Green Park Community Primary School

Calculation Policy 2025 – 2026

Updated: September 2025
Next Review: September 2026

Mathematics Mastery

At the centre of the mastery approach to the teaching of mathematics is the belief that all children have the potential to succeed. They should have access to the same curriculum content and, rather than being extended with new learning, they should deepen their conceptual understanding by tackling challenging and varied problems. Similarly, with calculation strategies, children must not simply rote learn procedures but demonstrate their understanding of these procedures through the use of concrete materials and pictorial representations. This policy outlines the different calculation strategies that should be taught and used in Year 1 to Year 6 in line with the requirements of the 2014 Primary National Curriculum.

Background

The 2014 Primary National Curriculum for mathematics differs from its predecessor in many ways. Alongside the end of Key Stage year expectations, there are suggested goals for each year; there is also an emphasis on depth before breadth and a greater expectation of what children should achieve. In addition, there is a whole new assessment method, as the removal of levels gives schools greater freedom to develop and use their own systems. One of the key differences is the level of detail included, indicating what children should be learning and when. This is suggested content for each year group, but schools have been given autonomy to introduce content earlier or later, with the expectation that by the end of each key stage the required content has been covered. For example, in Year 2, it is suggested that children should be able to 'add and subtract one-digit and two-digit numbers to 20, including zero' and a few years later, in Year 5, they should be able to 'add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction)'. In many ways, these specific objectives make it easier for teachers to plan a coherent approach to the development of pupils' calculation skills. However, the expectation of using formal methods is rightly coupled with the explicit requirement for children to use concrete materials and create pictorial representations – a key component of the mastery approach.

Mathematical Language

The 2014 National Curriculum is explicit in articulating the importance of children using the correct mathematical language as a central part of their learning (reasoning). Indeed, in certain year groups, the non-statutory guidance highlights the requirement for children to extend their language around certain concepts. It is therefore essential that teaching using the strategies outlined in this policy is accompanied by the use of appropriate and precise mathematical vocabulary. New vocabulary should be introduced in a suitable context (for example, with relevant real objects, apparatus, pictures or diagrams) and explained carefully. High expectations of the mathematical language used are essential, with teachers only accepting what is correct.

How to use the policy

This calculations policy is a guide for all staff at Green Park CPS and has been adapted from work by the White Rose Maths Hub. It is purposely set out as a progression of mathematical skills and not into year group phases to encourage a flexible approach to teaching and learning. It is expected that teachers will use their professional judgement as to when consolidation of existing skills is required or if to move onto the next concept.

However, the focus must always remain on breadth and depth rather than accelerating through concepts. Children should not be extended with new learning before they are ready, they should deepen their conceptual understanding by tackling challenging and varied problems. All teachers have been given the scheme of work from the White Rose Maths Hub and are required to base their planning around their year group modules. These modules use the Singapore Maths Methods and are affiliated to the workings of the 2014 Maths Programme of Study.

Teachers can use any teaching resources that they wish and the policy does not recommend one set of resources over another, rather that, a variety of resources are used. For each of the four operations, different strategies are laid out, together with examples of which concrete materials can be used and how, along with suggested pictorial representations. The principle of the concrete-pictorial-abstract (CPA) approach [Make it, Draw it, Write it] is for children to have a true understanding of a mathematical concept, they need to master all three phases within a year group's scheme of work.

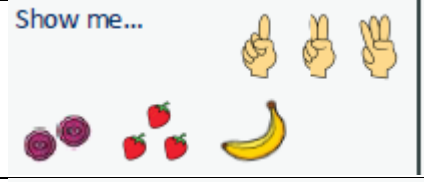
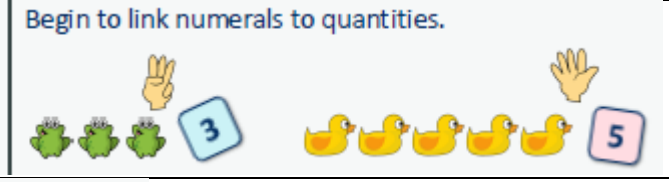
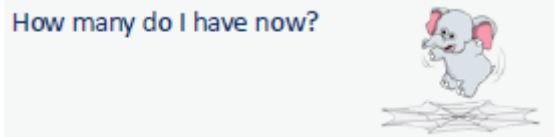
This document is organised by the four operations. Within each section, skills are grouped and prefaced by the overarching mathematical concepts in which they will be encountered. Accompanying each skill are a selection of sentence stems that can be used by teachers, when exemplifying their mathematical thinking, and by the children, when speaking about their mathematical processes. Where a skill is divided into more than one section, this represents an increase in level of difficulty and should be followed from left to right across the page.

A glossary of key mathematical terminology is included, split into two parts: 'Addition and Subtraction' and 'Multiplication and Division'. This exemplifies the correct, precise terminology to be used alongside more common-place vocabulary.

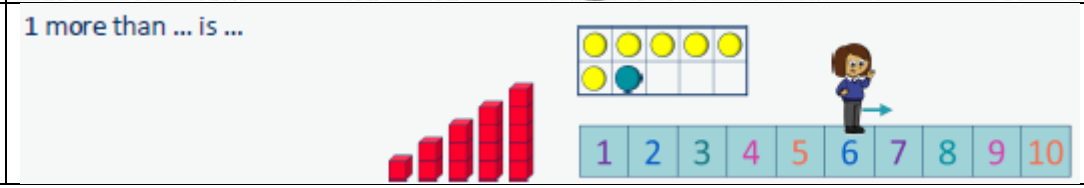
At the end of this document, a progression of vocabulary is found. This indicates where, within the White Rose Maths Scheme of Learning, each term is introduced for the first time. Teachers should use this to support their planning, when considering the vocabulary that children should already be familiar with and which vocabulary should be introduced next.

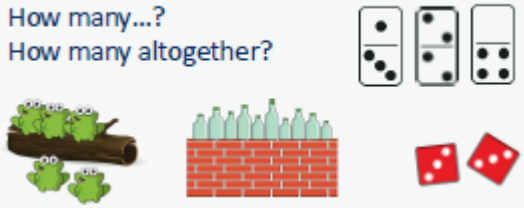
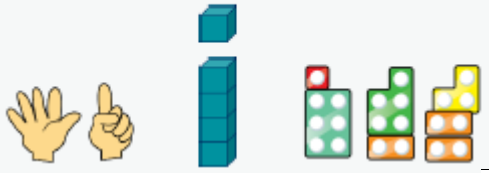
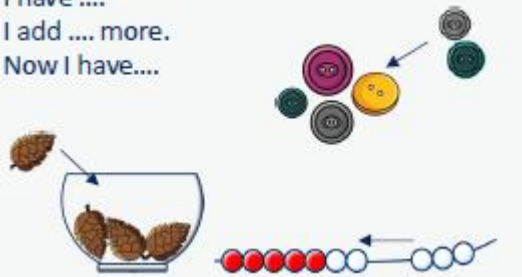
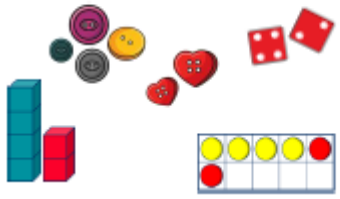
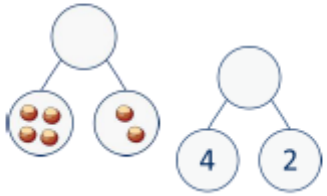
Addition

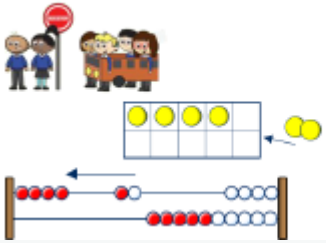
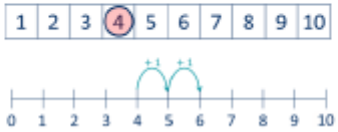
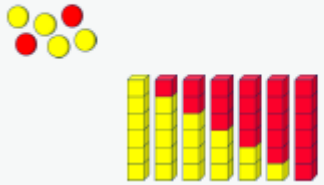
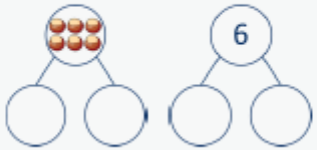
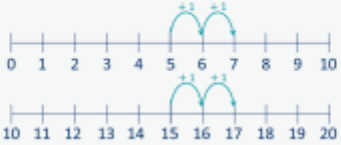
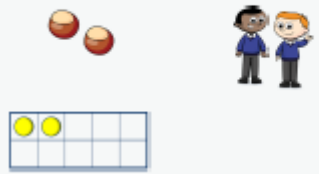
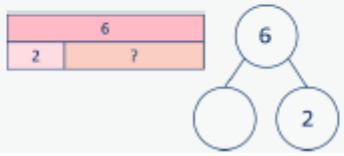
-Begin to have an understanding of numbers to 5.
-Notice and represent small quantities, perceptually subitise and count.

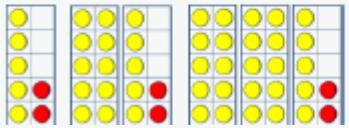
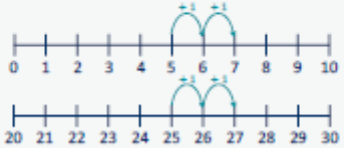
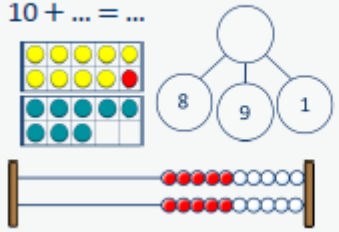
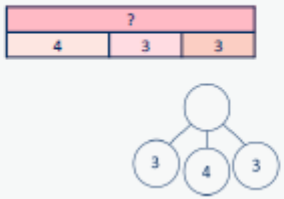
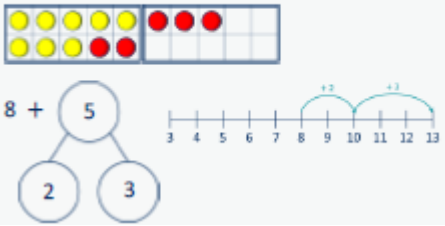
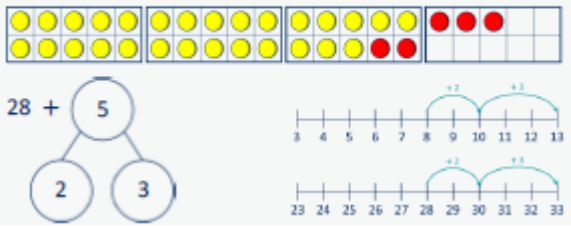
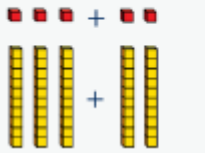
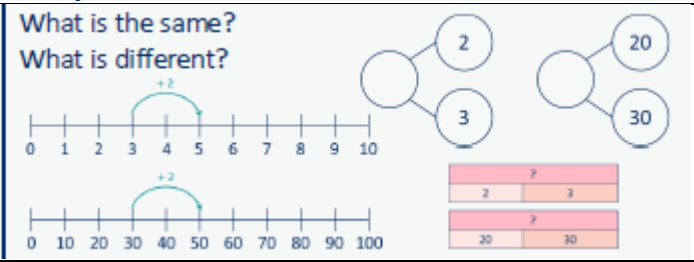
Skill	Key Representations and Sentence Stems
Subitise to 3 (instantly see how many)	
Count how many (1:1 correspondence)	 
Make numbers to 5	 
Add one more	

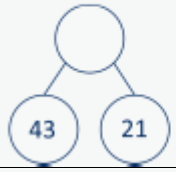
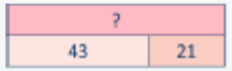
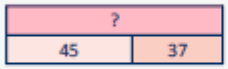
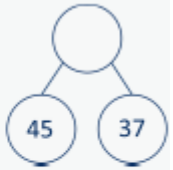
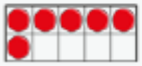
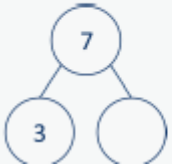
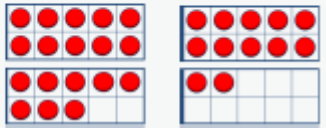
-Develop a deep understanding of numbers to 10, including the composition of each number.
-Subitise (recognise quantities without counting) up to 5
-Automatically recall number bonds up to 5 and some number bonds to 10, including double facts.

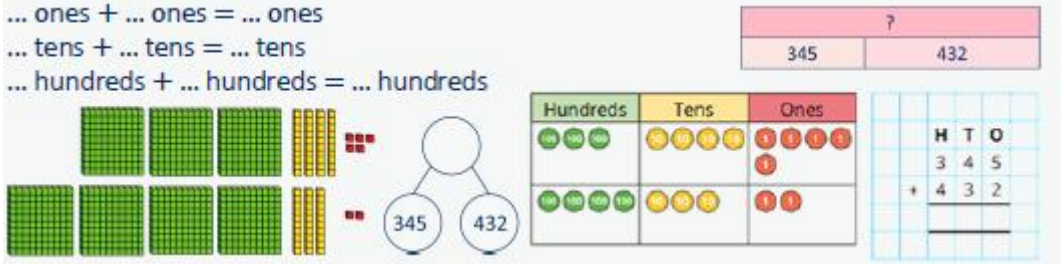
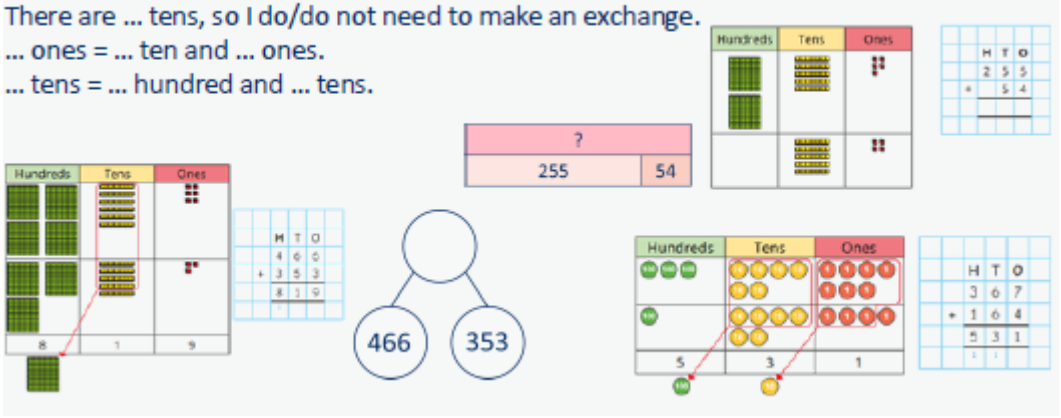
Skill	Key Representations and Sentence Stems
Conceptually subitise to 5	
One more	

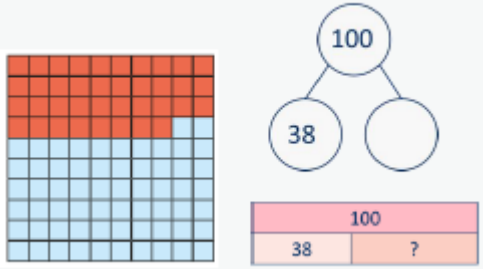
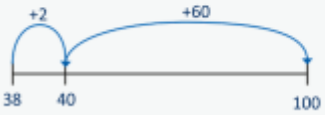
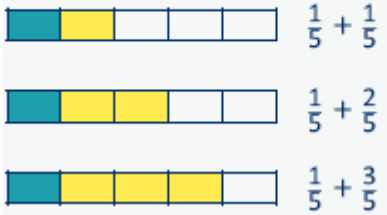
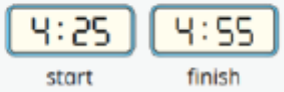
Composition of numbers within 10	How many...? How many...? How many altogether? 	How many ways can you make...? 
Combine two groups (find the total)	There are .... There are .... There are .... altogether. 	.... and .... make .... 
Add more (increase a quantity)	First... Then.... Now.... 	I have .... I add .... more. Now I have.... 
-Read, write and interpret mathematical statements involving addition (+) and equals (=) signs. -Represent and use number bonds within 20. -Add 1-digit and 2-digit numbers to 20, including zero. -Solve one-step problems that involve addition and simple missing number problems.		
Skill	Key Representations and Sentence Stems	
Add together (aggregation)	There are ... There are ... There are ... altogether. 	... is a part. ... is a part. ... is the whole.  4 2	... plus ... is equal to ... ... is equal to .... + ... $4+2=6$ $2+4=6$ $6=4+2$ $6=2+4$

