Fairholme Primary School
Calculation Policy

Reviewed March 2022

Rationale

This policy outlines a model progression through written strategies for addition, subtraction, multiplication and division in line with the National Curriculum. Through the policy, we aim to link key manipulatives and representations through concrete, pictorial and abstract methods. School wide policies ensure consistency of approach, enabling children to progress stage by stage through models and representations they recognise from previous teaching.

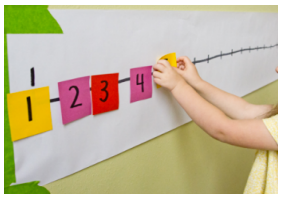
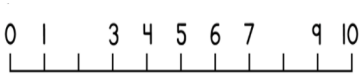
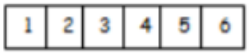
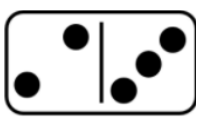
Addition

EYFS

ELG: Number - Children at the expected level of development will:
- 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** (including subtraction facts) and some **number bonds to 10**, including double facts.

ELG: Numerical Patterns - Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is **greater than**, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Key Vocabulary:
add, more, make, sum, total, altogether, one more, two more … ten more how many more to make …? how many more is … than …? how much more is …?

Strategies used to teach Addition	Concrete	Pictorial	Abstract
Counting on	 	 Children are provided with various resources to help make number sense by understanding the counting system.	 
Identify 1 more	  	 	2 + 1 = 3 6 + 1 = 7 By adding one more, children become familiar with the concept of adding and making amounts larger.

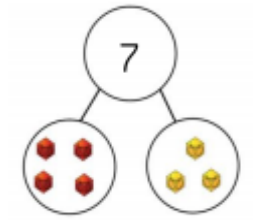
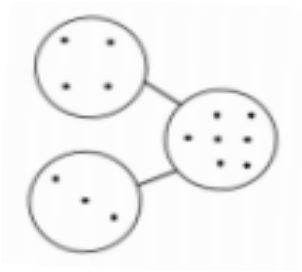
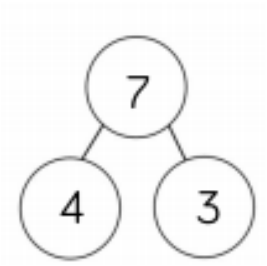
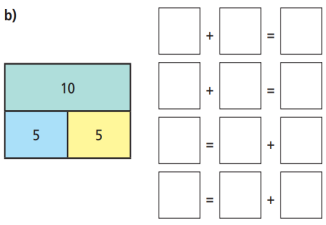
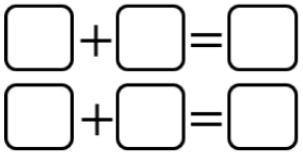
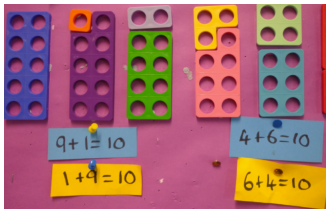
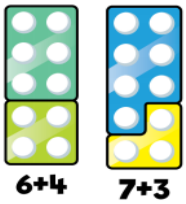
Year 1

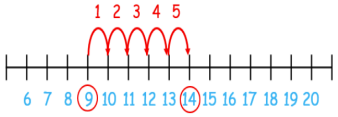
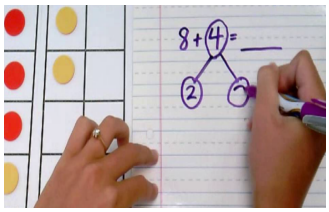
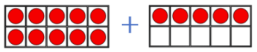
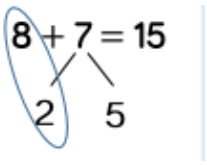
Pupil should be taught to:

- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- represent and use number bonds within 20
- add and subtract one-digit and two-digit numbers to 20, including 0
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? − 9

Key Vocabulary:

add, addition, plus, altogether, total, group, equal to, greater than, less than, more than, fewer than, part, whole, number bonds, fact family, combine, count on/ forwards, put together, one more, two more … ten more how many more to make …? how many more is … than …? how much more is …?

Strategies used to teach Addition	Concrete	Pictorial	Abstract
Parts and wholes	 Introducing the part-whole model concept so children can begin to build whole numbers.	 Pictorial representations allow children to count the parts to make a whole.	
Fact families	 5 + 3 = 8 3 + 5 = 8 Children begin to understand basic addition and subtraction relations (commutativity).	 Various representations support this relationship.	 
Number bonds to 10			6 + 4 = 10 At this stage children practise systematically with fast recall.

Adding together		There are 3  There are 2  There are 5 leaves altogether.	3 + 2 = 5
Add by counting on		 Children are able to link counting system to add amounts.	9+ 2 = 11
Add by making ten		If  10 + 5 = 15 Then  9 + 6 = 15	 Children will use knowledge of part-whole to partition amounts to make 10. This will lead to faster mental recall of facts.

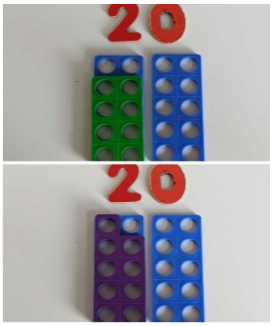
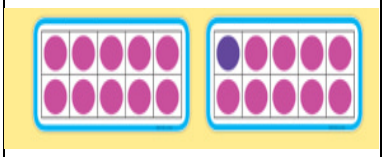
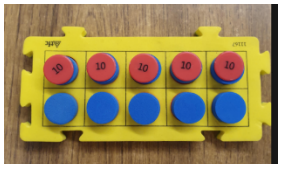
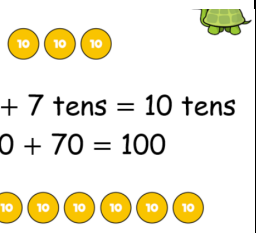
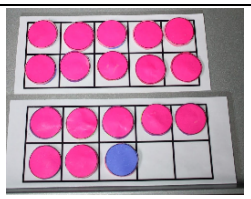
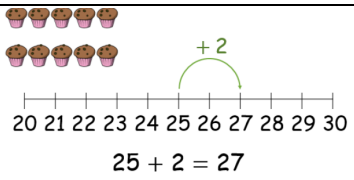
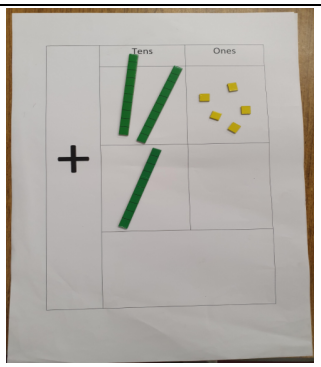
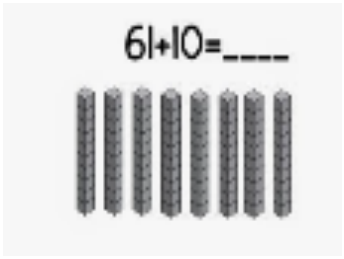
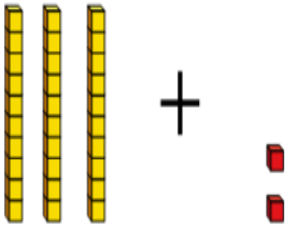
Year 2

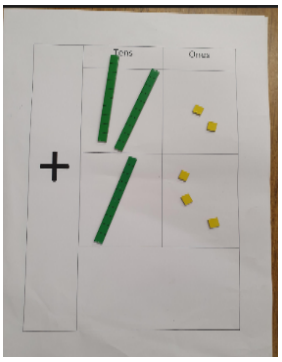
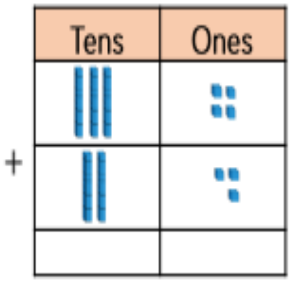
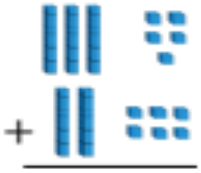
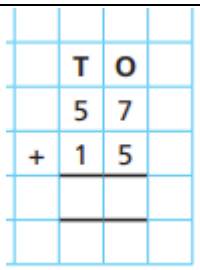
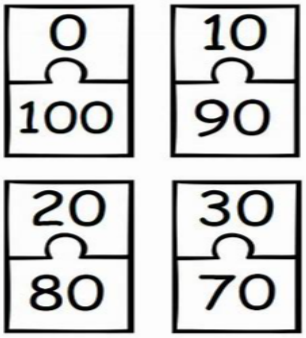
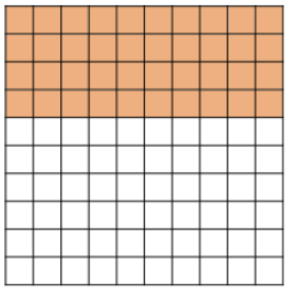
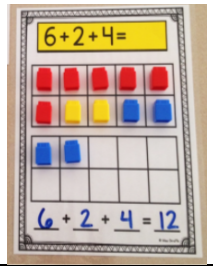
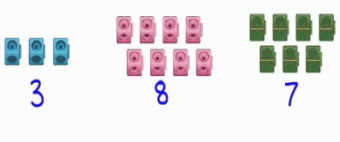
Pupils should be taught to: solve problems with addition:

- using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- applying their increasing knowledge of mental and written methods
- 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
- show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Key Vocabulary:
add, plus, altogether, total, group, equal to, greater than, less than, more than, fewer than, part, whole, number bonds, combine, count on/ forwards, put together, one more, two more … ten more …how many more to make …? how many more is … than …? how much more is …?

Strategies used to teach Addition	Concrete	Pictorial	Abstract

Identify number bonds to 20			Bonds to 20 0+_____=20 1+ _____=20 2+_____=20 3+_____=20 4+_____=20 5+_____=20 6+_____=20 7+_____=20 8+_____=20 9+_____=20 10+_____=2
To identify number bonds to 100 (tens only)			2+6=8 20+60=____ 2__+__0=80 80=__0+6__ Once children are secure with number bonds to 10, this will help them calculate bonds to 100.
Add 1s			35 + 2 = 37
10 more			1. 34 + 10 = ☐ 2. 61 + 10 = ☐ After adding ones, children will add tens paying attention to place value.
Add a 2-digit and 1-digit number – Crossing ten			25 + 7 = 32 30 + 2 = 32

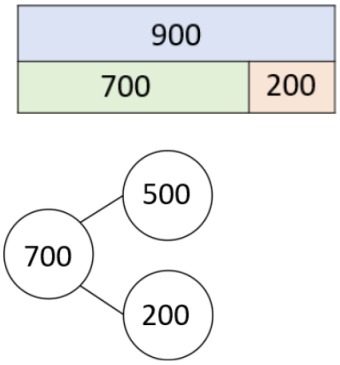
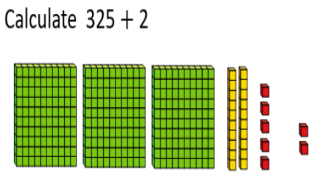
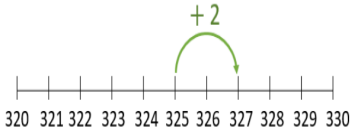
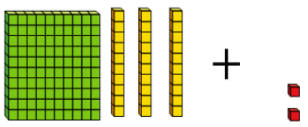
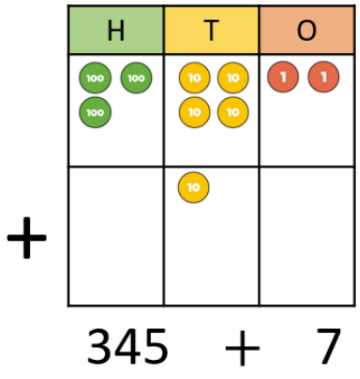
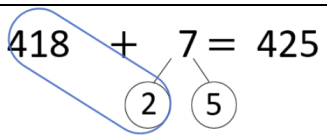
Add two 2-digit numbers – Not crossing ten			1) 24 + 31 It is important that children practise calculations not-crossing 10 before crossing 10 to reduce cognitive load.
Add two 2-digit numbers - crossing ten			
Bonds to 100 (tens and ones)			40 + 60 = 100 36 + 64 = 25 + 75 =
Adding 3 1-digit numbers			2 + 3 + 1 = 4 + 2 + 1 = 1 + 3 + 5 =
Money - Find the total		 Children are able to add multiple amounts using strategies taught within addition.	

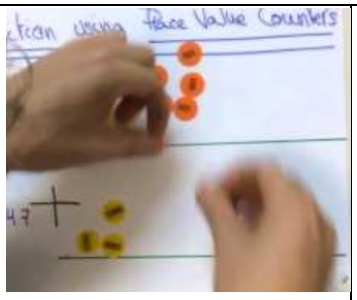
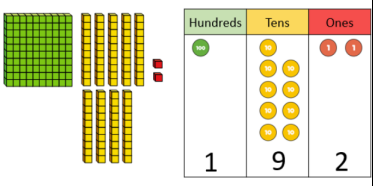
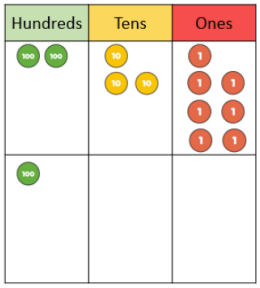
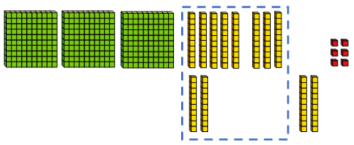
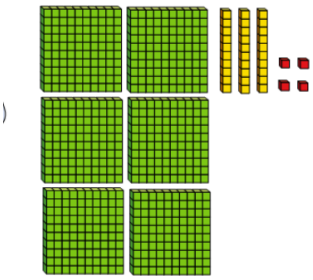
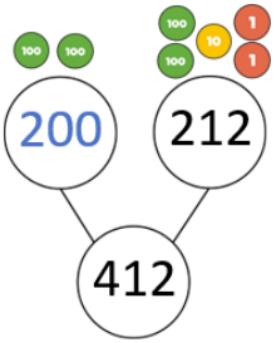
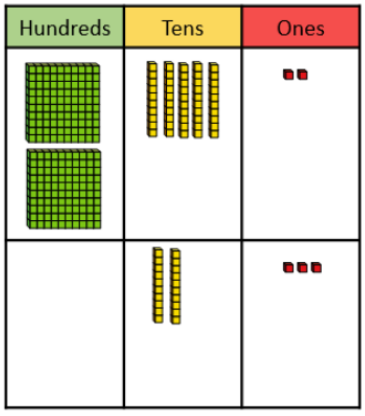
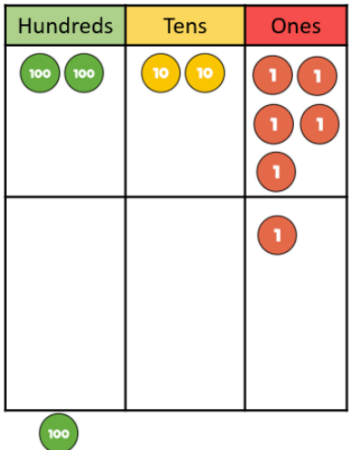
Year 3

