

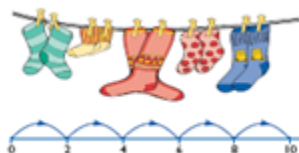
Cottesmore St Mary Catholic Primary School

Progression in Calculations Policy



Date of policy review:
June 2026

Next review: June 2029



Policy written by: **Nick Bearpark**

Policy reviewed & passed by: **Curriculum Committee**

Key people responsible for Mathematics: **Nick Bearpark**

Key Governor responsible for Mathematics: **Peter Gwilliam**

Other policies linked to this policy:

Equalities policy, Gifted and Talented policy, Teaching and Learning policy, Marking Policy, Inclusion Policy

Progression towards a standard method of calculation

The **Progressions in Calculations Policy** document provides a structured and systematic approach to the teaching of calculation. There is considerable emphasis on teaching mental calculation methods and the National Curriculum for mathematics aims to ensure that all children:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Introduction

This policy contains the key pencil and paper procedures that are to be taught throughout the school. Cottesmore has developed a consistent approach to the teaching of written calculations in order to establish continuity and progression through out the school. Although the main focus of this policy is on pencil and paper procedures, it is important to recognise that the ability to calculate mentally lies at the heart of numeracy. Mental calculation is not at the exclusion of written recording and should be seen as complementary to and not as separate from it. In every written method there is an element of mental processing.

Children will be assessed prior to teaching. This will help identify the phase or phases that the children will be working at. Teachers and children alike should not be discouraged from using previously taught methods with which they are secure, while the new concepts are becoming embedded.

The long-term aim is for children to be able to select an efficient method of their choice that is appropriate for a given task. They should do this by always asking themselves:

Before carrying out a calculation, children should be encouraged to consider:

- Can I do it in my head? (For example by using rounding, adjustment)
- The size of an approximate answer (For example estimation)
- Could I do jottings to keep track of the calculation?
- Do I need to use an expanded or compact written method? (Children may not refer to these names but will understand the methods.) Written recording both helps children to clarify their thinking and supports and extends the development of more fluent and sophisticated mental strategies.

Aims

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

Strategies for calculation need to be supported by familiar models and images to reinforce understanding. When teaching a new strategy, it is important that the child has experience at the three stages of representation (Based on Bruner's Model); the **enactive, iconic and symbolic stage** so that the child can understand the concept. This is concerned with how knowledge is represented and organised.

- The **enactive** stage is characterised where children learn through doing and direct manipulation of objects- unstructured, but not random play. For example, anything tangible like the use of tiles, paper and coins to support learning.

- The **iconic** stage is characterised by where children's thinking is based on mental images which may be based on, sight, hear, touch or smell. The children are able to internalise representation of external objects visually as images or icons. For example, the use of numicon, shapes, diagrams and graphs.

- The **symbolic** stage is where the children are able to store things in the form of symbols and the use of number. For example, using operations and numbers in both mental and written calculations.

So in this view anytime we're teaching we should first present a concept in the enactive stage involving direct manipulation of objects, then we re-introduce the concept in the iconic stage using some form of imagery, and finally we re-introduced the concept symbolically using words or formula or other notation.

It should be an active process in which the child is directly involved in the manipulation of the content in the three modes of representation. To be successful in learning new content, the learners must be actively engaged in the process, not sitting quietly and listening to a teacher explain something.

Teachers should follow the pre-assessment procedure to identify specific calculation phases that are appropriate for the year group and teach accordingly. Teachers should use professional judgement as how long is spent on a phases and when new phases should be initiated.

The transition between phases should not be hurried as not all children will be ready to move on to the next phase at the same time, therefore the progression in this document is outlined in phases. Previous phases may need to be revisited to consolidate understanding when introducing a new strategy.

An example of General Progression in Addition

- Establish mental methods based on a good understanding of place value
- Use of informal jottings to aid mental calculations
- Develop use of an empty number line to help mental imagery and aid recording
- Use of partitioning and recombining to aid informal methods
- Introduce expanded written methods
- Develop expanded written methods into compact standard written form.

When are children ready for written calculations?

Addition and subtraction

- Do they know addition and subtraction facts to 20?
- Do they understand place value and can they partition numbers?
- Can they add three single digit numbers mentally?
- Can they add and subtract any pair of two digit numbers mentally?
- Can they explain their mental strategies orally and record them using informal jottings?

Multiplication and division

- Do they know the 2,3,4,5 and 10 times tables?
- Do they know the result of multiplying by 1 and 0?
- Do they understand 0 as a place holder?
- Can they multiply two and three digit numbers by 10 and 100?
- Can they double and halve two digit numbers mentally?
- Can they use multiplication facts they know to derive mentally other multiplication facts that they do not know?
- Can they explain their mental strategies orally and record them using informal jottings?

Cottesmore will share these methods and expectations with parents / carers through the 'This is how we do it' school workshops for KS1 and KS2.

Mathematics Appendix 1: Examples of formal written methods for addition, Formal written methods for addition, subtraction, multiplication and division

This appendix sets out some examples of formal written methods for all four operations to illustrate the range of methods that could be taught. It is not intended to be an exhaustive list, nor is it intended to show progression in formal written methods. For example, the exact position of intermediate calculations (superscript and subscript digits) will vary depending on the method and format used.

For multiplication, some pupils may include an addition symbol when adding partial products. For division, some pupils may include a subtraction symbol when subtracting multiples of the divisor.

Addition and subtraction

789 + 642 becomes $ \begin{array}{r} 789 \\ + 642 \\ \hline 1431 \\ \hline \end{array} $ 1 1 Answer: 1431	874 – 523 becomes $ \begin{array}{r} 874 \\ - 523 \\ \hline 351 \\ \hline \end{array} $ Answer: 351	932 – 457 becomes $ \begin{array}{r} \overset{8}{\cancel{9}} \overset{12}{\cancel{3}} \overset{1}{2} \\ - 457 \\ \hline 475 \\ \hline \end{array} $ Answer: 475	932 – 457 becomes $ \begin{array}{r} \overset{1}{\cancel{9}} \overset{1}{\cancel{3}} 2 \\ - \overset{5}{\cancel{4}} \overset{6}{\cancel{5}} 7 \\ \hline 475 \\ \hline \end{array} $ Answer: 475
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Short multiplication