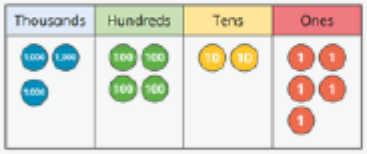
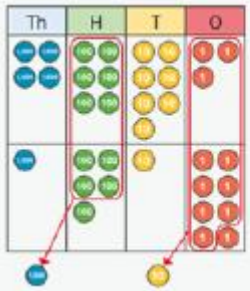
Add more (augmentation)	First... Then... Now... 	I start at ... I jump on ... I land on ...  	... plus ... is equal to ... is equal to ... + ... $4+2=6$ $2+4=6$ $6=4+2$ $6=2+4$
Bonds within 10	... is made of ... and ... ... and ... make ... 	... can be partitioned into ... and ...  	... plus ... is equal to ... $6+0=6$ $5+1=6$ $4+2=6$ $3+3=6$ $2+4=6$ $1+5=6$ $0+6=6$
Related facts within 20	I know that ... and ... = ... so ... and ... = ... 	... more than ... is ... so ... more than ... is ...  	What patterns do you notice? $5+2=7$ $15+2=17$ $7=5+2$ $17=15+2$
Missing numbers (link to known facts)	How many more do you need to make ...? 	If ... is the whole and ... is a part, the other part must be...  	... plus ... is equal to ... $2+\square=6$ $6=2+\square$ 

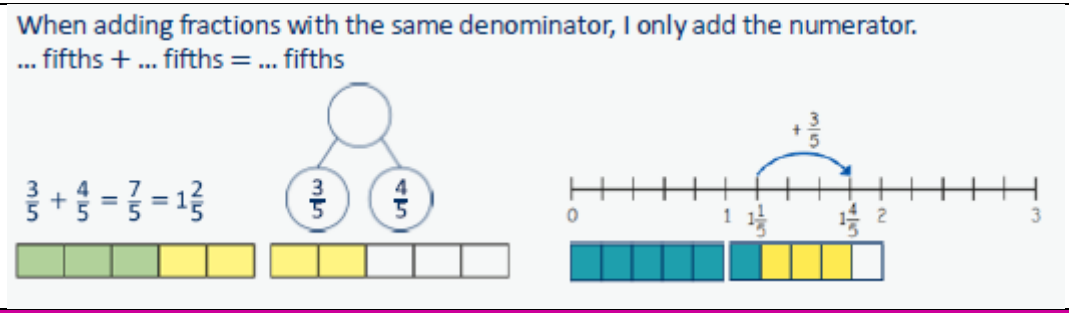
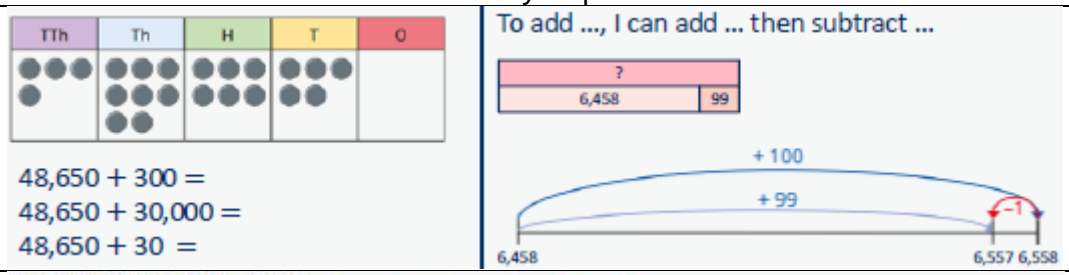
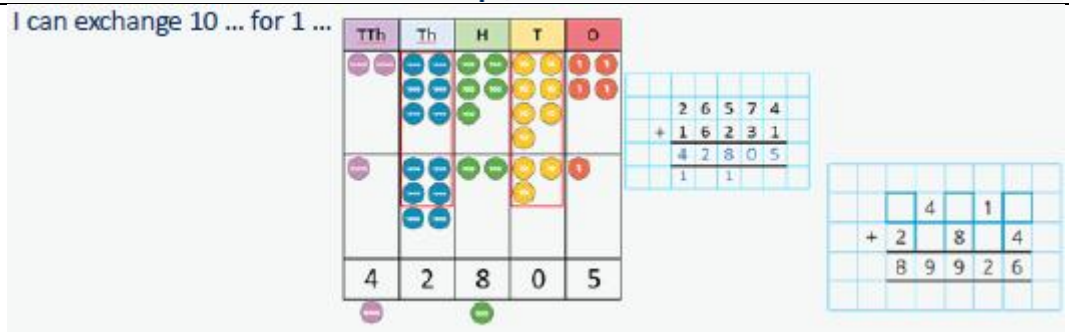
-Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 -Add numbers, including: a two-digit number and 1s, a two-digit number and 10s, 2 two-digit numbers, 3 one-digit numbers. -Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.			
Skill	Key Representations and Sentence Stems		
Add Ones to any number (link to known facts)	I know that … and … = … so … and … = … 	… more than … is … so … more than … is … 	What do you notice? Can you continue the pattern? 5 + 2 = 7 15 + 2 = 17 25 + 2 = 27…
Add three one-digit numbers (any order, link to facts)	… and … are a bond to 10 10 + … = … 	Double … + … = … 	What do you notice? Which addition is the easiest to calculate? 8 + 9 + 1 = 8 + 1 + 9 = 9 + 1 + 8 =
Add across a Ten (partition)	… can be partitioned into … and … 	I add … to get to … then I add … 8 + 5 = 13 28 + 5 = 33 	
Add multiples of 10 (link to know facts within 10)	… ones + … ones = … ones so … tens + … tens = … tens  3 + 2 = 5 30 + 20 = 50	What is the same? What is different? 	

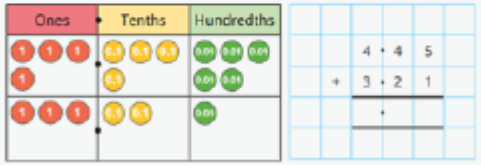
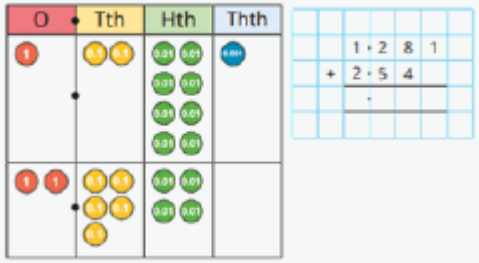
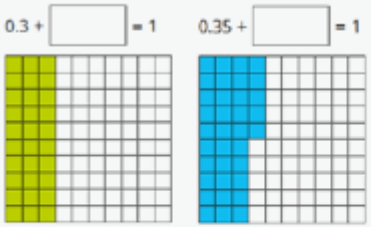
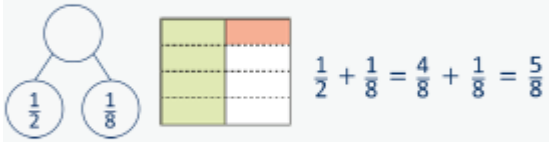
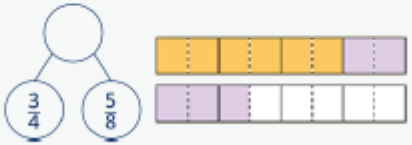
Add Tens to any number	... tens + ... tens = ... tens ... tens and ... ones = ... 	To add ... I need to add 10 ... times. 	I know that ... and ... = ... so ... and ... = ... 30 + 20 = 50 34 + 20 = 54
Add two-digit numbers (not across a Ten) Line up columns	... ones + ... ones = ... ones ... tens + ... tens = ... tens   	3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64  	
Add two-digit numbers (crossing a Ten) Exchange 10 Ones for 1 Ten	There are .... ones, so I do/do not need to make an exchange. ... ones = ... ten and ... ones  	  5 ones + 7 ones = 12 ones 12 ones = 1 ten and 2 ones 4 tens + 3 tens + 1 ten = 8 tens 8 tens and 2 ones = 82	
Missing numbers (use inverse to check)	How many more do you need to make ...?  6 + □ = 10 10 − □ = 6	If ... is a whole and ... is a part, then ... is the other part. □ + 3 = 7 7 − 3 = □  	... can be partitioned into ... and ... 10 + 8 = 12 + □ 

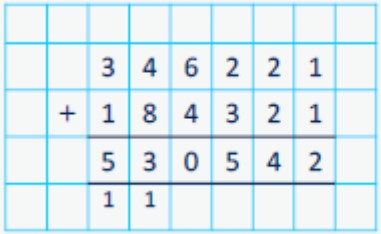
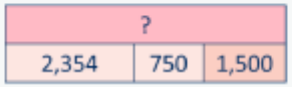
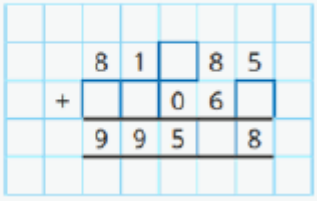
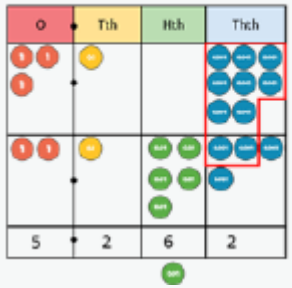
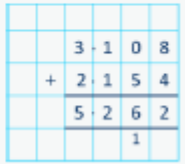
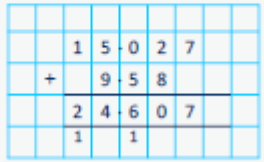
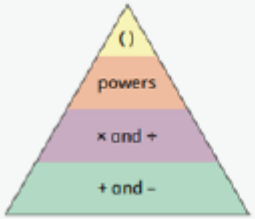
-Add numbers mentally, including: a three-digit number and Ones, a three-digit number and Tens, a three-digit number and Hundreds. -Add numbers with up to three digits, using formal written methods of columnar addition. -Add fractions with the same denominator within 1 whole. -Calculate time durations.	
Skill	Key Representations and Sentence Stems
Add Ones, Tens or Hundreds to a three-digit number (mental strategies, link to bonds and related facts)	The ones/tens/hundreds column will increase by ...  444 + 5 = 444 + 50 = 444 + 500 = 777 + 2 = 777 + 20 = 777 + 200 = What patterns do you notice? 235 + 3 = 235 + 30 = 235 + 300 = 604 + 20 = 604 + 50 = 604 + 90 = 111 + ☐ = 118 111 + ☐ = 181 111 + ☐ = 811
Add two numbers (no exchange) Formal method introduced	... ones + ... ones = ... ones ... tens + ... tens = ... tens ... hundreds + ... hundreds = ... hundreds 
Add two numbers across a Ten or Hundred (up to two exchanges)	There are ... ones, so I do/do not need to make an exchange. There are ... tens, so I do/do not need to make an exchange. ... ones = ... ten and ... ones. ... tens = ... hundred and ... tens. 

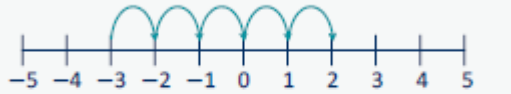
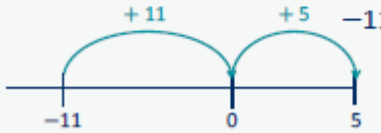
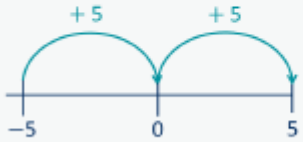
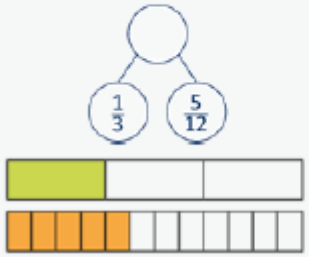
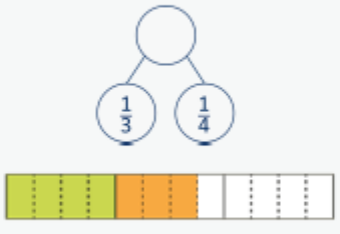
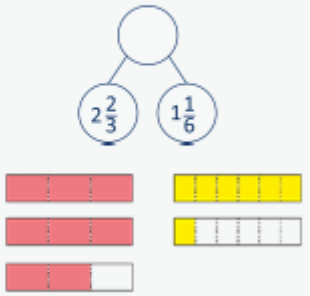
Complements to 100	… plus … is equal to 100  I add … to get to the next 10, then … to get to 100  $38 + 62 = 100$ $62 + 38 = 100$ $100 = 38 + 62$ $100 = 62 + 38$
Add fractions with the same denominator within 1 whole	When adding fractions with the same denominator, I only add the numerator. … fifths + … fifths = … fifths  
Calculate duration (using complements to 60)	From … to … o'clock is … minutes. From … o'clock to … is … minutes. The total time taken is … minutes.   

-Add numbers with up to 4 digits using a formal written method. -Solve simple measure and money problems involving fractions and decimals to two decimal places. -Add fractions with the same denominator.	
Skill	Key Representations and Sentence Stems
Add Ones, Tens and Hundreds to a four-digit number	The ones/tens/hundreds/thousands column will increase by ...  3,425 + 3 = 3,425 + 30 = 3,425 + 300 = 3,425 + 3,000 = What patterns do you notice? 2,350 + 3 = 2,350 + 30 = 2,350 + 300 = 2,350 + 3,000 = 6,040 + 200 = 6,040 + 500 = 6,040 + 900 = 2,211 + ☐ = 2,251 2,211 + ☐ = 2,215 2,211 + ☐ = 2,511
Add up to 2 four-digit numbers. (up to 3 exchanges)	There are ... ones/tens/hundreds so I do/do not need to make an exchange. I can exchange 10 ... for 1 ...  
Add decimal numbers (in the context of money) Use partitioning and number lines	... pence + ... pence = ... pence ... pounds + ... pounds = ... pounds  45p + 25p = 70p £2 + £3 = £5 £5 + 70p = £5.70 £3.25 can be partitioned into £3 + 20p + 5p 

Add fractions and mixed numbers with the same denominator, beyond 1 whole	
-Add whole numbers with more than 4 digits, including using formal written methods. -Add numbers mentally with increasingly large numbers. -Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 -Add fractions with the same denominator, and denominators that are multiples of the same number.	
Skill	Key Representations and Sentence Stems
Add using mental strategies	
Add whole numbers with more than four digits	

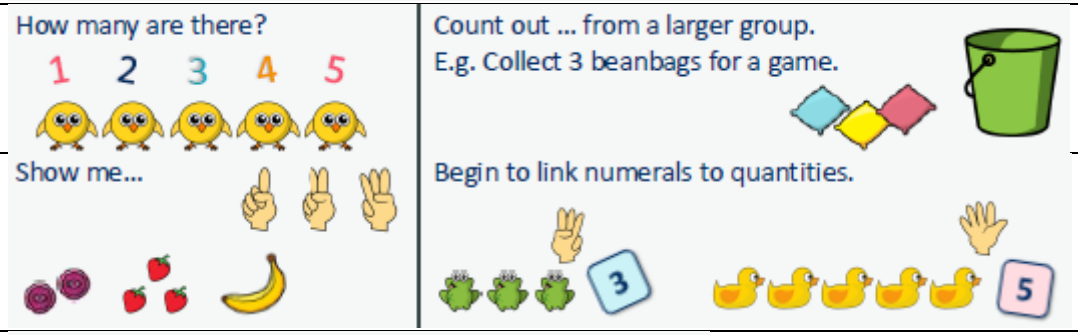
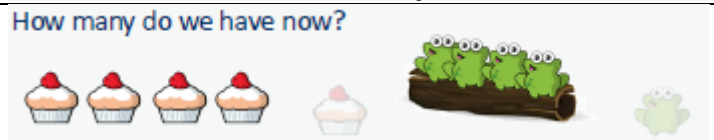
Add decimals with up to two decimal places	I do/do not need to make an exchange because ... I can exchange 10 ... for 1 ...  
Complements to 1	   $4 + 6 = 10$ $44 + 56 = 100$ $444 + 556 = 1{,}000$ $0.4 + 0.6 = 1$ $0.44 + 0.56 = 1$ $0.444 + 0.556 = 1$
Add fractions with denominators that are factors (convert to equivalent fractions)	The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.  $\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}$  $\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$  $\frac{3}{4} + \frac{5}{8} = \frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$