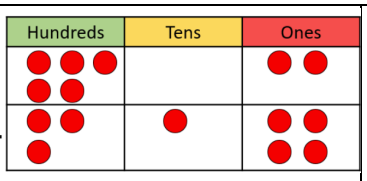
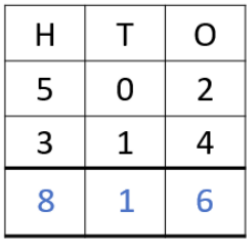
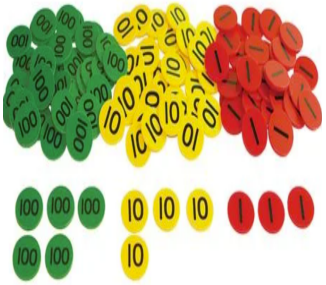
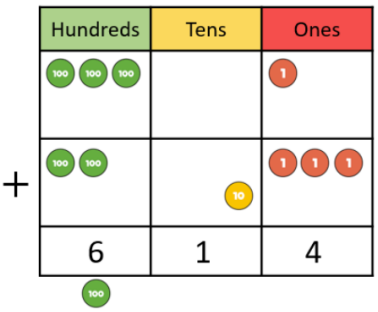
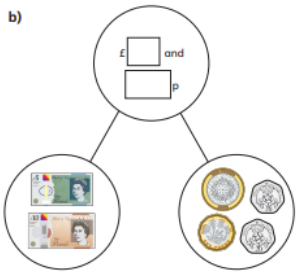
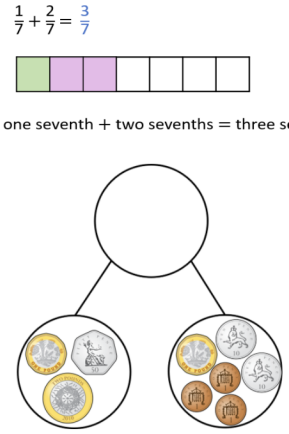
Pupils should be taught to:

- add numbers mentally, including: a three-digit number and 1s; a three-digit number and 10s; a three-digit number and 100s
- add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Key Vocabulary:
add, plus, altogether, total, group, equal to, greater than, less than, more than, fewer than, part, whole, combine, count on/ forwards, put together, exchange, crossing,

Strategies used to teach Addition	Concrete	Pictorial	Abstract
Add multiples of 100			$200 + 700 = 500$ $700 = 500 + 200$ Which is correct? Children are introduced to multiples of 100 using representations they are previously familiar with such as; bar models and part-whole models.
Add 3-digit numbers to 1-digit - Not crossing 10			$5 + 2 = 7$ $325 + 2 = 327$
Add 3-digit numbers to 1-digit - Crossing 10			 To reinforce mental calculation, children use their knowledge of numbers bonds to make a multiple of 10 before adding the remaining amount.

Add 3-digit and 2-digit numbers - Not crossing 100		152 + 40 = 192 	386 + 40 = 426
Add 3-digit and 2-digit numbers - crossing 100	257 + 80 = 337 	386 + 40 = 426 	422 + 35 = 643 + ? = 725
Add 100s	 434 + 200 = 634		523 + 200 =
Add 2-digit and 3-digit numbers - not crossing 10 or 100			+ H T O 2 5 2 2 3 2 7 5
Add 2-digit and 3-digit numbers - crossing 10 or 100			+ H T O 2 5 5 7 1 3 2 6 1

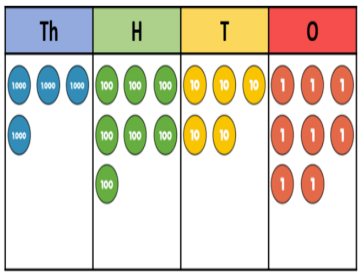
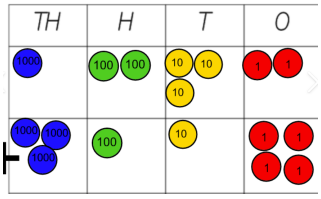
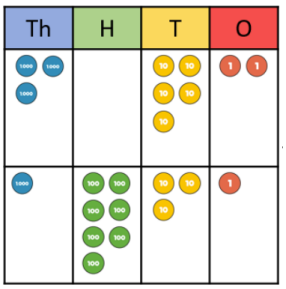
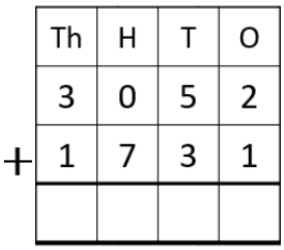
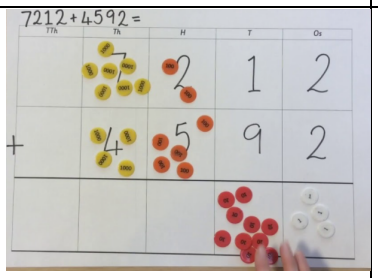
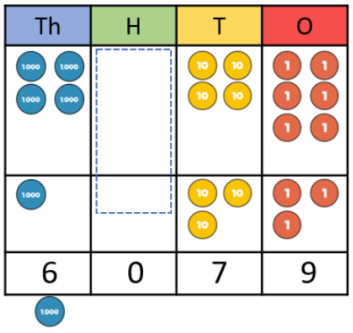
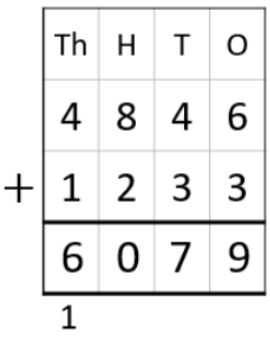
Add two 3-digit numbers - not crossing 10 or 100		+ 	+ 
Add two 3-digit numbers - crossing 10 or 100		+ 	
Add money	 Children use previously taught models to add larger amounts of money.		£2 + £5 = £7 45p + 5p = 50p
Add fractions			$\frac{2}{9} + \frac{4}{9} =$ Using knowledge of addition, children can confidently apply this onto adding fractions with same denominators.

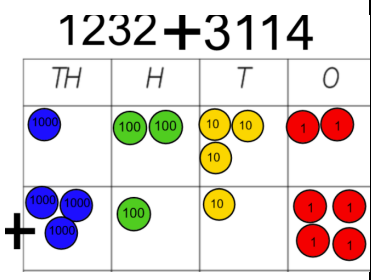
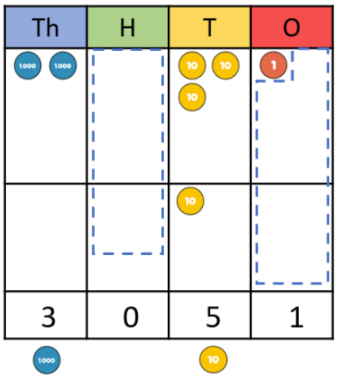
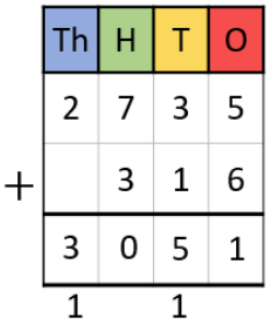
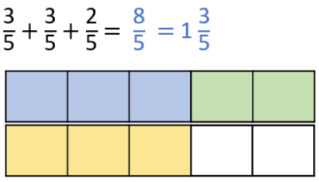
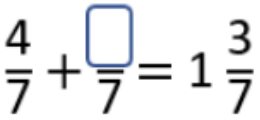
Year 4

Pupils should be taught to:

- add numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Key Vocabulary:
add, plus, altogether, total, group, equal to, greater than, less than, more than, fewer than, part, whole, combine, count on/ forwards, put together, exchange, fractions, part, whole, numerator, denominator.

Strategies used to teach Addition	Concrete	Pictorial	Abstract
Add 1s, 10s, 100s and 1,000s		 Using place value charts that children are confident in, thousands are introduced.	$4{,}709 + \square = 5{,}209$
Add two 4-digit numbers - no exchange		1,731 + 3,052 = 	
Add two 4-digit numbers - one exchange			

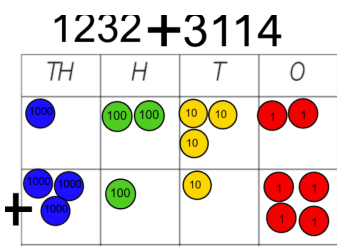
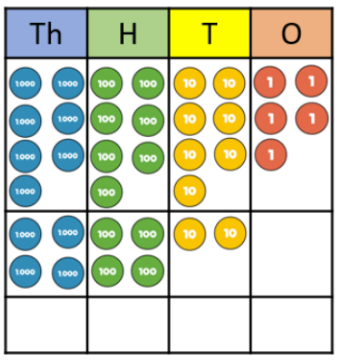
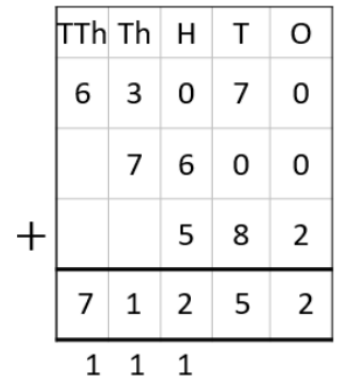
Add two 4-digit numbers - more than one exchange			
Add 2 or more fractions			 Mixed numbers are introduced using representations such as bar models to enable easier understanding.

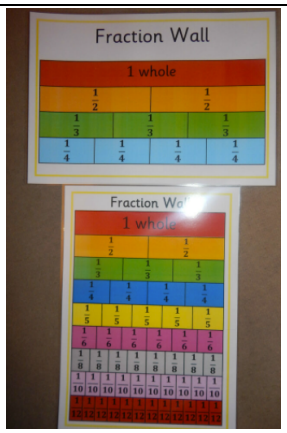
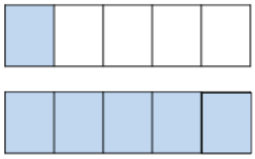
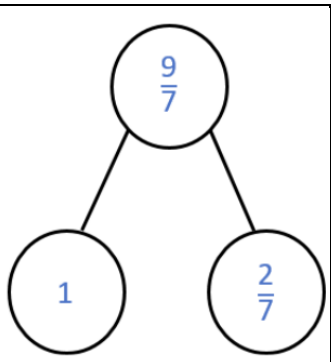
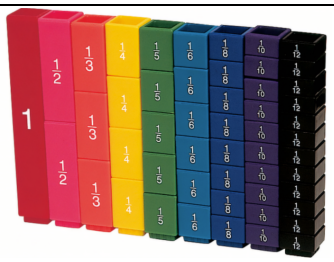
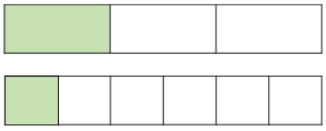
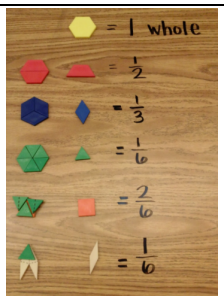
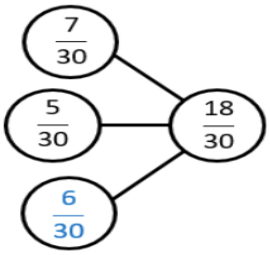
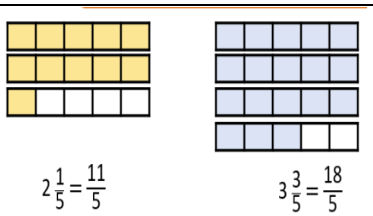
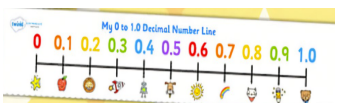
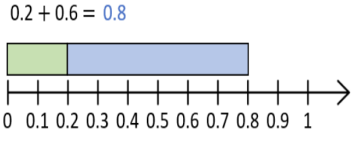
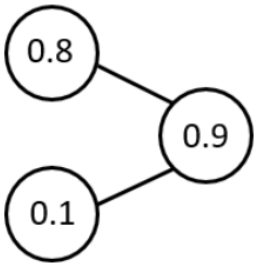
Year 5

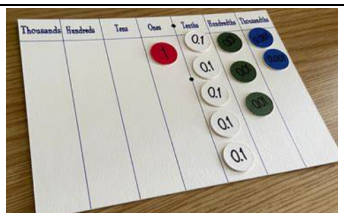
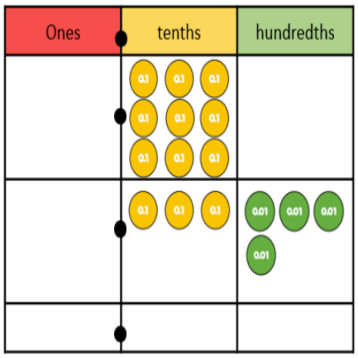
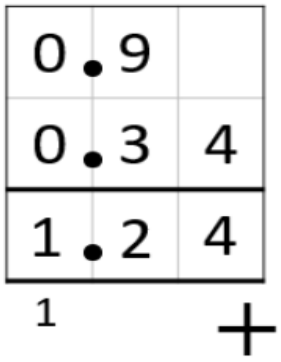
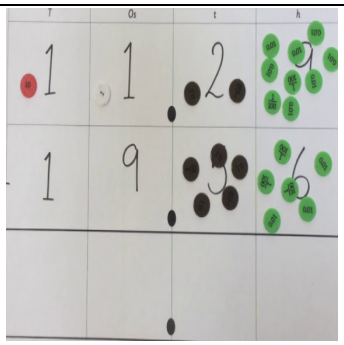
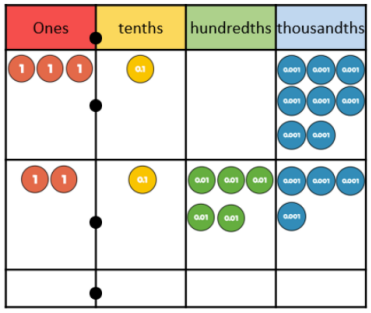
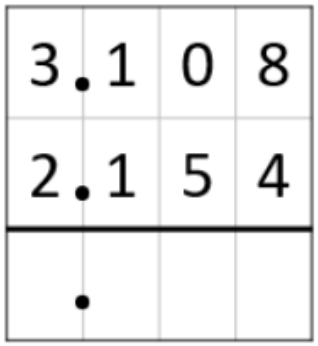
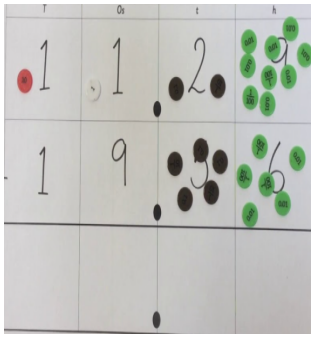
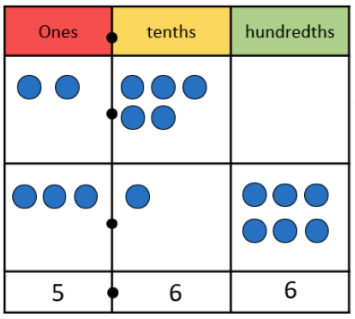
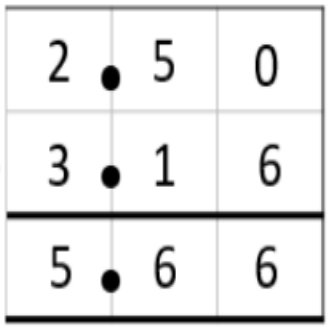
Pupils should be taught to:

- add whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Key Vocabulary:
add, plus, altogether, total, group, equal to, greater than, less than, more than, fewer than, part, whole, combine, count on/ forwards, put together, exchange, decimal place, fraction, part, whole, numerator, denominator.

