

The Federation of Winklebury Infant and Junior Schools

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Believe, Strive, Achieve

Calculation Policy

Date policy produced/reviewed: 13.01.26

Policy produced/reviewed by: Maths Leads

Ratified by the governing body: 12.03.26

Signed:

Position:

Date of next review: Mar 29

Calculation Policy

This calculation policy follows and is based on the ‘HIAS Scheme of Learning and Progression Documents’.

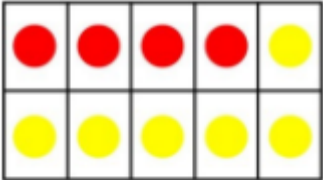
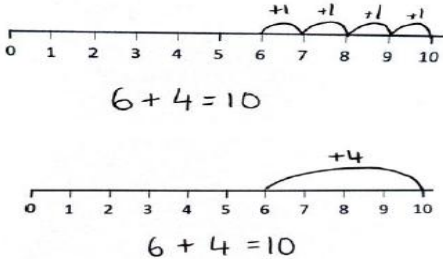
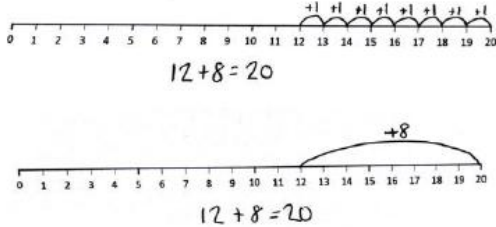
Rationale/Intent

This calculation policy outlines the key strategies and procedures taught within addition, subtraction, multiplication and division at the Federation of Winklebury. Through following this policy, consistency and progression will be reflected throughout the whole federation. Within the policy we encourage the supportive use of the CPA approach to underpin the foundation knowledge of the formal methods. This will build children’s fluency in a range of strategies to support reasoning and problem solving.

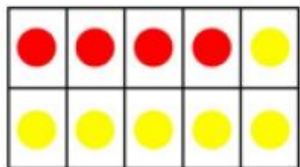
Addition and Subtraction

EYFS – In the EYFS, the foundations of maths skills are taught. The focus is on counting and subitising, number sense, and simple operations (addition and subtraction) through play-based hands-on activities, using the CPA approach. Key elements include daily practice with manipulatives (e.g. cubes, counters, tens-frames) developing number vocabulary, incorporating maths into routines and encouraging reasoning and problem solving through a range of experiences.

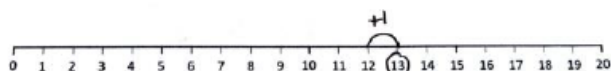
In Reception, the Mastering Number Programme is used for daily teaching to promote a deep and flexible understanding of number.

Year 1		
<p>Selected National Curriculum Programme of Study Statements</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • represent and use number bonds and related subtraction facts within 20. • add and subtract 1-digit and 2-digit numbers to 20, including 0. 	<p>The Big Ideas (NCTEM)</p> <p>Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given $8 + 7$, thinking of 7 as $2 + 5$ and adding the 2 to 8 to make 10 and then the 5 to total 15. Thinking of part whole relationships is helpful in linking addition and subtraction. For example, where the whole is 6, and 4 and 2 are parts. This means that 4 and 2 together form the whole, which is 6 and 6 subtract 4 leaves the 2 and 6 subtract 2 leaves the 4.</p>	
<p>Autumn Term (Stage 1)</p> <p>Represent number bonds within 10.</p> <p style="text-align: center;">$4 + 6 = 10$</p>	<p>Spring Term (Stage 2)</p> <p>Use number bonds within 10.</p>	<p>End of Year</p> <p>Represent and use number bonds within 20.</p>
		

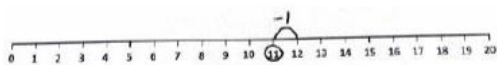
$$10 - 6 = 4$$



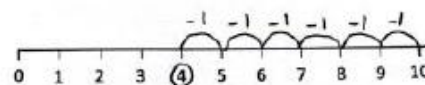
Find 1 more and 1 less from any given number within 20.



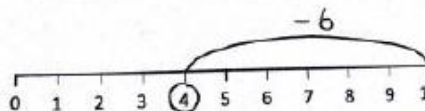
$$12 + 1 = 13$$



$$12 - 1 = 11$$

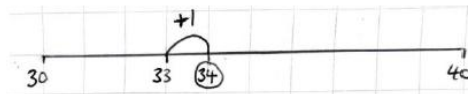


$$10 - 6 = 4$$

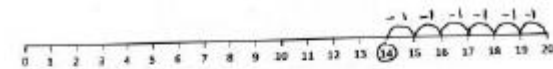
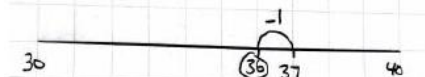


$$10 - 6 = 4$$

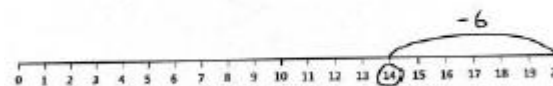
Find 1 more and 1 less from any given number within 50.



$$37 - 1 = 36$$

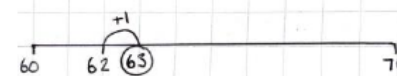


$$20 - 6 = 14$$

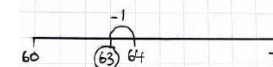


$$20 - 6 = 14$$

Find 1 more and 1 less from any given number within 100.



$$64 - 1 = 63$$

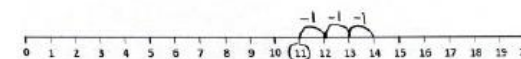


Add and subtract 1 digit and 2-digit numbers within 20.

Add 1-digit and 2-digit numbers to 20.



$$12 + 4 = 16$$



$$14 - 3 = 11$$

Supporting Resources (Concrete and Pictorial)

Tens frame, Dienes and place value counters.
Part whole models i.e., cherry and bar models.

Supporting Resources (Concrete and Pictorial)

Tens frame, Dienes and place value counters.
Number lines
Part whole models i.e., cherry and bar models.

Supporting Resources (Concrete and Pictorial)

Tens frame, Dienes and place value counters.
Number lines
Part whole models i.e., cherry and bar models.