-Add larger numbers, using the formal written method of columnar addition. -Use knowledge of the order of operations to carry out calculations involving the 4 operations. -Calculate intervals across zero. -Add fractions with different denominators and mixed numbers, using the concept of equivalent fractions.	
Skill	Key Representations and Sentence Stems
Add integers up to 10 million	 3 4 6 2 2 1 + 1 8 4 3 2 1 5 3 0 5 4 2 1 1  ? 2,354 750 1,500  8 1 □ 8 5 + □ □ 0 6 □ 9 9 5 □ 8
Add decimals with up to three decimal places	I do/do not need to make an exchange because …  O Th Hth Thth 5 2 6 2  3·1 0 8 + 2·1 5 4 5·2 6 2 1  1 5·0 2 7 + 9·5 8 2 4·6 0 7 1 1
Order of operations (Calculations in brackets should be done first. Multiplication and division should be performed before addition and subtraction. When no brackets are shown and the operations have the same priority, work left to right.)	… has greater priority than …, so the first part of the calculation I need to do is …  () powers × and ÷ + and −  $(3+4)\times 2=14$  $3\times 4+2=14$  $3+4\times 2=11$

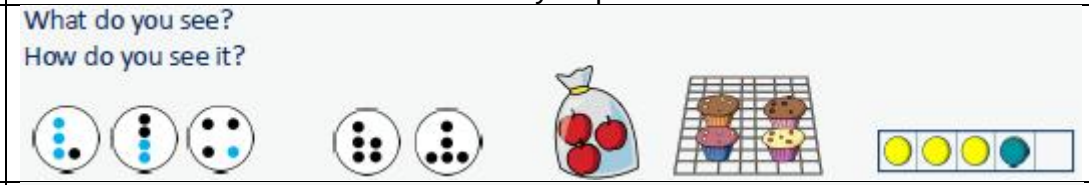
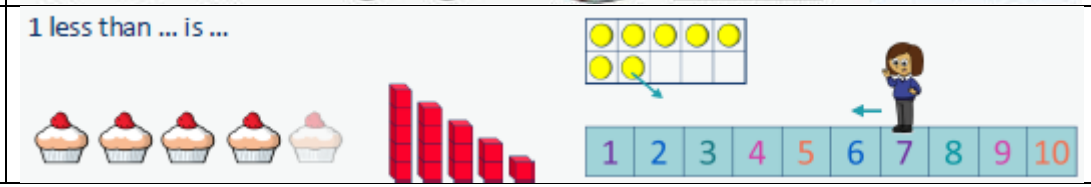
Negative Numbers (crossing zero)	... plus ... is equal to ... $-3+5=2$   $-11+16=5$	 The difference between −5 and −1 is 4  The difference between −5 and 5 is 10
Add fractions	The denominator has been multiplied by ..., so the numerator needs to be multiplied by ...  	The lowest common multiple of ... and ... is ...  $\frac{1}{3}+\frac{1}{4}=\frac{4}{12}+\frac{3}{12}=\frac{7}{12}$
		...is made up of ... wholes and ... 

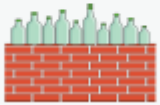
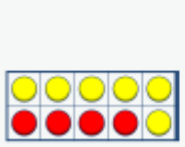
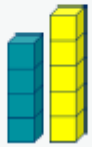
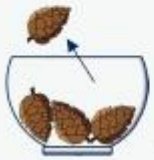
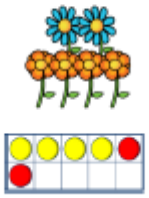
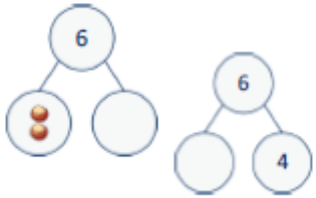
Subtraction

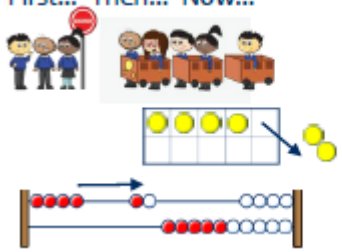
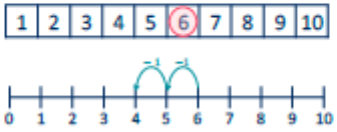
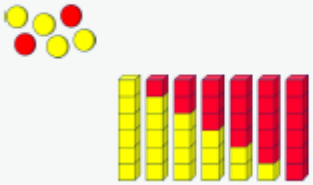
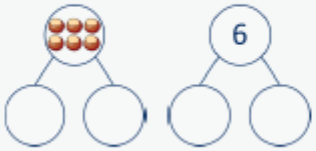
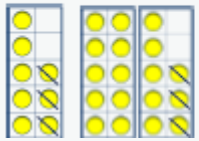
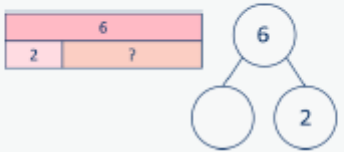
-Begin to have an understanding of numbers to 5.
-Notice and represent small quantities, perceptually subitise and count.

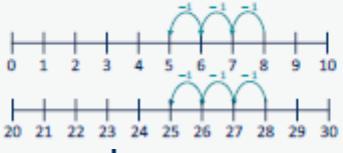
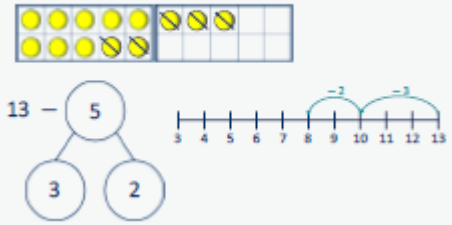
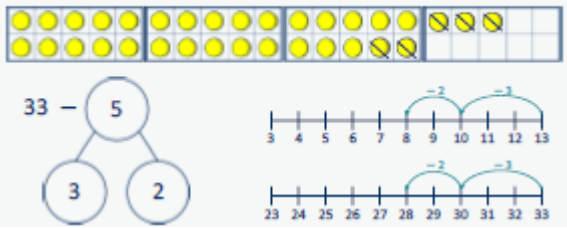
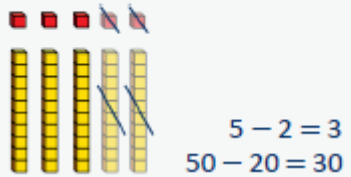
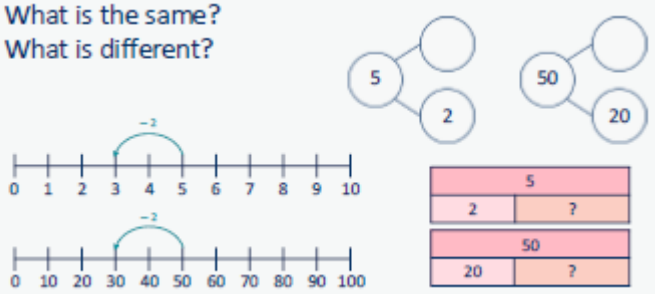
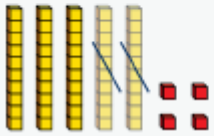
Skill	Key Representations and Sentence Stems
Subitise to 3 (instantly see how many)	
Count how many (1:1 correspondence)	
Make numbers to 5	
Take one away	

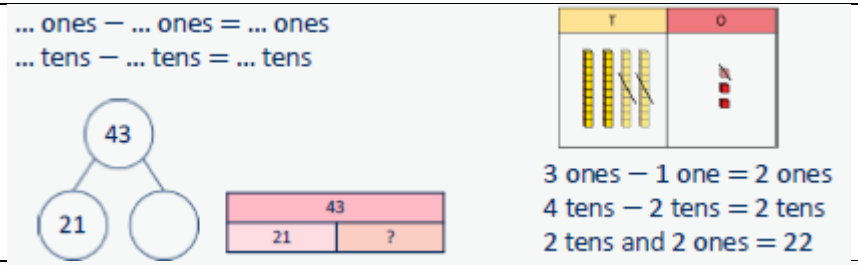
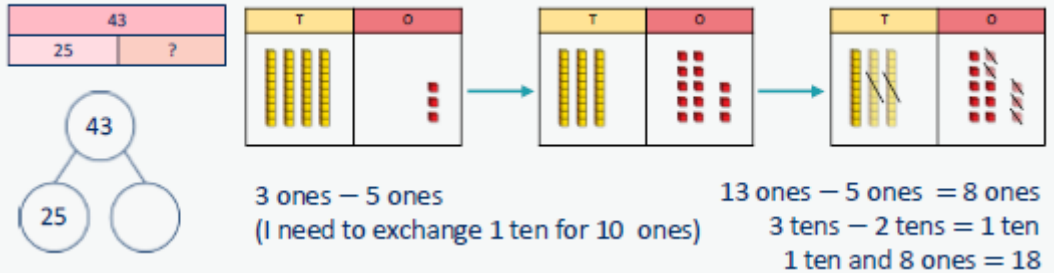
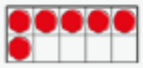
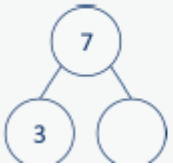
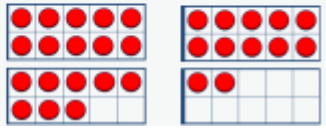
-Develop a deep understanding of numbers to 10, including the composition of each number.
-Subitise (recognise quantities without counting) up to 5
-Automatically recall number bonds up to 5 and some number bonds to 10, including double facts.

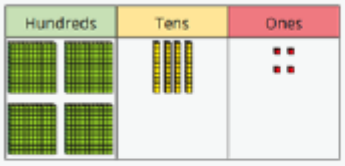
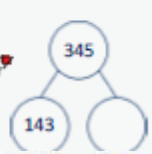
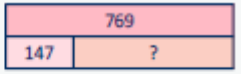
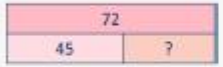
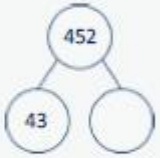
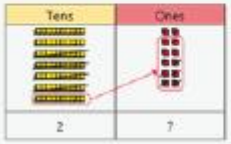
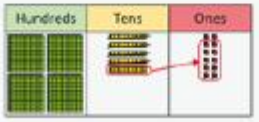
Skill	Key Representations and Sentence Stems
Conceptually subitise to 5	
One less	

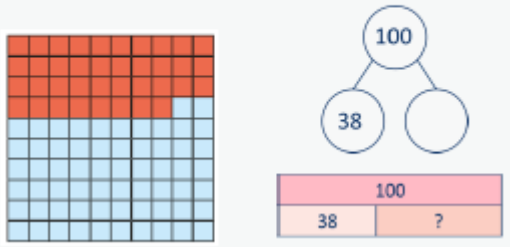
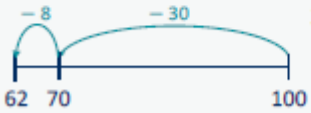
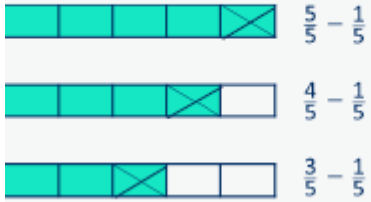
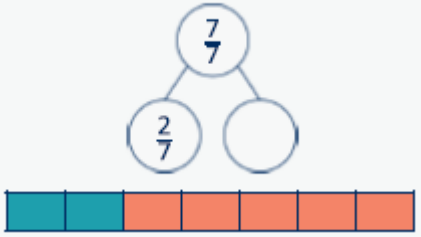
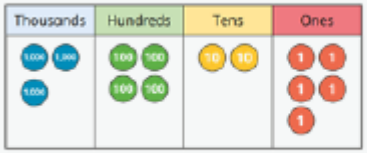
Composition of numbers within 10	How many...? How many...? How many altogether?    	How many ways can you make...?   ... and ... make ...
Partition (split into two or more parts)	There are ... altogether. I can see ... here and ... there.   	  
Take away (reduce a quantity)	First... Then... Now...  	I have ... I take ... away Now I have ...   
-Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs. -Represent and use number bonds and related subtraction facts within 20. -Subtract 1-digit and 2-digit numbers to 20, including zero. -Solve one-step problems that involve subtraction and simple missing number problems.		
Skill	Key Representations and Sentence Stems	
Find a part (link to number bonds and known facts)	There are ... in total. ... are ... How many are **not** ...?  	... is the whole. ... is a part. ... is a part.  	... subtract ... is equal to ... ... is equal to ... − ... $6-2=4$ $6-4=2$ $4=6-2$ $2=6-4$

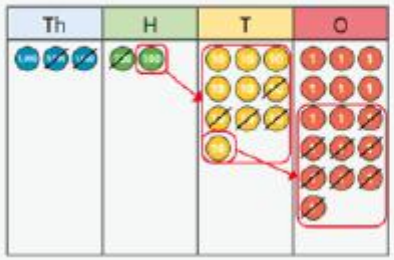
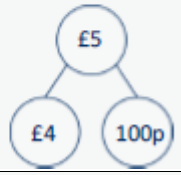
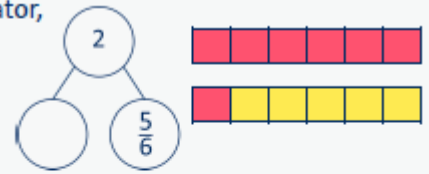
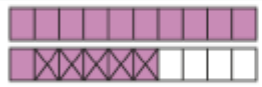
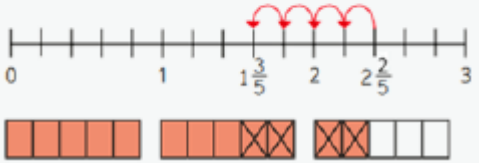
Take away	First... Then... Now... 	I start at ... I jump back ... I land on ...  	... minus ... is equal to ... ... is equal to ... − ... $6-2=4$ $6-4=2$ $4=6-2$ $2=6-4$
Bonds within 10 (subtraction facts)	... is made of ... and ... ... and ... make ... 	... can be partitioned into ... and ... 	... minus ... is equal to ... $6-0=6$ $6-1=5$ $6-2=4$ $6-3=3$ $6-4=2$ $6-5=1$ $6-6=0$
Related facts within 20	I know that ... minus ... = ... so ... minus ... = ... 	... less than ... is ... so ... less than ... is ... 	What patterns do you notice? $8-3=5$ $18-3=15$ $5=8-3$ $15=18-3$
Missing numbers (link to known facts)	How many do you need to subtract to make ...?  	If ... is the whole and ... is a part, the other part must be... 	... minus ... is equal to ... $6-\square=2$ $2=6-\square$ 

-Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100. -Subtract numbers, including: a two-digit number and 1s, a two-digit number and 10s, 2 two-digit numbers. -Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	
Skill	Key Representations and Sentence Stems
Subtract Ones from any number (related facts)	I know that ... minus ... = ... so ... minus ... = ...  ... less than ... is ... so ... less than ... is ...  What do you notice? Can you continue the pattern? $8-3=5$ $18-3=15$ $28-3=25$...
Subtract across a Ten (partition)	... can be partitioned into ... and ...  Make links with related facts. 
Subtract multiples of 10 (link to know facts within 10)	... ones − ... ones = ... ones so ... tens − ... tens = ... tens  $5-2=3$ $50-20=30$ What is the same? What is different? 
Subtract Tens from any number	... tens − ... tens = ... tens ... tens and ... ones = ...  To subtract ... I need to subtract 10 ... times.  I know that ... minus ... = ... so ... minus ... = ... $50-20=30$ $54-20=34$