Strategies used to teach Addition	Concrete	Pictorial	Abstract
Add whole numbers with more than 4 digits (column method)			

Add fractions		 $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$	
Add fractions within 1	 Children practise adding fractions with different denominators using concrete fraction cubes to determine why a fraction needs to be converted before adding.	$\frac{1}{3} + \frac{1}{6} =$ 	Have a think $\frac{7}{20} + \frac{2}{5} =$ $\times 4$ $\div 5$ $\frac{7}{20} + \frac{8}{20} = \frac{15}{20} = \frac{3}{4}$ Children apply knowledge of times tables to support fraction conversion.
Add 3 or more fractions			$\frac{3}{16} + \frac{1}{4} + \frac{1}{2} =$
Add mixed numbers			$2\frac{1}{5} + 3\frac{3}{5} = \frac{29}{5}$ or $5\frac{4}{5}$
Adding decimals within 1	 Once a child is secure in fractions, they can use this knowledge to apply into decimals.		

Adding decimals - Crossing the whole	 Children will use place value charts and previously taught formal methods of addition when adding decimals.		
Adding decimals with the same number of decimal places			
Adding decimals with a different number of decimal places		2.5 + 3.16 = 5.66 	

Year 6

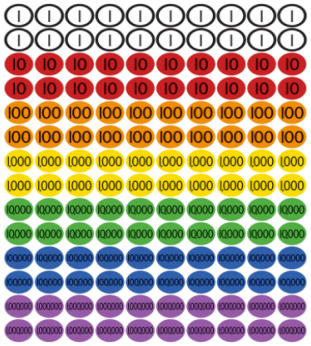
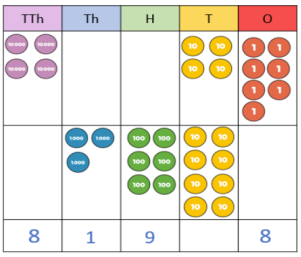
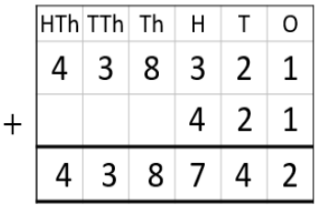
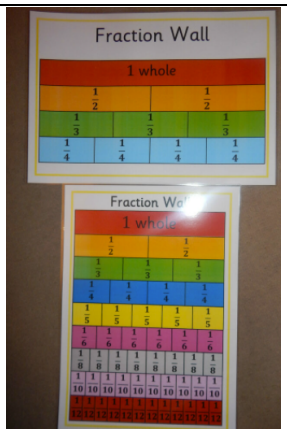
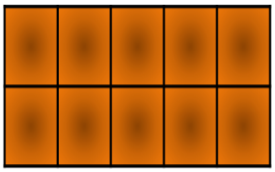
Objectives:

- perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the 4 operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Key Vocabulary:

add, plus, altogether, total, group, equal to, greater than, less than, more than, fewer than, part, whole, combine, count on/ forwards, put together, exchange, decimal place, fraction, part, whole, numerator, denominator.

Strategies used to teach Addition	Concrete	Pictorial	Abstract

Add integers			+ 
Add fractions		 Charlie eats $\frac{1}{5}$ of the chocolate bar. Suzie eats $\frac{3}{10}$ of the chocolate bar.	$\frac{2}{5}$ of it will be shaded red. $\frac{1}{2}$ of it will be shaded blue. The rest will be left white. What fraction will be left white? At this stage, children will be focusing on the application of fraction knowledge into more complex problems.

Subtraction

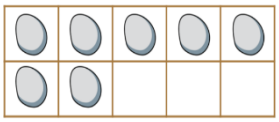
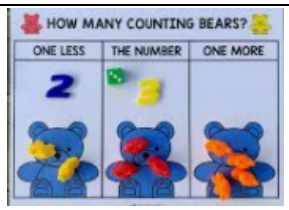
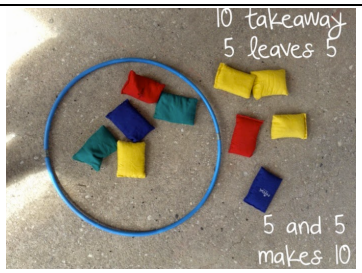
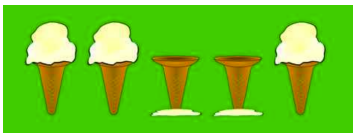
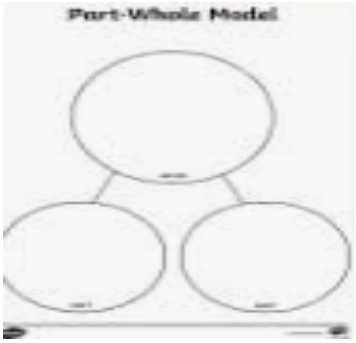
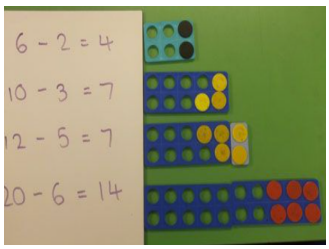
EYFS

ELG: Number - Children at the expected level of development will:
- 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 (**including subtraction facts)** and some number bonds to 10, including double facts.

ELG: Numerical Patterns - Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, **less than** or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Key Vocabulary:
subtract, take away, how many are left/left over? how many have gone? one less, two less, ten less … how many fewer is … than …? how much less is …? difference between.

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract

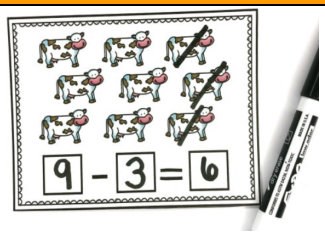
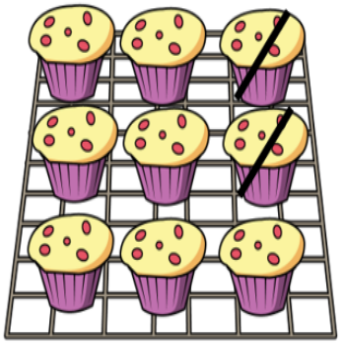
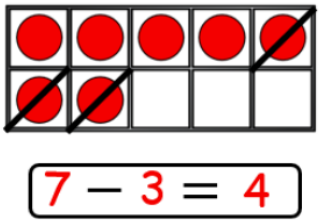
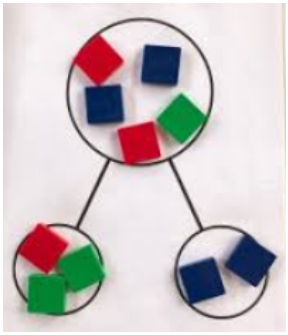
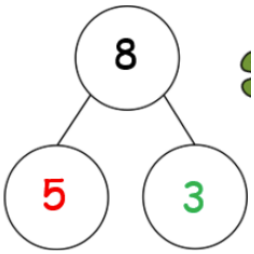
Taking Away with Pebbles		 Children begin to understand the concept of subtraction by removing objects. This is reinforced by the use of 5 and 10 frames.	5 - 1 = 4
Taking Away	   	  	2 - 1 = 1 
Taking Away – Unknown Then	  	 A range of resources are used to support the understanding of subtraction, including; stem sentences and songs.	5 - ? = 3 6 - ? = 4

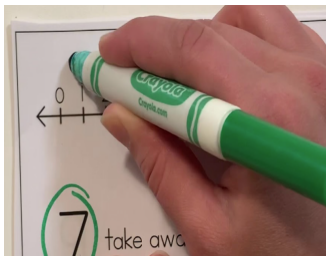
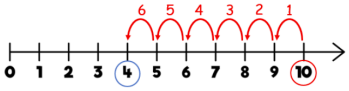
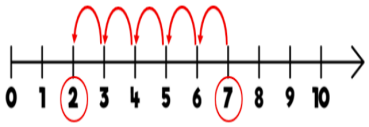
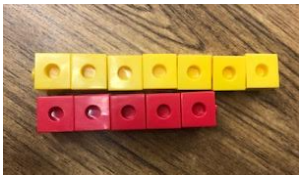
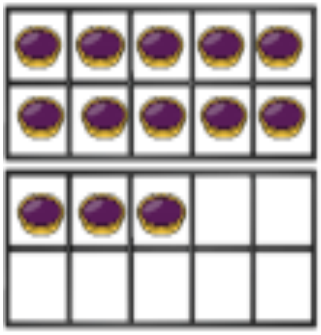
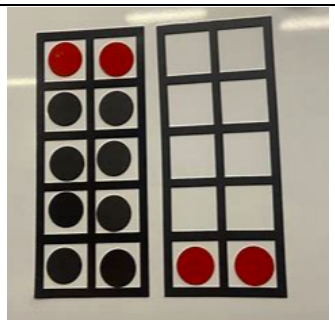
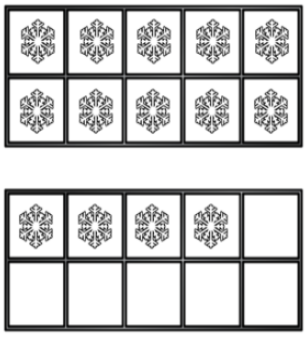
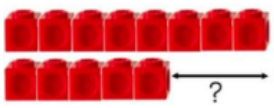
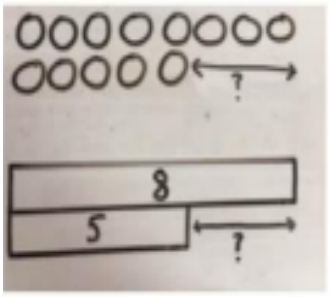
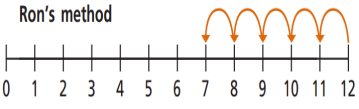
Year 1

Pupils should be taught to:

- read, write and interpret mathematical statements involving, subtraction (–) and equals (=) signs represent 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 = – 9.

Key Vocabulary:
subtract, take away, less than, left, fewer than, equal to, count backwards, difference, difference between, is the same as number bonds/pairs missing number, how many are left/left over? how many have gone? one less, two less, ten less … how many fewer is … than …? how much less is …?

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract
Subtraction - taking away, how many left? Crossing out	 Building on from their previous learning, children can subtract by crossing out the ones that are no longer needed.		First there were 10 candles. Then Tiny blew out 6 candles. Now there are 4 candles still lit. Stem sentences help reinforce children's understanding of subtraction.
Subtraction - taking away, how many left? Introducing the subtraction symbol			9 – 2 = 7 9 – 7 = 2
Subtraction - find a part, breaking apart		How many leaves altogether? 	

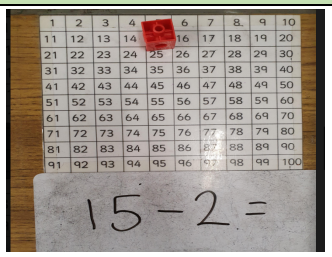
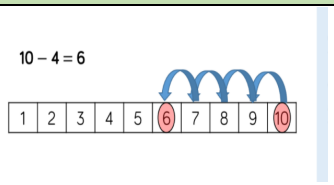
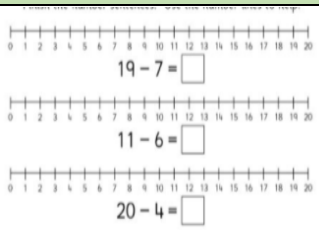
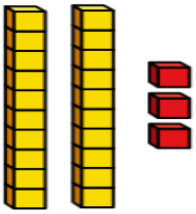
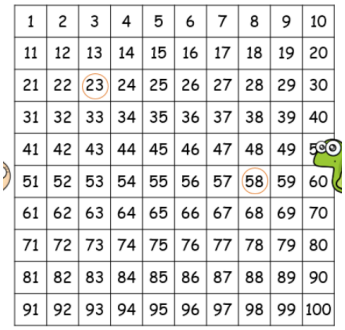
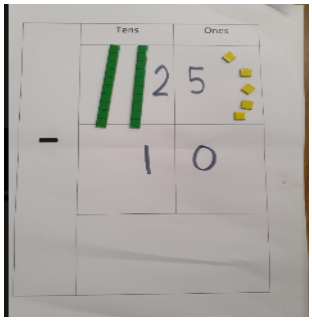
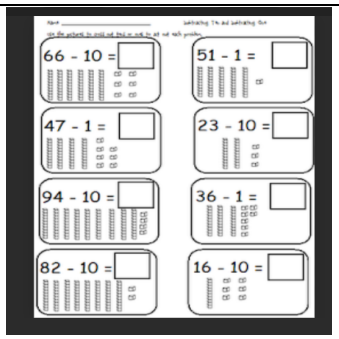
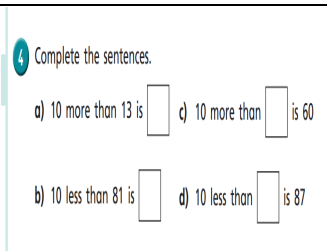
Subtract by counting back		 Using number lines, children begin to count backwards building onto rapid mental recall.	 7 − 5 = 2
Subtraction – find the difference	 children are taught how to find the diffrerence between two amounts and how this can be don't using addition and subtraction.		Mo has 3 strawberries. Kim has 5 strawberries. Mo Kim How many more strawberries does Kim have than Mo?
Subtraction - not crossing 10	 Children begin to subtract larger numbers with the support of 10 frames.	 17 − 3 = 14	16 − 2 = 14 17 − 4 = 13 19 − 6 = 13
Subtraction - crossing 10	 		

