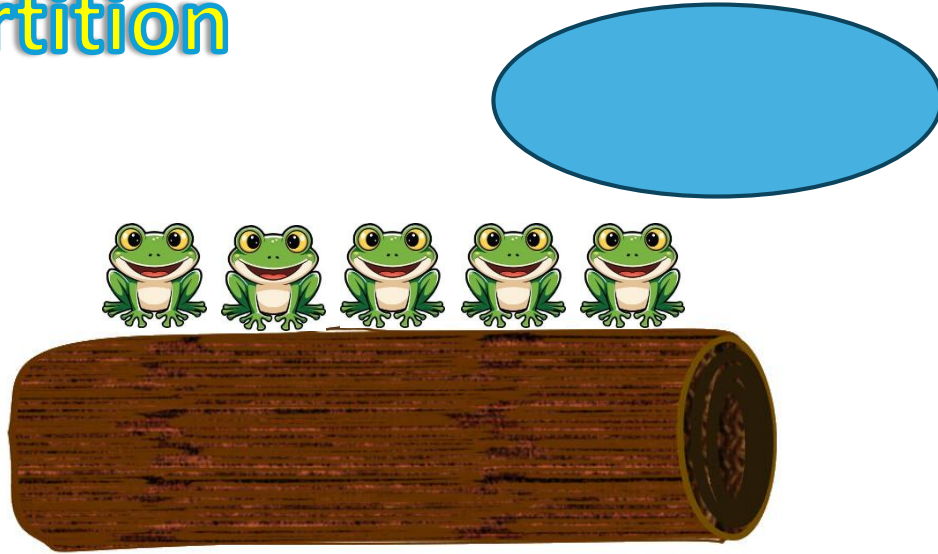
1 less than 7 is 6.





Subtraction - Reception

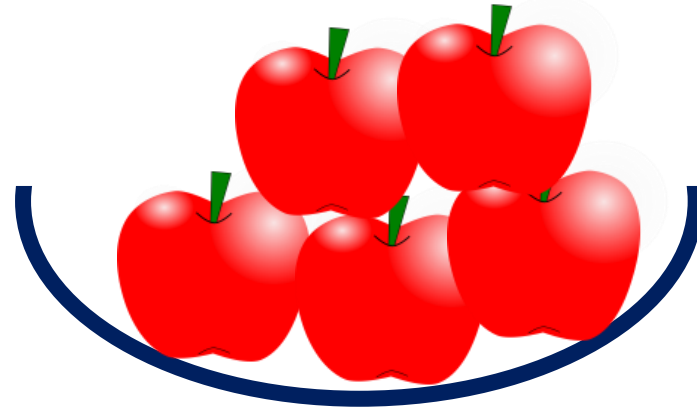
Partition



There are **5** altogether.

I can see **3** here and **2** there.

Add more



I have **5** apples

I take **2** away.

Now I have **3** apples.



Subtraction – Year 1

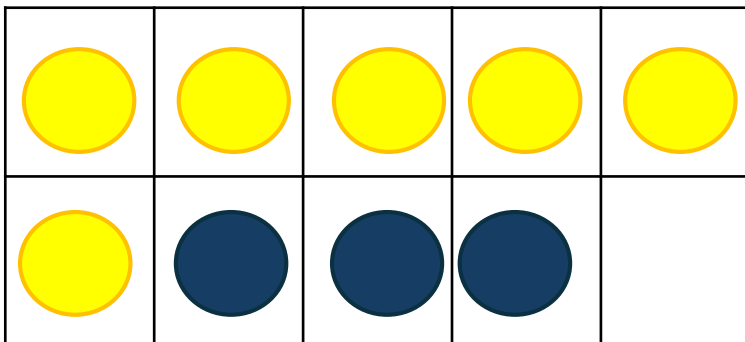
In Year 1, children continue to use practical resources such as counters, cubes and ten frames to develop their understanding of subtraction. They build on their Early Years learning by exploring subtraction as taking away and finding the difference within 10, using concrete objects and pictures to support their thinking. As their confidence grows, children begin to apply these subtraction strategies to numbers beyond 10, working with numbers up to 20.

- Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs.
- Represent and use number bonds and related subtraction facts within 20
- Subtract one-digit and two-digit numbers to 20, including zero.
- Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$

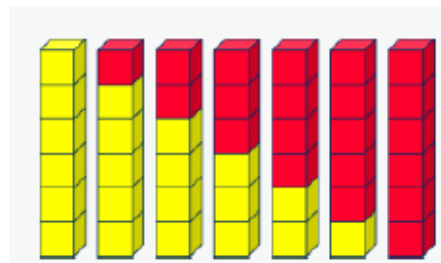


Subtraction – Year 1

Take away



Bonds within 10



$$\begin{aligned} 6 - 0 &= 6 \\ 6 - 1 &= 5 \\ 6 - 2 &= 4 \\ 6 - 3 &= 3 \\ 6 - 4 &= 2 \\ 6 - 5 &= 1 \\ 6 - 6 &= 0 \end{aligned}$$



I start at 7.

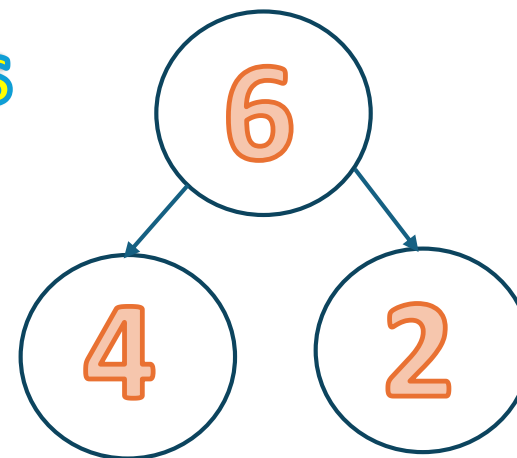
I jump on 3.

I land on 4.

Missing numbers

$$6 - \boxed{4} = 2$$

$$2 = 6 - \boxed{4}$$





Subtraction – Year 2

In Year 2, children continue to use practical resources such as base ten equipment, place value counters and hundred squares to develop their understanding of subtraction within 100. These resources help children to visualise tens and ones, exchange where necessary, and understand how subtraction works.

As their confidence grows, children move from using practical equipment to drawing pictorial representations before progressing to more formal written methods.

- Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100
- 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
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.



Subtraction – Year 2

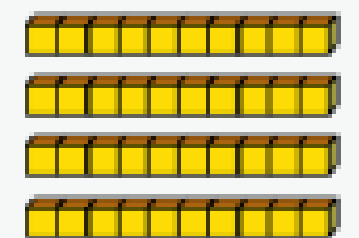
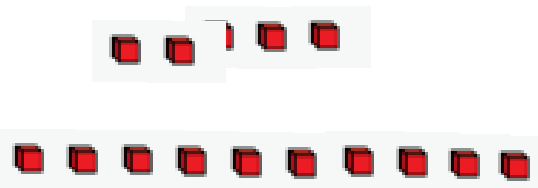
Subtract making links

$$8 - 3 = 5$$

$$18 - 3 = 15$$

$$28 - 3 = 25$$

Subtract 2-digit numbers

T	O
	

Subtract
multiples of 10

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

$$54 - 20 = 34$$

$$43 - 25 = 18$$



Subtraction – Year 3

In Year 3, children build on their understanding of place value and number within 1,000 to develop more efficient subtraction strategies. They continue to use practical resources, such as base ten equipment and place value counters, where needed to support their understanding, particularly when exchanging.