Year 2

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

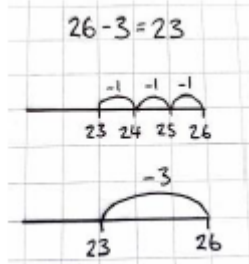
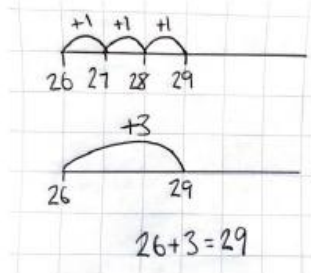
- recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100.
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - o a 2-digit number and ones
 - o a 2-digit number and tens
 - o two 2-digit numbers
 - o adding three 1-digit numbers

The Big Ideas (NCETM)

Understanding that addition of two or more numbers can be done in any order is important to support children’s fluency. When adding two numbers it can be more efficient to put the larger number first. For example, given $3 + 8$ it is easier to calculate $8 + 3$. When adding three or more numbers it is helpful to look for pairs of numbers that are easy to add. For example, given $5 + 8 + 2$ it is easier to add $8 + 2$ first than to begin with $5 + 8$. Understanding the importance of the equals sign meaning ‘equivalent to’ (i.e. that $6 + 4 = 10$, $10 = 6 + 4$ and $5 + 5 = 6 + 4$ are all valid uses of the equals sign) is crucial for later work in algebra. Empty box problems can support the development of this key idea. Correct use of the equals sign should be reinforced at all times. Altering where the equals sign is placed develops fluency and flexibility.

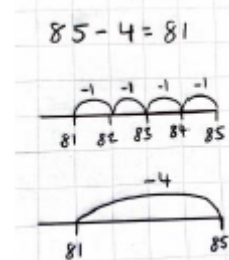
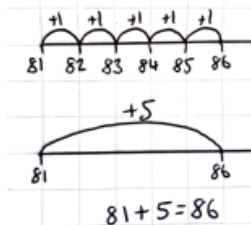
Autumn Term (Stage 1)

Add and subtract 2-digit numbers and ones to 50 without bridging.

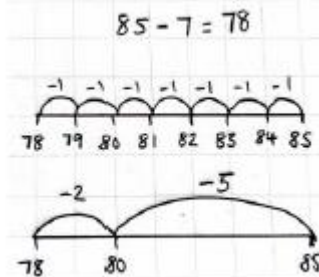
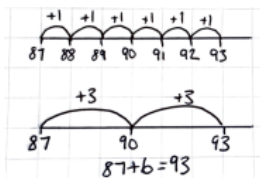


Spring Term (Stage 2)

Add and subtract 2-digit numbers and ones to 100 without bridging.

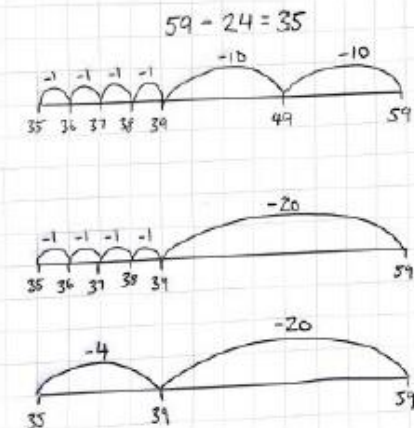
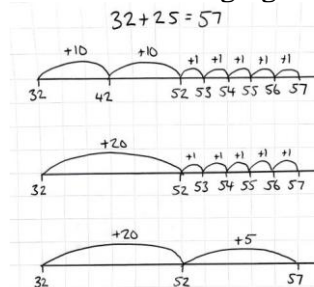


Add and subtract 2-digit numbers and ones to 100 with bridging.

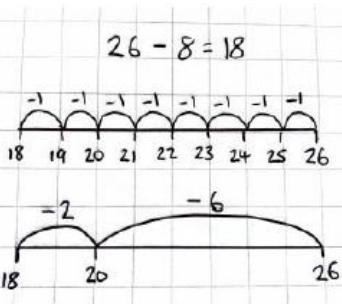
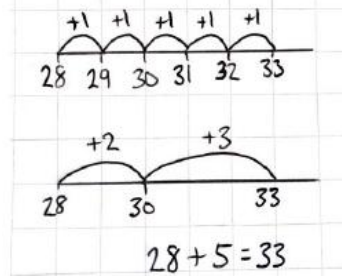


End of Year

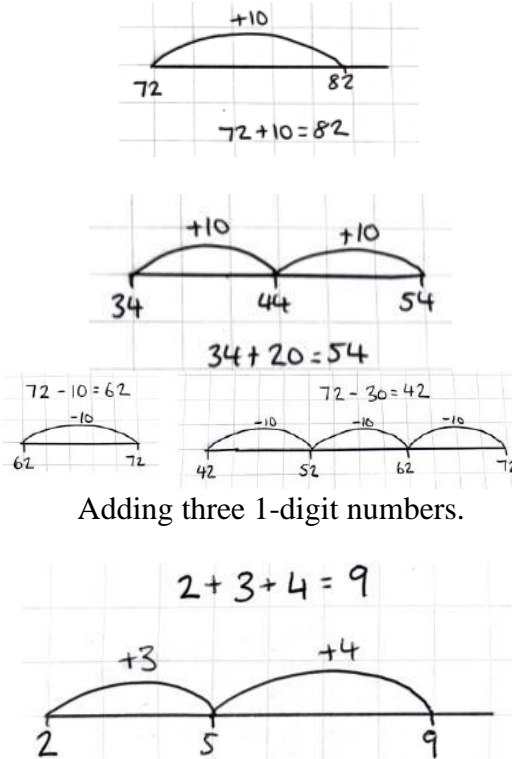
Adding and subtracting two 2-digit numbers without bridging.



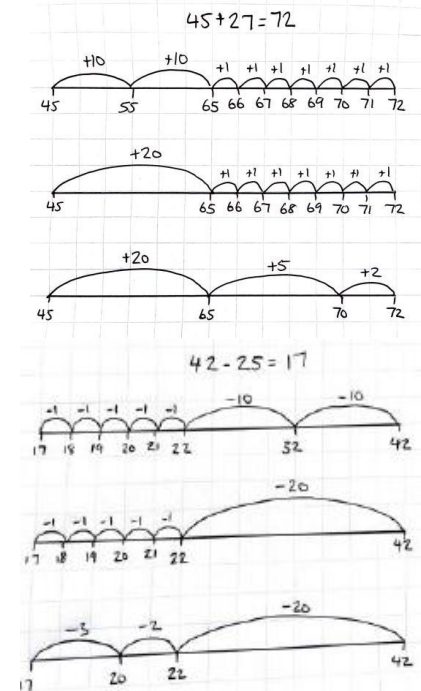
Add and subtract 2-digit numbers and ones to 50 with bridging.