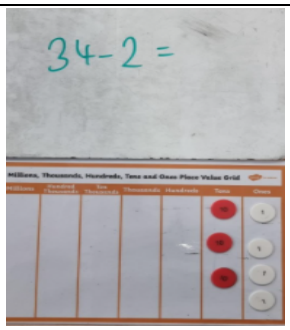
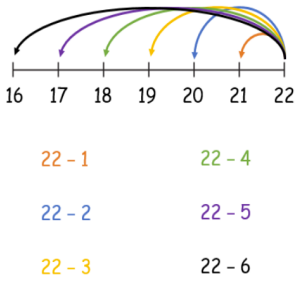
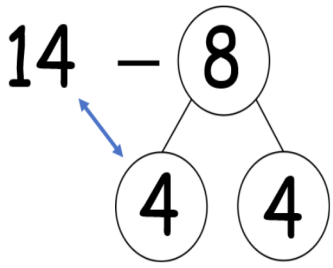
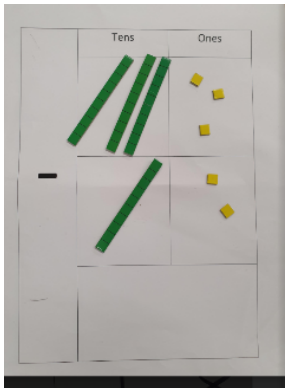
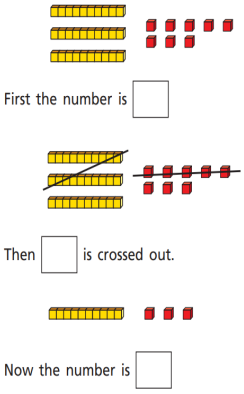
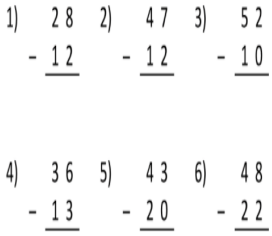
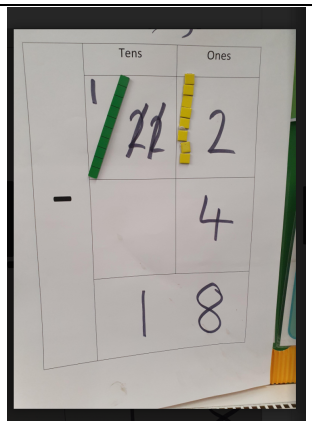
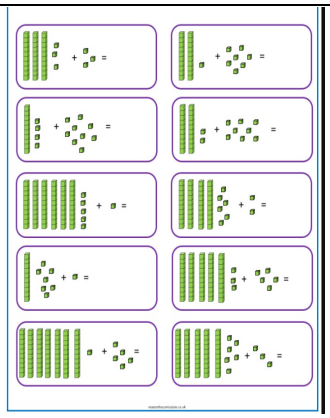
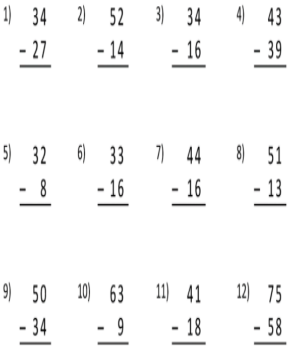
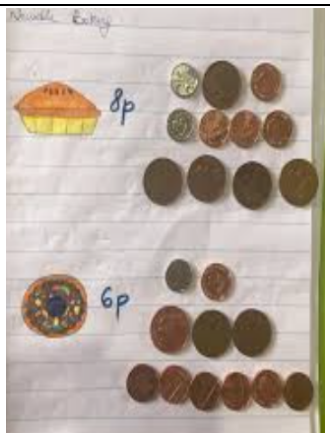
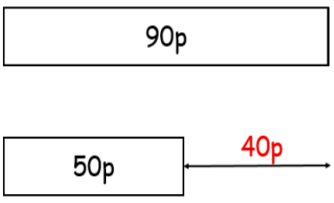
Year 2

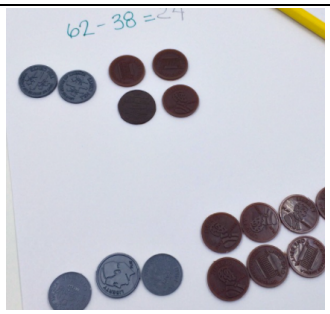
Pupils should be taught to: solve problems with subtraction:

- using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- applying their increasing knowledge of mental and written methods
- recall and use addition and 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 ones; a two-digit number and tens; two two-digit numbers
- adding three one-digit numbers
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Key Vocabulary:
add, plus, altogether, combined, sum, together, total, subtract, minus, difference, les s than, fewer, take away how many are left/left over? how many have gone? one less, two less, ten less … one hundred less how many fewer is … than …? how much less is …?

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract
Subtract 1s			
10 less	 23	 Children are confident using a 100 square and notice the pattern when subtracting tens.	62 – 10 = 10 less than 50 is ?
To subtract 10s			

Subtract a 1-digit number from a 2-digit number - crossing ten		 22 – 1 22 – 4 22 – 2 22 – 5 22 – 3 22 – 6	 Children should be encouraged to partition numbers and make connections when calculating.
Subtract a 2-digit number from a 2-digit number - not crossing ten			 Children eventually are shown the formal method of subtraction without crossing 10.
Subtract a 2-digit number from a 2-digit number - crossing ten - subtract ones and subtract tens			
Money – find the difference			 Money provides a clearer representation to find the difference. Secure knowledge of subtract helps children when finding change.

Money – Find change		 10 – 4	£1 – 50p = 50p £1 – 45p = 55p £1 – 43p = 57p

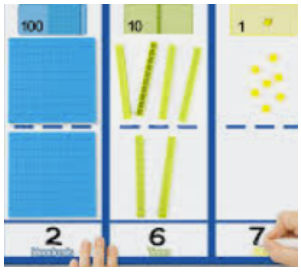
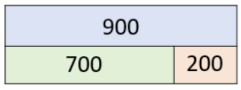
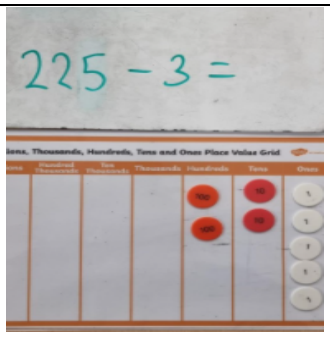
Year 3

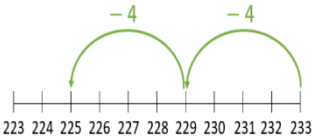
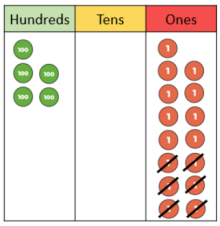
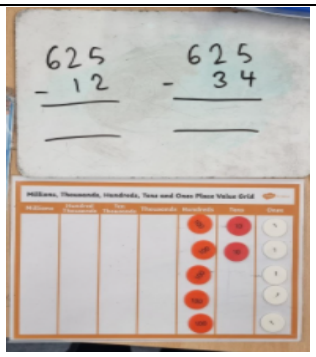
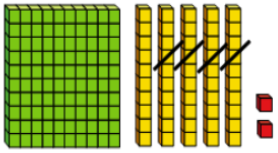
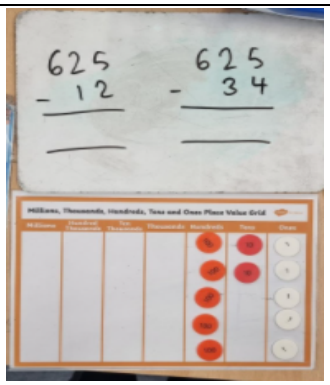
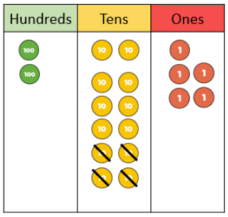
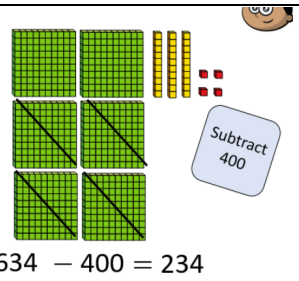
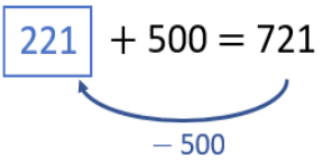
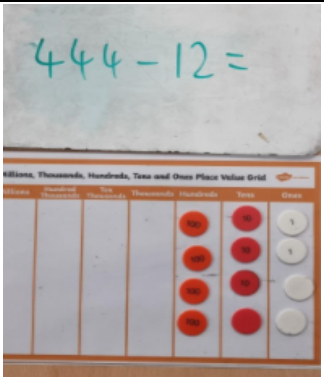
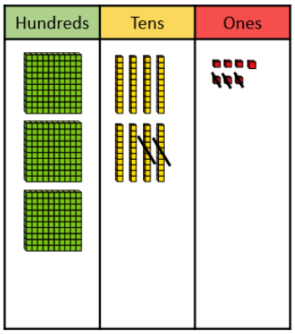
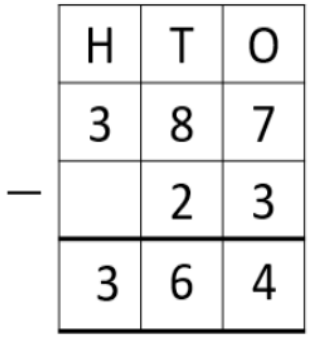
Pupils should be taught to:

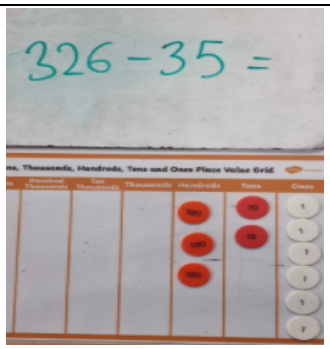
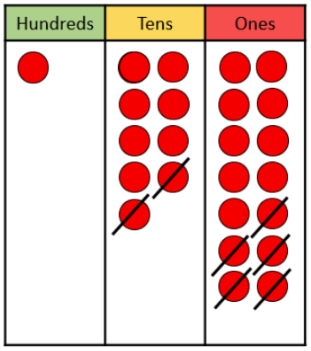
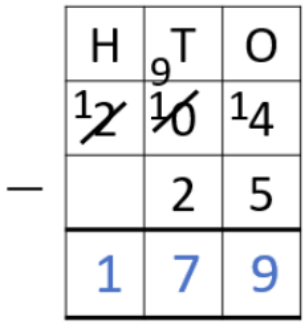
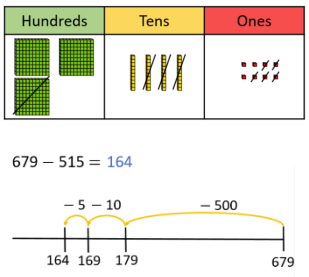
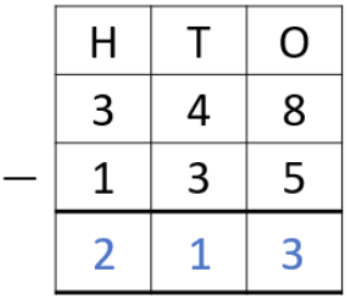
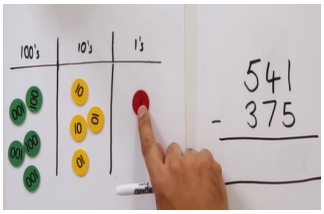
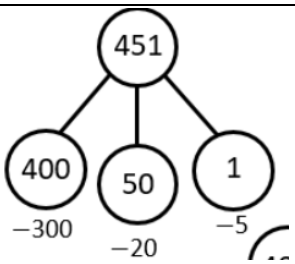
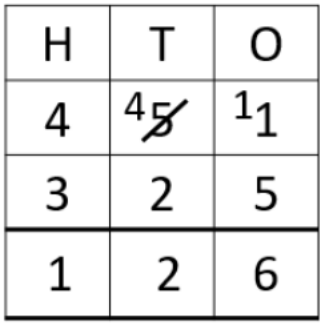
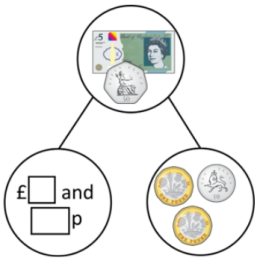
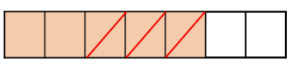
- subtract numbers mentally, including: a three-digit number and 1s; a three-digit number and 10s;a three-digit number and 100s
- subtract numbers with up to 3 digits, using formal written methods of columnar subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Key Vocabulary:

add, total, sum, plus, altogether, more than, increase, subtract, minus, take away, less than, Altogether, Difference, Mentally, Orally, Estimate, Inverse, Operation, Place Value, Exchange, fraction, part, whole, denominator, numerator, ones,

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract
subtract multiples of 100		9 hundreds – 4 hundreds = 5 hundreds  	800 – 300 = 500 400 = 800 – 400 Chn are encouraged to use their knowledge of number bonds to support with subtracting multiples of 100.
subtract 3-digit and 1-digit numbers - not crossing 10		 a) 475 + 1 = b) 475 – 1 =	311 – 1 = Children begin without crossing 10 to build confidence. Encourage mental subtraction at this stage.

Subtract a 1-digit number from a 3-digit number - crossing 10		Work out 515 − 6 	What number is Froggy hiding?  Missing number problems allow children to use their skills of inverse to secure undertsanding.
subtract 3-digit and 2-digit numbers - not crossing 100			152 − 40 = 112
Subtract a 2-digit number from a 3-digit number - crossing 100		325 − 40 = 285 	351 − 50 = 301 301 − 20 = 281
subtract 100s		 634 − 400 = 234 Various representations allow children to gain a deeper understanding of the concept.	
subtract 2-digit and 3-digit numbers - not crossing 10 or 100			

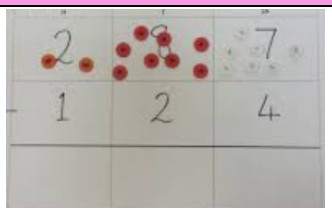
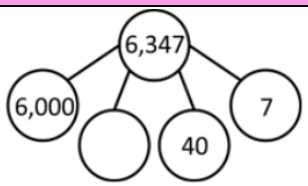
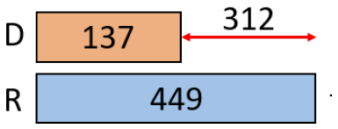
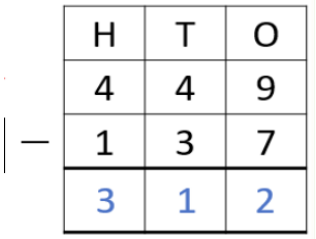
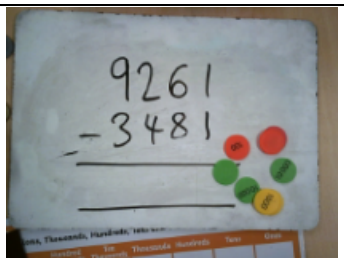
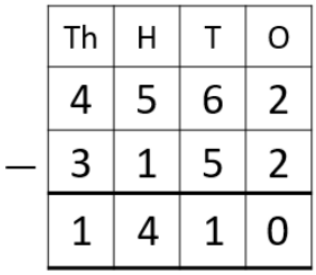
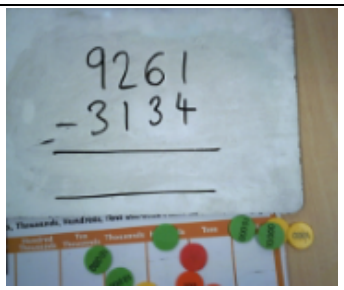
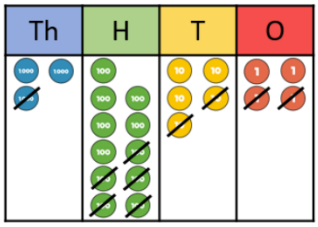
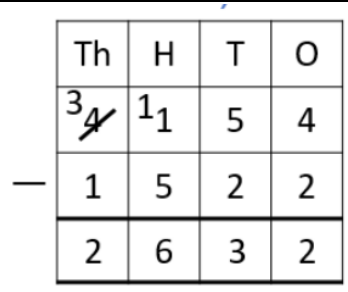
Subtract a 2-digit number from a 3-digit numbers - crossing 10 or 100			
Subtract a 3-digit number from a 3-digit number - no exchange			
Subtract a 3-digit number from a 3-digit number - exchange			
Subtract Money	 Beginning with coins allows children to physically move items and make coin exchanges.		
Subtract fractions		$\frac{5}{7} - \frac{3}{7} = \frac{2}{7}$ 	$\frac{8}{9} - \frac{5}{9} =$

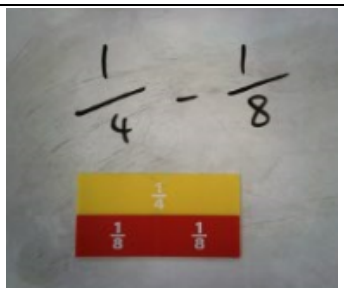
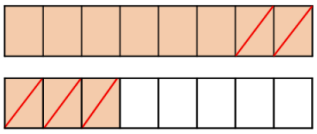
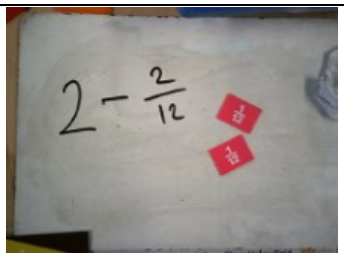
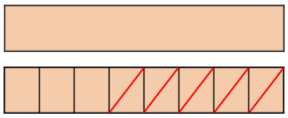
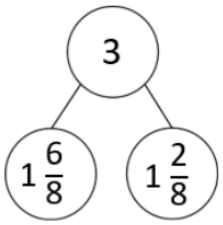
Year 4

Pupils should be taught to:

- subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Key Vocabulary:
add, total, sum, subtract, minus, take away, altogether, difference, mentally, orally, estimate, inverse, operation, place value, exchange, fraction, part, whole, denominator, numerator, ones, decimal place, tenths, hundredths.