24 × 6 becomes

$$\begin{array}{r} 4 \\ \times 6 \\ \hline 144 \\ \hline 2 \end{array}$$

Answer: 144

342 × 7 becomes

$$\begin{array}{r} 42 \\ \times 7 \\ \hline 2394 \\ \hline 21 \end{array}$$

Answer: 2394

2741 × 6 becomes

$$\begin{array}{r} 741 \\ \times 6 \\ \hline 16446 \\ \hline 42 \end{array}$$

Answer: 16 446

Long multiplication

24 × 16 becomes

$$\begin{array}{r} 2 \\ \mathbf{2} \ \mathbf{4} \\ \times \ \mathbf{1} \ \mathbf{6} \\ \hline \mathbf{2} \ \mathbf{4} \ \mathbf{0} \\ \mathbf{1} \ \mathbf{4} \ \mathbf{4} \\ \hline \mathbf{3} \ \mathbf{8} \ \mathbf{4} \end{array}$$

Answer: 384

124 × 26 becomes

$$\begin{array}{r} 1 \ 2 \\ \mathbf{1} \ \mathbf{2} \ \mathbf{4} \\ \times \ \mathbf{2} \ \mathbf{6} \\ \hline \mathbf{2} \ \mathbf{4} \ \mathbf{8} \ \mathbf{0} \\ \ \mathbf{7} \ \mathbf{4} \ \mathbf{4} \\ \hline \mathbf{3} \ \mathbf{2} \ \mathbf{2} \ \mathbf{4} \\ \hline 1 \ 1 \end{array}$$

Answer: 3224

124 × 26 becomes

$$\begin{array}{r} 1 \ 2 \\ \mathbf{1} \ \mathbf{2} \ \mathbf{4} \\ \times \ \mathbf{2} \ \mathbf{6} \\ \hline \ \mathbf{7} \ \mathbf{4} \ \mathbf{4} \\ \mathbf{2} \ \mathbf{4} \ \mathbf{8} \ \mathbf{0} \\ \hline \mathbf{3} \ \mathbf{2} \ \mathbf{2} \ \mathbf{4} \\ \hline 1 \ 1 \end{array}$$

Answer: 3224

Short division

98 ÷ 7 becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \end{array}$$

Answer: 14

432 ÷ 5 becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$$

Answer: 86 remainder 2

496 ÷ 11 becomes

$$\begin{array}{r} 45 \text{ r } 1 \\ 11 \overline{) 496} \end{array}$$

Answer: $45\frac{1}{11}$

Long division

432 ÷ 15 becomes

$$\begin{array}{r}
 \overline{) 432} \text{r } 12 \\
 \underline{300} \\
 132 \\
 \underline{120} \\
 12
 \end{array}$$

Answer: 28 remainder 12

432 ÷ 15 becomes

$$\begin{array}{r}
 \overline{) 432} \\
 \underline{300} \quad 15 \times 20 \\
 132 \\
 \underline{120} \quad 15 \times 8 \\
 12
 \end{array}$$

$$\frac{\cancel{12}}{\cancel{15}} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

432 ÷ 15 becomes

$$\begin{array}{r}
 \overline{) 432.8} \\
 \underline{300} \\
 132 \\
 \underline{120} \\
 120 \\
 \underline{120} \\
 0
 \end{array}$$

Answer: 28.8

Progression of skills- Addition

Year group	Skill
Nursery	• Subitise to 3 • Count how many • Make numbers to 5 • Add 1 more (through songs and rhymes)
Reception	• Conceptually subitise to 5 • 1 more • Notice the composition of numbers within 10 • Combine 2 groups • Add more
Year 1	• Add together • Add more • Bonds within 10 • Related facts within 20 • Missing numbers

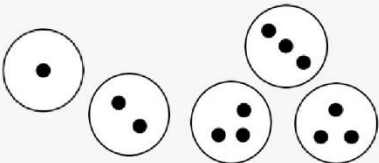
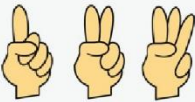
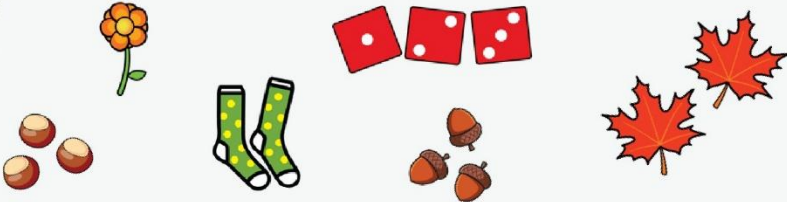
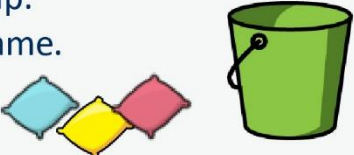
Progression of skills- Addition

Year group	Skill
Year 2	• Add 1s to any number (related facts) • Add three 1-digit numbers • Add across a 10 • Add multiples of 10 • Add 10s to any number • Add two 2-digit numbers (not across a ten) • Add two 2-digit numbers (across a ten) • Missing numbers
Year 3	• Add 1s, 10s and 100s to a 3-digit number • Add two numbers (no exchange) • Add two numbers across a 10 or 100 • Complements to 100 • Add fractions with the same denominator within 1 whole • Calculate the duration of events

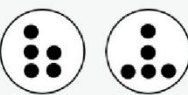
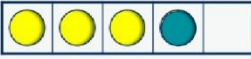
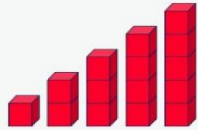
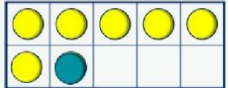
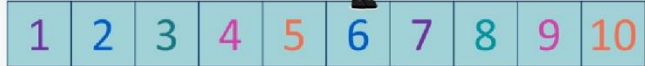
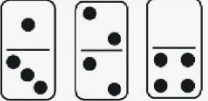
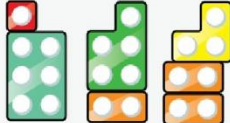
Progression of skills- Addition

Year group	Skill
Year 4	• Add 1s, 10s and 100s to a 4-digit number • Add up to two 4-digit numbers • Add decimal numbers in the context of money • Add fractions and mixed numbers with the same denominator beyond 1 whole
Year 5	• Add using mental strategies • Add whole numbers with more than 4 digits • Add decimals with up to 2 decimal places • Complements to 1 • Add fractions with denominators that are a multiple of one another
Year 6	• Add integers up to 10 million • Add decimals with up to 3 decimal places • Order of operations • Negative numbers • Add fractions