Add and subtract 2-digit and tens.



Adding and subtracting two 2-digit numbers with bridging.



Supporting Resources (Concrete and Pictorial)

Tens frame, Dienes and place value counters.
Number lines
Part whole models i.e., cherry and bar models.

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Supporting Resources (Concrete and Pictorial)

Tens frame, Dienes and place value counters.
Number lines
Part whole models i.e., cherry and bar models.

Year 3

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- add and subtract numbers mentally, including:
 - o a 3-digit number and ones
 - o a 3-digit number and tens
 - o a 3-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

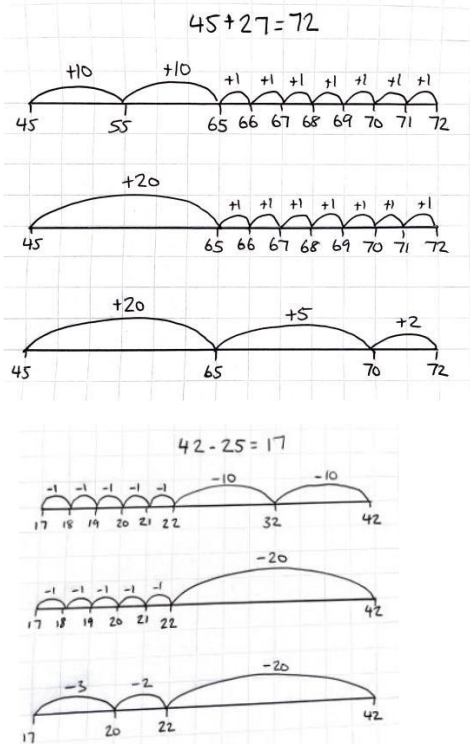
The Big Ideas (NCETM)

Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given $8 + 7$, thinking of 7 as $2 + 5$, and adding the 2 and 8 to make 10, then the 5 to 15. This should then be applied when calculating with larger numbers.

Subtraction bonds can be thought of in terms of addition: for example, in answering $15 - 8$, thinking what needs to be added to 8 to make 15. Counting on for subtraction is a useful strategy that can also be applied to larger numbers.

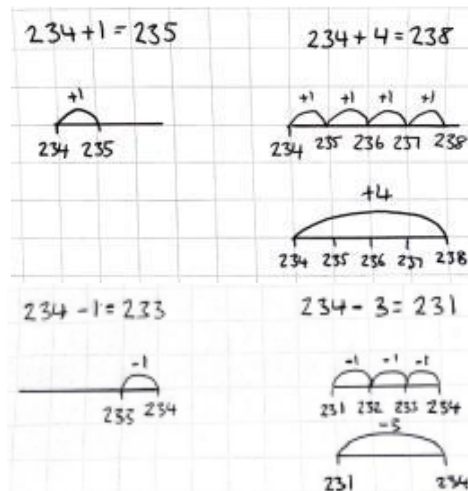
Autumn Term (Stage 1)

Adding and subtracting two 2-digit numbers with bridging.

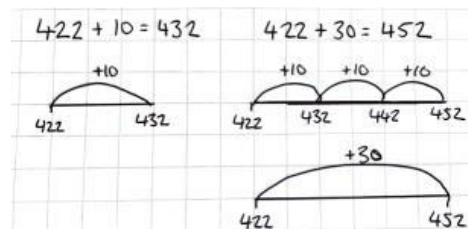


Spring Term (Stage 2)

Adding and subtracting a 3-digit number and ones.



Adding and subtracting 3-digit and tens.



End of Year

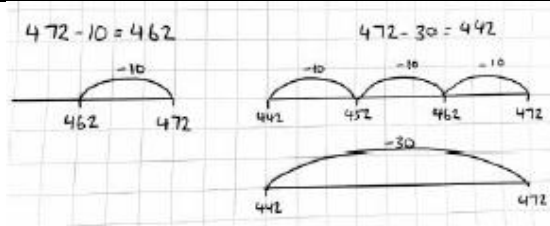
Introduce column addition and subtraction with numbers up to 3-digits.

Ensure number sentences chosen would not be more suited to a more efficient mental strategy.

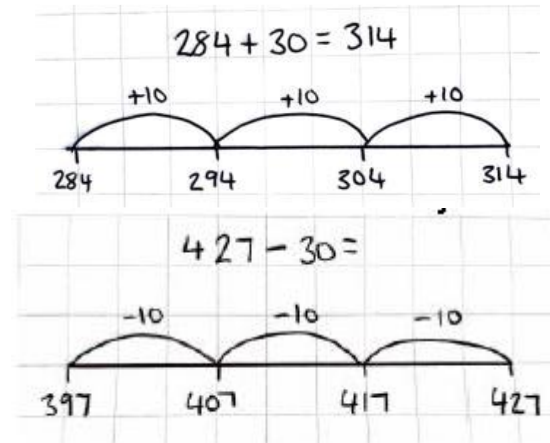
Begin with expanded.

$$\begin{array}{r}
 700 + 80 + 9 \\
 600 + 40 + 2 \\
 \hline
 1300 + 120 + 11 = 1431
 \end{array}$$

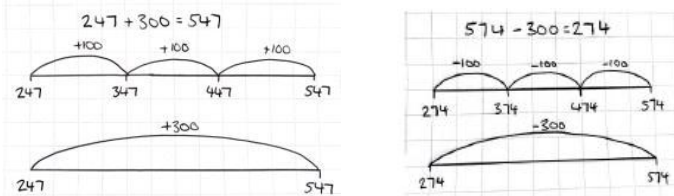
$$\begin{array}{r}
 900 - 60 - 7 \\
 400 - 50 - 2 \\
 \hline
 500 - 10 - 5
 \end{array}$$



Adding and subtracting a 3-digit number and tens crossing the hundreds boundary.