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract
subtract 1s, 10s, 100s and 1,000s			$7{,}534 - \square = 5{,}534$ Consolidation from Year 3 learning.
Subtract two 4-digit numbers - no exchange			
Subtract two 4-digit numbers - one exchange		 By beginning with one exchange children build confidence when subtracting.	
Subtract two 4-digit numbers - more than one exchange			

Subtract 2 fractions		$\frac{11}{8}-\frac{5}{8}=\frac{6}{8}=\frac{3}{4}$  it is vital children are provided with visual representations and equivalent fractions.	$2\frac{2}{7}-\frac{2}{7}=2$ $\frac{7}{7}-\frac{4}{7}=\frac{3}{7}$
Fractions - Subtract from whole amounts		$2-\frac{5}{8}=1\frac{3}{8}$ 	

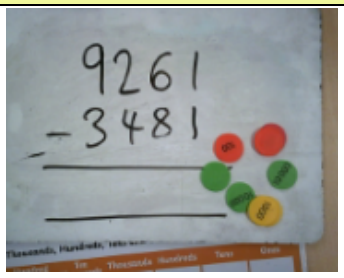
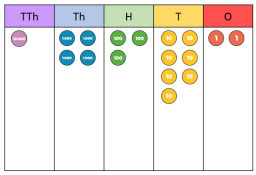
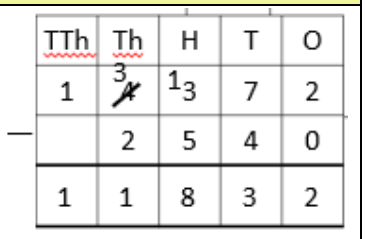
Year 5

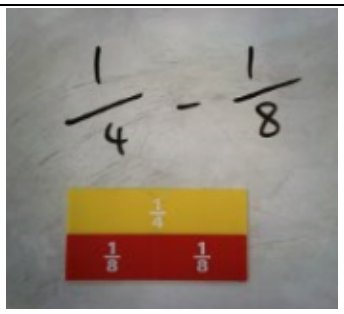
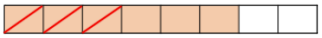
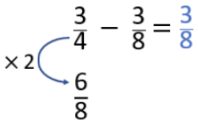
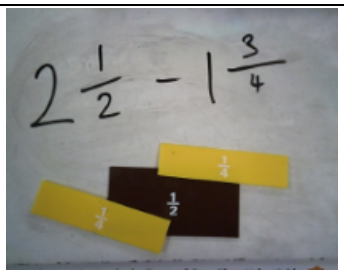
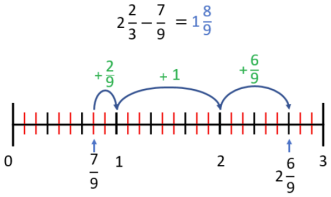
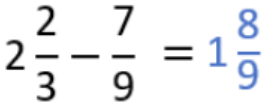
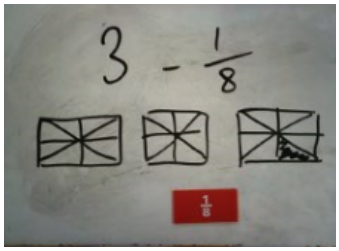
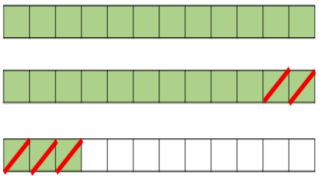
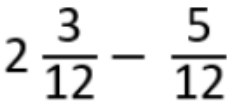
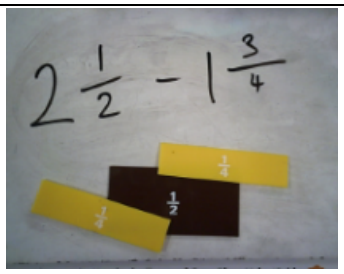
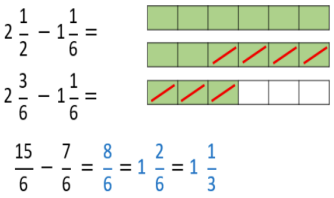
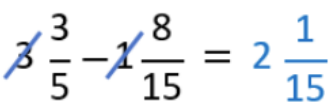
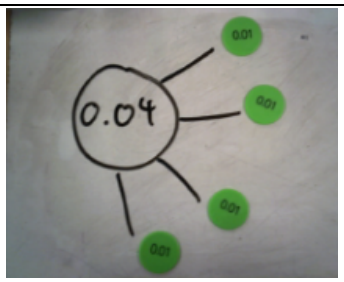
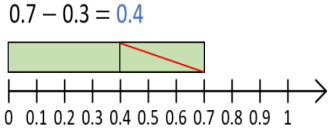
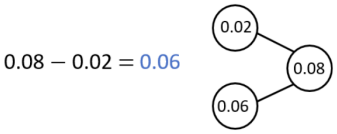
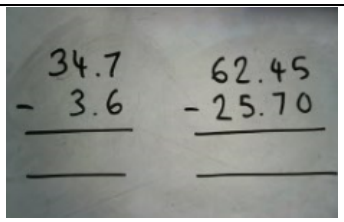
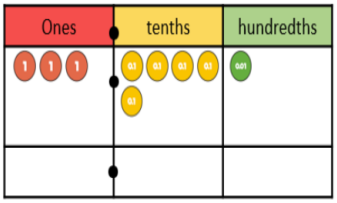
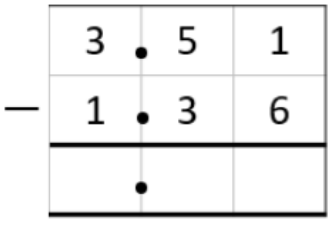
Pupils should be taught to:

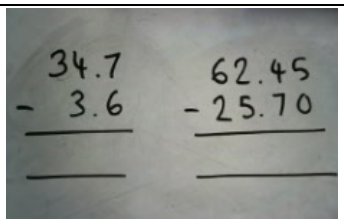
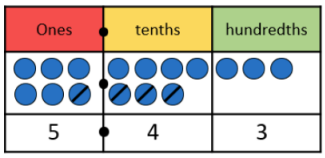
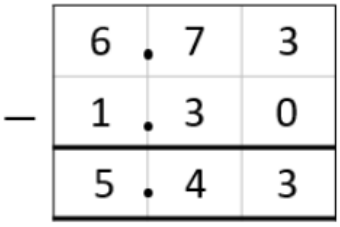
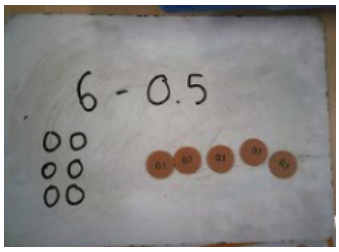
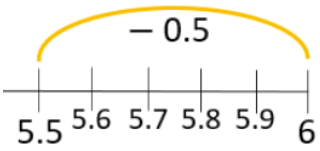
- subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Key Vocabulary:

add, total, sum, subtract, minus, take away, altogether, difference, mentally, orally, estimate, inverse, operation, place value, exchange, fraction, part, whole, denominator, numerator, ones, decimal place, tenths, hundredths.

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract
Subtract whole numbers with more than 4 digits (column method)		14,372 − 2,540 =  At this stage children can confidently subtract with up to 4 exchanges.	

Subtract fractions			 Children are able to use their times tables knowledge to support when calculating fractions.
Subtract mixed numbers			
Subtraction - breaking the whole			 Children will apply knowledge of subtraction to exchange and break whole numbers.
Subtract 2 mixed numbers			
Subtracting decimals within 1			 Children use their knowledge of fractions to support calculating decimals.
Subtracting decimals with the same number of decimal places			

Subtracting decimals with a different number of decimal places	 Children can confidently understand place value after the decimal point.	6.73 − 1.3 = 5.43 	
Subtracting wholes and decimals			6 − 0.5 = 5.5

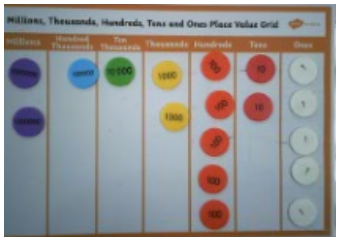
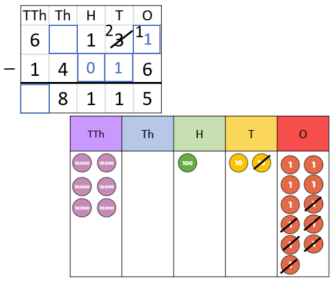
Year 6

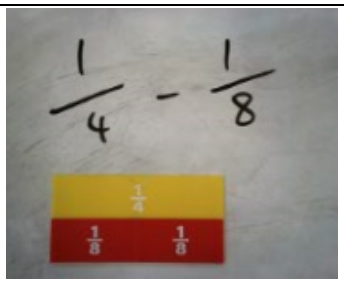
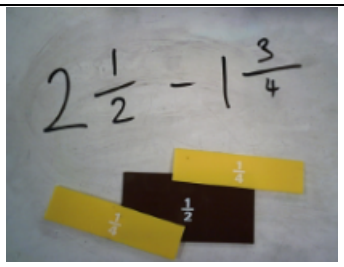
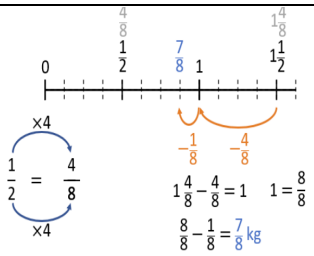
Pupils should be taught to:

- perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the 4 operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Key Vocabulary:

add, total, sum, subtract, minus, take away, altogether, difference, mentally, orally, estimate, inverse, operation, place value, exchange, fraction, part, whole, denominator, numerator, ones, decimal place, tenths, hundredths.

Strategies used to teach Subtraction	Concrete	Pictorial	Abstract
Subtract integers			530,542 − 346,221 = 184,321 children can confidently apply knowledge of subtractions to solve problems and inverse to check answers.

Subtract fractions			$\frac{2}{5}$ of it will be shaded red. $\frac{1}{2}$ of it will be shaded blue. The rest will be left white. What fraction will be left white?
Mixed subtraction			I have $1\frac{1}{2}$ kg of flour. I use $\frac{5}{8}$ kg of flour to make a cake. How much flour is left? A greater focus will be on the application of subtracting skills at this stage.

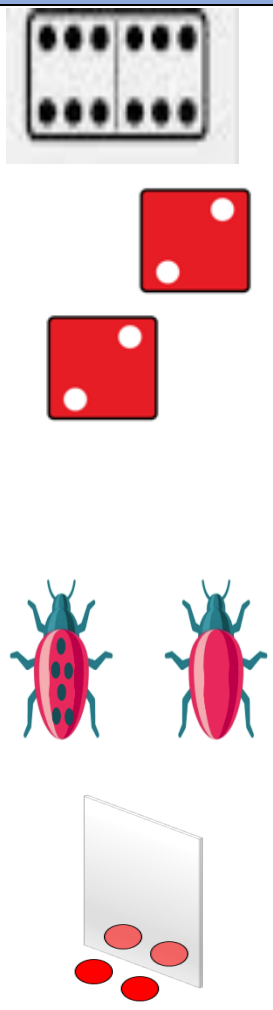
Multiplication

EYFS

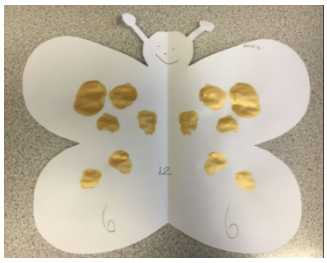
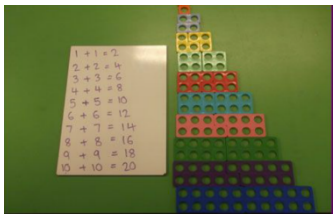
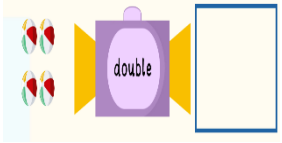
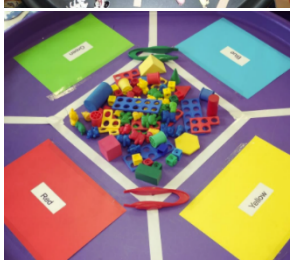
ELG: Number - Children at the expected level of development will:
- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including **double facts**.

ELG: Numerical Patterns - Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including **evens and odds**, **double facts** and how **quantities can be distributed equally**.

Key Vocabulary: Double, doubling, times, groups, equal, unequal, groups, lots

Strategies used to teach Multiplication	Concrete	Pictorial	Abstract
Doubling			3 + 3 = Double 5 2 and 2 make Children are beginning to identify 2 of the same values, object and amounts are called double.

EYFS

	  		
Grouping	  	 	 Children can group/sort out items based on similarities. E.g. Colour, value, size.