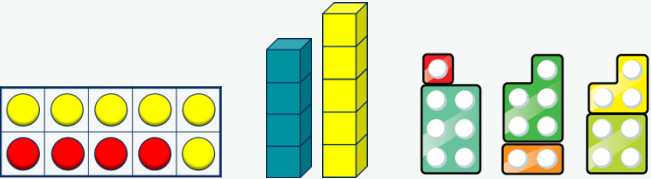
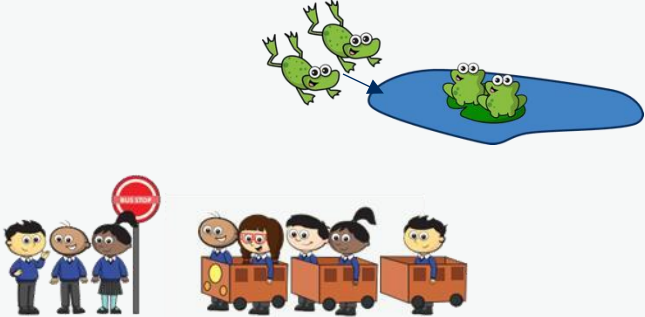
Addition

Nursery	• Begin to have an understanding of numbers to 5 • We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.	
Progression of skills	Key representations	
Subitise to 3 Instantly see how many.	How many do you see?   	
Count how many Begin to count objects using 1-1 correspondence.	How many are there? 	Count out ... from a larger group. E.g. Collect 3 beanbags for a game. 
Make numbers to 5 Start by showing 1, 2 and 3 using fingers.	Show me...  	
Add 1 more Through stories, songs and rhymes.	How many do I have now? 	

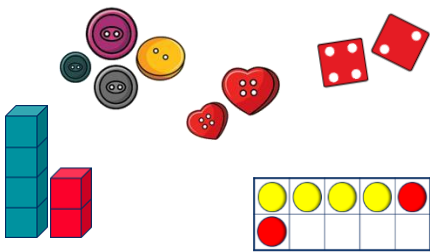
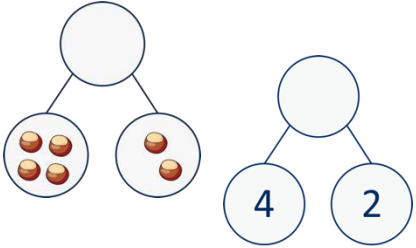
Addition

Reception	- Have a deep understanding of numbers to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5 - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.	
Progression of skills	Key representations	
Conceptually subitise to 5 Notice the parts that make up the whole.	What do you see? How do you see it?     	
1 more Continue to link to stories, songs and rhymes.	1 more than ... is ...   	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	How many...? How many...? How many altogether?    	How many ways can you make...?   

Addition

Progression of skills	Key representations	
Combine 2 groups 2 groups are combined to find the total.	There are There are There are altogether. 	 and make 
Add more A quantity is increased.	First... Then.... Now.... 	I have I add more. Now I have.... 

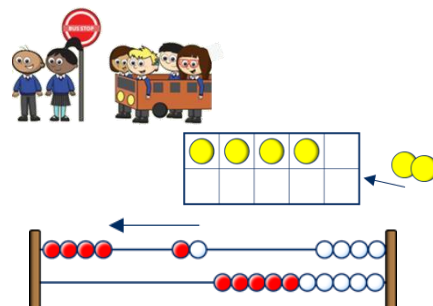
Addition

Year 1	• Read, write and interpret mathematical statements involving addition (+) and equals (=) signs. • Represent and use number bonds within 20 • Add 1-digit and 2-digit numbers to 20, including zero. • Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as $7 = \square + 2$		
Progression of skills	Key representations		
Add together (aggregation) 2 quantities are combined to find the total.	There are ... There are ... There are ... altogether. 	... is a part. ... is a part. ... is the whole. 	... plus ... is equal to is equal to + ... $4 + 2 = 6$ $2 + 4 = 6$ $6 = 4 + 2$ $6 = 2 + 4$

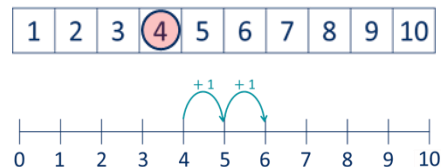
Add more
(augmentation)

A quantity is increased.

First... Then... Now...



I start at ...
I jump on ...
I land on ...



... plus ... is equal to
... is equal to ... + ...

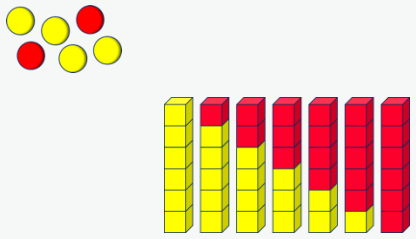
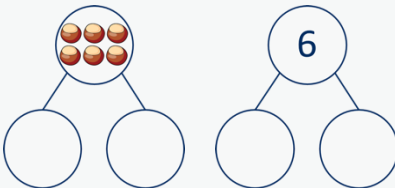
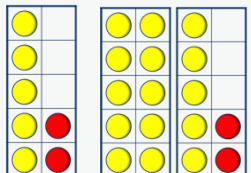
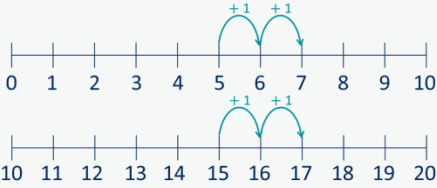
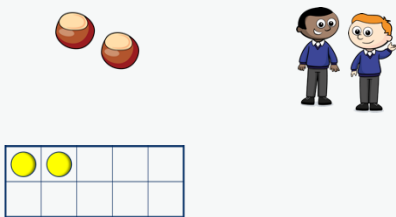
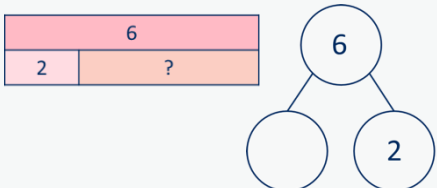
$$4 + 2 = 6$$