Adding and subtracting a 3-digit number and hundreds.



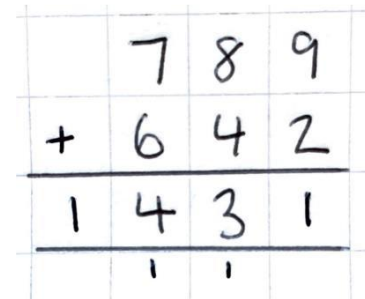
Supporting Resources (Concrete and Pictorial)

Tens frame, Dienes, 100 square, physical number lines and place value counters.
Part whole models i.e., cherry and bar models.

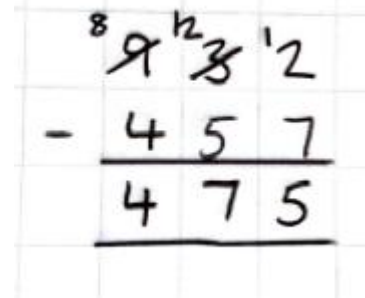
Supporting Resources (Concrete and Pictorial)

Dienes with place value charts.
Part whole models i.e., cherry and bar models.

Then progress to compact without and then with carrying.



Progress to compact column method for subtraction. Start with no exchange and then move onto exchanging.



Supporting Resources (Concrete and Pictorial)

Abstract concept but to use Dienes with place value chart alongside until confident.
Part whole models i.e., cherry and bar models.

Year 4

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why
- count backwards through zero to include negative numbers (subtraction only)

The Big Ideas (NCETM)

It helps to round numbers before carrying out a calculation to get a sense of the size of the answer. For example, $4786 - 2135$ is close to $5000 - 2000$, so the answer will be around 3000. Looking at the numbers in a calculation and their relationship to each other can help make calculating easier. For example, $3012 - 2996$. Noticing that the numbers are close to each other might mean this is more easily calculated by thinking about subtraction as difference.

Autumn Term (Stage 1)

Column addition and subtraction with numbers up to 3-digits.

Ensure number sentences chosen would not be more suited to an efficient strategy.

$$\begin{array}{r}
 789 \\
 + 642 \\
 \hline
 1431 \\
 \hline
 11
 \end{array}$$

Compact column method for subtraction but use of exchange.

Spring Term (Stage 2)

Column addition and subtraction with numbers up to 4-digits.

Ensure number sentences chosen would not be more suited to an efficient strategy.

$$\begin{array}{r}
 3982 \\
 + 1766 \\
 \hline
 5748 \\
 \hline
 11
 \end{array}$$

Column method for subtraction but use of exchange.
Ensure number sentences chosen would not be more suited to a more efficient mental strategy.

End of Year

Multistep problem in context involving addition and subtraction.

(Provide a mixture of opportunities to apply mental and formal strategies taught)

Some children vote for their favourite ice-cream flavour.

Ice-cream flavour	Number of children
vanilla	87
chocolate	154
strawberry	?
mint	38
Total	402

How many children vote for **strawberry**?

Year 5

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction)
- solve problems involving numbers up to three decimal places.
- Interpret negative numbers in context, count forwards and backwards with positive and negative numbers through zero.

The Big Ideas (NCETM)

Before starting any calculation is it helpful to think about whether or not you are confident that you can do it mentally. For example, $3689 + 4998$ may be done mentally, but $3689 + 4756$ may require paper and pencil.

Carrying out an equivalent calculation might be easier than carrying out the given calculation. For example, $3682 - 2996$ is equivalent to $3686 - 3000$ (constant difference).

Autumn Term (Stage 1)

Column addition and subtraction with numbers up to 4-digits.

Ensure number sentences chosen would not be more suited to an efficient strategy.

$$\begin{array}{r} 3982 \\ + 1766 \\ \hline 5748 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 2874 \\ - 1949 \\ \hline 1925 \end{array}$$

Spring Term (Stage 2)

Column addition and subtraction with numbers with more than 4-digits.

Ensure number sentences chosen would not be more suited to an efficient strategy.

$$\begin{array}{r} 23972 \\ + 45639 \\ \hline 69611 \\ \hline 111 \end{array}$$

$$\begin{array}{r} 74928 \\ - 33294 \\ \hline 41634 \end{array}$$

End of Year

Multistep problem in context, deciding which methods to use and why.
(Provide a mixture of opportunities to apply mental and formal strategies taught)

This table shows the number of people living in various towns in England.

Town	Population
Bedford	82,448
Carlton	48,493
Dover	34,087
Formby	24,478
Telford	166,640

What is the total of the numbers of people living in Formby and in Telford?

$$\begin{array}{r} 24,478 \\ + 66,640 \\ \hline 91,118 \\ \hline 111 \end{array}$$

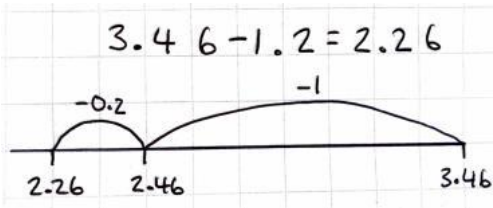
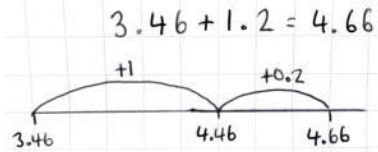
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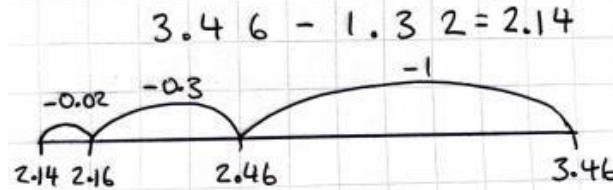
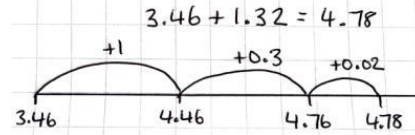
What is the difference between the numbers of people living in Bedford and in Dover?

$$\begin{array}{r} 82,448 \\ - 34,087 \\ \hline 48,361 \end{array}$$

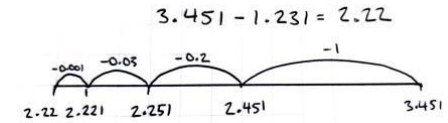
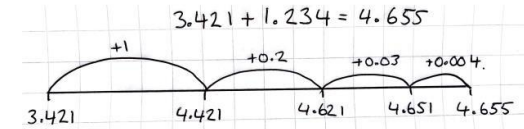
Adding and subtracting involving numbers up to 1 and 2 decimal places.