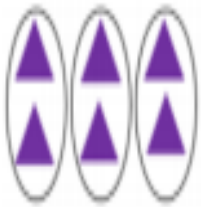
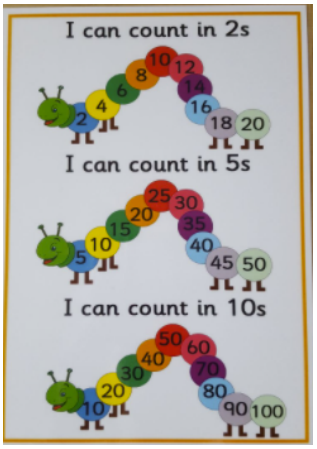
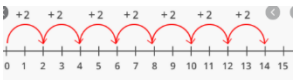
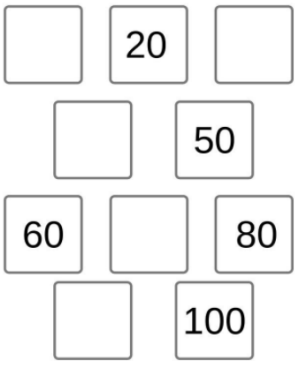
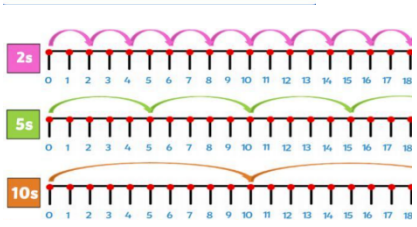
Year 1

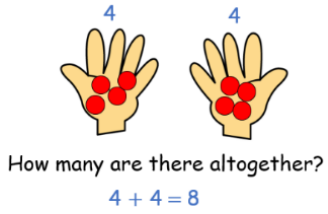
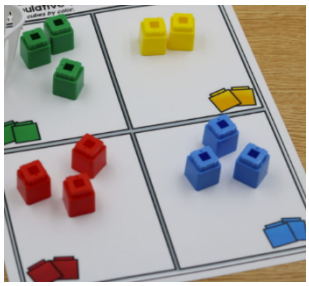
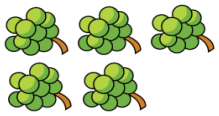
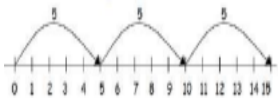
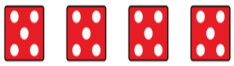
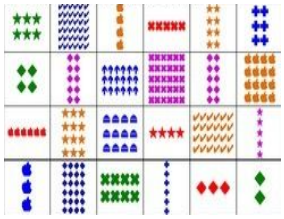
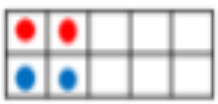
Pupils should be taught to:

- solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays

Key Vocabulary:

multiply, double, count in 10's, groups, arrays, rows, columns, number patterns, Odd, even, count in twos, threes, fives, Count in tens (forwards from/backwards from) How many times? Lots of, groups of, Once, twice, three times, five times, Multiple of, times, multiply, multiply by repeated addition, place value counters, base 10

Strategies used to teach Multiplication	Concrete	Pictorial	Abstract
Count in 2s, 5s and 10s	  Children are able to use their number knowledge to make groups of 2, 5 and 10 using concrete objects and then begin to mentally recite with the use of skip counting.	 	  2 x 5 = 10, 5 x 4 = 20 2, 4, 6, 8, 10 lots of…  

Grouping (make groups)	 	  	2 x 2 = 4 2 x 3 = 6 2 + 2 + 2 = 8 Two groups of …...
Add equal groups	 Early concept of repeated addition supports children's understanding of multiplication.	 	3 + 3 + 3 = 9 5 + 5 + 5 = 15
Make arrays	 	 	____ in this column _____ in this row
Make doubles	 	  	2 + 2 = 4 3 + 3 = 6 double _____ is _____

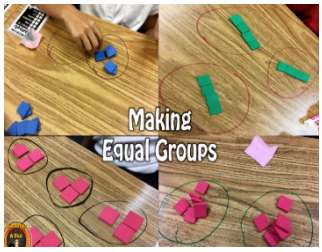
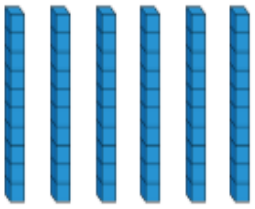
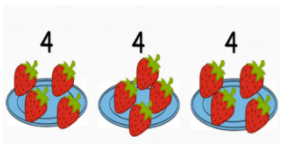
			two lots of ____ is

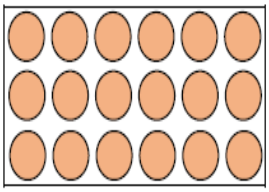
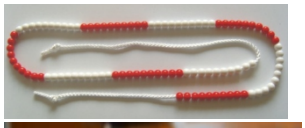
Year 2

Pupils should be taught to:

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Key Vocabulary:
multiply, double, count in 10's, groups, arrays, rows, columns, number patterns, Odd, even, count in twos, threes, fives, Count in tens (forwards from/backwards from) How many times? Lots of, groups of, Once, twice, three times, five times, Multiple of, times, multiply, multiply by repeated addition, place value counters, base 10, place value,

Strategies Used to Teach Multiplication	Concrete	Pictorial	Abstract
Make equal groups		 	3 groups of 10 =
Add equal groups		 There are ___ equal groups with ___ in each group. There are three ___s. ___ + ___ + ___ = 12 Stem sentences provide children with relevant vocabulary and support undersanding.	5 + 5 + 5 =

Using arrays			5 x 2 = 3 x 10 =
Multiply by 2, 5 and 10	  	How many petals altogether?  Write the calculation. How many crayons are there altogether?  There are ___ crayons altogether. ___ x 10 = ___	2 x 2 = 5 x 2 = 7 x 5 = 6 x 5 = 7 x 5 = 4 x 10 = 6 x 10 = Encourage children to recall from memory.

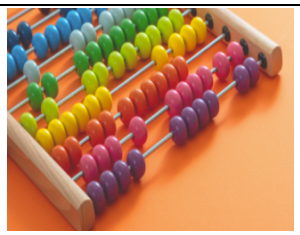
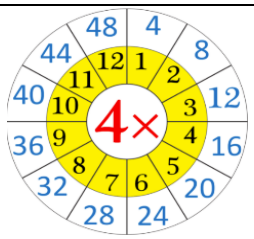
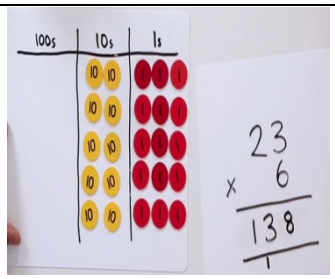
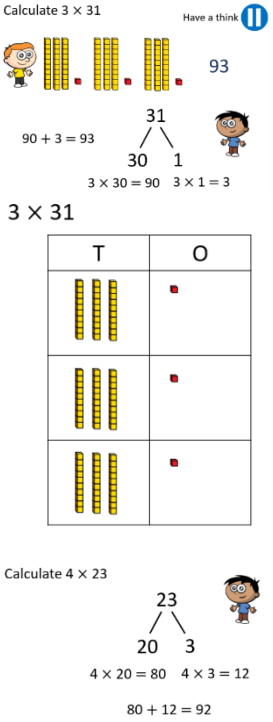
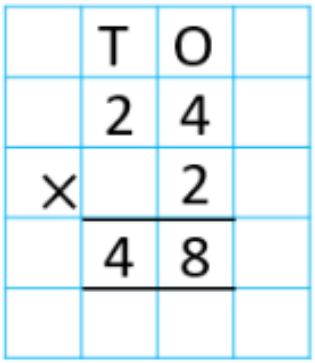
Year 3

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 for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Key Vocabulary:
integer, groups of, lots of, product, multiples of, scale up, integer, commutative, groups of, lots of, times,

Strategies used to teach Multiplication	Concrete	Pictorial	Abstract

Multiply by 3, 4 and 8	 Children use various objects to make groups of 3, 4 and 8.		3 x 4 = 12 8 x 8 = 64
Multiply 2-digits by 1-digit - no exchange Multiply 2-digits by 1-digit - exchange	 Children are shown calculation using place value charts and counters which they are already familiar with from addition and subtraction.		 Children build up to the formal method and are confident with various representations.

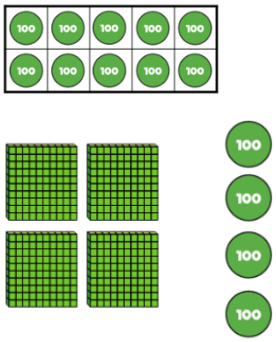
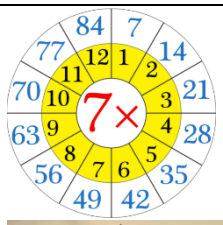
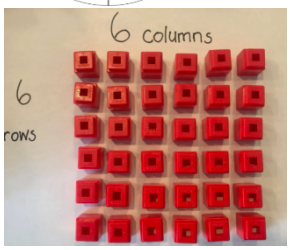
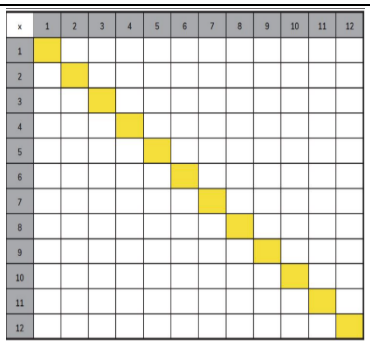
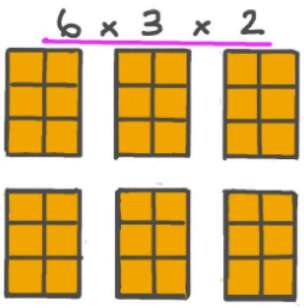
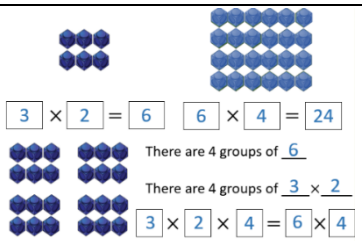
Year 4

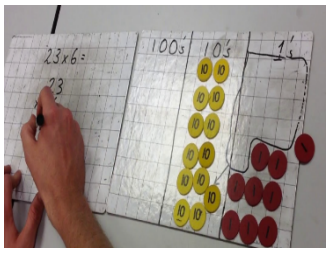
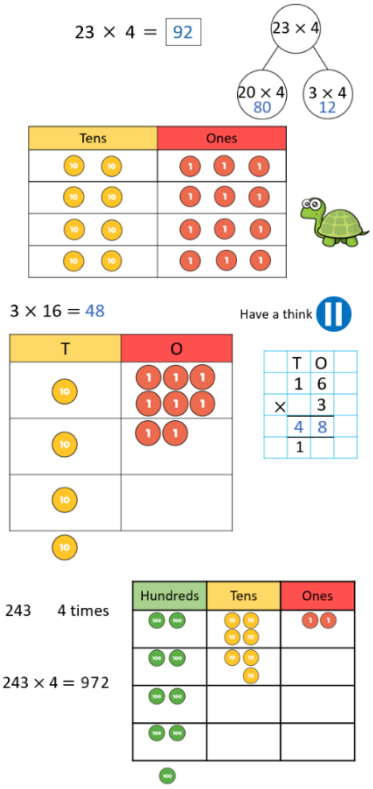
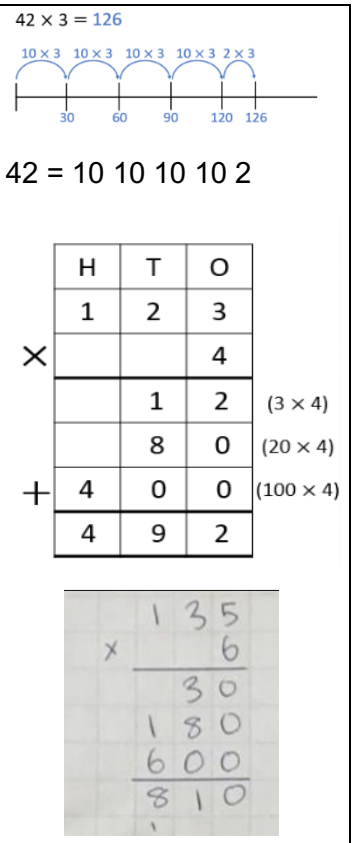
Pupils should be taught to:

- 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; 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.

Key Vocabulary:
multiplication facts (up to 12x12) division facts, inverse, place value, commutative, scaling, groups of, lots of, grid method, column method, partitioning

Strategies used to teach Multiplication	Concrete	Pictorial	Abstract

Multiply by 0, 1 10 and 100	 Children can physically multiply by 10, 100 and 1000 using PV sliders.		10 x 1 hundred = 10 hundreds 10 hundreds = 1 thousand 10 x 100 = 1,000 100 x 10 = 1,000 Stem sentences are vital to support understanding of greater numbers.
Multiply and divide by 6, 9, 7, 11 and 12	 		7 x 4 = 28 11 x 8 = 88 12 x 6 = 72
Multiply 3 numbers			5 x 2 x 3 = 6 x 3 x 10 = Multiplying 3 digits encourage children to calculate larger equations mentally.

Multiply 2-digits by 1-digit Multiply 3-digits by 1-digit	 Children are encourage to use place value counters and expanded methods to calculate longer equations individually.		