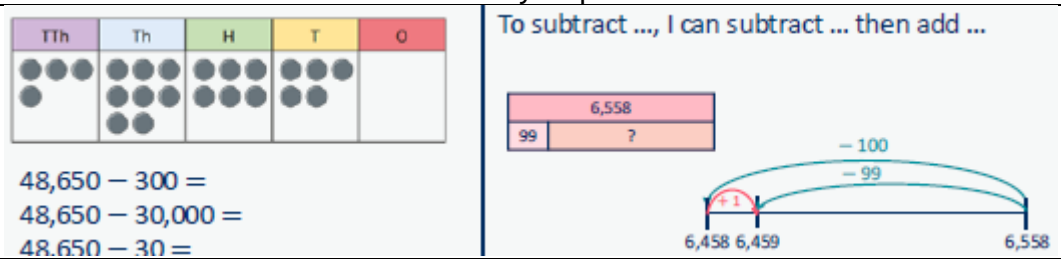
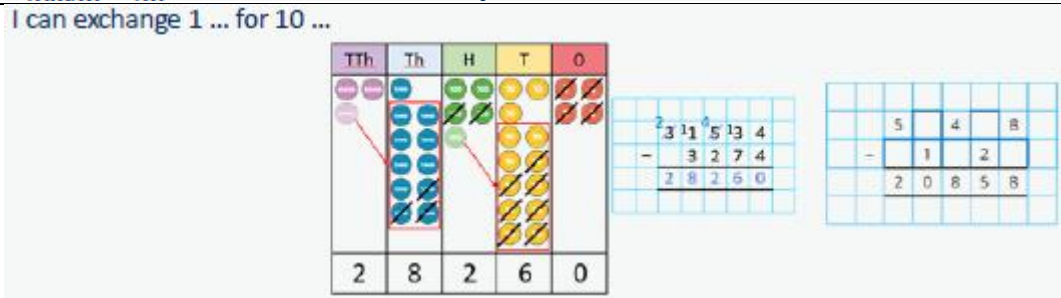
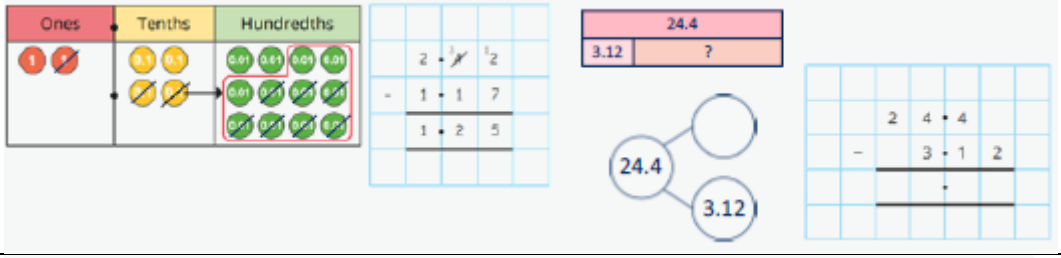
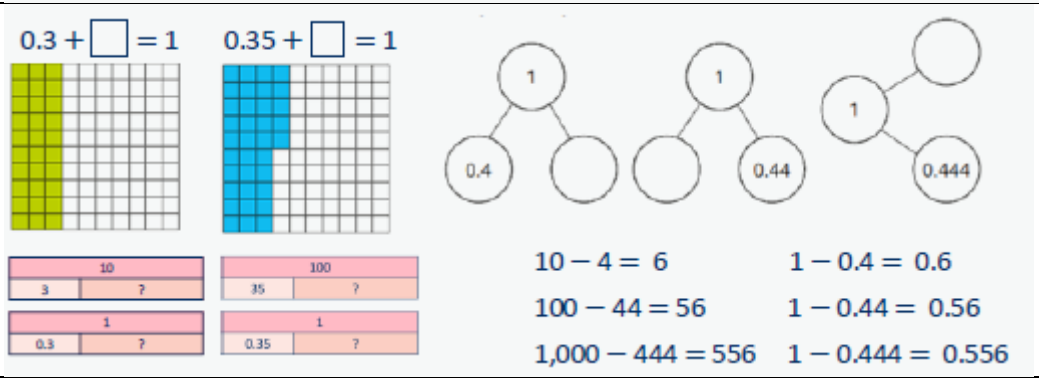
Subtract 2 two-digit numbers (not across a Ten) Line up columns	… ones − … ones = … ones … tens − … tens = … tens  3 ones − 1 one = 2 ones 4 tens − 2 tens = 2 tens 2 tens and 2 ones = 22
Subtract 2 two-digit numbers (crossing a Ten) Exchange 1 Ten for 10 Ones	I need to make an exchange because I do not have enough ones to subtract … ones.  3 ones − 5 ones (I need to exchange 1 ten for 10 ones) 13 ones − 5 ones = 8 ones 3 tens − 2 tens = 1 ten 1 ten and 8 ones = 18
Missing numbers (use inverse to check)	How many do you need to subtract to make …?  10 − □ = 6 6 + □ = 10 If … is a whole and … is a part, then … is the other part. 7 − 3 = □ □ + 3 = 7  … can be partitioned into … and … 18 − □ = 12 + 2 

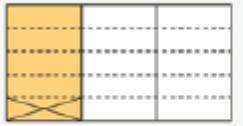
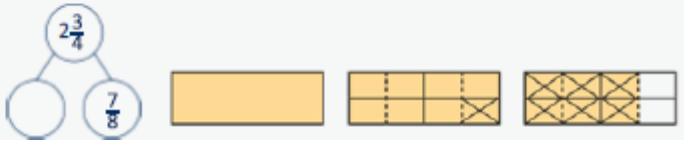
-Subtract numbers mentally, including: a three-digit number and Ones, a three-digit number and Tens, a three-digit number and Hundreds. -Subtract numbers with up to three digits, using formal written methods of columnar addition. -Subtract fractions with the same denominator within 1 whole.	
Skill	Key Representations and Sentence Stems
Subtract Ones, Tens or Hundreds from a three-digit number (mental strategies, link to bonds and related facts)	The ones/tens/hundreds column will decrease by ...   444 − 2 = 444 − 20 = 444 − 200 = 777 − 4 = 777 − 40 = 777 − 400 = What patterns do you notice? 235 − 3 = 235 − 30 = 235 − 300 = 624 − 20 = 654 − 50 = 694 − 90 = 118 − ☐ = 111 181 − ☐ = 111 811 − ☐ = 111
Subtract two numbers (no exchange) Formal method introduced	... ones − ... ones = ... ones ... tens − ... tens = ... tens ... hundreds − ... hundreds = ... hundreds     
Subtract two numbers across a Ten or Hundred (up to two exchanges)	I need to subtract ... ones. I do/do not need to make an exchange. I need to subtract ... tens. I do/do not need to make an exchange. I can exchange 1 ... for 10 ...        

Complements to 100 (subtraction facts)	100 minus ... is equal to ...  	I subtract ... tens, then I subtract ... ones. $100 - 38 = 62$ $100 - 62 = 38$ $62 = 100 - 38$ $38 = 100 - 62$ 
Subtract fractions with the same denominator within 1 whole	When subtracting fractions with the same denominator, I only subtract the numerator. ... fifths − ... fifths = ... fifths   	
-Subtraxct numbers with up to 4 digits using a formal written method. -Solve simple measure and money problems involving fractions and decimals to two decimal places. -Subtract fractions with the same denominator.		
Skill	Key Representations and Sentence Stems	
Subtract Ones, Tens and Hundreds to a four-digit number	The ones/tens/hundreds/thousands column will decrease by ...  $3,425 - 2 =$ $3,425 - 20 =$ $3,425 - 200 =$ $3,425 - 2,000 =$	What patterns do you notice? $4,356 - 3 =$ $4,356 - 30 =$ $4,356 - 300 =$ $4,356 - 3,000 =$ $6,940 - 200 =$ $6,940 - 300 =$ $6,940 - 400 =$ $4,433 - \square = 4,430$ $4,433 - \square = 4,033$ $4,433 - \square = 4,403$

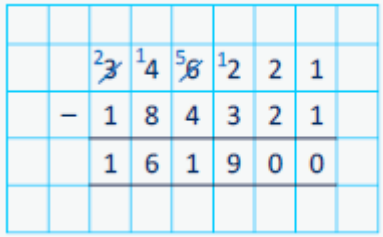
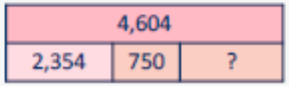
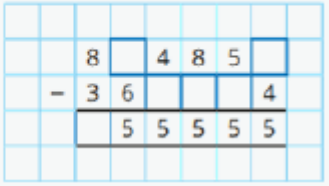
Subtract up to 2 four-digit numbers. (up to 3 exchanges)	I need to subtract... ones/tens/hundreds. I do/do not need to make an exchange. I can exchange 1... for 10...  
Subtract decimal numbers (in the context of money) Use partitioning and number lines	I can partition £... into £... and 100p £... − £... = £... 100p − ...p = ...p £5 − £3.26 £4 − £3 = £1 100p − 26p = 74p £5 - £3.26 = £1.74  £3.26 can be partitioned into £3 + 20p + 6p 
Subtract fractions and mixed numbers with the same denominator, including from wholes	When subtracting fractions with the same denominator, I only subtract the numerator. ... tenths − ... tenths = ... tenths   $\frac{16}{10} - \frac{5}{10}$  $\frac{16}{10} - \frac{9}{10}$ 

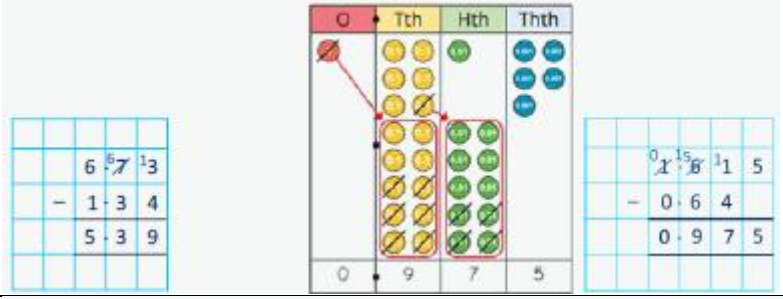
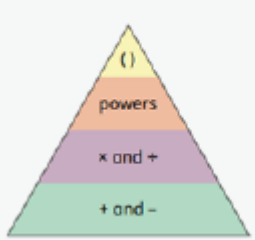
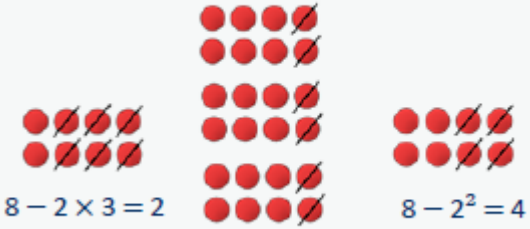
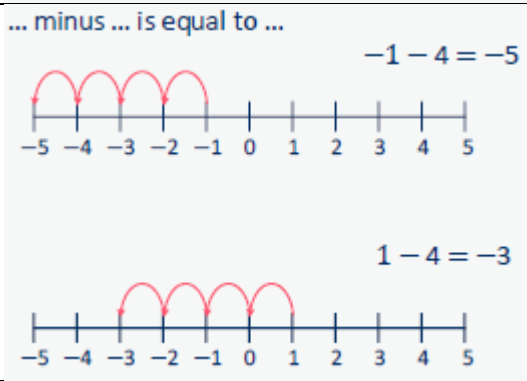
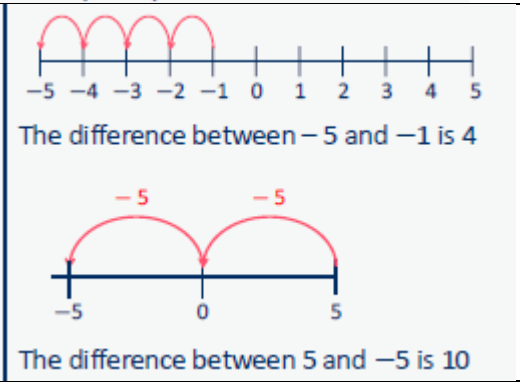
-Subtract whole numbers with more than 4 digits, including using formal written methods.
-Subtract numbers mentally with increasingly large numbers.
-Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1
-Subtract fractions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

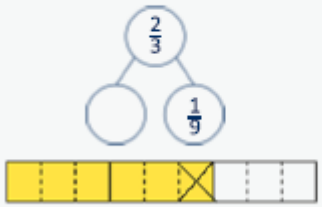
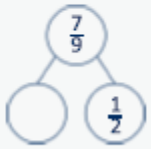
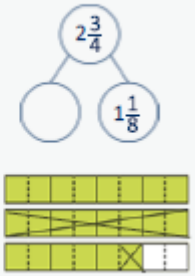
Skill	Key Representations and Sentence Stems
Subtract using mental strategies	
Subtract whole numbers with more than four digits	
Subtract decimals with up to two decimal places	
Complements to 1	

Subtract fractions with denominators that are factors (convert to equivalent fractions)	The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.  $\frac{1}{3}-\frac{1}{15}=\frac{5}{15}-\frac{1}{15}=\frac{4}{15}$  $\frac{2}{3}-\frac{2}{9}=\frac{6}{9}-\frac{2}{9}=\frac{4}{9}$ 

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

Skill	Key Representations and Sentence Stems
Subtract integers up to 10 million	  

Subtract decimals with up to three decimal places	I do/do not need to make an exchange because ... 
Order of operations (Calculations in brackets should be done first. Multiplication and division should be performed before addition and subtraction. When no brackets are shown and the operations have the same priority, work left to right.)	... has greater priority than ..., so the first part of the calculation I need to do is ...  
Negative Numbers (crossing zero)	... minus ... is equal to ...  

Subtract fractions	The denominator has been multiplied by ..., so the numerator needs to be multiplied by...  $\frac{2}{3} - \frac{1}{9} = \frac{6}{9} - \frac{1}{9} = \frac{5}{9}$	The lowest common multiple of ... and ... is ...  $\frac{7}{9} - \frac{1}{2} = \frac{14}{18} - \frac{9}{18} = \frac{5}{18}$	... is made up of ... wholes and ...  $2\frac{3}{4} - 1\frac{1}{8} = 1\frac{5}{8}$

Glossary

Addend - A number to be added to another.

Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative – numbers can be added in any order.

Complement – in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference – the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange – Change a number or expression for another of an equal value.

Minuend – A quantity or number from which another is subtracted.

Partitioning – Splitting a number into its component parts.

Reduction – Subtraction as take away.

Subitise – Instantly recognise the number of objects in a small group without needing to count.

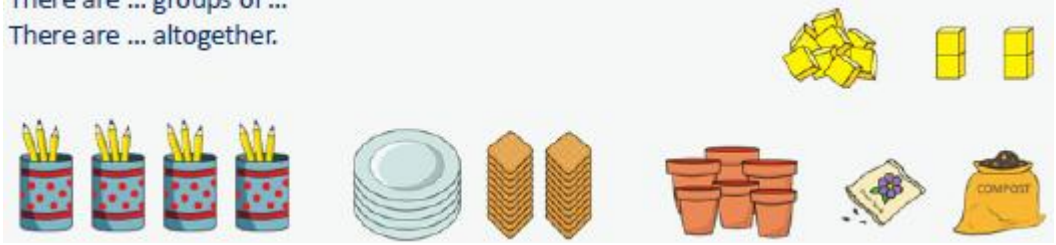
Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.

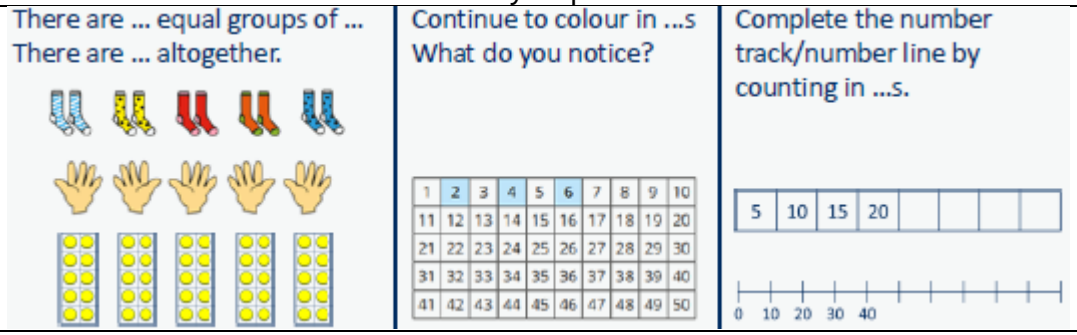
Total – The aggregate or the sum found by addition.