$$2 + 4 = 6$$

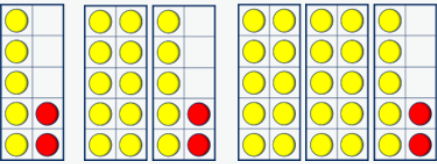
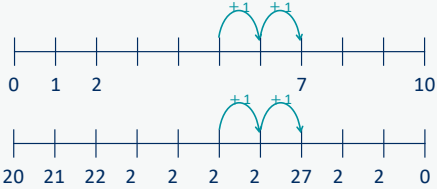
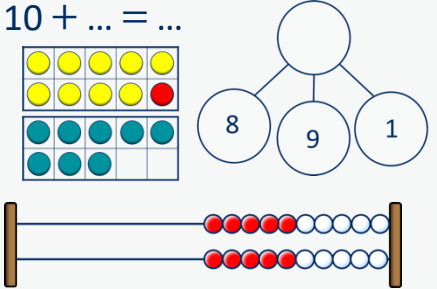
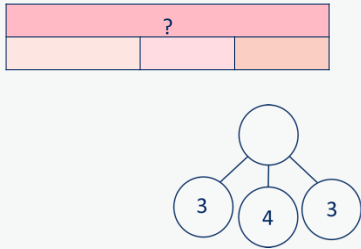
$$6 = 4 + 2$$

$$6 = 2 + 4$$

Addition

Progression of skills	Key representations		
Bonds within 10 Include bonds for each number within 10 Encourage children to notice patterns.	... 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 Make links to known facts.	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 Make links 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 ... $2 + \square = 6$ $6 = 2 + \square$ 

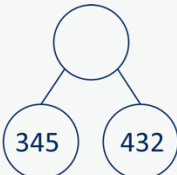
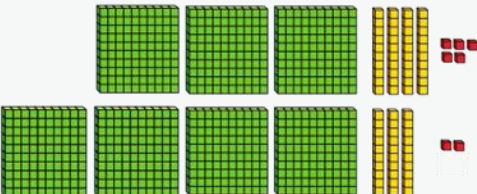
Addition

Year 2	- Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 - Add numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s 2 two-digit numbers - adding 3 one-digit numbers - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
Progression of skills	Key representations		
Add ones to any number (related facts) Make links 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 1-digit numbers Prompt children to understand that addition can be done in any order and to make links to known facts.	... and ... are a bond to 10 $10 + ... = ...$ 	Double ... + ... = ... 	What do you notice? Which addition is the easiest to calculate? $8 + 9 + 1 =$ $8 + 1 + 9 =$ $9 + 1 + 8 =$

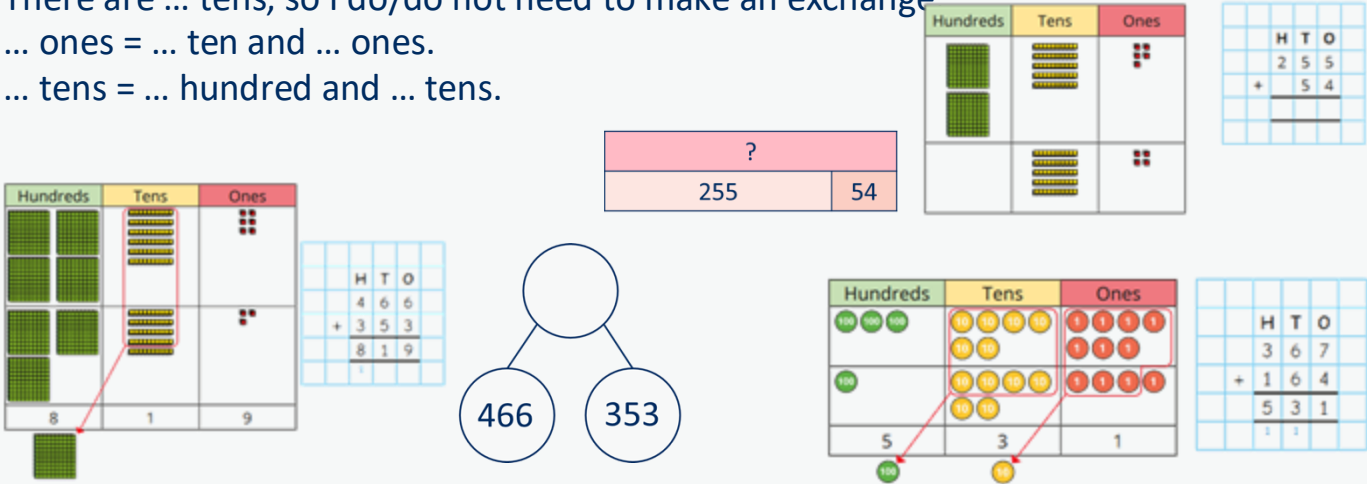
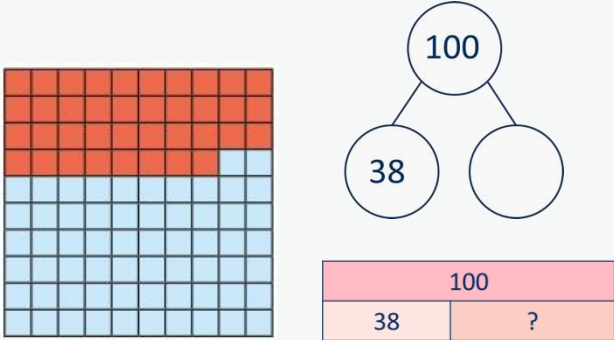
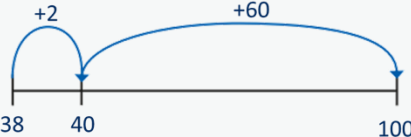
Addition

Progression of skills	Key representations																
Add 2-digit numbers (not across a ten) Lining up ones and tens in columns will support with later written methods.	... ones + ... ones = ... ones ... tens + ... tens = ... tens <table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> 3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64 <table><tr><td colspan="2">?</td></tr><tr><td>43</td><td>21</td></tr></table>			Tens	Ones					?		43	21				
Tens	Ones																
?																	
43	21																
Add 2-digit numbers (across a ten) Begin to exchange 10 ones for 1 ten.	There are ones, so I do/do not need to make an exchange. ... ones = ... ten and ... ones <table><tr><th>T</th><th>O</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table><table><tr><th>T</th><th>O</th></tr><tr><td></td><td></td></tr></table> <table><tr><td colspan="2">?</td></tr><tr><td></td><td>7</td></tr></table> 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			T	O					T	O			?			7
T	O																
T	O																
?																	
	7																
Missing numbers Solve missing number problems and use the inverse to check.	How many more do you need to make ...? <table><tr><td></td></tr></table> 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 + <table><tr><td></td></tr><tr><td></td></tr></table><table><tr><td></td><td></td></tr></table>													