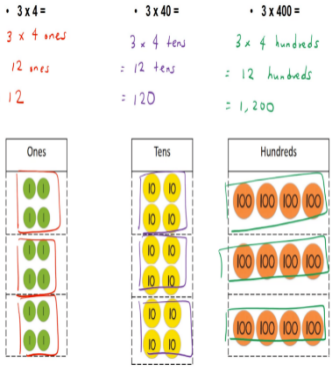
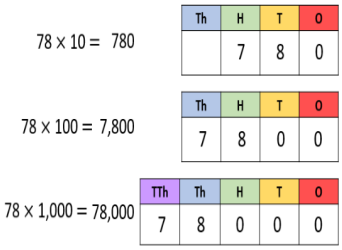
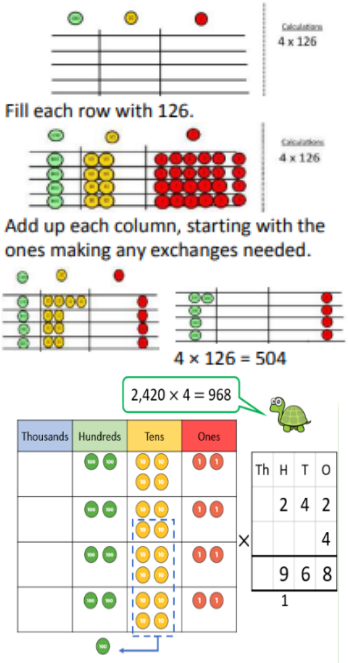
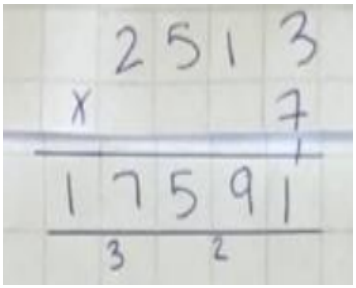
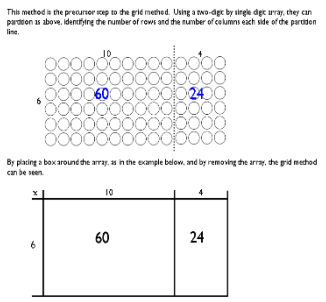
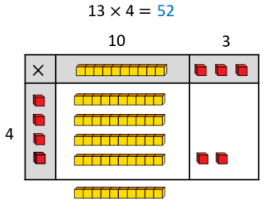
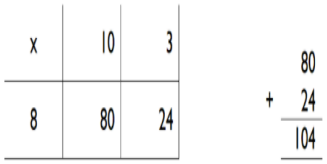
Year 5

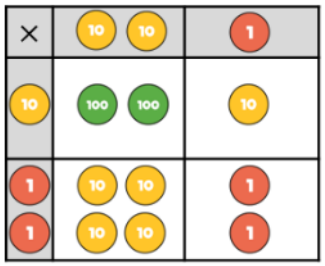
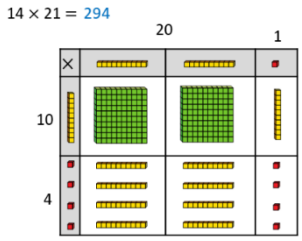
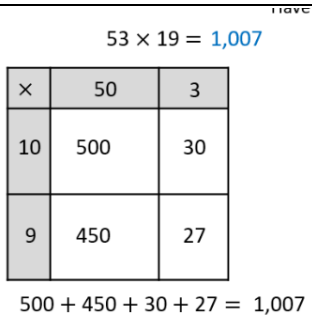
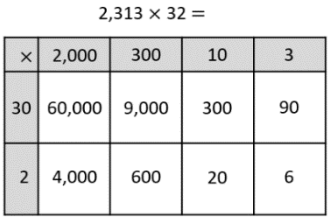
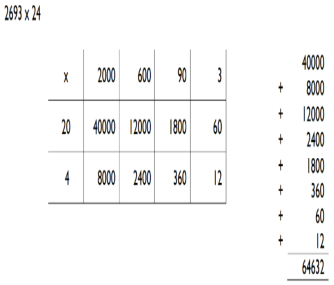
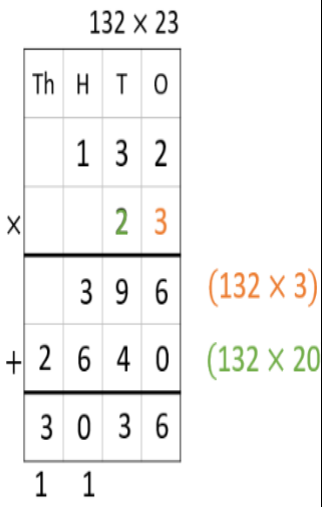
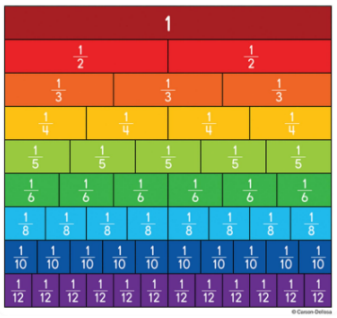
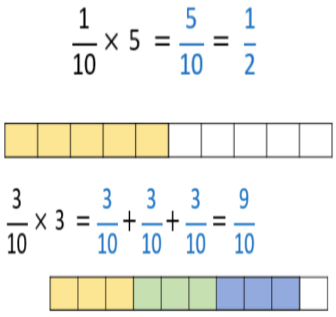
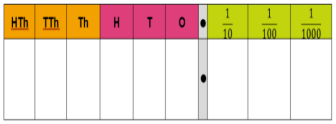
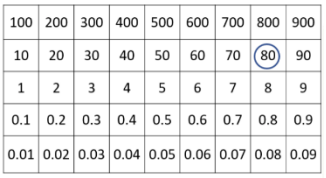
Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- 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 and divide numbers mentally drawing upon known facts
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- recognise and use square numbers and cube numbers, and the notation for squared and cubed
- solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Key Vocabulary:

factor pairs, composite numbers, prime number, prime factors, square number, cubed number, formal written method, area model, base 10, place value, place holder, rows, columns, expanded method, integers, parts, whole, portioning.

Strategies used to teach Multiplication	Concrete	Pictorial	Abstract
Multiply by 10, 100 and 1,000 and its multiples			3 x 40 = 60 x 5 = 700 x 40 =
Multiply 4-digits by 1-digit	 Children begin with place value charts and physically exchange counters.		
Multiply 2-digits (area model)		 The area model allows children to break up larger amounts and multiply them individually using their times tables knowledge.	

Multiply 2-digits by 2-digits (expanded method)			
Multiply 3-digits by 2-digits Multiply 4-digits by 2-digits			
Multiply unit, non-united and mixed number fractions by an integer			$\frac{5}{6} \times 6 = \frac{30}{6} = 5$ Children use visual representations to understand multiplication and repeated groups.
Multiplying decimals by 10, 100 and 1,000			32.04 X 10 = £320.40 Children encouraged to apply skill mentally using their knowledge.

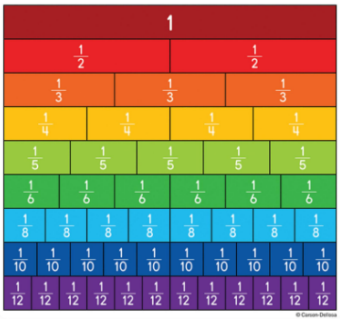
Year 6

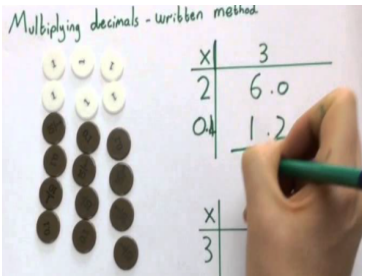
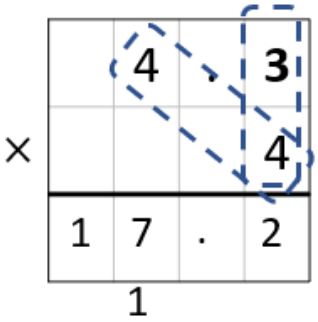
Pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve problems involving addition, subtraction, multiplication and division

- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Key Vocabulary:
order of operations, common factors, common multiples, factor pairs, composite numbers, prime number, prime factors, square number, cubed number, formal written method, area model, base 10, place value, place holder, rows, columns, expanded method, integers, parts, whole, portioning.

Strategies used to teach Multiplication	Concrete	Pictorial	Abstract
Multiply up to a 4-digit number by a 2-digit number	2,313 × 32 = × | 2,000 | 300 | 10 | 3 30 | 60,000 | 9,000 | 300 | 90 2 | 4,000 | 600 | 20 | 6 Area model is used in conjunction with concrete objects such as: counters and dienes.	2693 x 24 x | 2000 | 600 | 90 | 3 20 | 40000 | 12000 | 1800 | 60 4 | 8000 | 2400 | 360 | 12 40000 + 8000 + 12000 + 2400 + 1800 + 360 + 60 + 12 = 64632	132 × 23 Th H T O 1 3 2 × 2 3 3 9 6 (132 + 2 6 4 0 (132 3 0 3 6 1 1
Multiply fractions by integers		$\frac{3}{10} \times 3 = \frac{3}{10} + \frac{3}{10} + \frac{3}{10} = \frac{9}{10}$ $\frac{1}{10} \times 5 = \frac{5}{10} = \frac{1}{2}$	$\frac{5}{6} \times 6 = \frac{30}{6} = 5$
Multiply decimals by 10, 100 and 1,000	3 x 4 = 12 3 x 40 = 120 3 x 400 = 1,200 Ones Tens Hundreds	3.12 × 10 = 31.2 Th H T O tth hth 3 1 2 Place value counters show children the increase in value at each stage.	3.6 x 100 = 63.2 x 10 = 7.32 x 1000 =

Multiply decimals by integers	 Children are encouraged to use place value counters to make to represent repeated groups.	3.3 × 3 = 	£1.50 × 5 = £7.50 (£1 × 5) + (£0.50 × 5) 

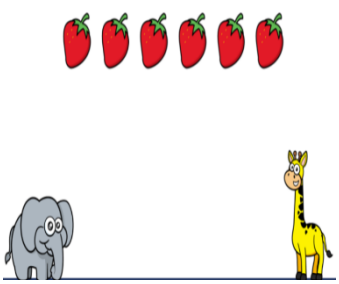
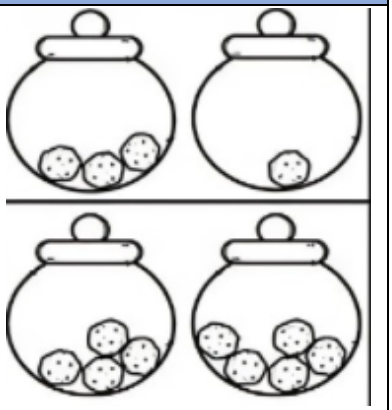
Division

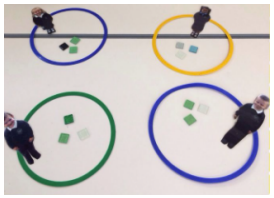
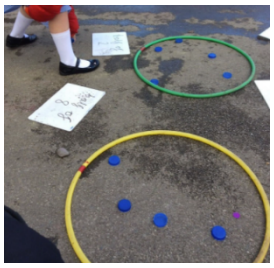
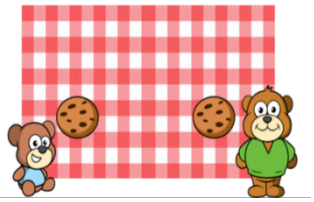
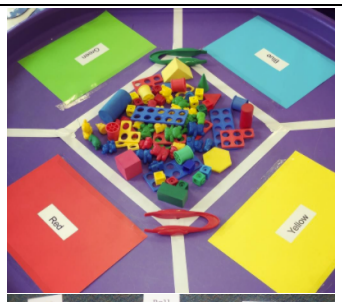
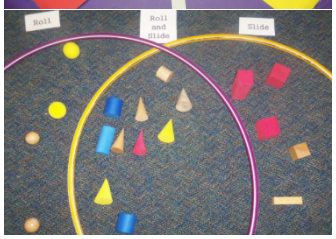
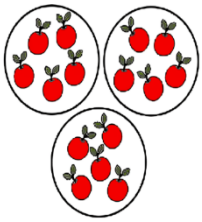
EYFS

ELG: Number - Children at the expected level of development will:
- 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 (including subtraction facts) and some number bonds to 10, including **double facts**.

ELG: Numerical Patterns - Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including **evens and odds**, **double facts** and how **quantities can be distributed equally**.

Key Vocabulary: Share, sharing, equal, groups, equal amounts, halves.

Strategies used to teach Division	Concrete	Pictorial	Abstract
Sharing			

	  	  Children are encourage to share a range of objects equally.	
Grouping	 	 Grouping Sorting objects out into equal groups provides the foundation for division.	 There are 3 equal groups of 5.

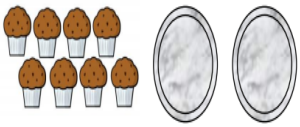
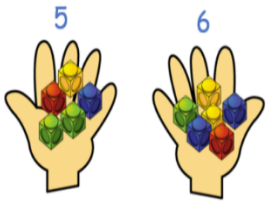
Year 1

Pupils should be taught to:

- solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays

Key Vocabulary:
share, each group, equal, fair, same, divided by, shared by, shared between, shared equally, equal groups, left over, equal amount.

Strategies used to teach Division	Concrete	Pictorial	Abstract

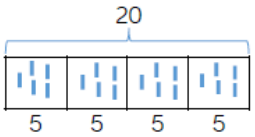
Make equal groups - sharing	  	   	$4 \div 2 = 2$ share ____equally into... Children are exposed to the division symbol and can share objects equally.

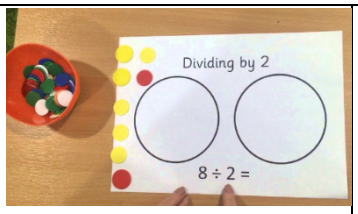
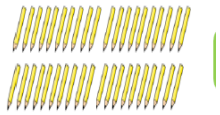
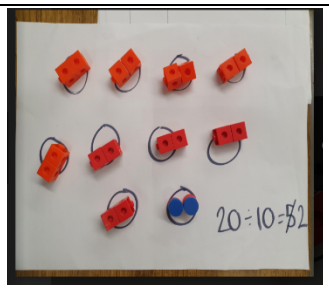
Year 2

Pupils should be taught to:

- recall and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Key Vocabulary:
share, each group, equal, fair, same, divided by, shared by, shared between, shared equally, equal groups, left over, equal amount,

Strategies used to teach Division	Concrete	Pictorial	Abstract
Make equal groups - sharing	 Children use a range of objects to create equal groups.	 	$20 \div 4 = 5$

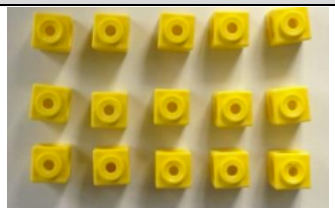
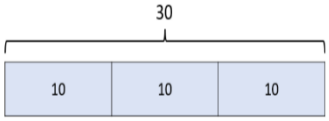
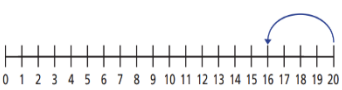
Dividing by 2		Group the socks into pairs. 	What is 12 ÷ 2?
Dividing by 5		40 pencils are shared between 5 children  How many pencils does each child get?	20 ÷ 5 = 4
Dividing by 10		Apples can be sold in packs of 10 How many packs can be made below? 	70 ÷ 10 = __ 6 tens ÷ 1 ten = __ 5 = __ ÷ 10