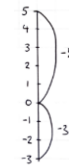
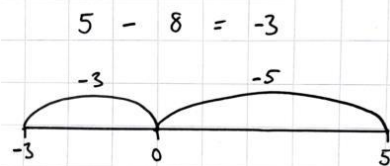
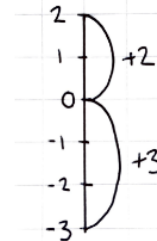
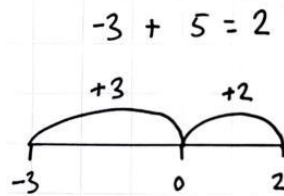
Adding and subtracting involving numbers up to 2 decimal places.



Adding and subtracting involving numbers up to 3 decimal places.



Adding and subtracting with negative numbers (linking with temperature).



Supporting Resources (Concrete and Pictorial)

Number lines
Place value chart and counters alongside abstract formal method.
Part whole models i.e., cherry and bar models.

Supporting Resources (Concrete and Pictorial)

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Place value chart and counters alongside abstract formal method.
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Supporting Resources (Concrete and Pictorial)

Number lines
Place value chart and counters alongside abstract formal method.
Part whole models i.e., cherry and bar models.

Year 6

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
- use negative numbers in context, and calculate intervals across zero

The Big Ideas (NCETM)

Deciding which calculation method to use is supported by being able to take apart and combine numbers in many ways. For example, calculating $8.78 + 5.26$ might involve calculating $8.75 + 5.25$ and then adjusting the answer.

The associative rule helps when adding three or more numbers: $367 + 275 + 525$ is probably best thought of as $367 + (275 + 525)$ rather than $(367 + 275) + 525$.

Autumn Term (Stage 1)

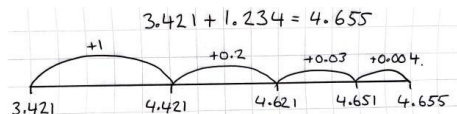
Column addition and subtraction with numbers with more than 4-digits.

Ensure number sentences chosen would not be more suited to an efficient strategy.

$$\begin{array}{r} 23972 \\ + 45639 \\ \hline 69611 \\ \hline \end{array}$$

$$\begin{array}{r} 74928 \\ - 33294 \\ \hline 41634 \\ \hline \end{array}$$

Adding and subtracting involving numbers up to 3 decimal places.



Spring Term (Stage 2)

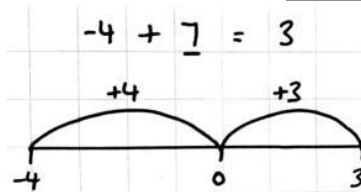
Adding and subtracting negative numbers in context.

Here are the temperatures in four cities at midnight and at midday.

City	Temperature	
	At midnight	At midday
Paris	-4°C	-2°C
Oslo	-13°C	-7°C
Rome	3°C	10°C
Warsaw	-6°C	2°C

At midnight, how many degrees colder was Paris than Rome?

degrees



This table shows the temperature at 9 am on three days in January.

1st January	8th January	15th January
+5°C	-4°C	+1°C

What is the difference between the temperature on 1st January and the temperature on 8th January?

°C

End of Year

Multistep problem in context, deciding which methods to use and why.
(Provide a mixture of opportunities to apply mental and formal strategies taught)

At the start of June, there were 1,793 toy cars in the shop.

During June,

- 8,728 more toy cars were delivered
- 9,473 toy cars were sold.

How many toy cars were left in the shop at the end of June?

$$\begin{array}{r} 1793 \\ + 8728 \\ \hline 10521 \\ \hline \end{array}$$

$$\begin{array}{r} 10521 \\ - 9473 \\ \hline 1048 \\ \hline \end{array}$$

Answer = 1048

$3.451 - 1.231 = 2.22$

Use of column method and place value knowledge applied to adding and subtracting decimals.

$$\begin{array}{r}
 18.42 \\
 + 5.37 \\
 \hline
 .9
 \end{array}$$

Use of adjustment for addition and subtraction to support easier and efficient methods.

$5 - 9 = -4$

Supporting Resources (Concrete and Pictorial)

Number lines
Place value chart and counters alongside abstract formal method.

One Saturday afternoon, a total of 234,869 people attended three rugby matches.

- 80,978 people attended match 1
- 72,319 people attended match 2

How many people attended match 3?

Match 3 = 81,572 people

Supporting Resources (Concrete and Pictorial)

Number lines
Place value chart and counters alongside abstract formal method.

Hampshire units of learning: 6.1, 6.7, 6.10 and 6.15.

Multiplication and Division

Year 1

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- count in multiples of twos, fives and tens.
- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

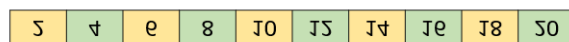
The Big Ideas (NCETM)

Counting in steps of equal sizes is based on the big idea of ‘unitising’; treating a group of, say, five objects as one unit of five.

Working with arrays helps pupils to become aware of the commutative property of multiplication, that 2×5 is equivalent to 5×2

Autumn Term (Stage 1)

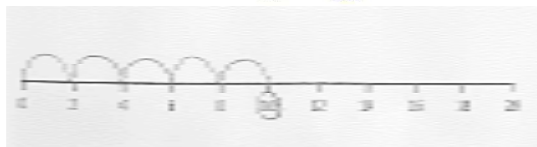
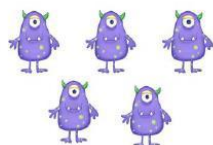
Count in multiples of twos Number track



Solve one step multiplication, by calculating the answer using pictorial representations (twos)

Structured number line, e.g:

How many legs are there? Count in groups of 2.



Making equal groups – sharing.

Concrete objects and pictorial representations, e.g:

I have 12 sweets and share them between myself and a friend (2 people), how many will we each have?

Spring Term (Stage 2)

Count in multiples of tens Number track

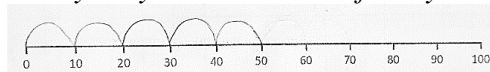


Solve one step multiplication, by calculating the answer using pictorial representations (tens).