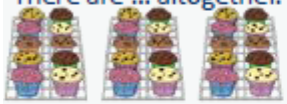
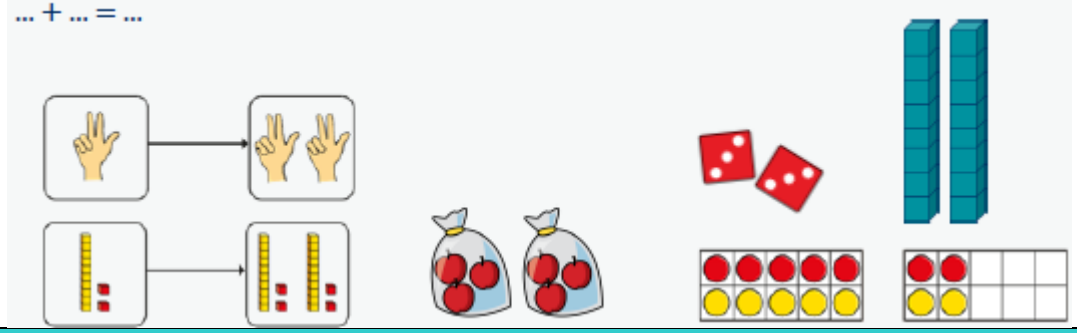
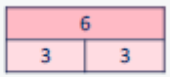
Multiplication

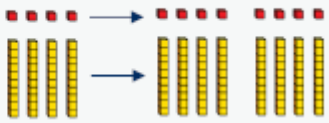
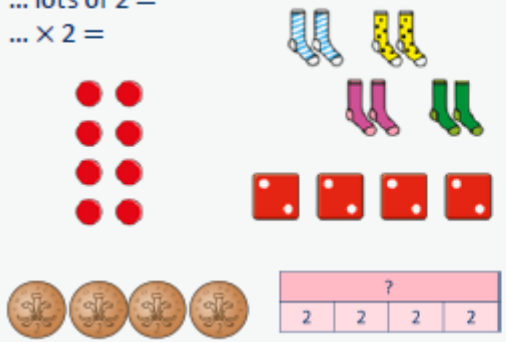
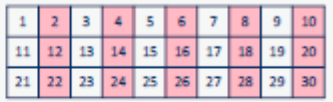
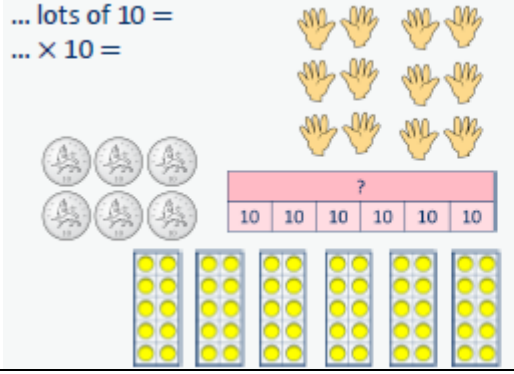
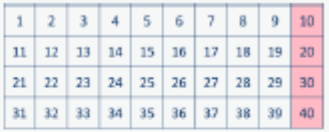
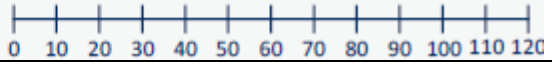
-Develop a deep understanding of numbers to 10, including the composition of each number.
-Subitise (recognise quantities without counting) up to 5
-Automatically recall number bonds up to 5 and some number bonds to 10, including double facts.
-Explore and represent patterns with numbers up to 10, including evens and odds and how quantities can be distributed equally.

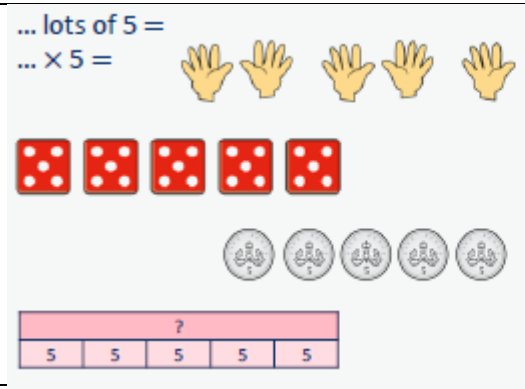
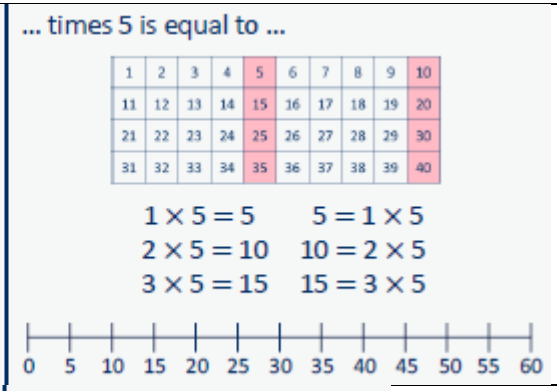
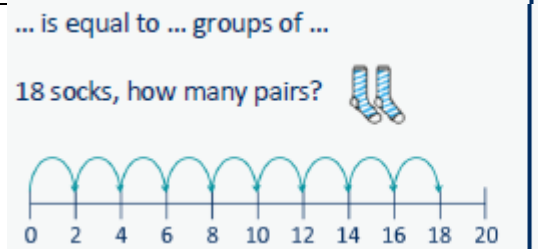
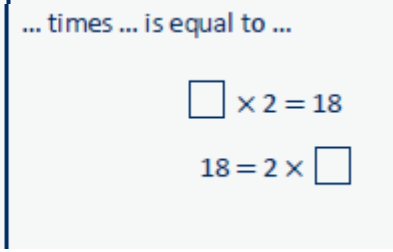
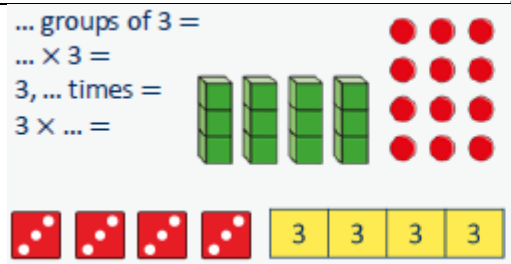
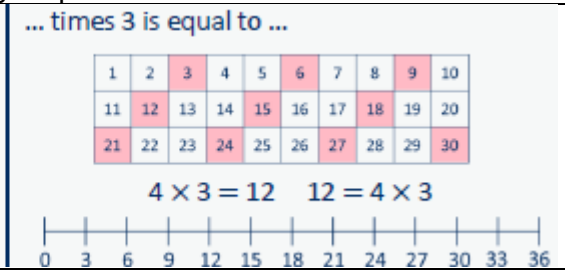
Skill	Key Representations and Sentence Stems
Double to 10	
Make equal groups	

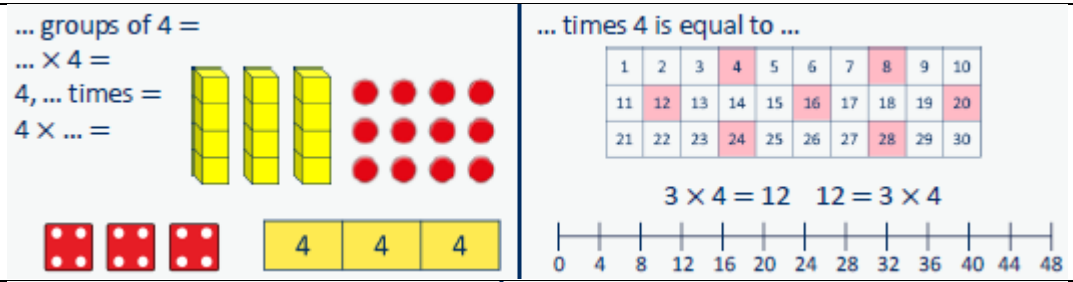
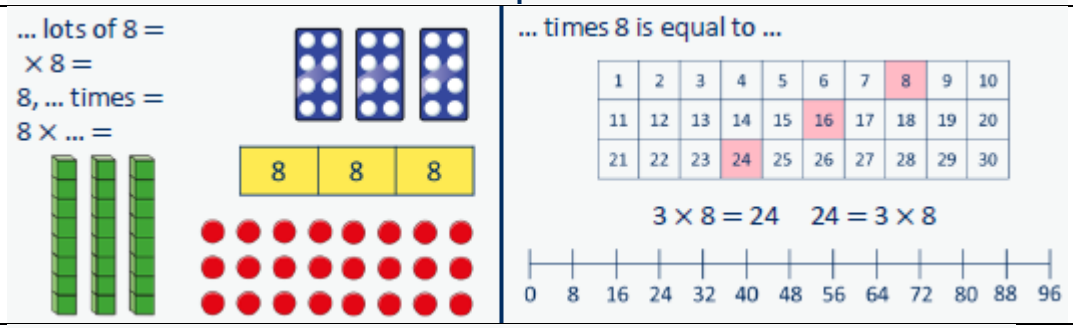
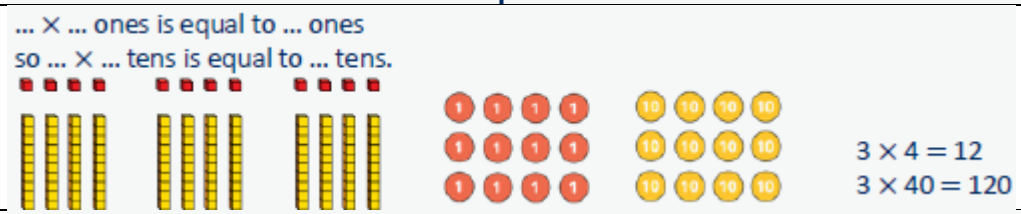
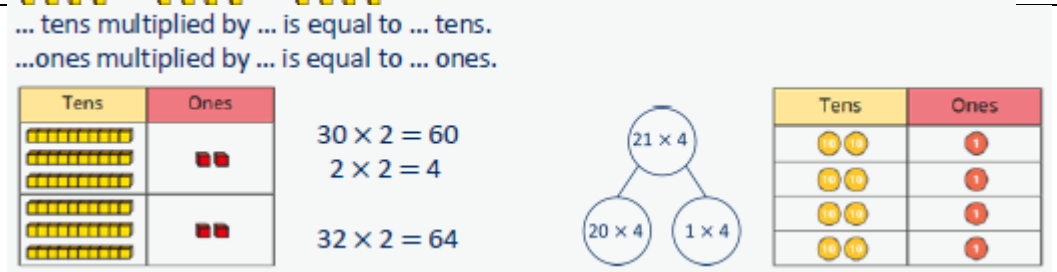
Count in multiples of twos, fives and tens.
-Solve one-step problems involving multiplication, including using arrays, with support.

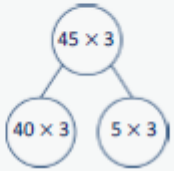
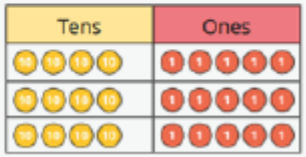
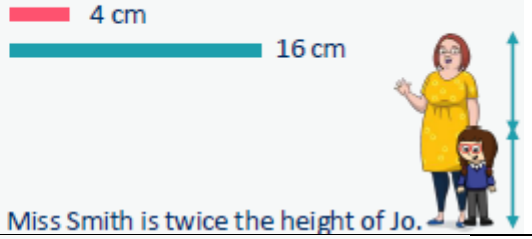
Skill	Key Representations and Sentence Stems
Count in 2s, 5s and 10s	

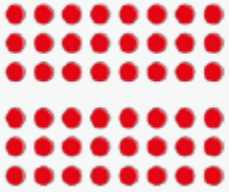
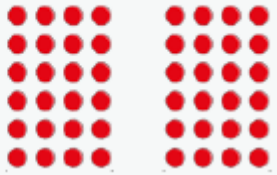
Add equal groups (repeated addition)	There are ... groups of ... There are ... altogether.  $10 + 10 + 10 = 30$  $5 + 5 + 5 + 5 = 20$ What is the same? What is different? $2 + 2 + 2 =$ $5 + 5 + 5 =$ $10 + 10 + 10 =$ Use objects or a drawing to represent the equal groups and find how many in total.
Make arrays	There are ... rows of ... There are ... altogether. There are ... columns of ... There are ... altogether. 
Make doubles	Double ... is ... ... + ... = ... 
-Recall and use multiplication facts for the 2, 5 and 10 multiplication tables. -Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs. -Show that multiplication of two numbers can be done in any order (commutative).	
Skill	Key Representations and Sentence Stems
Link repeated addition and multiplication	There are ... equal groups with ... in each group. There are ... altogether.   6 3 3 $3 + 3 = 6$ $2 \times 3 = 6$  20 5 5 5 5 $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$

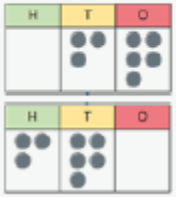
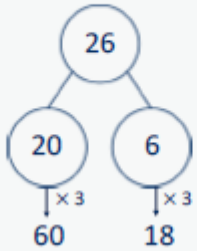
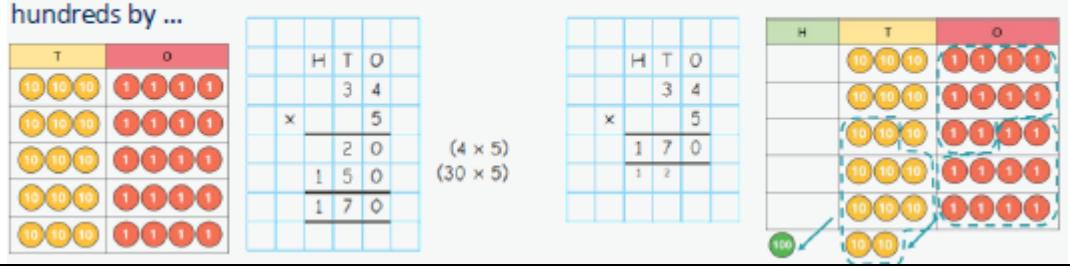
Use arrays	There are ... rows with ... in each row. There are ... columns with ... in each column.  3 lots of 5 = 15 5 + 5 + 5 = 15 5 lots of 3 = 15 3 + 3 + 3 + 3 + 3 = 15	I can see ... × ... and ... ×... 3 × 5 = 15 5 × 3 = 15 3 × 5 = 5 × 3
Double	Double ... is ...  Double 4 = 4 + 4 Double 4 is 8	Double ... is ... so double ... is ...  Double 4 is 8 Double 40 is 80
2 Times Table	... lots of 2 = ... × 2 =  	... times 2 is equal to ...  1 × 2 = 2 2 = 1 × 2 2 × 2 = 4 4 = 2 × 2 3 × 2 = 6 6 = 3 × 2 
10 Times Table	... lots of 10 = ... × 10 =  	... times 10 is equal to ...  1 × 10 = 10 10 = 1 × 10 2 × 10 = 20 20 = 2 × 10 3 × 10 = 30 30 = 3 × 10 

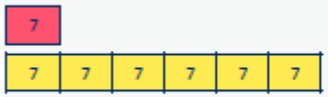
5 Times Table		
Missing numbers (link to known facts)		
-Recall and use multiplication facts for the 3, 4 and 8 multiplication tables. -Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. -Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.		
Skill	Key Representations and Sentence Stems	
3 Times Table		

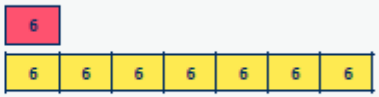
4 Times Table	
8 Times Table	
Related Facts (link to scaling by 10)	
Multiply a two-digit number by a one-digit number (no exchange)	

Multiply a two-digit number by a one-digit number (with exchange)	... tens multiplied by ... is equal to ... tens. ... ones multiplied by ... is equal to ... ones.  $20 \times 4 = 80$ $4 \times 4 = 16$ $24 \times 4 = 96$  
Scaling	There are .... times as many ... as ...  There are 3 times as many triangles as circles. ... is ... times the size of ... ... is ... times the length/height of ...  Miss Smith is twice the height of Jo.
Correspondence Problems (how many ways?)	For every ... , there are ... possible ... There are ... × ... possibilities altogether.   For every hat, there are two possible scarves. $3 \times 2 = 6$ There are 6 possibilities altogether.