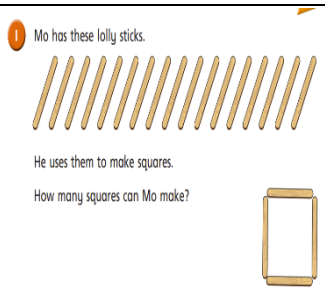
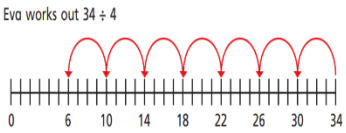
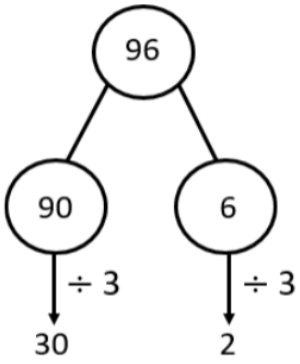
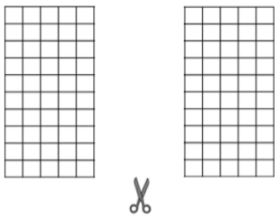
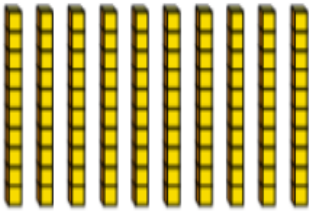
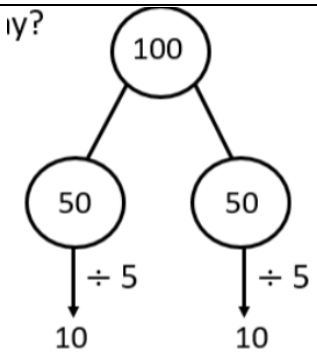
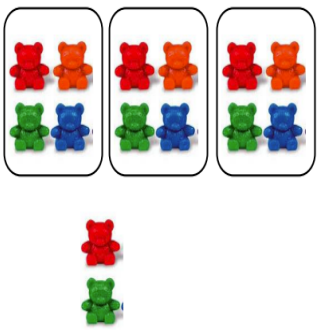
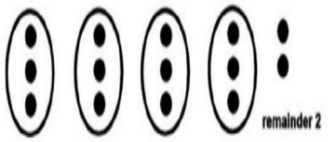
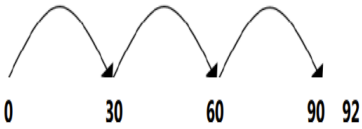
Year 3

Pupils should be taught to:

- 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
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Key Vocabulary:
share, each group, equal, fair, same, divided by, shared by, shared between, shared equally, equal groups, left over, equal amount, remainders

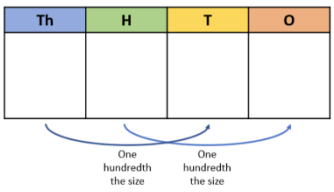
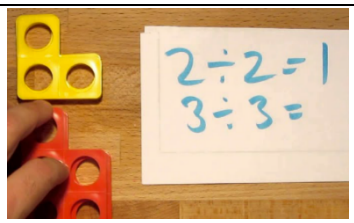
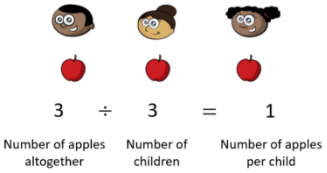
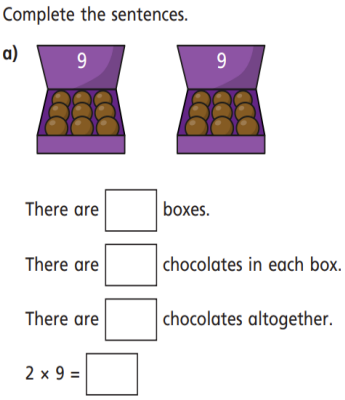
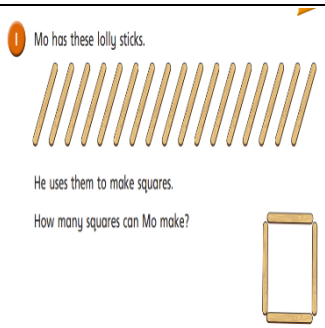
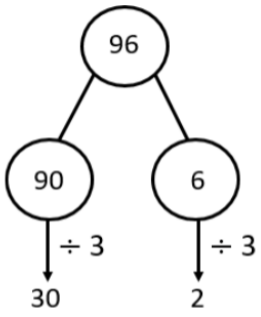
Strategies used to teach Division	Concrete	Pictorial	Abstract
Divide by 3, 4 and 8		30 divided into groups of 3  Here are 21 cakes.  They are shared equally between 3 plates.	5 There are 20 muffins. 4 muffins fit in 1 box. Use the number line to work out how many boxes can be filled.  Children us their knowledge of times tables to understand that division is the inverse.

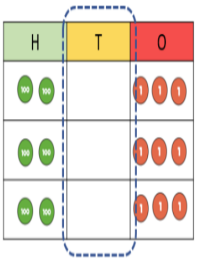
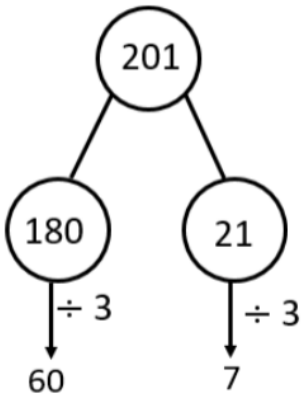
Divide 2-digits by 1-digit	 Making shapes using lolly sticks allows children to divide by various numbers and understanding remainders.	39 ÷ 3 = 13  	96 ÷ 3 = 32  30 + 2 = 32
Divide 100 into 2, 4, 5 and 10 equal parts	 Using a 100 square to support this, children physically experiment with ways it can be divided equally.		 10 + 10 =20
Divide with remainders	14 ÷ 3 = Divide objects into groups or share equally and see how much is left over. 	  	92 ÷ 3 = 30 r2  Children use knowledge of times table facts to quickly calculate divisions involving remainders. For example: 27 ÷ 5 = 5 r2

Year 4

Pupils should be taught to:

- recall 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

Key Vocabulary: share, each group, equal, fair, same, divided by, shared by, shared between, shared equally, equal groups, left over, equal amount, inverse, remainder.			
Strategies used to teach Division	**Concrete**	**Pictorial**	**Abstract**
Divide by 100	 To find one hundredth, we divide by 100		___ x 100 = 3,200 Children encouraged to make connections between multiplication and division.
Divide by 1 and itself			7 × 1 = 7 1 × 7 = 7 7 ÷ 1 = 7 7 ÷ 7 = 1
Divide by 6, 7 and 9			56 = ☐ x 7 11 x ☐ = 77 7 x ☐ = 63
Divide 2-digits by 1-digit (including remainders)		39 ÷ 3 = 13 	96 ÷ 3 = 32  30 + 2 = 32

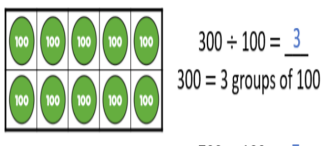
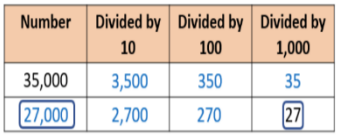
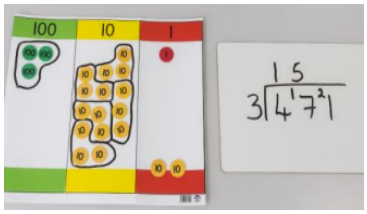
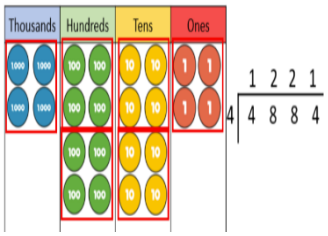
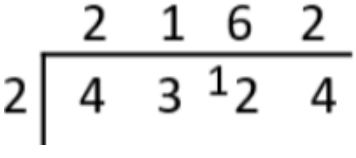
Divide 3-digits by 1-digit (including remainders)	609 ÷ 3 = 203  Children use PV counters to divide larger values.	 	84 ÷ 3 = 28 85 ÷ 3 = 28 r 1 83 ÷ 3 = 27 r 2

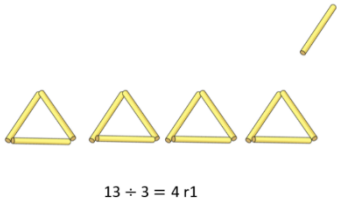
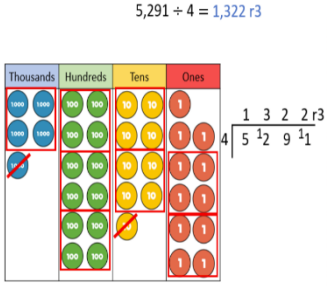
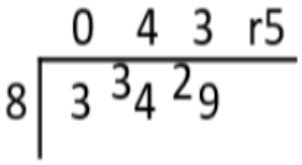
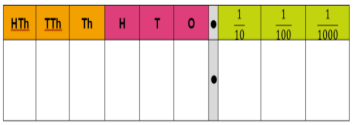
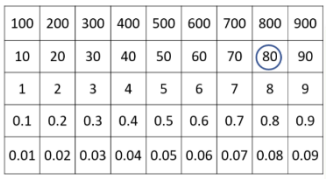
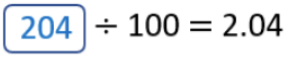
Year 5

Pupils should be taught to:

- 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 1000
- solve problems involving division
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Key Vocabulary:
share, each group, equal, fair, same, divided by, shared by, shared between, shared equally, equal groups, left over, equal amount, divisor, divisible, dividend, inverse, remainder.

Strategies used to teach Division	Concrete	Pictorial	Abstract
Divide by 10, 100 and 1,000	 	 300 ÷ 100 = 3 300 = 3 groups of 100	 Number | Divided by 10 | Divided by 100 | Divided by 1,000 35,000 | 3,500 | 350 | 35 27,000 | 2,700 | 270 | 27
Divide 4-digits by 1-digit	 Children are introduced to the bus stop method in	 	 2 1 6 2 2 4 3 12 4

	conjunction with the place value chart to secure understanding.		
Divide with remainders			
Dividing decimals by 10, 100 and 1,000			

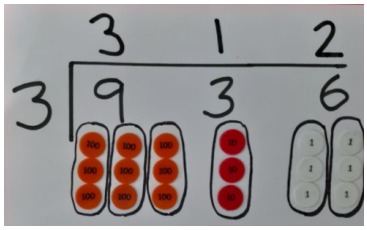
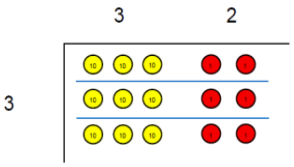
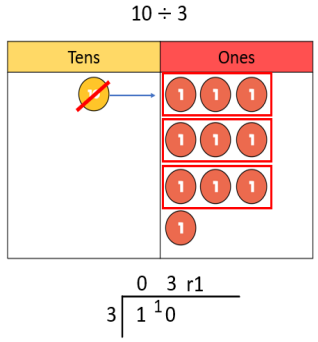
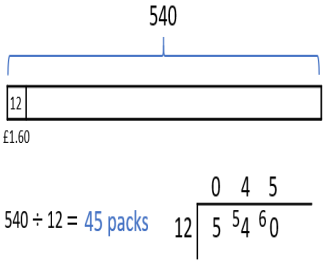
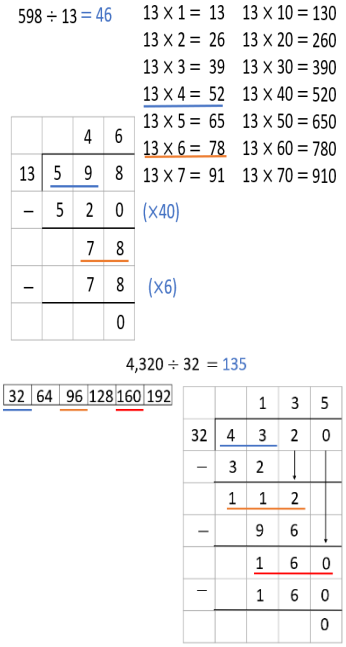
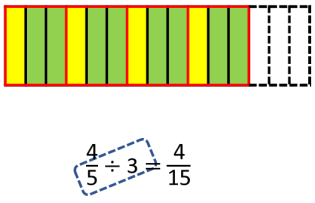
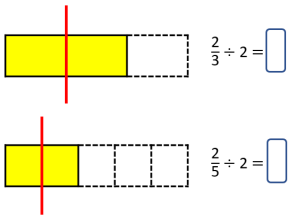
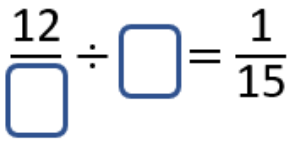
Year 6

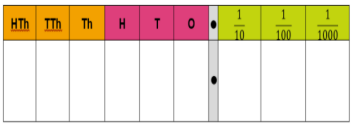
Pupils should be taught to:

- 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 perform mental calculations, including with mixed operations and large numbers
- solve problems involving division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Key Vocabulary:
share, each group, equal, fair, same, divided by, shared by, shared between, shared equally, equal groups, left over, equal amount, divisor, divisible, dividend, inverse, remainder, integer, percentage,

Strategies used to teach Division	**Concrete**	**Pictorial**	**Abstract**

Short division	 The bus stop method is taught with counters to support. Children are encouraged to use their times tables to support division.		Begin with divisions that divide equally with no remainder. $\begin{array}{r} 1\ 8 \\ 4\overline{)\ 7\ ^{3}2} \end{array}$ Move onto divisions with a remainder. $\begin{array}{r} 1\ \ 9\ r3 \\ 4\overline{)\ 7\ ^{3}9} \end{array}$
Long division		 Similar to the expanded method, long division support understanding by breaking problems down into chunks.	
Divide fractions by integers	 Physical objects enable children to exchange fractions for equivalents before calculating.		 Missing value problems encourage children to investigate connections between numbers.

<table>
<tr>
<td>Dividing decimals by 10, 100 and 1,000</td>
<td> 
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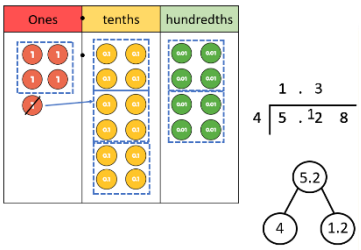
<td>
<table>
<tr><td>100</td><td>200</td><td>300</td><td>400</td><td>500</td><td>600</td><td>700</td><td>800</td><td>900</td></tr>
<tr><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td><td>90</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr>
<tr><td>0.1</td><td>0.2</td><td>0.3</td><td>0.4</td><td>0.5</td><td>0.6</td><td>0.7</td><td>0.8</td><td>0.9</td></tr>
<tr><td>0.01</td><td>0.02</td><td>0.03</td><td>0.04</td><td>0.05</td><td>0.06</td><td>0.07</td><td>0.08</td><td>0.09</td></tr>
</table>
</td>
<td>15.62 ÷ 10 ÷ 10 ÷ 10 = 15.62 ÷ 1,000
15.62 ÷ 1,000</td>
</tr>
<tr>
<td>Divide decimals by integers</td>
<td> 
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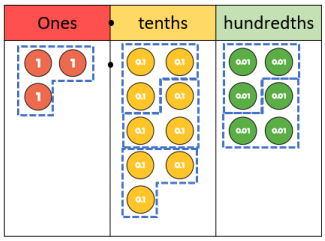
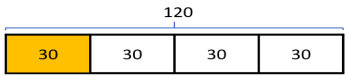
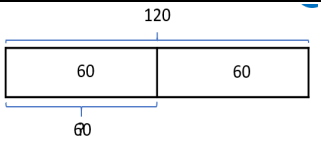
<td> 
</td>
<td>1 . 3 2
3 | 3 . 9 6</td>
</tr>
<tr>
<td>Percentage of an amount</td>
<td> 

Using the bar model, how could we find 25% of 120?

Children make a connection between percentage and division.</td>
<td> 

50% of 120 = 60

120 ÷ 2 = 60</td>
<td>10% of 1,270 = 127

1,270 ÷ 10 = 127</td>
</tr>
</table>