Addition

Year 3	• Add numbers mentally, including: a three digit number and ones, a three digit number and tens, a three digit number and hundreds. • Add numbers with up to three digits, using formal written methods of columnar addition. • Add fractions with the same denominator within 1 whole. • Calculate the time taken by particular events or tasks.														
Progression of skills	Key representations														
Add 1s, 10s or 100s to a 3-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds column will increase by ... <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr></table> 444 + 5 = 444 + 50 = 444 + 500 =	Hundreds	Tens	Ones				<table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td></tr></table> 777 + 2 = 777 + 20 = 777 + 200 =	H	T	O				What patterns do you notice? 235 + 3 = 235 + 30 = 235 + 300 = 111 + = 118 111 + = 181 111 + = 811
Hundreds	Tens	Ones													
															
H	T	O													
															
Add two numbers (no exchange) Mental strategies and introduction of formal written method.	... ones + ... ones = ... ones ... tens + ... tens = ... tens ... hundreds + ... hundreds = ... hundreds 														

Addition

Progression of skills	Key representations	
Add two numbers across a 10 or 100 Formal written method involving up to 2 exchanges including 3-digit plus 2-digit numbers.	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 Pairs of numbers which total 100	... plus ... is equal to 100 	I add ... to get to the next 10, then ... to get to 100  $38 + 62 = 100$ $62 + 38 = 100$ $100 = 38 + 62$ $100 = 62 + 38$

Addition

Progression of skills	Key representations
Add fractions with the same denominator within 1 whole Make links with known facts.	When adding fractions with the same denominator, I only add the numerator. ... fifths + ... fifths = ... fifths $\frac{1}{5} + \frac{1}{5}$ $\frac{1}{5} + \frac{2}{5}$ $\frac{1}{5} + \frac{3}{5}$
Calculate the duration of events Find durations of time between a given start and end point. Children will need to calculate complements to 60	From ... to ... o'clock is ... minutes. From ... o'clock to ... is ... minutes. The total time taken is ... minutes.

Addition

Year 4	- Add numbers with up to 4 digits using a formal written method. - Solve simple measure and money problems involving fractions and decimals to 2 decimal places. - Add fractions with the same denominator.																																			
Progression of skills	Key representations																																			
Add 1s, 10s and 100s to a 4-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds/thousands column will increase by ... <table><tr><th>Thousands</th><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td> 1,000 1,000 1,000 </td><td> 100 100 100 100 </td><td> 10 10 </td><td> 1 1 1 1 1 </td></tr></table> 3,425 + 3 = 3,425 + 30 = 3,425 + 300 = 3,425 + 3,000 =	Thousands	Hundreds	Tens	Ones	1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1	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																										
Thousands	Hundreds	Tens	Ones																																	
1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1																																	
Add up to two 4digit numbers Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations.	There are ... ones/tens/hundreds so I do/do not need to make an exchange. I can exchange 10 ... for 1 ... <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td> 1,000 1,000 1,000 1,000 </td><td> 100 100 100 100 100 100 </td><td> 10 10 10 10 10 10 10 </td><td> 1 1 1 1 1 1 1 </td></tr></table> 1,000 10 <table><tr><th></th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>4</td><td>6</td><td>7</td><td>3</td></tr><tr><td>+</td><td>1</td><td>5</td><td>1</td><td>8</td></tr><tr><td></td><td>6</td><td>1</td><td>9</td><td>1</td></tr><tr><td></td><td>1</td><td></td><td>1</td><td></td></tr></table>			Th	H	T	O	1,000 1,000 1,000 1,000	100 100 100 100 100 100	10 10 10 10 10 10 10	1 1 1 1 1 1 1		Th	H	T	O		4	6	7	3	+	1	5	1	8		6	1	9	1		1		1	
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Addition

Progression of skills	Key representations	
Add decimal numbers in the context of money Emphasis on partitioning and use of number lines rather than formal written calculations.	... 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	When adding fractions with the same denominator, I only add the numerator. ... fifths + ... fifths = ... fifths	

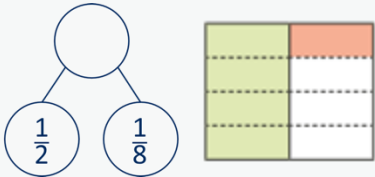
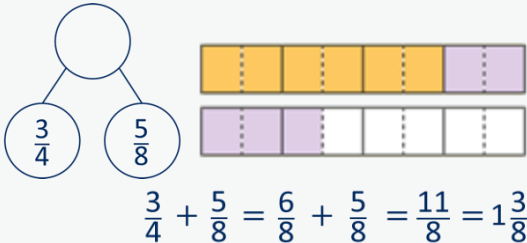
Addition

Year 5	• 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.																																																				
Progression of skills	Key representations																																																				
Add using mental strategies Add 1s, 10s, 100s, etc. to any number. Use number bonds and related facts.	<table><tr><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td></td></tr></table> 48,650 + 300 = 48,650 + 30,000 = 48,650 + 30 = To add ..., I can add ... then subtract ... <table><tr><td colspan="2">?</td></tr><tr><td></td><td></td></tr></table> + 100 + 99 - 1 , , 7 ,	TTh	Th	H	T	O						?																																									
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Add whole numbers with more than 4 digits Encourage children to estimate and use inverse operations to check answers to calculations.	I can exchange 10 ... for 1 ... <table><tr><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> <table><tr><td></td><td>2</td><td>6</td><td>5</td><td>7</td><td>4</td></tr><tr><td>+</td><td>1</td><td>6</td><td>2</td><td>3</td><td>1</td></tr><tr><td></td><td>4</td><td>2</td><td>8</td><td>0</td><td>5</td></tr><tr><td></td><td>1</td><td></td><td>1</td><td></td><td></td></tr></table> <table><tr><td></td><td></td><td>4</td><td></td><td>1</td><td></td></tr><tr><td>+</td><td>2</td><td></td><td>8</td><td></td><td>4</td></tr><tr><td></td><td>8</td><td>9</td><td>9</td><td>2</td><td>6</td></tr></table>	TTh	Th	H	T	O							2	6	5	7	4	+	1	6	2	3	1		4	2	8	0	5		1		1					4		1		+	2		8		4		8	9	9	2	6
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Addition