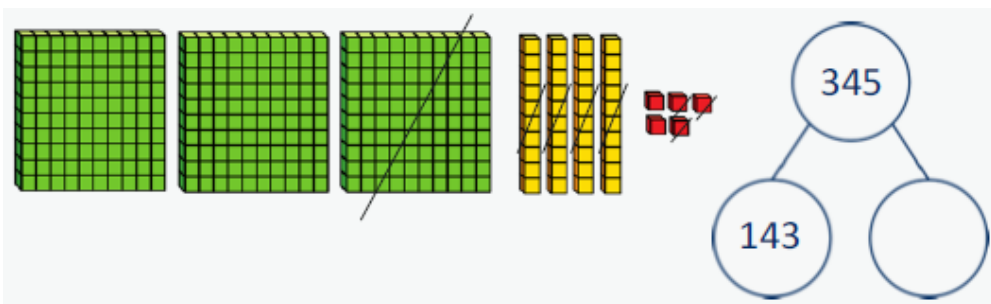
As their confidence increases, children rely less on concrete resources and move towards more efficient written methods. They begin to use the formal column method for subtraction, using their secure understanding of place value to subtract accurately and explain their reasoning.

- Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds.
- Subtract numbers with up to three digits, using formal written methods.
- Subtract fractions with the same denominator within 1 whole.



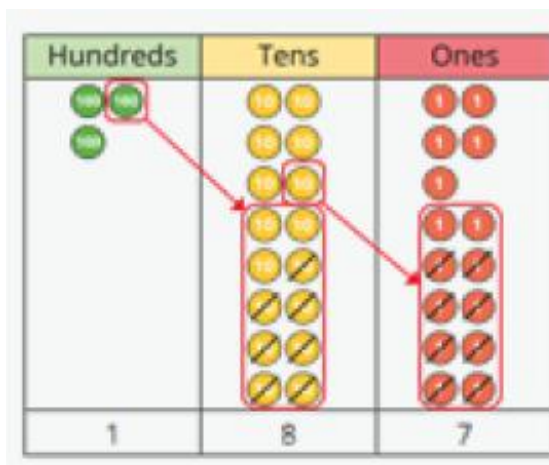
Subtraction – Year 3

Subtract two numbers (no exchange)



	H	T	O	
	3	4	5	
-	1	4	3	
	2	0	2	

Subtract two numbers across a 10 or 100



	2	15		
	~~3~~	~~6~~	15	
-	1	7	8	
	1	8	7	

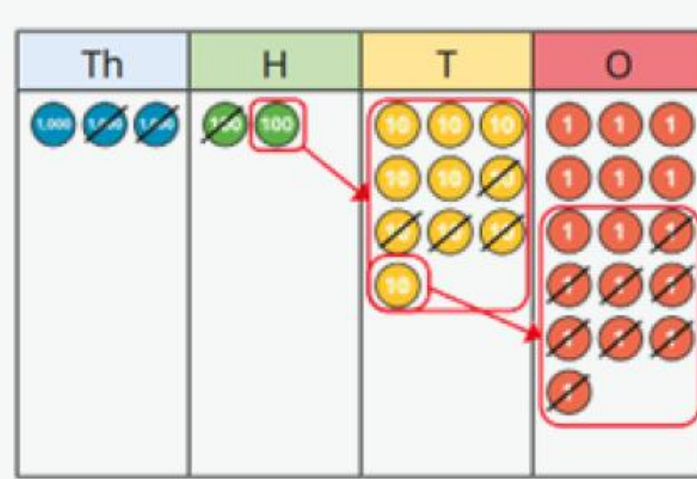


Subtraction – Year 4

In Year 4, children build on their secure understanding of formal column subtraction, applying it confidently to larger numbers, including those involving thousands. They continue to use concrete resources and place value representations where needed to support their understanding, particularly when exchanging across columns. As their confidence develops, children use the formal column method with increasing accuracy and efficiency.

- Subtract numbers with up to 4 digits using a formal written method.
- Solve simple measure and money problems involving fractions and decimals to 2 decimal places.
- Subtract fractions with the same denominator.

Subtract up to
two 4-digit
numbers



		1	9		
	3	~~2~~	~~10~~	16	
-	2	1	4	8	
	1	0	5	8	



Subtraction – Year 5

In Year 5, children extend their understanding of subtraction to include larger whole numbers and decimals up to two decimal places. They build on their secure understanding of place value to accurately align digits when using the formal column method, including when subtracting decimal numbers.

Alongside accurate calculation, children are taught to solve missing number problems and use inverse operations to check their answers. They are encouraged to explain their reasoning clearly, estimate before calculating, and choose efficient strategies, developing fluency, accuracy and flexibility in their mathematical thinking.

- Subtract whole numbers with more than 4 digits.
- Subtract numbers mentally with increasingly large numbers.
- Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1
- Subtract fractions with the same denominator, and denominators that are multiples of the same number.



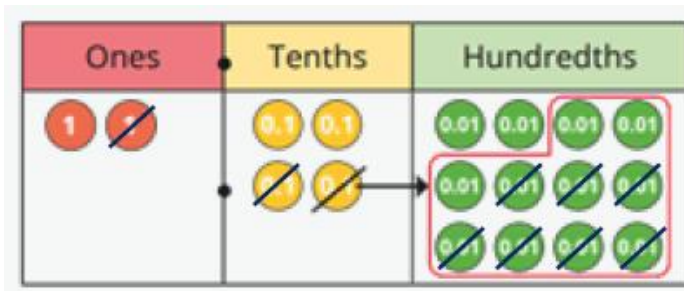
Subtraction – Year 5

Subtract whole numbers with more than 4-digits

Subtract two numbers with missing numbers

		1			
	4	~~2~~	14	7	8
-	2	1	6	2	0
	2	0	8	5	8

Subtract decimals with up to 2 decimal places



		3		
	2	~~4~~	12	
-	1	1	7	
	1	2	5	



Subtraction – Year 6

In Year 6, children apply their understanding of formal column subtraction confidently and efficiently to increasingly complex calculations involving whole numbers and decimals with different numbers of decimal places. They use their secure knowledge of place value to align digits accurately and understand the importance of using placeholders where necessary.

Children are encouraged to use estimation and inverse operations to check the accuracy of their answers and to explain their reasoning clearly. They select efficient strategies and demonstrate fluency, accuracy and flexibility when solving a range of subtraction problems.

- Subtract larger numbers, using the formal written methods of columnar subtraction.
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations.
- Calculate intervals across zero.
- Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.