Structured number line, e.g:

There are 10 crayons in a box.

How many crayons will I have if I buy 5 boxes?



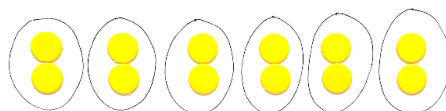
Making equal groups – grouping.

Concrete objects and pictorial representations, e.g:

I have 12 cookies to put in bags.

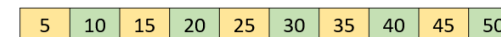
If I put 2 in each bag how many bags will I need?

12



End of Year

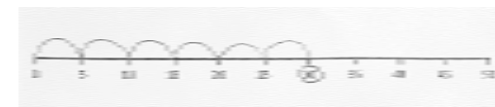
Count in multiples of fives Number track



Solve one step multiplication, by calculating the answer using pictorial representations (fives).

Structured number line, e.g:

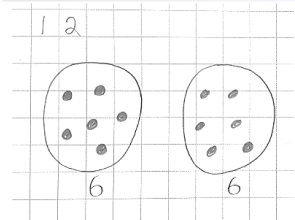
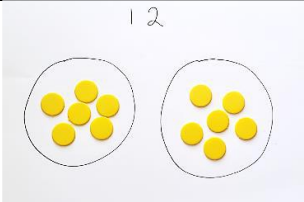
Crayons come in packs of 5. How many crayons do I have?



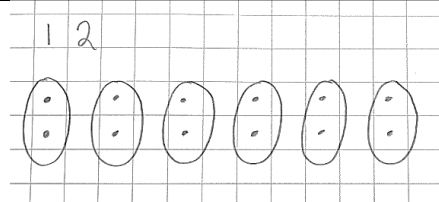
Making equal groups (including finding half of a quantity).

Bar models, e.g:

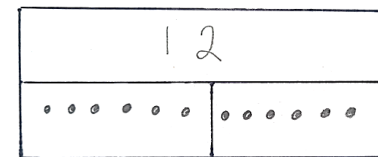
I had 12 grapes and I ate half. How many are left?



“If I share **12** equally between **2** groups, there will be **6** in each group.”



“There are **12** altogether. There are **6** equal groups of **2**.”



“There are **12** altogether. They are shared into **2** equal groups. There are **6** in each group. Each group is half of the whole. I know that there are **6** grapes left.”

Please note that manipulatives and visual representations may be used alongside more formal recording as appropriate. It is important for pupils to explore structure and understand a concept before developing a more procedural approach, at which point all representations may be used alongside each other.

Hampshire units of learning: 1.3, 1.6 and 1.8

Year 2

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- count in steps of two, three, and five from 0, and in tens from any number, forward and backward.
- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context.

The Big Idea (NCETM)

It is important that pupils both commit multiplication facts to memory and also develop an understanding of conceptual relationships. This will aid them in using known facts to work out unknown facts and in solving problems.

Pupils should look for and recognise patterns within tables and connections between them (e.g. $5 \times$ is half of $10 \times$).

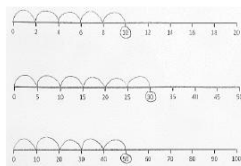
Pupils should recognise multiplication and division as inverse operations and use this knowledge to solve problems. They should also recognise division as both grouping and sharing.

Please note that manipulatives and visual representations may be used alongside more formal recording

Autumn Term (Stage 1)

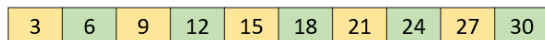
Count in steps of two, five from 0 and in tens from any number, forward and backward.

Structured number line.



Count in steps of 3.

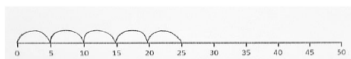
Number track



Count on in steps of two, three and five from 0.

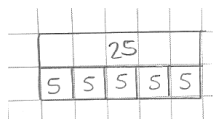
Skip counting on a structured number line, e.g.:

$$25 + 5 = \square$$



$$25 + 5 = 6$$

Bar model representation:

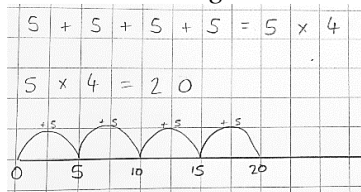


Spring Term (Stage 2)

Solve problems involving multiplication using repeated addition.

Unstructured number line, e.g.

How many muffins are there altogether?

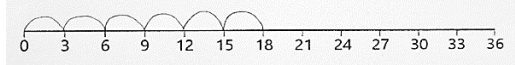


Count in steps of 3.

Structured number line, e.g.

Tilly ran 3 miles every day.

How many miles has she run after 6 days?



End of Year

Recall and use multiplication facts for the 2, 5 and 10 multiplication tables.

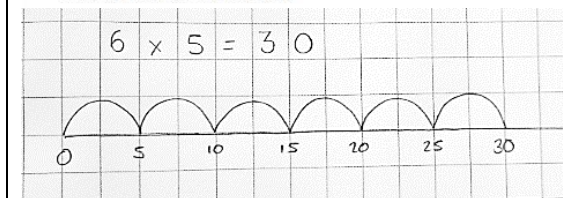
Unstructured number line to 'prove it'

18 6 teams play football.

Each team has 5 children.

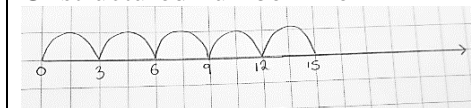


How many children play football altogether?



Count in steps of 3.

Unstructured number line



Please note that manipulatives and visual representations may be used alongside more formal recording as appropriate. It is important for pupils to explore structure and understand a concept before developing a more procedural approach, at which point all representations may be used alongside each other.

Hampshire units of learning: 2.3, 2.6 and 2.10

Year 3

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including 2-digit numbers times 1-digit numbers, using mental and progressing to formal written methods.

The Big Ideas (NCETM)

It is important for children not just to be able to chant their multiplication tables but also to understand what the facts in them mean, to be able to use these facts to figure out others and to use in problems. It is also important for children to be able to link facts within the tables (e.g. $5 \times$ is half of $10 \times$).