Progression of skills	Key representations																																																																	
Add decimals with up to 2 decimal places Progress from the same number of decimal places to a different number of decimal places, and from no exchange to exchange.	I do/do not need to make an exchange because ... I can exchange 10 ... for 1 ... <table><tr><th>Ones</th><th>Tenths</th><th>Hundredths</th></tr><tr><td>1 1 1</td><td>0.1 0.1 0.1</td><td>0.01 0.01 0.01</td></tr><tr><td>1</td><td>0.1</td><td>0.01 0.01</td></tr><tr><td>1 1 1</td><td>0.1 0.1</td><td>0.01</td></tr></table><table><tr><td>4</td><td>4</td><td>5</td></tr><tr><td>+</td><td>3</td><td>2</td></tr><tr><td></td><td></td><td></td></tr></table> <table><tr><th>O</th><th>Tth</th><th>Hth</th><th>Thth</th></tr><tr><td>1</td><td>0.1 0.1</td><td>0.01 0.01</td><td>0.001</td></tr><tr><td></td><td></td><td>0.01 0.01</td><td></td></tr><tr><td></td><td></td><td>0.01 0.01</td><td></td></tr><tr><td></td><td></td><td>0.01 0.01</td><td></td></tr><tr><td>1 1</td><td>0.1 0.1</td><td>0.01 0.01</td><td></td></tr><tr><td></td><td>0.1 0.1</td><td>0.01 0.01</td><td></td></tr><tr><td></td><td>0.1</td><td></td><td></td></tr></table><table><tr><td>1</td><td>2</td><td>8</td><td>1</td></tr><tr><td>+</td><td>2</td><td>5</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Ones	Tenths	Hundredths	1 1 1	0.1 0.1 0.1	0.01 0.01 0.01	1	0.1	0.01 0.01	1 1 1	0.1 0.1	0.01	4	4	5	+	3	2				O	Tth	Hth	Thth	1	0.1 0.1	0.01 0.01	0.001			0.01 0.01				0.01 0.01				0.01 0.01		1 1	0.1 0.1	0.01 0.01			0.1 0.1	0.01 0.01			0.1			1	2	8	1	+	2	5	4				
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Complements to 1 Pairs of numbers with up to 3 decimal places which total 1 Encourage children to make links with bonds to 10 and complements to 100 and 1,000	$0.3 + \square = 1$ $0.35 + \square = 1$ <table><tr><td>71</td><td></td></tr><tr><td>100</td><td></td></tr></table> <table><tr><td>0.71</td><td></td></tr><tr><td>1</td><td></td></tr></table> 1 0.4 1 0.44 1 0.444 $4 + 6 = 10$ $44 + 56 = 100$ $444 + 556 = 1,000$ $0.4 + 0.6 = 1$ $0.44 + 0.56 = 1$ $0.444 + 0.556 = 1$	71		100		0.71		1																																																										
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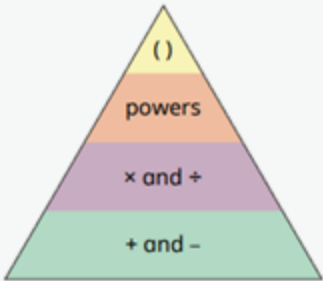
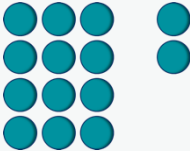
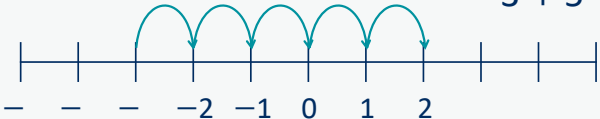
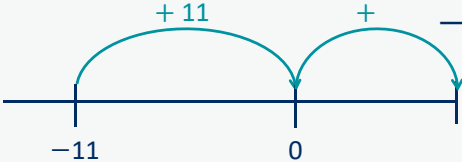
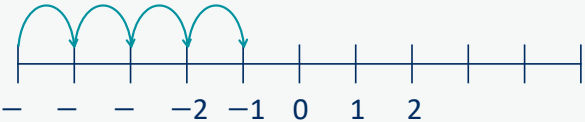
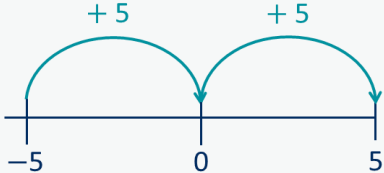
Addition

Progression of skills	Key representations
Add fractions with denominators that are a multiple of one another Encourage children to convert fractions to the same denominator before adding. Progress from adding fractions within 1 whole to adding fractions beyond 1 whole.	The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.  $\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}$  $\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$  $\frac{3}{4} + \frac{5}{8} = \frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$

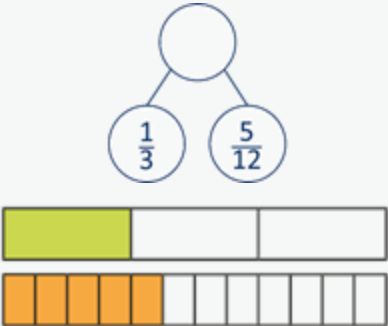
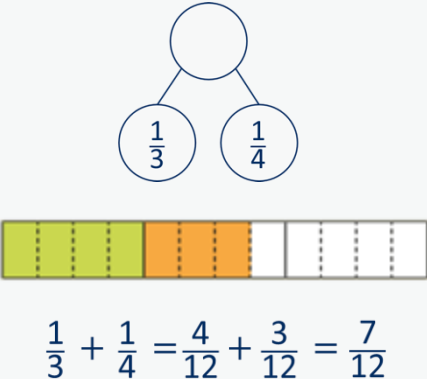
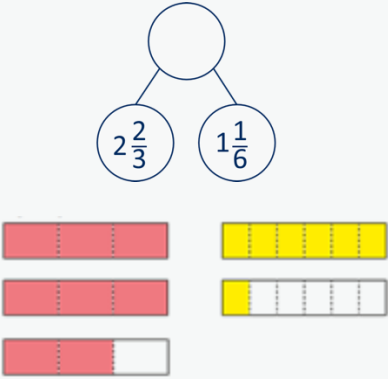
Addition