Subtraction – Year 6

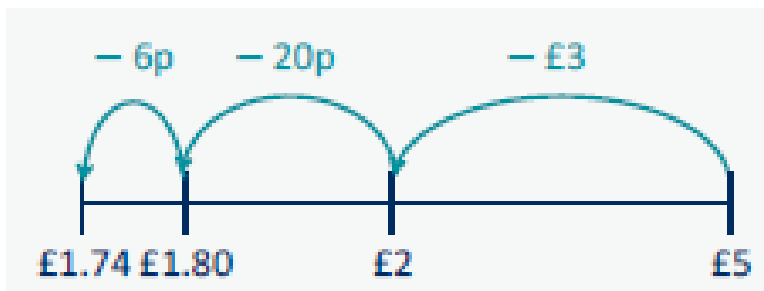
Subtract integers up to ten million

Subtract decimals with up to 3 decimal places

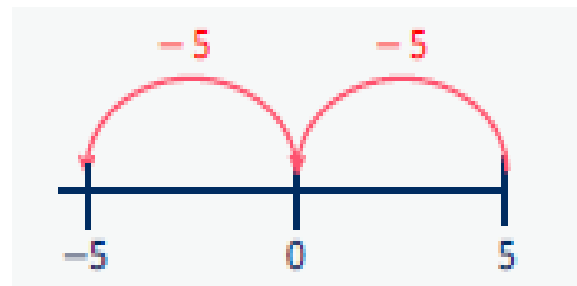
$$1.615 - 0.64 = 0.975$$

	0	15				
	~~1~~	~~.~~ 6	11	5		
-	0	.6	4	0		
	0	.9	7	5		

Knowing when to represent addition using a number line



MONEY



NEGATIVE NUMBERS



Multiplication and Division

Fluency in multiplication and division is about developing efficient, accurate and flexible strategies, underpinned by the **NCETM Five Big Ideas**. Children are supported to build conceptual understanding alongside automatic recall, enabling them to apply known facts confidently in a range of mathematical contexts.

In **Years 4, 5 and 6**, children take part in a daily **15-minute Mastery of Number** session focused on multiplication and division. These sessions develop rapid recall of multiplication facts while strengthening understanding of the relationships between numbers. Rather than memorising facts in isolation, children make connections between multiplication and division, recognising them as inverse operations and using known facts to derive unknown facts. For example, understanding that if $6 \times 8 = 48$, then $48 \div 8 = 6$, and using known facts to reason about larger calculations.

Throughout the curriculum, children are encouraged to represent their thinking, explain their reasoning and identify patterns and structures within multiplication and division. By making links with prior learning and applying known facts flexibly, children develop confidence, efficiency and mathematical fluency. This secure understanding supports increasingly complex mental and written calculations, problem solving and reasoning across all areas of mathematics.

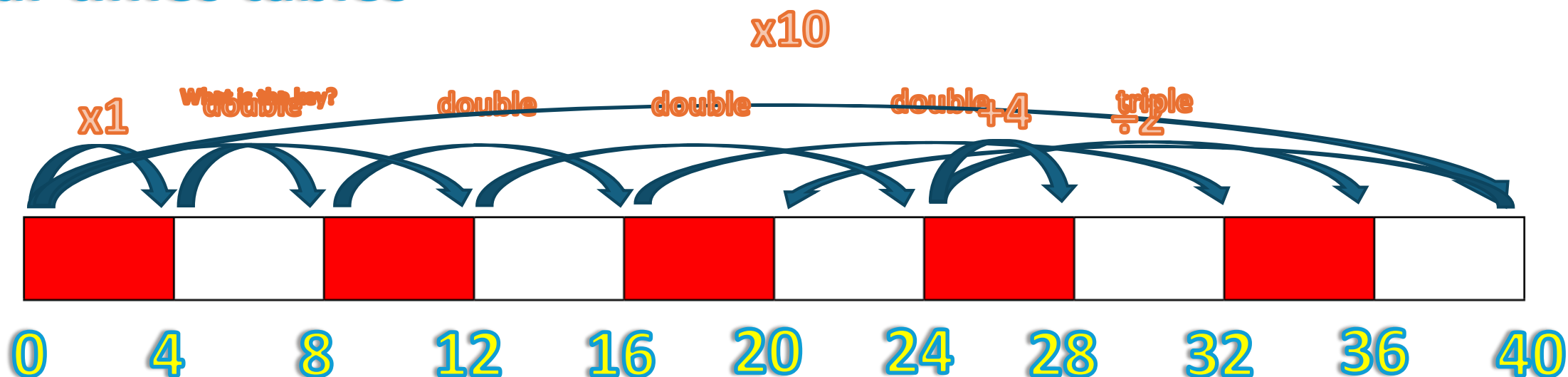


Multiplication

Daily Times Tables Practice (Key Stage 2)

In **Key Stage 2**, every maths lesson begins with **5 minutes of dedicated times tables practice**. These short, focused sessions develop **rapid recall** alongside **conceptual understanding**, ensuring children know not only the facts but also understand the relationships between them.

Four times tables



Recite together without the numbers.



Multiplication - Reception

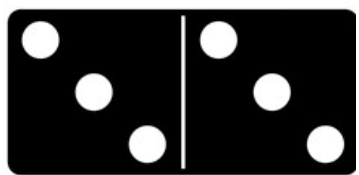
In Reception, children begin to develop an early understanding of multiplication through practical experiences such as sharing, grouping and combining objects. They use a range of concrete resources, games and structured activities to explore equal groups and begin to notice patterns in repeated addition.

- 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 and some number bonds to 10, including double facts.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.



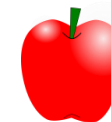
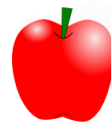
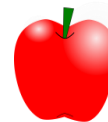
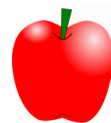
Multiplication - Reception

Double to 10



Double **3** is **6**.

Make equal groups



There are **3** groups of **2** .

There are **6** altogether.





Multiplication – Year 1

In Year 1, children begin to develop an understanding of multiplication through counting in 2s, 5s and 10s. They use practical resources such as counters, cubes and bead strings to help them recognise and build simple groups.

Children are introduced to arrays to support their understanding of multiplication as equal groups and to begin to see that multiplication can be done in any order (commutative law).

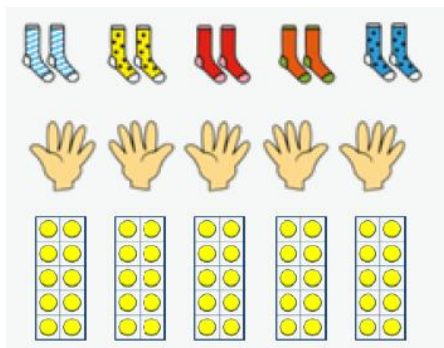
- Count in multiples of twos, fives and tens.
- Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher.



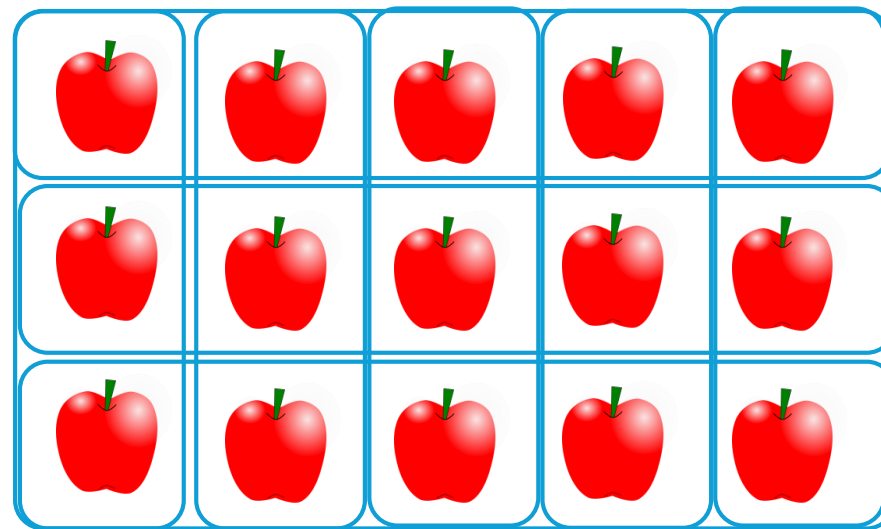
Multiplication – Year 1

Count in 2s, 5s and 10s

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Make arrays



There are **3** rows of **5** . There are **15** altogether.