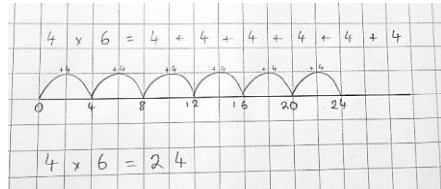
They understand what multiplication means, see division as both grouping and sharing, and see division as the inverse of multiplication

Autumn Term (Stage 1)

Recall and use multiplication facts for the 3, 4 and 8 multiplication table.

Unstructured number line, e.g:

$$4 \times 6 = \square$$

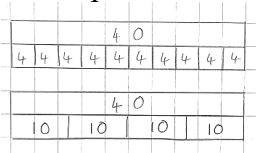


Number line or bar model to 'prove it'

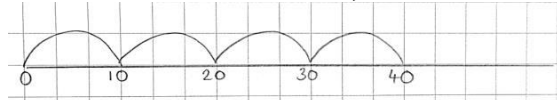
Ben has 40 cards.

He shares them equally between 4 party bags.

How many cards does he put in each bag?



“If I know that $4 \times 10 = 40$, then I know $40 \div 4 = 10$ ”.

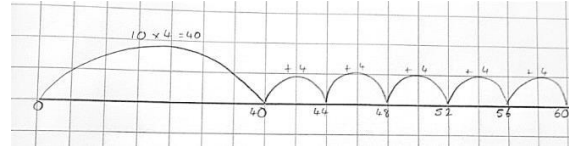


Spring Term (Stage 2)

Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.

Using efficient jumps on a number line when working with larger calculations, e.g:

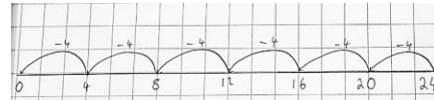
$$15 \times 4 = \square$$



$$15 \times 4 = 60$$

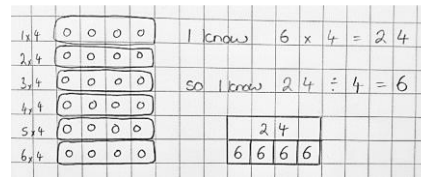
Counting back on a number line, e.g:

$$24 \div 4 = \square$$



Arrays and bar model, e.g:

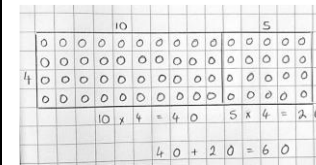
$$24 \div 4 = \square$$



End of Year

Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.

Box array, e.g:



$$15 \times 4 = 60$$



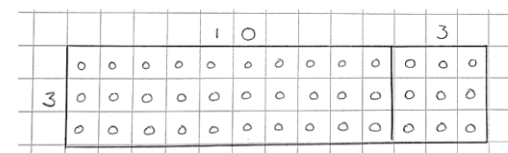
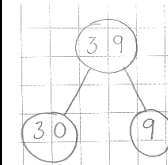
Partitioning and box arrays, e.g:
39 sweets shared between 3 children.

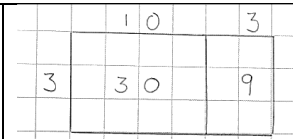
How many sweets each?

I know $30 \div 3 = 10$ and

$$9 \div 3 = 3$$

$$10 + 3 = 13$$





$$39 \div 3 = 13$$

Please note that manipulatives and visual representations may be used alongside more formal recording as appropriate. It is important for pupils to explore structure and understand a concept before developing a more procedural approach, at which point all representations may be used alongside each other.

Hampshire units of learning: 3.3, 3.9, 3.11 and 3.14

Year 4

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to 12×12 .
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- recognise and use factor pairs and commutativity in mental calculations.
- multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout.

The Big Ideas (NCETM)

Children understand what multiplication means and see division as both grouping and sharing, and to see division as the inverse of multiplication.

The distributive law can be used to partition numbers in different ways to create equivalent calculations. For example, $4 \times 27 = 4 \times (25 + 2) = (4 \times 25) + (4 \times 2) = 108$.

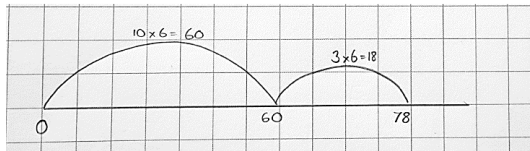
Looking for equivalent calculations can make calculating easier. For example, 98×5 is equivalent to $98 \times 10 \div 2$ or to $(100 \times 5) - (2 \times 5)$. The array model can help show equivalences.

Autumn Term (Stage 1)

Recall and use multiplication and division facts for multiplication tables up to 12×12 .

Using efficient jumps on a number line when working with larger calculations, e.g:

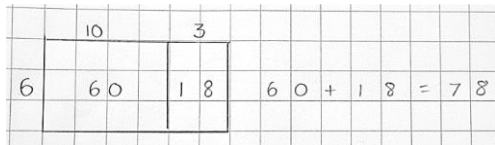
$$13 \times 6 = \square$$



$$13 \times 6 = 78$$

Box Array, e.g:

$$13 \times 6 = \square$$



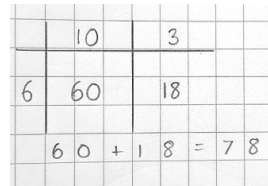
$$13 \times 6 = 78$$

Spring Term (Stage 2)

Recall multiplication and division facts for multiplication tables up to 12×12 .

2 x 1 grid method, e.g:

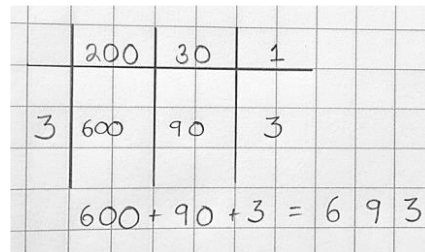
$$13 \times 6 = \square$$



$$13 \times 6 = 78$$

3 x 1 grid method, e.g:

$$231 \times 3 = \square$$

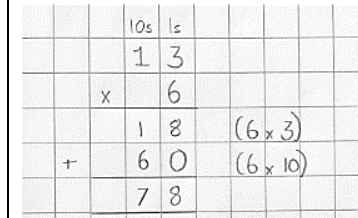


End of Year

Recall multiplication and division facts for multiplication tables up to 12×12 .