Year 6	• Add larger numbers, using the formal written method of columnar addition. • Use their knowledge of the order of operations to carry out calculations involving the 4 operations. • Calculate intervals across zero. • Add fractions with different denominators and mixed numbers, using the concept of equivalent fractions.																																																																																						
Progression of skills	Key representations																																																																																						
Add integers up to 10 million Encourage children to estimate and use inverse operations to check answers to calculations.	<table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>3</td><td>4</td><td>6</td><td>2</td><td>2</td><td>1</td></tr><tr><td></td><td>+</td><td>1</td><td>8</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td></td><td></td><td>5</td><td>3</td><td>0</td><td>5</td><td>4</td><td>2</td></tr><tr><td></td><td></td><td>1</td><td>1</td><td></td><td></td><td></td><td></td></tr></table><table><tr><td colspan="3">?</td></tr><tr><td>2,354</td><td>750</td><td>1,500</td></tr></table><table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>8</td><td>1</td><td></td><td>8</td><td>5</td><td></td></tr><tr><td></td><td>+</td><td></td><td></td><td>0</td><td>6</td><td></td><td></td></tr><tr><td></td><td></td><td>9</td><td>9</td><td>5</td><td></td><td>8</td><td></td></tr></table>											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									
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Add decimals with up to 3 decimal places Progress to numbers with digits in different place value columns. Encourage children to check that they have lined up the columns correctly.	I do/do not need to make an exchange because ... <table><tr><th>O</th><th>Tth</th><th>Hth</th><th>Thth</th></tr><tr><td>1 1 1</td><td>1</td><td></td><td>1 1 1 1 1 1 1 1 1 1</td></tr><tr><td>1 1</td><td>1</td><td>1 1 1 1 1 1 1 1 1 1</td><td>1 1 1 1 1 1 1 1 1 1</td></tr><tr><td>5</td><td>2</td><td>6</td><td>2</td></tr></table><table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>3</td><td>1</td><td>0</td><td>8</td></tr><tr><td></td><td>+</td><td>2</td><td>1</td><td>5</td><td>4</td></tr><tr><td></td><td></td><td>5</td><td>2</td><td>6</td><td>2</td></tr><tr><td></td><td></td><td></td><td></td><td>1</td><td></td></tr></table><table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>1</td><td>5</td><td>0</td><td>2</td><td>7</td><td></td></tr><tr><td></td><td>+</td><td>9</td><td>5</td><td>8</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>2</td><td>4</td><td>6</td><td>0</td><td>7</td><td></td></tr><tr><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td></td><td></td></tr></table>	O	Tth	Hth	Thth	1 1 1	1		1 1 1 1 1 1 1 1 1 1	1 1	1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	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			
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Addition

Progression of skills	Key representations	
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 ...   $(3 + 4) \times 2 = 14$  $3 + 4 \times 2 = 11$  $3 \times 4 + 2 = 14$	
Negative numbers Children add to negative numbers and carry out calculations which cross 0	... 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

Addition

Progression of skills	Key representations		
Add fractions Convert fractions to the same denominator before adding. Progress from fractions where one denominator is a multiple of the other, to any fractions and then to mixed numbers.	The denominator has been multiplied by ..., so the numerator needs to be multiplied by ... 	The lowest common multiple of ... and ... is ... 	...is made up of ... wholes and ... 

Progression of skills- Subtraction

Year group	Skill
Nursery	• Subitise to 3 • Count how many • Make numbers to 5 • Take 1 away (through songs and rhymes)
Reception	• Conceptually subitise to 5 • 1 less • Notice the composition of numbers within 10 • Partition • Take away
Year 1	• Find a part • Take away • Bonds within 10 • Related facts within 20 • Missing numbers

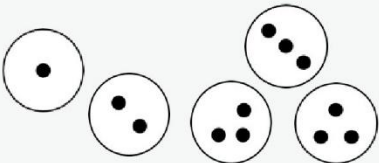
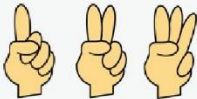
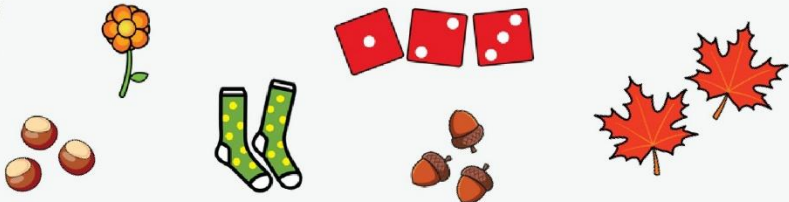
Progression of skills- Subtraction

Year group	Skill
Year 2	• Subtract 1s from any number (related facts) • Subtract across a 10 • Subtract multiples of 10 • Subtract 10s from any number • Subtract two 2-digit numbers (not across a ten) • Subtract two 2-digit numbers (across a ten) • Missing numbers
Year 3	• Subtract 1s, 10s and 100s from a 3-digit number • Subtract two numbers (no exchange) • Subtract two numbers across a 10 or 100 • Complements to 100 • Subtract fractions with the same denominator within 1 whole

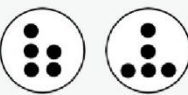
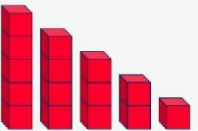
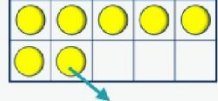
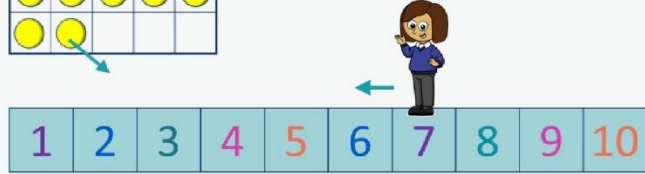
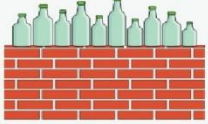
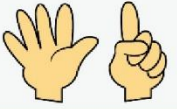
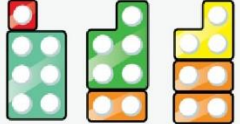
Progression of skills- Subtraction

Year group	Skill
Year 4	• Subtract 1s, 10s, 100s and 1,000s from a 4-digit number • Subtract up to two 4-digit numbers • Subtract decimal numbers in the context of money • Subtract fractions and mixed numbers with the same denominator
Year 5	• Subtract whole numbers with more than 4 digits • Subtract using mental strategies • Subtract decimals with up to 2 decimal places • Complements to 1 • Subtract fractions with denominators that are a multiple of one another
Year 6	• Subtract integers up to 10 million • Subtract decimals with up to 3 decimal places • Order of operations • Negative numbers • Subtract fractions