There are **5** columns of **3** . There are **15** altogether.



Multiplication – Year 2

In Year 2, children build on their understanding of multiplication by using arrays to represent equal groups more confidently and to solve simple multiplication problems. They continue to use counting in 2s, 5s and 10s to support their learning and begin to record their work using repeated addition.

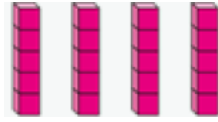
Children are introduced to the multiplication grid as a structured way to organise and calculate multiplication facts. They make links between arrays, repeated addition and multiplication calculations, developing a deeper understanding of how these representations are connected.

- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables.
- Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication ($\times$) and equals ($=$) signs.
- Show that multiplication of two numbers can be done in any order (commutative).



Multiplication – Year 2

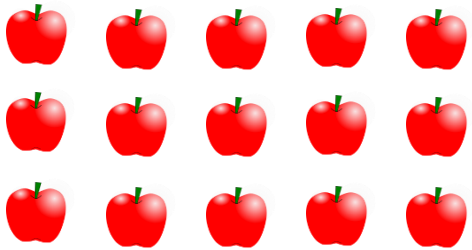
Link repeated addition to
multiplication



20			
5	5	5	5

$$5 + 5 + 5 + 5 = 20$$
$$4 \times 5 = 20$$

Use arrays



$$3 \times 5 = 15$$

$$5 \times 3 = 15$$

$$3 \times 5 = 5 \times 3$$

Start to become
familiar with the
multiplication grid.

$$3 \times 8 = 24$$

X	1	2	3
1	1	2	3
2	2	4	6
3	3	6	9
4	4	8	12
5	5	10	15
6	6	12	18
7	7	14	21
8	8	16	24



Multiplication – Year 3

In Year 3, children develop greater fluency and confidence in multiplication by learning and recalling the 3, 4 and 8 times tables alongside the 2, 5 and 10 times tables. They use this knowledge to solve increasingly complex multiplication problems and begin to apply known facts to derive new multiplication facts.

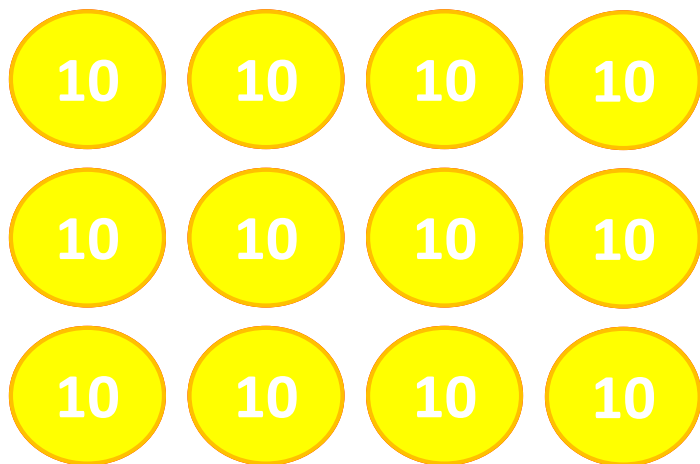
Children deepen their understanding of multiplication by using arrays, bar models and the multiplication grid to explore the relationships between factors and products. They make connections between repeated addition, equal groups, arrays and multiplication calculations, while beginning to use the grid method.

- Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.
- Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.



Multiplication – Year 3

Related facts



$$3 \times 4 = 12$$

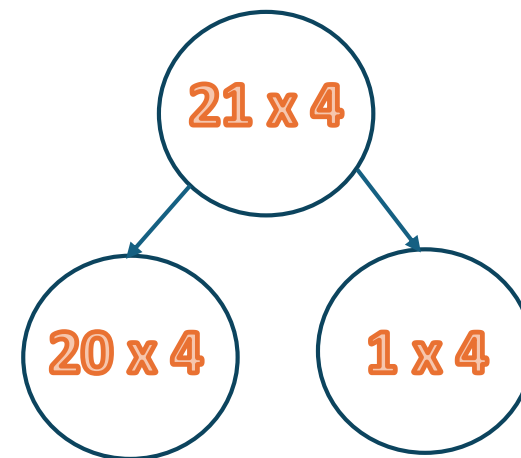
3 x 4 ones equal to 12 ones

$$30 \times 4 = 120$$

3 x 4 tens equal to 12 tens

Multiply a 2-digit number
by a 1-digit number – no
exchange

Tens	Ones
10 10	1
10 10	1
10 10	1
10 10	1





Multiplication – Year 3

Grid method

Multiply a 2-digit number by a 1-digit number – with exchange

$$17 \times 4 = 68$$

x	10	7
4	40	28

$$45 \times 3 = 135$$

x	40	5
3	120	15



Multiplication – Year 4

In Year 4, children build on their multiplication knowledge by becoming fluent in all multiplication and division facts up to 12×12 . They use this secure recall to solve increasingly complex multiplication problems efficiently and accurately, applying their knowledge in a range of mathematical contexts.

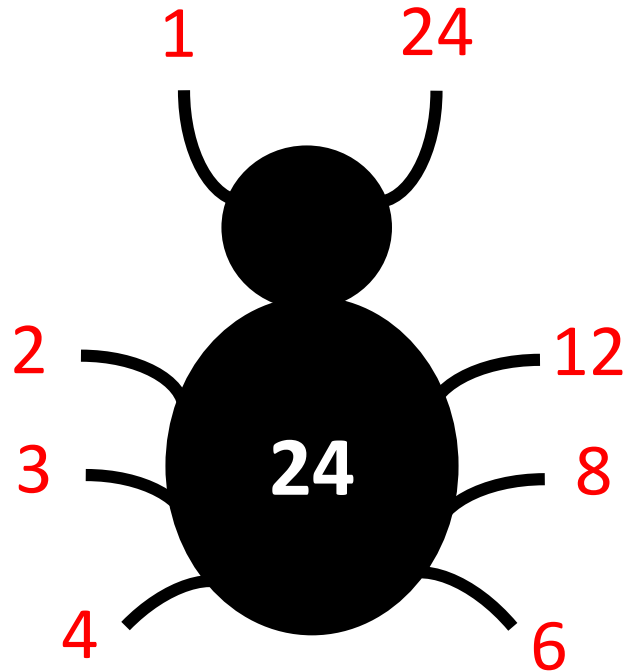
Children extend their understanding of multiplication by continuing to use the grid method to multiply up to three-digit numbers by a one-digit number. They continue to use representations such as arrays, bar models and the multiplication grid to strengthen conceptual understanding.

- Recall multiplication facts for multiplication tables up to 12×12
- Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers.
- Recognise and use factor pairs and commutativity in mental calculations.
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
- Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.