-Recall multiplication facts for multiplication tables up to 12 × 12 -Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers. -Recognise and use factor pairs and commutativity in mental calculations. -Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. -Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	
Skill	Key Representations and Sentence Stems
Times Tables Facts to 12 x 12	… groups of … = … times … is equal to … … × … = 
Multiply by one and zero	Any number multiplied by 1 is equal to … Any number multiplied by 0 is equal to …  … × … = … $1 \times 1 = 1$ $1 \times 0 = 0$ $2 \times 1 = 2$ $2 \times 0 = 0$ $3 \times 1 = 3$ $3 \times 0 = 0$ $4 \times 1 = 4$ $4 \times 0 = 0$
Multiply three numbers	To work out … × … × …, I can first calculate … × … and then multiply the answer by …  $4 \times 2 \times 3 = 8 \times 3 = 24$ $2 \times 3 \times 4 = 6 \times 4 = 24$ $3 \times 4 \times 2 = 12 \times 2 = 24$
Factor pairs	12 = … × …, so … × 12 = … × … × …  $8 \times 6 = 8 \times 3 \times 2$ $8 \times 6 = 24 \times 2$  $6 \times 8 = 6 \times 4 \times 2$ $6 \times 8 = 24 \times 2$

Multiply by 10 and 100	When I multiply by 10, the digits move ... place value column to the left. ... is 10 times the size of ...  $35 \times 10 = 350$ When I multiply by 100, the digits move ... place value columns to the left. ... is 100 times the size of ...  $14 \times 100 = 1{,}400$
Related facts (scale by 10 and 100)	... × ... ones is equal to ... ones so ... × ... tens is equal to ... tens and ... × ... hundreds is equal to ... hundreds.  $3 \times 7 = 21$ $3 \times 70 = 210$ $3 \times 700 = 2{,}100$ $7 \times 3 = 21$ $7 \times 30 = 210$ $7 \times 300 = 2{,}100$
Mental strategies (partition)	... tens multiplied by ... is equal to ... tens. ...ones multiplied by ... is equal to ... ones.  $3 \times 26 = 60 + 18 = 78$   $26 \times 8 = 80 + 80 + 48 = 208$
Multiply a two or three-digit number by a one-digit number (expanded form short multiplication)	To multiply a 2-digit number by ... , I multiply the ones by ... and the tens by ... To multiply a 3-digit number by ... , I multiply the ones by ... , the tens by ... and the hundreds by ...  (4×5) (30×5)

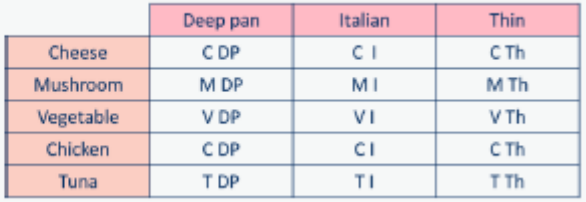
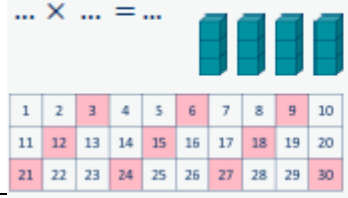
<table>
<tr><td>Scaling</td><td>... is ... times the size of ...
 

A computer mouse costs £7
A keyboard costs 6 times as much.
 

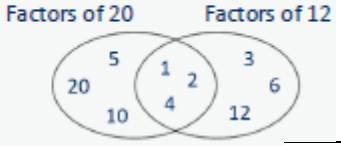
A red ribbon is 6 cm.
A yellow ribbon is 7 times as long.</td></tr>
<tr><td>Correspondence problems</td><td>For every ... , there are ... possibilities.
There are ... × ... possibilities altogether.

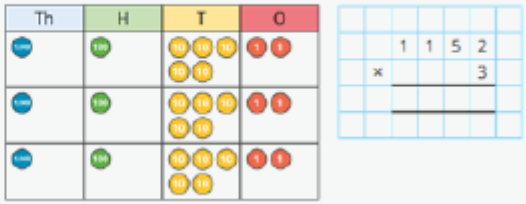
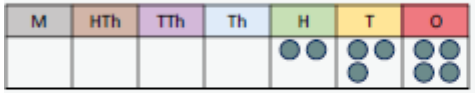
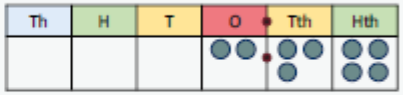
A pizza company offers a choice of 5 toppings and 3 bases.

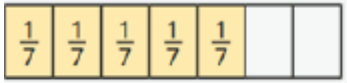
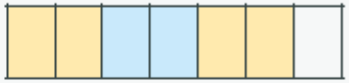
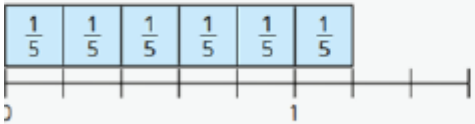
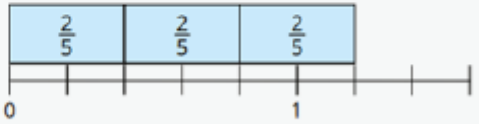
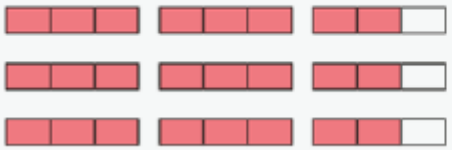
5 × 3 = 15

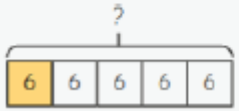
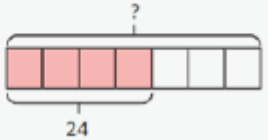
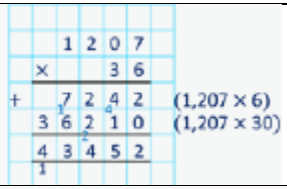
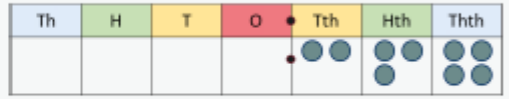
 
</td></tr>
<tr><td colspan="2">-Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
-Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)
-Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
-Multiply numbers mentally drawing upon known facts.
-Multiply whole numbers and those involving decimals by 10, 100 and 1000
-Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</td></tr>
<tr><td>Skill</td><td>Key Representations and Sentence Stems</td></tr>
<tr><td>Multiples and factors
(link known facts)</td><td>... is a multiple of ... because
... × ... = ...
 

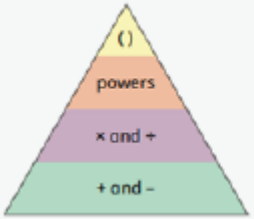
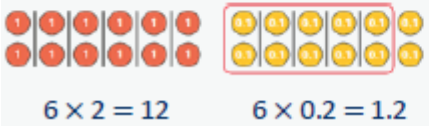
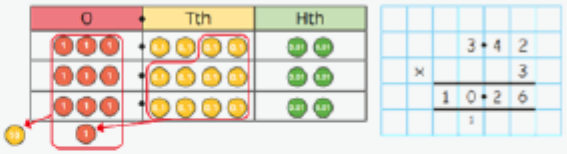
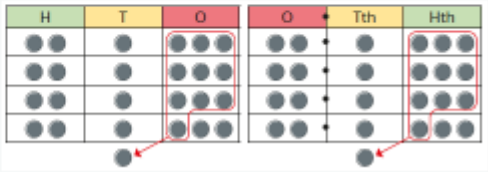
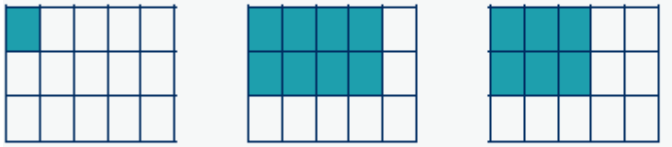
... is a factor of ... because
... × ... = ...
 

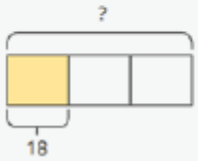
1, 2, 4 and 8 are factors of 8
The common factors of ... and ... are ...
 
</td></tr>
<tr><td>Square and cube numbers</td><td>... squared means ... × ...
 
1 × 1 = 1² = 1
2 × 2 = 2² = 4
3 × 3 = 3² = 9
4 × 4 = 4² = 16
... cubed means ... × ... × ...
 
1 × 1 × 1 = 1³ = 1
2 × 2 × 2 = 2³ = 8
3 × 3 × 3 = 3³ = 27</td></tr>
</table>

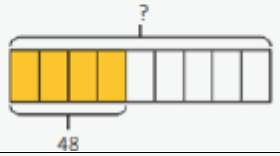
Multiply numbers with up to four digits by a one-digit number	To multiply a 4-digit number by … , I multiply the ones by … , the tens by … , the hundreds by … and the thousands by … 
Multiply numbers with up to four digits by a two-digit number	I can partition … into … and …  × 40 4 30 1,200 120 2 80 8 $32 \times 44 = 1{,}200 + 80 + 120 + 8$ $32 \times 44 = 1{,}408$ First, I multiply by the … Then I multiply by the … × 10 3 30 300 90 2 20 6 300 + 90 + 20 + 6 = 416  (32 × 3) (32 × 10)
Multiply by 10, 100 and 1000	To multiply by 10/100/1,000, I move all the digits … places to the left. … is 10/100/1,000 times the size of …   $234 \times 10 = 2{,}340$ $234 \times 100 = 23{,}400$ $234 \times 1{,}000 = 234{,}000$ $2.34 \times 10 = 23.4$ $2.34 \times 100 = 234$ $2.34 \times 1{,}000 = 2{,}340$

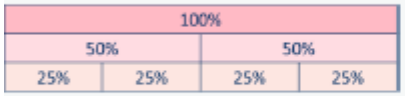
Mental strategies (partitioning, factor pairs, related facts)	The most efficient strategy to calculate ... × ... is ... To calculate ... × 12, I can do ... × ... × ... For example: 121 × 12 I could calculate 100 × 12 plus 20 × 12 plus 1 × 12 I could calculate 121 × 10 plus 121 × 2 I could calculate 121 × 6 × 2 I could calculate 121 × 4 × 3
Mutliply fractions by a whole number (link to repeated addition)	To multiply a fraction by an integer, I multiply the numerator by the integer and the denominator remains the same.  $\frac{1}{7} \times 5 = \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{5}{7}$  $\frac{2}{7} \times 3 = \frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7}$  $\frac{1}{5} \times 6 = \frac{6}{5} = 1\frac{1}{5}$  $\frac{2}{5} \times 3 = \frac{6}{5} = 1\frac{1}{5}$
Multiply mixed numbers by a whole number	I can partition $\square\frac{\square}{\square}$ into $\square$ and $\frac{\square}{\square}$  $2\frac{2}{3} \times 3$ $2 \times 3 = 6$ $\quad \frac{2}{3} \times 3 = \frac{6}{3} = 2$ $2\frac{2}{3} \times 3 = 6 + 2 = 8$

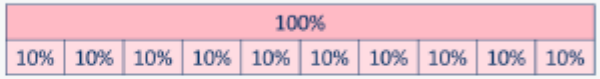
Find the whole	If $\frac{1}{\square}$ is … , then the whole is … × … $\frac{1}{5}$ of $\_\_ = 6$  $5 \times 6 = 30$ $\frac{1}{5}$ of $30 = 6$ If $\frac{\square}{\square}$ is … , then $\frac{1}{\square}$ is … and the whole is … × … $\frac{4}{7}$ of $\_\_ = 24$  $\frac{1}{7} = 24 \div 4 = 6$ $7 \times 6 = 42$ $\frac{4}{7}$ of $42 = 24$
-Identify common factors and common multiples. -Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. -Multiply numbers by 10, 100 and 1,000 -Multiply one-digit numbers with up to two decimal places by whole numbers. -Use knowledge of the order of operations to carry out calculations involving the 4 operations. -Multiply simple pairs of proper fractions, writing the answer in its simplest form. -Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. -Solve problems involving the calculation of percentages.	
Skill	Key Representations and Sentence Stems
Multiply numbers up to four digits by a two-digit number	To multiply by a 2-digit number, first multiply by the ones, then multiply by the tens and then find the total. 
Multiply by 10, 100 and 1000	To multiply by 10/100/1,000, I move all the digits … places to the left. … is 10/100/1,000 times the size of …   $234 \times 10 = 2{,}340$ $234 \times 100 = 23{,}400$ $234 \times 1{,}000 = 234{,}000$ $0.234 \times 10 = 2.34$ $0.234 \times 100 = 23.4$ $0.234 \times 1{,}000 = 234$

Order of operations (Calculations in brackets should be done first. Multiplication and division should be performed before addition and subtraction.)	… has greater priority than …, so the first part of the calculation I need to do is …   $(3+4)\times 2=14$  $3+4^2=19$  $3+4\times 2=11$
Multiply decimals by integers	I know that … × … = …, so I also know that … × … = …
	I need to exchange 10 … for 1 …
	 $6\times 2=12$ $\quad 6\times 0.2=1.2$
	  $213\times 4=852$ $\quad 2.13\times 4=8.52$
Multiply fractions by fractions	When multiplying a pair of fractions, I need to multiply the numerator and multiply the denominator.  $\frac{1}{3}\times\frac{1}{5}=\frac{1}{15}$ $\quad \frac{2}{3}\times\frac{4}{5}=\frac{8}{15}$ $\quad \frac{2}{3}\times\frac{3}{5}=\frac{6}{15}=\frac{2}{5}$

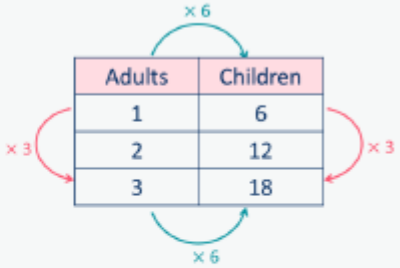
<table>
<tr>
<td>Find the whole</td>
<td>
If $\frac{1}{\square}$ is … , then the whole is … × …
$\frac{1}{3}$ of ___ = 18


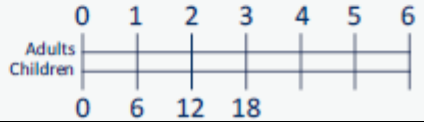
18 × 3 = 54
$\frac{1}{3}$ of 54 = 18
If $\frac{\square}{\square}$ is … , then $\frac{1}{\square}$ is … and the whole is … × …
$\frac{4}{9}$ of ___ = 48


$\frac{1}{9}$ = 48 ÷ 4 = 12
9 × 12 = 108
$\frac{4}{9}$ of 108 = 48
</td>
</tr>
<tr>
<td>Calculate percentages
(1%, 10%, 20%, 25%, 50%, any)</td>
<td>
There are … lots of … % in 100%
To find … %, I need to divide by …


50% of … = …÷ 2
25% of … = …÷ 4
… % is made up of … %, and … %


To find 30%, I can find 10% and then multiply it by 3
To find 23%, I can use 10% × 2 and 1% × 3
To find 99%, I can find 1%, then subtract from 100%
</td>
</tr>
<tr>
<td>Calculations involving ratio</td>
<td>
For every … , there are …
For every 1 adult on a school trip, there are 6 children.

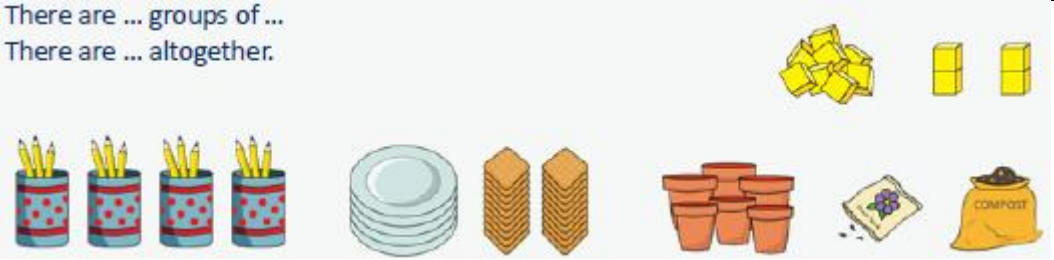





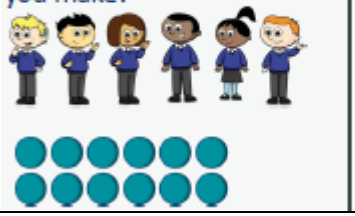
The ratio of adults to children is 1 : 6
</td>
</tr>
</table>

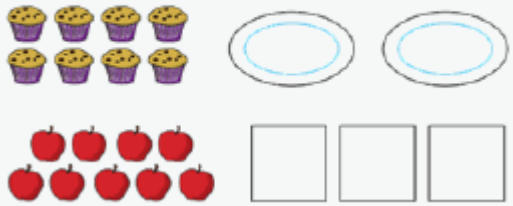
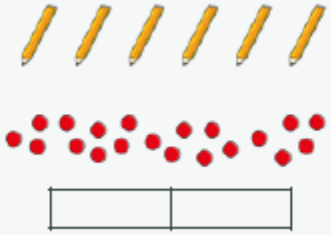
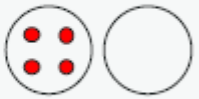
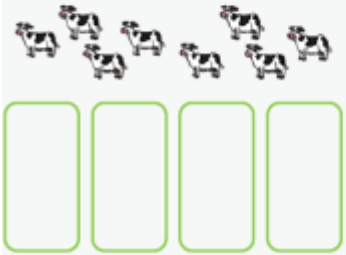
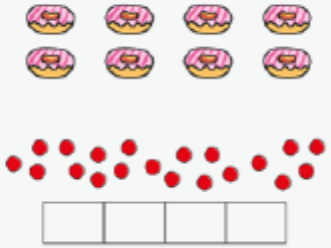
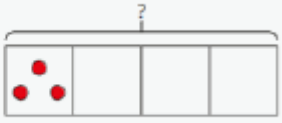
Division