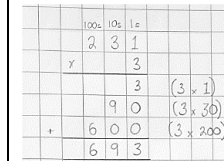
2 x 1 expanded formal method, e.g:

$$13 \times 6 = \square$$



3 x 1 expanded formal method, e.g:

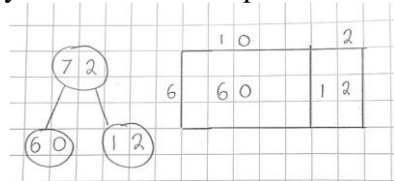
$$231 \times 3 = \square$$



Partitioning, e.g:

72 children go camping. There are 6 tents.

How many children can sleep in each tent?



I know $60 \div 6 = 10$ and

$$12 \div 6 = 2$$

$$10 + 2 = 12$$

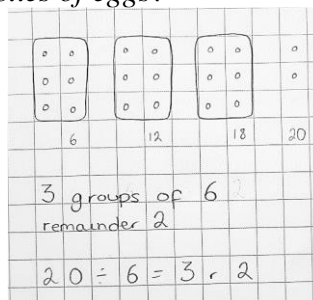
$$72 \div 6 = 12$$

Division with remainders.

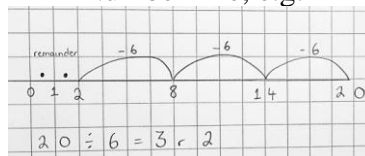
Arrays, e.g:

20 eggs in boxes of 6.

How many boxes of eggs?

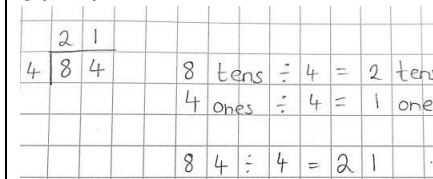


Number line, e.g:

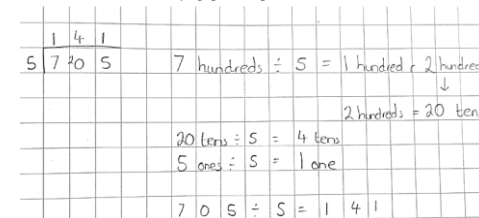


Short division (up to 3-digit by 1-digit).

$$84 \div 4 = \square$$



$$705 \div 5 = \square$$



Please note that manipulatives and visual representations may be used alongside more formal recording as appropriate. It is important for pupils to explore structure and understand a concept before developing a more procedural approach, at which point all representations may be used alongside each other.

Hampshire units of learning: 4.3, 4.9, 4.11 and 4.14

Upper Key Stage 2 – Year 5 and 6

Selected National Curriculum Programme of Study Statements

Year 5 Pupils should be taught to:

- multiply numbers up to four digits by a 1 or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.

Year 6 Pupils should be taught to:

- multiply multi-digit numbers up to four digits by a 2-digit whole number using the formal written method of long multiplication.

The Big Ideas (NCETM)

Pupils have a firm understanding of what multiplication and division mean and have a range of strategies for dealing with large numbers, including both mental and standard written methods. They see the idea of factors, multiples and prime numbers as connected and not separate ideas to learn.

They recognise how to use their skills of multiplying and dividing in new problem-solving situations.

Stage 1

Stage 2

Stage 3

Multiply up to four digits by a 1-digit number,

2 x 1 formal method of short multiplication, e.g:

$13 \times 6 = \square$

	1	3	
x		6	
	7	8	
	1		

$13 \times 6 = 78$

Multiply up to four digits by a 2-digit number.

Formal written method of long multiplication for 2-digit numbers, e.g:

$24 \times 16 = \square$

Multiply up to four digits by a 1-digit number.

3 x 1 formal method of short multiplication, e.g:

$231 \times 3 = \square$

	2	3	1
x			3
	6	9	3

$231 \times 3 = 693$

Multiply up to four digits by a 2-digit number.

Formal written method of long multiplication for 2-digit numbers, e.g:

$124 \times 26 = \square$

Multiply up to four digits by a 1-digit number.

4 x 1 formal method of short multiplication, e.g:

$2731 \times 4 = \square$

	2	7	3	1	
x				4	
	1	0	9	2	4

$2731 \times 4 = 10924$

Multiply up to four digits by a 2-digit number.

Formal written method of long multiplication for 2-digit numbers, e.g:

$5227 \times 43 = \square$

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

$$24 \times 16 = 384$$

Short division (up to 4-digit by 1-digit).

Including remainders, e.g:

$$5746 \div 5 = \square$$

		1	1	4	9	r1
5		5	7	4	6	

$$5746 \div 5 = 1149 \text{ r } 1$$

Long Division Year 6:

Please note that pupils should not move on to this method until they are conceptually and procedurally secure with strategies outlined in previous year groups.

As a result, some pupils may not complete the long division strategies whilst in Key Stage 2.

Chunking method, e.g:

$$432 \div 15 = \square$$

		2	8	r12	
1	5	4	3	2	
		3	0	0	(15 x 20)
		1	3	2	
		1	2	0	(15 x 8) 20 + 8 = 28 r 2
		0	1	2	

		1	2		
		1	2	4	
	x		2	6	
		7	4	4	
+	2	4	8	0	
		3	2	2	4
		1	1		

$$124 \times 26 = 3224$$

Short division (up to 4-digit by 1-digit).

Remainders as fractions, e.g:

$$5746 \div 5 = \square$$

		1	1	4	9	r1
5		5	7	4	6	
		5	7	4	6	$\div 5 = 1149 \frac{1}{5}$

$$5746 \div 5 = 1149 \frac{1}{5}$$

Long division.

Chunking method with fraction remainders, e.g:

$$432 \div 15 = \square$$

		2	8	$\frac{4}{5}$	
1	5	4	3	2	
		3	0	0	(15 x 20)
		1	3	2	
		1	2	0	(15 x 8) 20 + 8 = 28 r 2
		0	1	2	
				$\frac{12}{15} = \frac{4}{5}$	

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

$$5227 \times 43 = 224761$$

Short division (up to 4-digit by 1-digit).

Remainders as decimals, e.g:

$$5746 \div 5 = \square$$

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

$$5746 \div 5 = 1149.2$$

Long division.

Formal written method, e.g:

$$432 \div 15 = \square$$

		2	8	.8	
1	5	4	3	2	.0
		3	0	↓	↓
		1	3	2	↓
		1	2	0	↓
		1	2	0	
				0	