Multiplication – Year 4

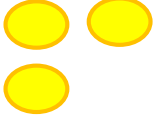
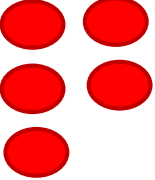
Factor pairs



Factors of 24 are:
1, 2, 3, 4, 6, 8, 12 & 24

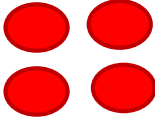
Multiplying by 10

$$35 \times 10 = 350$$

Th	H	T	O
			

Multiplying by 100

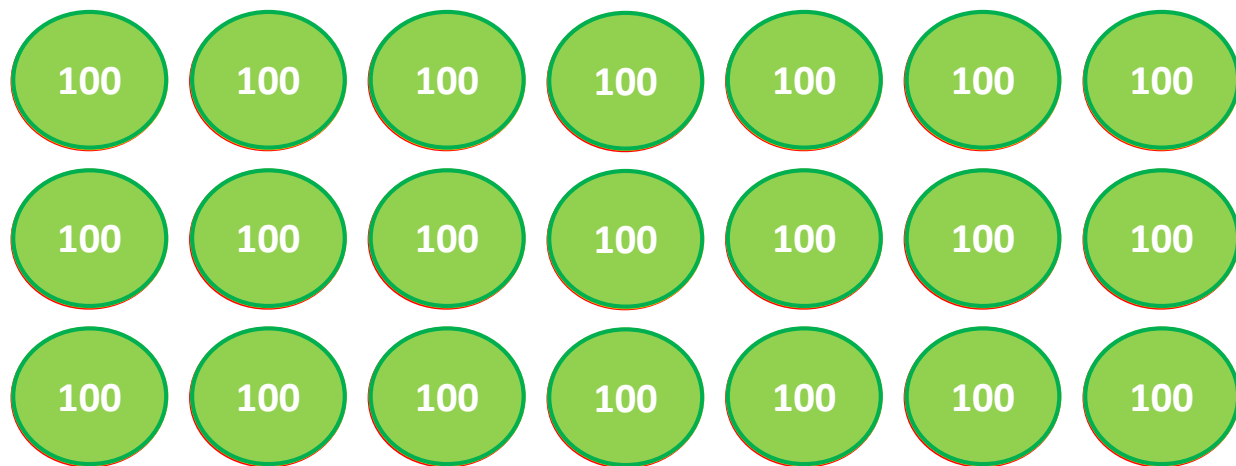
$$14 \times 100 = 1400$$

Th	H	T	O
			



Multiplication – Year 4

Related facts



$$3 \times 7 = 21$$

3 x 7 ones equal to 21 ones

$$30 \times 7 = 210$$

3 x 7 tens equal to 21 tens

$$300 \times 7 = 2100$$

3 x 7 hundreds equal to 21 hundreds

Grid method

x	300	20	4
6	1800	120	24

$$324 \times 6 = 1944$$



Multiplication – Year 5

In Year 5, children build on their understanding of multiplication. They use their secure knowledge of place value and multiplication facts to multiply numbers with up to four digits by one-digit and two-digit numbers, selecting efficient strategies to solve increasingly complex calculations.

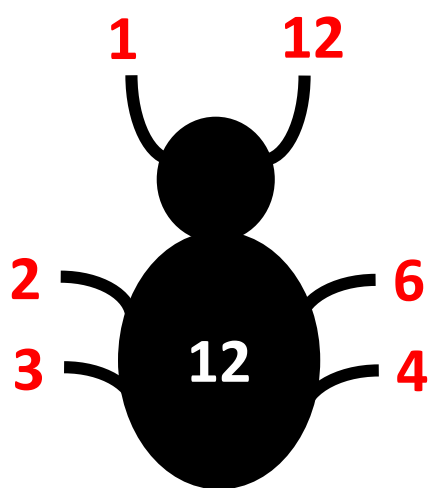
Children continue to use representations, such as place value counters and the grid method, to support their understanding before making the transition to the formal column method.

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})
- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
- Multiply numbers mentally drawing upon known facts.
- Multiply whole numbers and those involving decimals by 10, 100 and 1000
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.

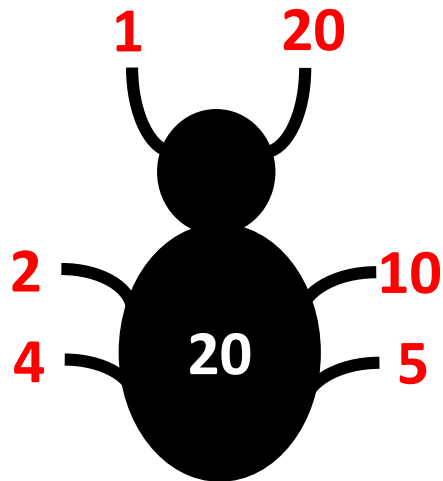


Multiplication – Year 5

Factor pairs



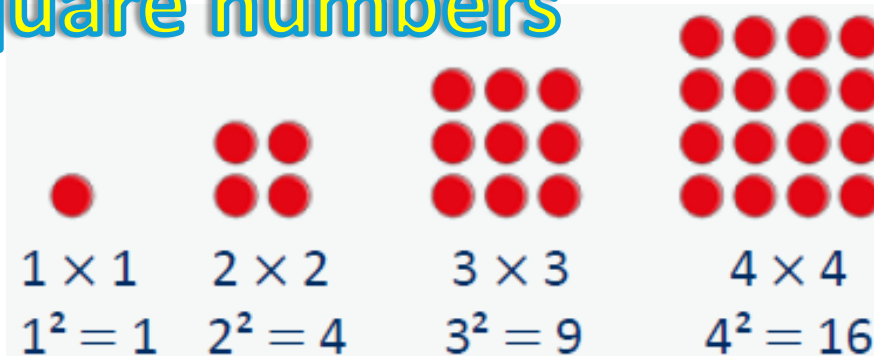
Factors of 12 are:
1, 2, 3, 4, 6 & 12



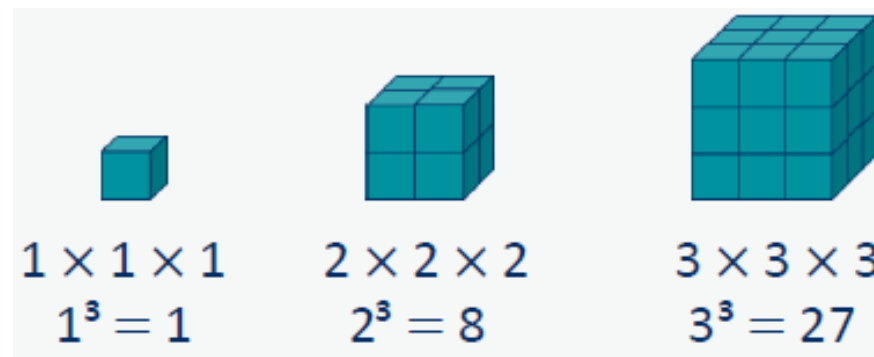
Factors of 20 are:
1, 2, 4, 5, 10 & 20

The common factors of 12 & 20 are:
1, 2 & 4

Square numbers



Cube numbers





Multiplication – Year 5

Multiply numbers up to 4-digits by
a 1-digit number

x	300	20	4
6	1800	120	24

$$324 \times 6 = 1944$$

		3	2	4		
	x			6		
			2	4		
		1	2	0		
	1	8	0	0		
	1	9	4	4		

What's the same? What's different?



Multiplication – Year 5

Multiply numbers up to 4-digits by
a 1-digit number

		3	2	4	
	x			6	
			2	4	
		1	2	0	
	1	8	0	0	
	1	9	4	4	

		1	2		
		3	2	4	
	x			6	
	1	9	4	4	

$$324 \times 6 = 1944$$

What's the same? What's different?