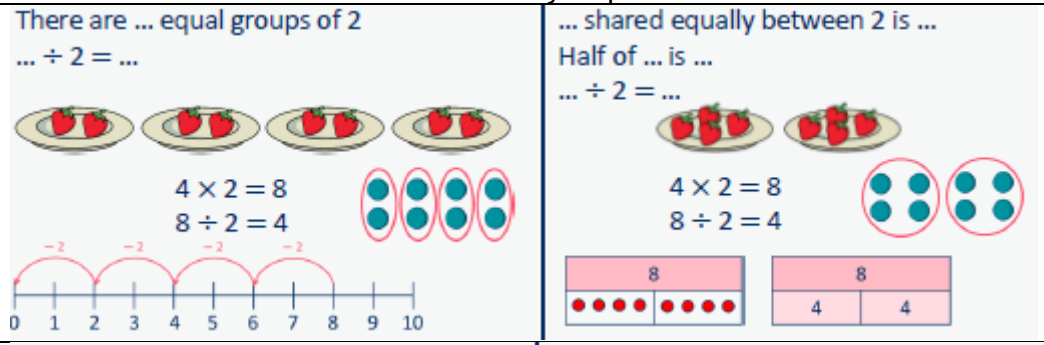
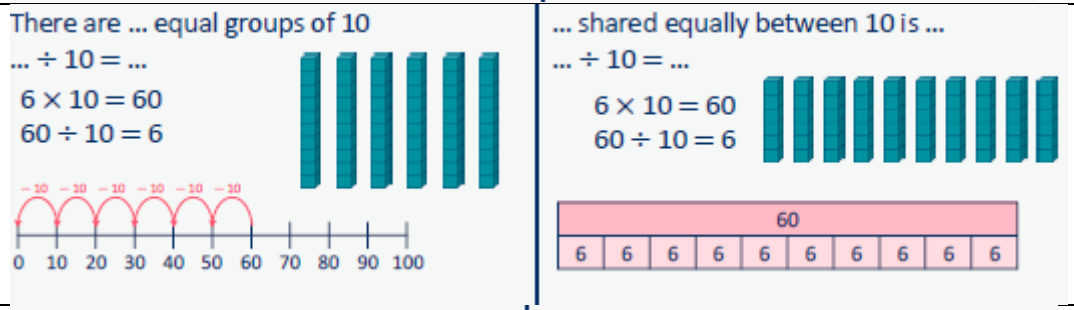
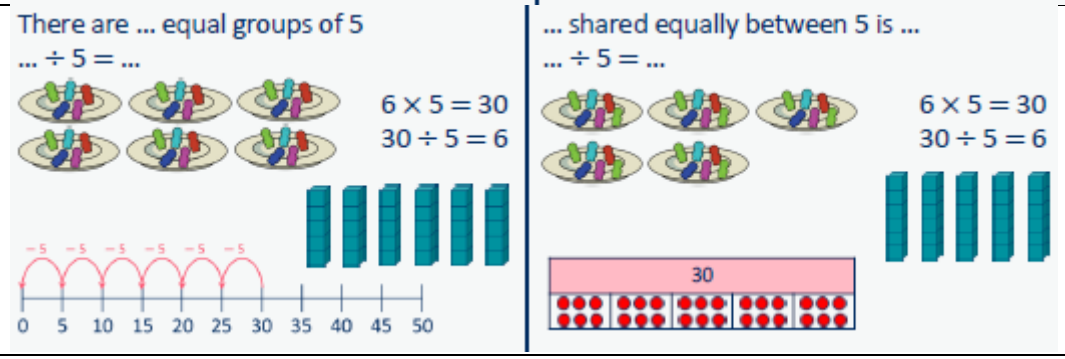
-Develop a deep understanding of numbers to 10, including the composition of each number.
-Subitise (recognise quantities without counting) up to 5
-Automatically recall number bonds up to 5 and some number bonds to 10, including double facts.
-Explore and represent patterns with numbers up to 10, including evens and odds and how quantities can be distributed equally.

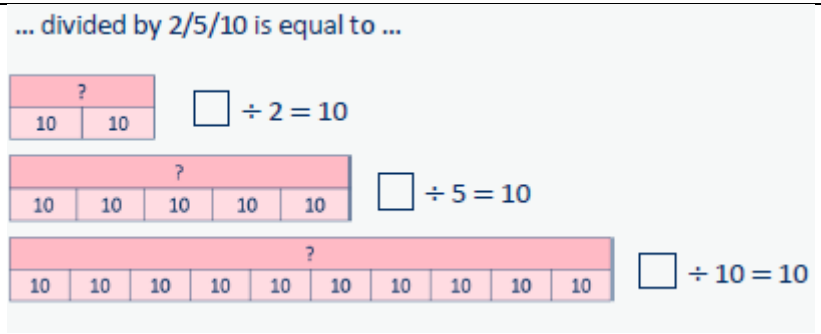
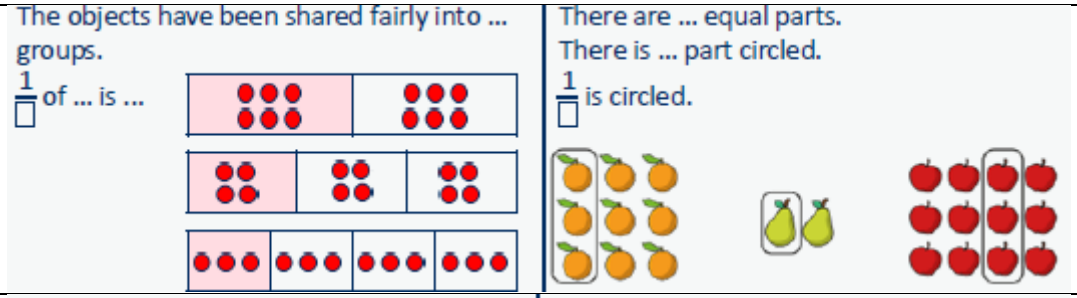
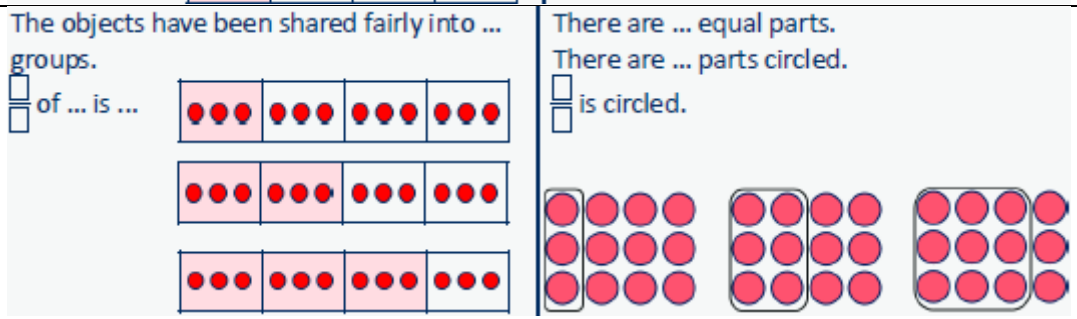
Skill	Key Representations and Sentence Stems
Sharing	There are ... altogether. They are shared equally between ... groups. 
Grouping	There are ... groups of ... There are ... altogether. 

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

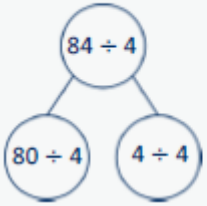
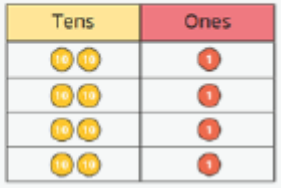
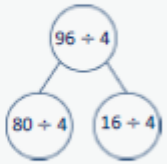
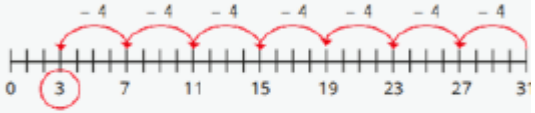
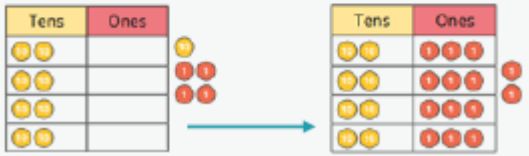
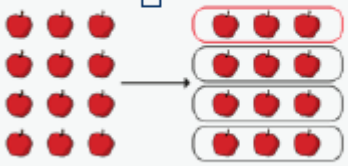
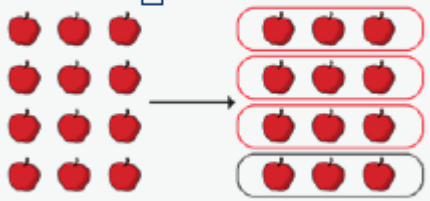
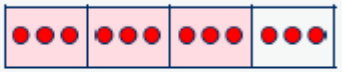
Skill	Key Representations and Sentence Stems		
Make equal groups - grouping	There are ... altogether. How many groups of ... can you make? 	Circle groups of 2 There are ... groups of 2 	Take ... cubes. Make equal groups.  There are ... groups of ...

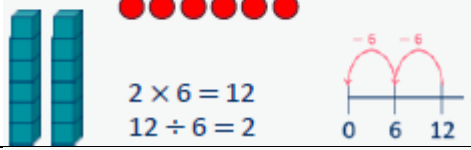
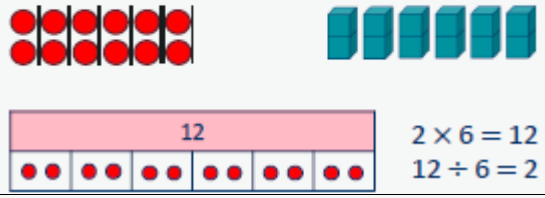
Make equal groups - sharing	... have been shared equally between... There are ... on/in each ... 	Take ... cubes. Share them between ...  12 shared between ... is ...	
Find a half	To find half, I need to share into 2 equal groups.  There are ... in each group	Half of ... is ... 	If ... is half, what is the whole?  4 is half of ...
Find a quarter	To find a quarter, I need to share into 4 equal groups.  There are ... in each group	A quarter of ... is ... 	If ... is one quarter, what is the whole?  3 is one quarter of

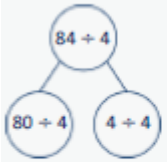
-Recall and use division facts for the 2, 5 and 10 multiplication tables. -Calculate mathematical statements for division within the multiplication tables and write them using the division (÷) and equals (=) signs. -Recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a quantity.	
Skill	Key Representations and Sentence Stems
Divide by 2	
Divide by 10	
Divide by 5	

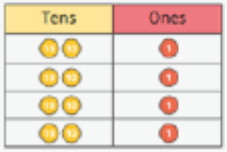
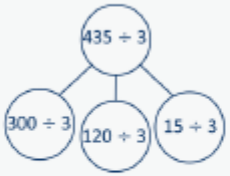
Missing numbers (bar models)	
Unit fractions	
Non-unit fractions	

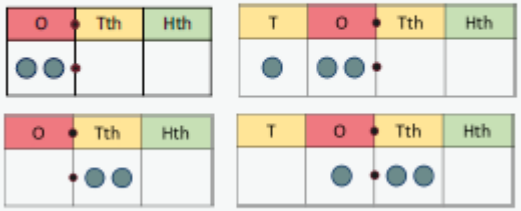
-Recall and use division facts for the 3, 4 and 8 multiplication tables. -Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. -Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	
Skill	Key Representations and Sentence Stems
Divide by 3	There are ... groups of 3 in ... ... ÷ 3 = 2 × 3 = 6 6 ÷ 3 = 2 ... has been shared equally into 3 equal groups. ... ÷ 3 = 2 × 3 = 6 6 ÷ 3 = 2
Divide by 4	There are ... groups of 4 in ... ... ÷ 4 = 2 × 4 = 8 8 ÷ 4 = 2 ... has been shared equally into 4 equal groups. ... ÷ 4 = 2 × 4 = 8 8 ÷ 4 = 2
Divide by 8	There are ... groups of 8 in ... ... ÷ 8 = 2 × 8 = 16 16 ÷ 8 = 2 ... has been shared equally into 8 equal groups. ... ÷ 8 = 2 × 8 = 16 16 ÷ 8 = 2
Related Facts (link to multiplication facts)	... ÷ ... is equal to ..., so ... tens ÷ ... is equal to ... tens. 12 ÷ 3 = 4 120 ÷ 3 = 40

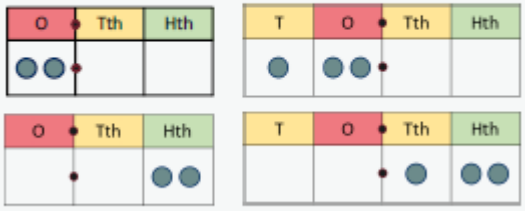
Divide a two-digit number by a one-digit number (no exchange)	... tens divided by ... is equal to ... tens. ... ones divided by ... is equal to ... ones.  $60 \div 2 = 30$ $4 \div 2 = 2$ $64 \div 2 = 32$  	
Multiply a two-digit number by a one-digit number (with exchange) Flexible partitioning	... tens divided by ... is equal to ... tens. ... ones divided by ... is equal to ... ones.   $80 \div 4 = 20$ $16 \div 4 = 4$ $96 \div 4 = 24$	There are ... groups of ... There are ... remaining. $31 \div 4 = 7$ r3  $94 \div 4 = 23$ r2 
Unit fractions of a set of objects	The whole is divided into ... equal parts. Each part is $\frac{1}{\square}$ of the whole.  $\frac{1}{\square}$ of 12 apples is 3 apples.	One ... of ... is ... $\frac{1}{4}$ of 12 is 3  $\frac{1}{3}$ of 36 is 12 
Non-unit fractions of a set of objects	The whole is divided into ... equal parts. Each part is $\frac{1}{\square}$ of the whole.  $\frac{3}{4}$ of 12 apples is 9 apples.	$\frac{1}{\square}$ of ... is ..., so $\frac{\square}{\square}$ of ... is ... $\frac{3}{4}$ of 12 is 9  $\frac{2}{3}$ of 36 is 24 

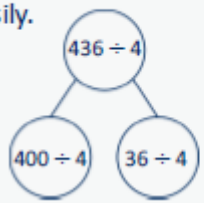
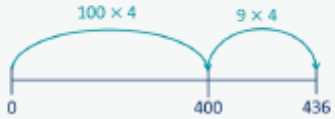
-Recall division facts for multiplication tables up to 12 × 12 -Use place value, known and derived facts to divide mentally, including: dividing by 1. -Recognise and use factor pairs and commutativity in mental calculations. -Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	
Skill	Key Representations and Sentence Stems
Division facts to 12 x 12	There are ... groups of ... in ... ... ÷ ... =  ... has been shared equally into ... equal groups. ... ÷ ... = 
Divide a number by one and itself	When I divide a number by 1, the number remains the same. 5 shared between 1 is 5  There are 5 groups of 1 in 5  When I divide a number by itself, the answer is 1 5 shared between 5 is 1  There is 1 group of 5 in 5 
Related facts	... ÷ ... is equal to ... so ... tens ÷ ... is equal to ... tens and ... hundreds ÷ ... is equal to ... hundreds.  21 ÷ 7 = 3 210 ÷ 7 = 30 2,100 ÷ 7 = 300 21 ÷ 3 = 7 210 ÷ 3 = 70 2,100 ÷ 3 = 700

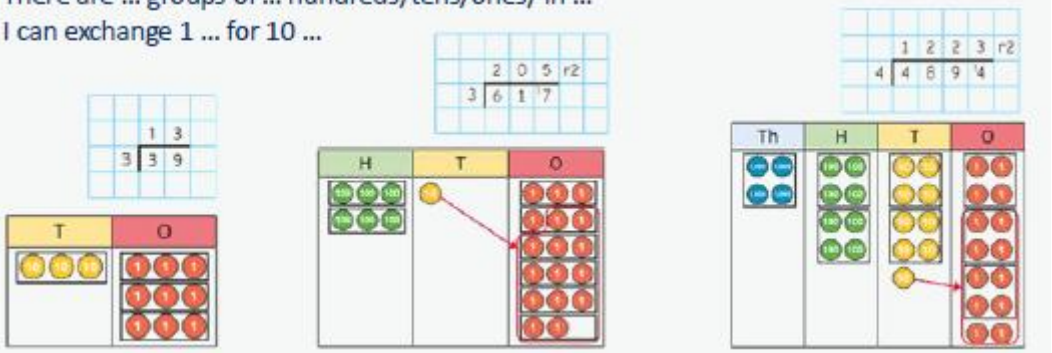
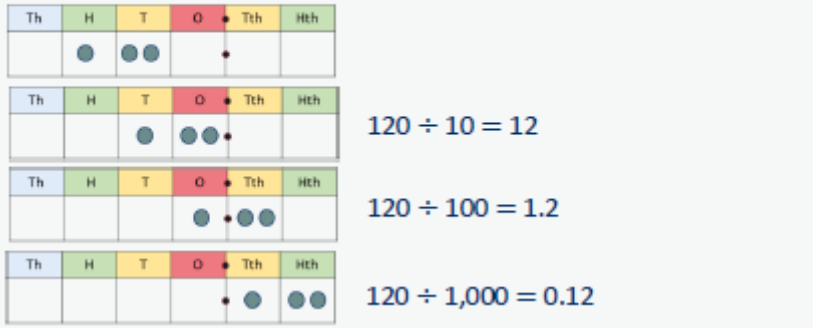
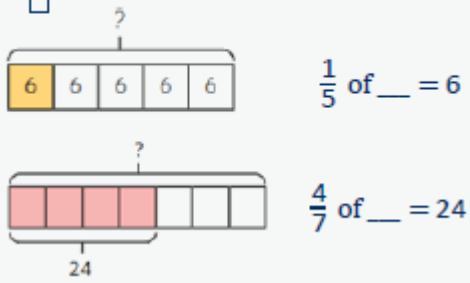
<table>
<tr><td>Divide a two- or three-digit number by a one-digit number (no exchange, exchanges, remainders)</td><td colspan="2">I can partition ... into ... tens and ... ones.
 