Multiplication – Year 5

Multiply numbers up to 4-digits by a 2-digit number

Multiply by 10, 100 and 1000

Th	H	T	O	tth	hth
			•••	•••	•••

	2	2				
			7	2		
x			3	4		
			8	8		(72 x 4)
		1	6	0		(72 x 30)
	2	4	4	8		
		1				

$$2.34 \times 10 = 23.4$$

$$2.34 \times 100 = 234$$

$$2.34 \times 1000 = 2340$$



Multiplication – Year 6

In Year 6, children refine and apply their multiplication skills by using the formal written method of multiplication confidently and efficiently. They multiply numbers with up to four digits by two-digit whole numbers and extend their understanding to include multiplying decimal numbers by whole numbers, using their secure knowledge of place value to ensure accurate calculations.

- Identify common factors and common multiples.
- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Multiply numbers by 10, 100 and 1,000.
- Multiply one-digit numbers with up to two decimal places by whole numbers.
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations.
- Multiply simple pairs of proper fractions, writing the answer in its simplest form.
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
- Solve problems involving the calculation of percentages.



Order of operation

BODMAS

[illegible]



Division - Reception

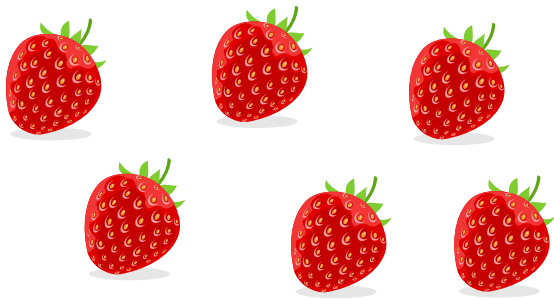
In Reception, children begin to develop an early understanding of division through practical experiences such as sharing, grouping and distributing objects equally. They use a range of concrete resources, games and structured activities to explore fair sharing, recognising when groups are equal and noticing simple patterns. Through everyday contexts, children begin to develop an understanding of division as sharing and grouping, using mathematical language such as “share”, “equal groups” and “same amount”.

- 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 and some number bonds to 10, including double facts.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.



Division - Reception

Sharing



There are **6** altogether.

They are shared equally between **2** groups.

Grouping



There are **4** groups of **3** .

There are **12** altogether.



Division – Year 1

In Year 1, children build on their early understanding of division by solving practical problems involving sharing and grouping. In line with the National Curriculum, they use concrete resources, pictorial representations and simple diagrams to recognise, find and make equal groups. They begin to understand the relationship between multiplication and division through counting in 2s, 5s and 10s and use this knowledge to solve simple division problems. Children also learn to recognise and find one-half and one-quarter of objects, shapes and quantities by sharing them into 2 equal parts and 4 equal parts.

- Solve simple one-step problems involving division, using concrete objects, pictorial representations and arrays with the support of the teacher.
- Recognise, find and name a half as one of two equal parts of a quantity.
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.



Division – Year 1

Make equal groups -
grouping

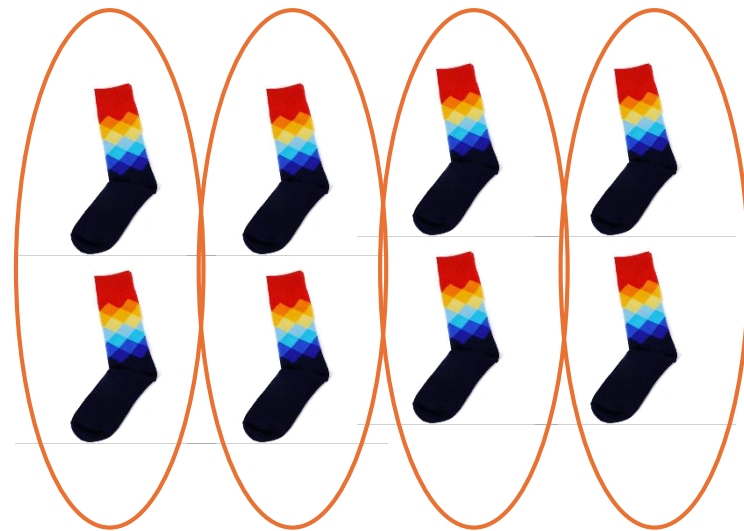


There are **6** altogether.

How many groups of **3** can you make? **2**

Circle groups of **2** .

There are **4** groups of **2** .





Division – Year 1

Make equal groups -
sharing

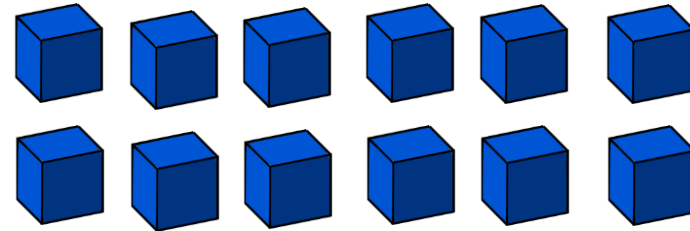


8 cakes have been shared equally between 2 plates.

There are 4 on each plate.

Take 12 cubes.

Share them between 4 .

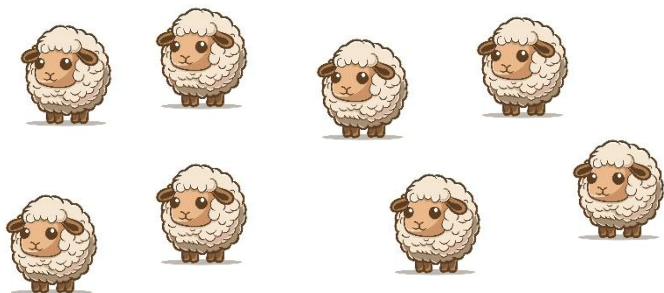


12 shared between 4 is 3 .



Division – Year 1

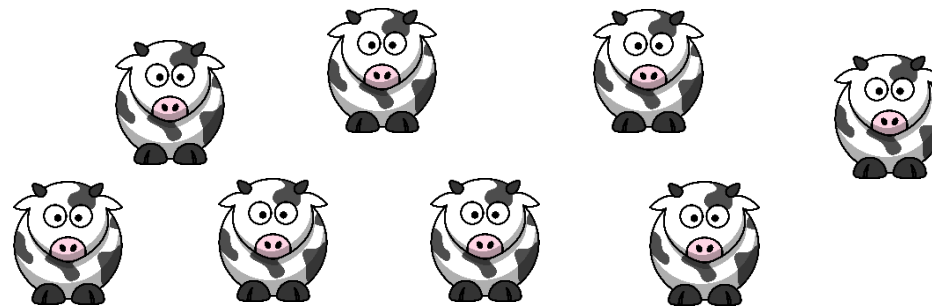
Find a half



To find half, I need to share into 2 equal groups.

Half of **8** is **4** .

Find a quarter



To find quarter, I need to share into 4 equal groups.

A quarter of **8** is **2** .



Division – Year 2

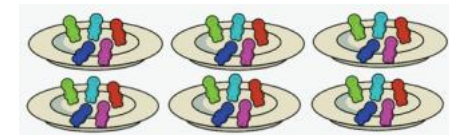
In Year 2, children build on their understanding of division by using their knowledge of multiplication facts and arrays to solve division problems. In line with the National Curriculum, they recognise the inverse relationship between multiplication and division, using known multiplication facts for the 2, 5 and 10 times tables to find related division facts. Children solve problems involving grouping and sharing, representing division with concrete resources, pictorial representations, arrays and number sentences. They begin to explain their reasoning and develop fluency using mathematical vocabulary.

- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables.
- Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication ($\div$) and equals ($=$) signs.
- Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a quantity.

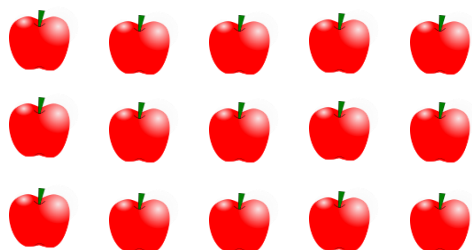


Division – Year 2

Sharing (partitive division)



Use arrays



$$3 \times 5 = 15$$

$$5 \times 3 = 15$$

$$15 \div 3 = 5$$

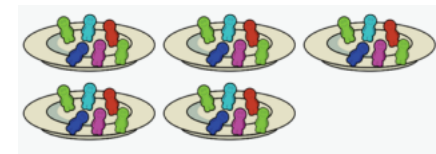
$$15 \div 5 = 3$$

How many in each group?"

In **partitive division**, the **number of groups** is **already known**, and the quantity is shared equally between them. The unknown is the size of each group.

If I share **30** equally between **6** groups, how many will be in each group?

Grouping (quotitive division)



"How many groups can I make?"

In **quotitive division**, the **size of each group** is **already known**, and children work out how many groups can be made. The unknown is the number of groups.

If I make groups of **6** from **30**, how many groups can I make?

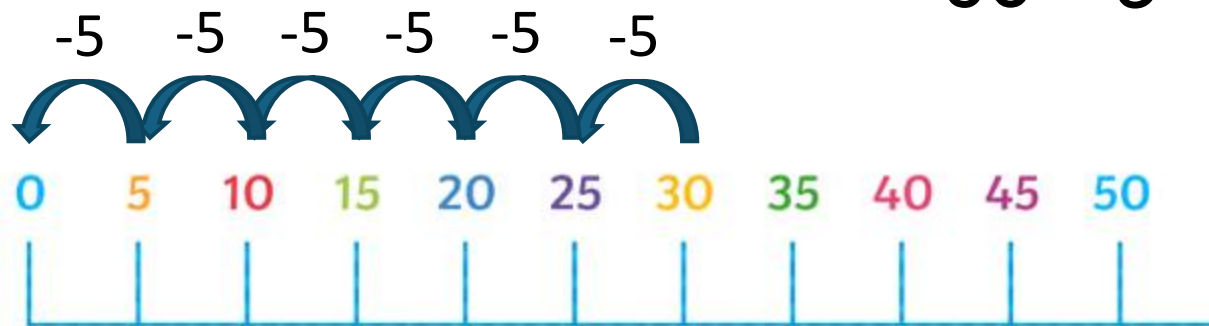


Division – Year 2

Repeated subtraction

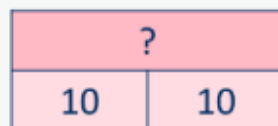
$$6 \times 5 = 30$$

$$30 \div 5 = 6$$

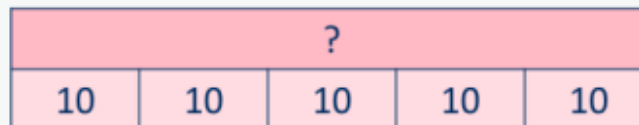


Missing numbers

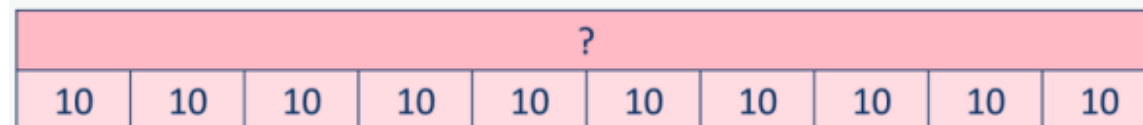
Use bar models to show the link between multiplication and division.



$$\square \div 2 = 10$$



$$\square \div 5 = 10$$



$$\square \div 10 = 10$$



Division – Year 3

In Year 3, children develop greater fluency and confidence in division by building on their knowledge of multiplication facts, including the 2, 5, 10, 3, 4 and 8 times tables. They use these known facts to solve increasingly complex division problems and recognise the inverse relationship between multiplication and division.

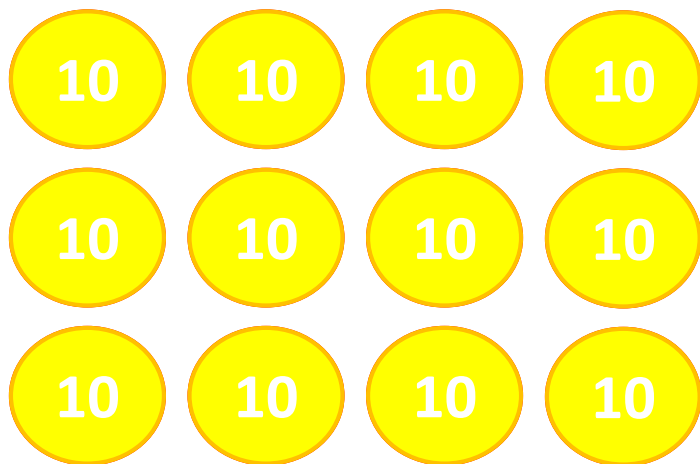
Children deepen their understanding of division through practical and pictorial representations, including arrays, bar models and the multiplication grid, making connections between equal groups, sharing, grouping and division calculations. They are introduced to the chunking method as a formal written strategy, where they repeatedly subtract known groups of the divisor to find how many groups are made. Children use their multiplication knowledge to select efficient chunks.

- Recall and use division facts for the 3, 4 and 8 multiplication tables.
- Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.



Division – Year 3

Related facts



$$3 \times 4 = 12$$

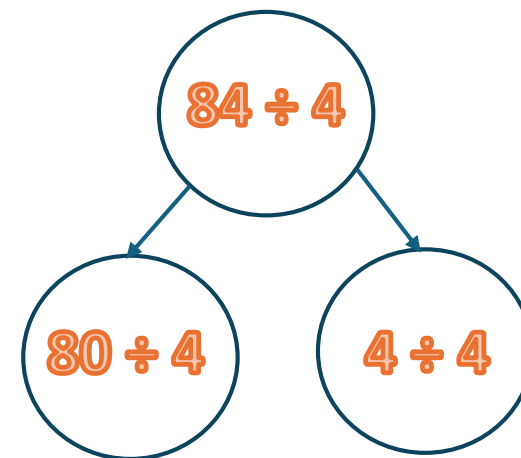
$$12 \div 3 = 4$$

$$3 \times 40 = 120$$

$$120 \div 3 = 40$$

Divide a 2-digit number by
a 1-digit number – no
remainders

Tens	Ones
	
	
	
	





Division – Year 3

Chunking using known facts

When children use chunking for division, they do not need to divide the whole number in one step. Instead, they break the dividend into manageable chunks using multiplication facts they already know. The aim is for children to use efficient known facts, such as multiplying by 2, 5 and 10, to find groups quickly.

$$84 \div 3 = 28$$

			2	8		
		3	8	4		
		—	3	0		(x10)
			5	4		
		—	3	0		(x10)
			2	4		
		—	1	5		(x5)
				9		
		—		9		(x3)
				0		