80 ÷ 4 = 20
4 ÷ 4 = 1
84 ÷ 4 = 21
 
</td><td>I cannot share the hundreds/tens equally, so I need to exchange 1 ... for 10 ...
 

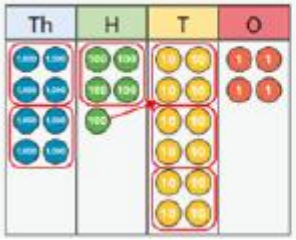
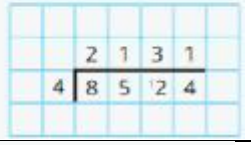
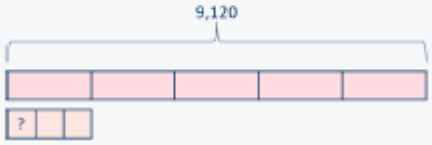
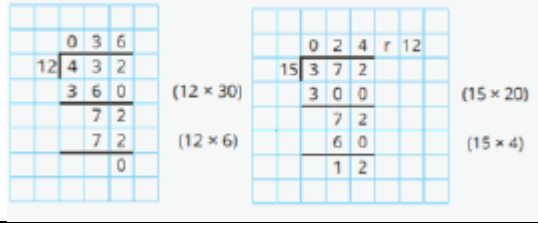
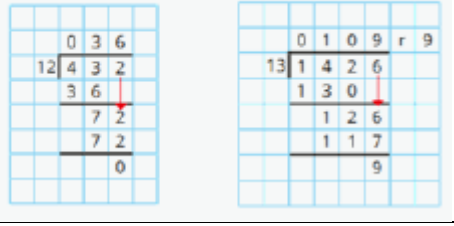
300 ÷ 3 = 100
120 ÷ 3 = 40
15 ÷ 3 = 5
435 ÷ 3 = 145
 
</td></tr>
<tr><td>Divide by 10 and 100</td><td colspan="2">When I divide by 10, the digits move 1 place value column to the right.
... is one-tenth the size of ...
 

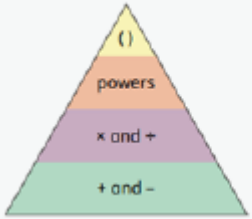
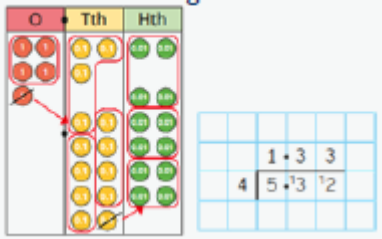
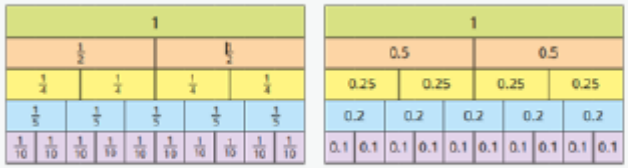
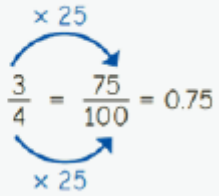
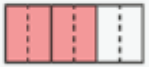
2 ÷ 10 = 0.2
12 ÷ 10 = 1.2</td><td>When I divide by 100, the digits move 2 place value columns to the right.
... is one-hundredth the size of ...
 

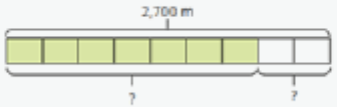
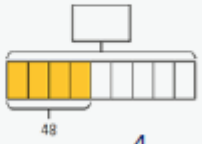
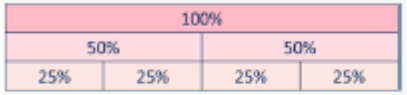
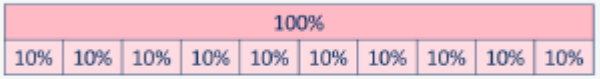
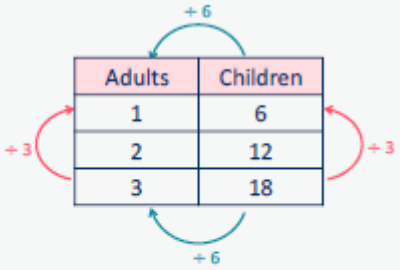
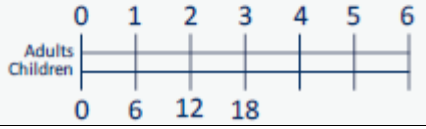
2 ÷ 100 = 0.02
12 ÷ 100 = 0.12</td></tr>
<tr><td colspan="3">-Divide numbers mentally drawing upon known facts.
-Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
-Divide whole numbers and those involving decimals by 10, 100 and 1,000</td></tr>
<tr><td>Skill</td><td colspan="2">Key Representations and Sentence Stems</td></tr>
<tr><td>Mental strategies</td><td>I can partition ... into ... and ... to help me to divide more easily.
 
</td><td>I can show groups of ... on a number line.
 
</td><td>To divide by ..., I can divide by ... and then divide the result by ...
436 ÷ 4 = 436 ÷ 2 ÷ 2
436 ÷ 2 = 218
218 ÷ 2 = 109</td></tr>
</table>

Divide numbers with up to four digits by a one-digit number (short division)	There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ... 
Divide by 10, 100 and 1000	To divide by 10/100/1,000, I move all the digits ... places to the right. ... is one-tenth/one-hundredth/one-thousandth the size of ... 
Fraction of an amount	To find $\frac{\square}{\square}$ of ... , I need to divide by ... and multiply by ...  $\frac{1}{5}$ of 20 = $\frac{1}{4}$ of 84 = $\frac{3}{5}$ of 20 = $\frac{3}{4}$ of 84 = If $\frac{1}{\square}$ is ... , then the whole is ... × ...  $\frac{1}{5}$ of ___ = 6 $\frac{4}{7}$ of ___ = 24

-Perform mental calculations, including with mixed operations and large numbers.
-Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
-Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
-Divide numbers by 10, 100 and 1,000 giving answers up to three decimal places.
-Use written division methods in cases where the answer has up to two decimal places.
-Associate a fraction with division and calculate decimal fraction equivalents.
-Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 =1/6]
-Solve problems involving the calculation of percentages.

Skill	Key Representations and Sentence Stems
Short division	There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ...  
Mental strategies	To divide by ... , I can first divide by ... and then divide the answer by ... 240 ÷ 60 = 240 ÷ 10 ÷ 6  480 ÷ 24 = 480 ÷ 4 ÷ 6  9,120 ÷ 15 = 9,120 ÷ 5 ÷ 3 
Long division	Method 1  Method 2 

Order of operations	… has greater priority than …, so the first part of the calculation I need to do is …   $(6+4)\div 2=5$  $6+4\div 2=8$
Divide by 10, 100 and 1000	To divide by … , I move the digits … places to the right.  $312\div 10=31.2$ $312\div 100=3.12$ $312\div 1{,}000=0.312$ $906\div 10=90.6$ $906\div 100=9.06$ $906\div 1{,}000=0.906$
Divide decimals by integers	I know that … ÷ … = …, so I also know that … ÷ … = …  $39\div 3=13$ $3.9\div 3=1.3$ $0.39\div 3=0.13$ I need to exchange 1 … for 10 … 
Decimal and fraction equivalents	The fraction … is equivalent to the decimal …  $\frac{1}{5}=0.2$ $\frac{2}{5}=0.4$ $\frac{3}{5}=0.6$ $\frac{\square}{\square}$ is equal to $\frac{\square}{100}$ 
Divide a fraction by an integer	… ones divided by 2 is … ones so … sevenths divided by 2 is … sevenths.  $\frac{4}{7}\div 4=\frac{1}{7}$  $\frac{4}{7}\div 2=\frac{2}{7}$ I am dividing by … , so I can split each part into … equal parts.  $\frac{1}{3}\div 2=\frac{1}{6}$ … is equivalent to … so … ÷ … = … ÷ …  $\frac{2}{3}=\frac{4}{6}$ so $\frac{2}{3}\div 4=\frac{4}{6}\div 4=\frac{1}{6}$

Fraction of an amount	To find $\frac{1}{\square}$ I divide by ... $\frac{1}{2}$ of $36 = 36 \div 2$ $\frac{1}{12}$ of $36 = 36 \div 12$	If $\frac{1}{\square}$ is equal to ..., then $\frac{\square}{\square}$ are equal to ...  $\frac{7}{9}$ of $2{,}700 = \frac{1}{9}$ of $2{,}700 \times 7$	If $\frac{\square}{\square}$ is equal to ..., then the whole is equal to ...  $\frac{4}{9}$ of $\_\_ = 48$
Calculate percentages	There are ... lots of ... % in 100% To find ... %, I need to divide by ...  50% of ... = ...÷ 2 25% of ... = ...÷ 4	... % is made up of ... %, and ... %  To find 30%, I can find 10% and then multiply it by 3 To find 23%, I can use 10% × 2 and 1% × 3 To find 99%, I can find 1%, then subtract from 100%	
Calculations involving ratio	For every ... , there are ... For every 6 children on a school trip, there is 1 adult.  The ratio of children to adults is 6 : 1	 	

Glossary

Array – An ordered collection of counters, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied in any order.

Dividend – In division, the number that is divided.

Divisor – In division, the number by which another is divided.

Exchange – Change a number or expression for another of an equal value.

Factor – A number that multiplies with another to make a product.

Multiplicand – In multiplication, a number to be multiplied by another.

Partitioning – Splitting a number into its component parts.

Product – The result of multiplying one number by another.

Quotient – The result of a division

Remainder – The amount left over after a division when the divisor is not a factor of the dividend.

Scaling – Enlarging or reducing a number by a given amount, called the scale factor

Place value

White Rose MATHS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
amount, backwards, collection, count, few, fewer (than), forwards, how many, largest, lot(s), more (than), number, numeral, same, smallest, subitise	after, before, different, represent, zero	compare, count on, digit, fewest, greater than, greatest, less than, most, one(s), order, partition, represent, ten(s), ordinal numbers (first, second, third, etc)	exchange, interval, least, multiple, value,	ascending, descending, hundred(s), part, whole	place holder, roman, numeral, round, thousands	hundred, thousand(s), integer, negative number, millions, power of 10, ten thousand	ten million

Addition and subtraction

White Rose MATHS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	1 less, 1 more, add, add more, altogether, first, left, now, part, take away, whole	addition, add together, subtraction/ subtract, difference, double, efficient, equal to, fact family, greater, group, inverse, less, minus, near double, number bond, plus, symbol, systematic, total	calculation, exchange, method, multiple, one(s), operation, partition, related facts, ten(s), value, increase, decrease, sum	column, addition, column, subtraction, digit, estimate, exchange, hundred(s), inverse, crossing the 10, crossing the 100,	efficient, inverse, round, thousand(s)	accurate, approximate, constant difference, strategy	order of operations

Multiplication and division

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	double, equal groups, even, fair, grouping, groups, odd, pair, sharing, unequal, groups	array, divide, repeated, addition	divide, even, half, lots of, multiply, odd, twice, times times-table,	commutative, inverse, multiple, product, remainder, scaling	factor, factor pair, inverse, triple, efficient	common multiple, common factor, cube number, prime number, square number	composite number, order of operations, powers of

Fraction, decimals and percentages

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		equal parts, half, quarter, whole	numerator, denominator, equivalent, unit fraction, non-unit fraction, third, two-quarters, three-quarters	scale, compare, convert	decimal equivalent, decimal place, decimal point, hundredths, improper, fractions, mixed, numbers, proper fractions, round, tenths	common denominator, fractional part, percentage, thousandth	simplify, simplest form, recurring

Measure (money)

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		amount, coin, note, money, pence (p), pound (£), unitise, value	change, cost, worth	convert	decimal		

Measure (length and height)

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
big, bigger, large, little, small, smaller	height, length, long, longer, longest, measure, short, shorter, shortest, tall, taller, tallest	centimetres, ruler	metres	convert, millimetres, perimeter	area, kilometres, rectilinear, width	imperial, inches, metric, volume	formula

Measure (mass, capacity and temperature)

White Rose MATHS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
big, bigger, large, little, small, smaller	balanced, balancing scales, empty, float, full, heavier, heaviest, heavy, least, less, light, lighter, lightest, mass, more, most, narrow, sink, tall, thin, weight, wide,	capacity, container, non-standard, volume	celsius, circular scales, degrees, grams, kilograms, litres, millilitres, temperature, thermometer	convert		cubic, centimetres, imperial metric, pints, pounds,	formula, gallon, ounces, tonnes

Measure (time)

White Rose MATHS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
first, next, now, then	after, afternoon, before, clock, day, evening, later, lunchtime, minute, morning, night, night-time, today, tomorrow, week, weekend, yesterday,	half past, hour, month, o'clock, second, watch, week,	five-minute intervals midnight, noon, quarter past, quarter to,	analogue clock, 12-hour clock, 24-hour clock, digital clock duration, leap year, am, pm, roman numerals,			

Shape

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
build, curved, curvy, different, flat, match, pointy, round, same, sharp, stack	2-d shape, 3-d shape, circle, cone, corner, cube, cuboid, curved, cylinder, face, flat, pyramid, rectangle, rotate, set, sides, solid, sort, sphere, square, straight, surface, triangle	properties	edge, line of symmetry, symmetrical, vertex, vertices	acute, obtuse, angle, vertical horizontal, parallel, perpendicular, polygon, right angle	equilateral, regular, irregular, isosceles, parallelogram, quadrilateral, rhombus, scalene, trapezium	adjacent, degrees, reflex angle	base, circumference, diameter, dimensions, interior angles, intersect, net, opposite, angles, radius,

Statistics

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			block diagram, key, pictogram, table, tally chart, collect, record	axis, bar chart, cell, horizontal axis, label, scale, two-way table, title, vertical axis,	data, estimate, line graph	timetable, variable	average, dual bar chart, mean, pie chart

Position and direction

White Rose MATHS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
behind, between, down in, in front, inside, move, on, out, outside, over, through, under, up,	above, around, backwards, below, beside, bottom, forwards, map, next to, position, route, top	far, full turn, half turn, left, near, quarter turn, right, three-quarter turn, direction	anti-clockwise, between, clockwise		coordinates, grid, reflection, translation,	quadrant,	x-axis y-axis

Pattern

White Rose MATHS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
after, line, next, pattern, spot, star, stripe, swirl, zigzag	continue, copy, mistake, repeat, repeating, pattern, same, unit of repeat,		decreasing, increasing, sequence				

Ratio and proportion

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
							additive, enlargement, multiplicative, proportion, ratio, scale factor, scaling, simplest form

Algebra

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
							algebra, equation, expression, function, input, linear output, rule, solve, substitution, value,