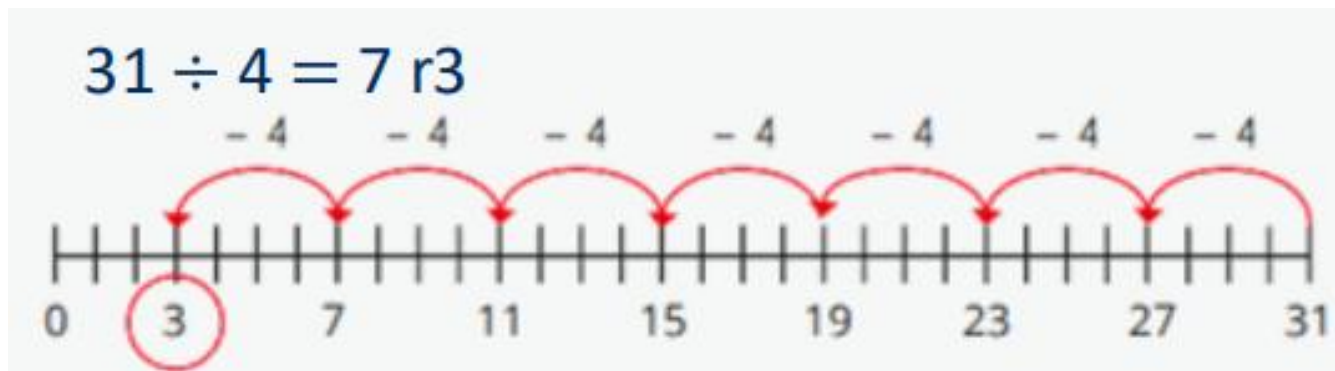


Division – Year 3

Divide a 2-digit number by
a 1-digit number – with
remainders

$$86 \div 3 = 28 \text{ r}2$$

			2	8	r	2
		3	8	6		
		–	3	0		
			5	6		
		–	3	0		(x10)
			2	6		
		–	1	5		(x10)
			1	1		(x5)
		–		9		(x3)
				2		





Division – Year 4

In Year 4, children build on their understanding of division by becoming increasingly fluent in recalling all multiplication and division facts up to 12×12 . They use this knowledge to solve more complex division calculations efficiently, applying the inverse relationship between multiplication and division to check the accuracy of their answers and solve multi-step problems.

Children develop greater efficiency with the chunking method, using larger chunks based on known multiplication facts and multiples of 10 (for example, subtracting 10, 20 or 30 groups of the divisor at a time) before using smaller chunks to complete the calculation.

- Recall division facts for multiplication tables up to 12×12
- Use place value, known and derived facts to divide mentally, including: dividing by 1
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.



Related facts

Divide a 2 or 3-digit number by a 1-digit number

$$286 \div 3 = 95 \text{ r}1$$
$$21 \div 7 = 3$$
$$21 \div 3 = 7$$
$$210 \div 7 = 30$$
$$210 \div 3 = 70$$
$$2100 \div 7 = 300$$
$$2100 \div 3 = 700$$

I know...

$$3 \times 9 = 27$$

So...

$$3 \times 90 = 270$$

				9	5	r	1
... 27 270	3	2	8	6			
	—	2	7	0			(x90)
			1	6			
	—		1	5			(x5)
					1		



Division – Year 4

Divide by 10

$$12 \div 10 = 1.2$$

Th	H	T	O	•	tth	hth
		●	● ●	•		

Divide by 100

$$12 \div 100 = 0.12$$

Th	H	T	O	•	tth	hth
		●	● ●	•		



Division – Year 5

In Year 5, children build on their understanding of division by applying their knowledge of place value and multiplication facts to divide numbers with up to 4 digits by a one-digit number. They continue to use the chunking method where appropriate but begin to transition to the formal written method of long division. Children are taught to understand each step of the method conceptually, making links between repeated grouping, place value and the inverse relationship between multiplication and division.

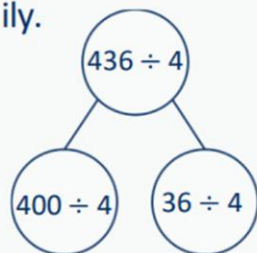
- Divide numbers mentally drawing upon known facts.
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
- Divide whole numbers and those involving decimals by 10, 100 and 1,000.



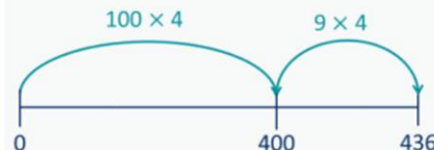
Division – Year 5

Mental strategies

I can partition ... into ... and ... to help me to divide more easily.



I can show groups of ... on a number line.



To divide by ..., I can divide by ... and then divide the result by ...

$$436 \div 4 = 436 \div 2 \div 2$$

$$436 \div 2 = 218$$

$$218 \div 2 = 109$$

Divide by 10, 100 and 1000

Th	H	T	O	.	tth	hth
	●	● ●		●		

$$120 \div 10 = 12$$

$$120 \div 100 = 1.2$$

$$120 \div 1000 = 0.12$$



Division – Year 5

Divide a 4-digit number by
a 1-digit number – with
remainders

$$2682 \div 6 = 447$$

I know...
 $4 \times 6 = 24$

I know...
 $4 \times 6 = 24$

I know...
 $7 \times 6 = 42$

			4	4	7
6	2	6			
–	2	4			
		2	8		
		–	2	4	
			4	2	
			–	4	2
				0	

1	6
2	12
3	18
4	24
5	30
6	36
7	42
8	48
9	54



Division – Year 6

In Year 6, children build on their understanding of division by becoming fluent in the formal written method of long division, extending their calculations to divide numbers with up to 4 digits by a two-digit divisor, in line with the National Curriculum. They use secure knowledge of multiplication facts, place value and estimation to select efficient strategies and complete calculations accurately.

Children develop confidence in interpreting remainders according to the context of a problem, expressing them as whole-number remainders, fractions or decimal values where appropriate.

- Perform mental calculations, including with mixed operations and large numbers.
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Divide numbers by 10, 100 and 1,000 giving answers up to three decimal places.
- Use written division methods in cases where the answer has up to two decimal places.
- Associate a fraction with division and calculate decimal fraction equivalents.
- Solve problems involving the calculation of percentages.



Division – Year 6

Divide a 4-digit number by
a 2-digit number – with
remainders

$$1426 \div 13 = 109 \text{ r}9$$

I know...
 $1 \times 13 = 13$

I know...
 $0 \times 13 = 13$

I know...
 $9 \times 13 = 117$

			1	0	9	r	9
1	3	1	4				
		–	1	3			
			1	2			
				0			
			1	2	6		
			–	1	1	7	
					9		

1	13
2	26
3	39
4	52
5	65
6	78
7	91
8	104
9	117



Flashbacks

Weekly or twice weekly, children complete **Flashback activities** to support the retention and application of previously taught mathematical knowledge. These carefully planned retrieval opportunities help children revisit key concepts, strengthen memory and make connections between different areas of mathematics.

Flashbacks include a range of questions covering:

- **Place value** - reinforcing the understanding of number and the value of digits.
- **Operation of the day** - developing fluency and efficiency with addition, subtraction, multiplication or division.
- **Fraction of the day** - building confidence with fractions and their links to other mathematical concepts.
- **This week's learning** - consolidating current knowledge and addressing misconceptions.
- **Last week's learning** - strengthening recall and preventing knowledge loss.
- **Previous learning** - revisiting essential knowledge from earlier units and year groups.

Through regular retrieval practice, children develop stronger recall of key facts, improve their ability to make connections and become more confident in applying their mathematical understanding to new problems.