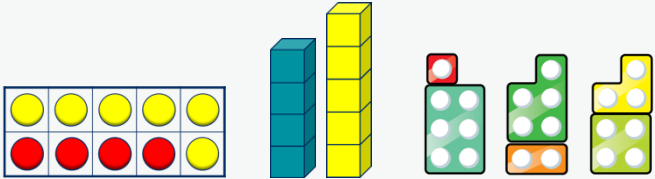
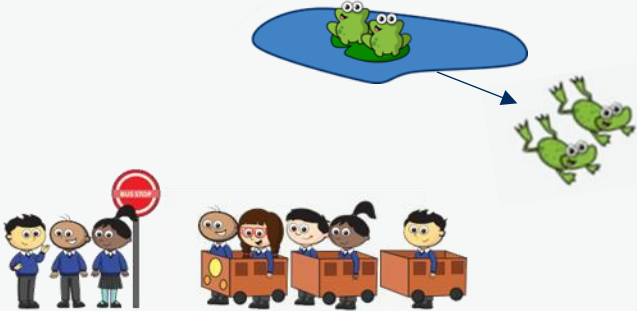
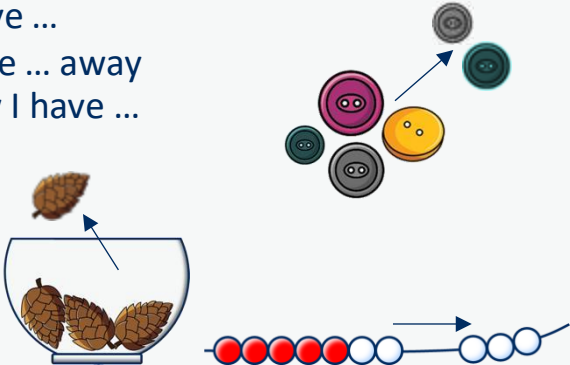
Subtraction

Nursery	- Begin to have an understanding of numbers to 5 - We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.	
Progression of skills	Key representations	
Subitise to 3 Instantly see how many.	How many do you see?   	
Count how many Begin to count objects using 1-1 correspondence.	How many are there? 1 2 3 4 5 	Count out ... from a larger group. E.g. Collect a cup for everyone at the table. 
Make numbers to 5 Start by showing 1, 2 and 3 using fingers.	Show me...  	
Take 1 away Through stories, songs and rhymes.	How many do we have now?  	

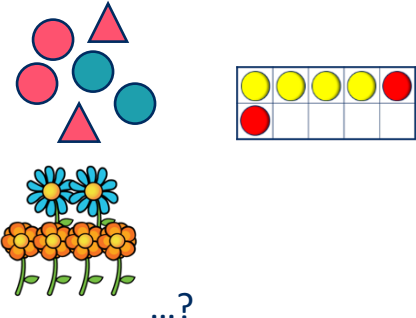
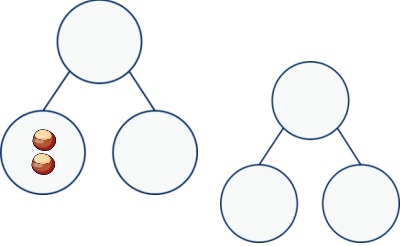
Subtraction

Reception	- Have a deep understanding of number to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5 - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (and some subtraction facts) and some number bonds to 10, including double facts.	
Progression of skills	Key representations	
Conceptually subitise to 5 Notice the parts that make up the whole.	What do you see? How do you see it?     	
1 less Continue to link to stories, songs and rhymes.	1 less than ... is ...    	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	How many...? How many...? How many altogether?   	How many ways can you make...?    

Subtraction

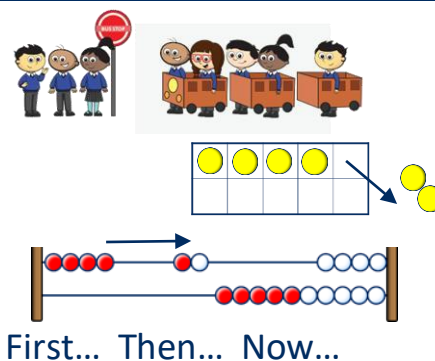
Progression of skills	Key representations	
Partition Using objects, explore different ways to partition a number into 2 or more parts.	There are ... altogether. I can see ... here and ... there. 	... and ... make ... 
Take away A quantity is reduced.	First... Then... Now... 	I have ... I take ... away Now I have ... 

Subtraction

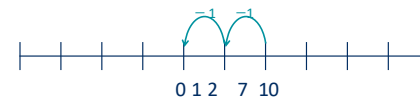
Year 1	- Read, write and interpret mathematical statements involving subtraction (–) and equals (=) signs. - Represent and use number bonds and related subtraction facts within 20 - Subtract one-digit and two-digit numbers to 20, including zero. - Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$		
Progression of skills	Key representations		
Find a part Link to number bonds and known facts. E.g. $2 + 4 = 6$ so if 6 is the whole and 4 is a part, the other part must be 2	There are ... in total. ... are ... How many are not  The illustration shows a group of 6 objects: 3 pink circles, 2 blue circles, and 1 pink triangle. Below them are 4 yellow flowers. To the right is a ten-frame with 5 yellow counters and 1 red counter. Below the flowers is the text "...?"	... is the whole. ... is a part. ... is a part.  The illustration shows two number bonds. The first has a top circle with 2 dots and two bottom circles, one with 2 dots and one empty. The second has an empty top circle and two empty bottom circles.	... subtract ... is equal to is equal to ... – ... $6 - 2 = 4$ $6 - 4 = 2$ $4 = 6 - 2$ $2 = 6 - 4$

Take away

A quantity is decreased.



I start at ...
I jump back ...
I land on ...



... minus ... is equal to ...
... is equal to ... - ...

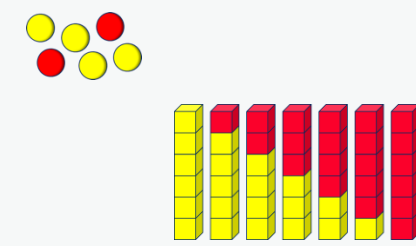
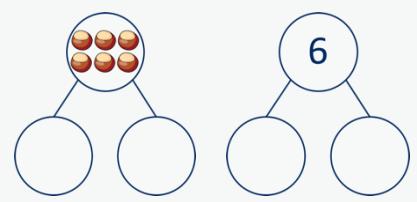
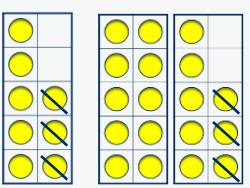
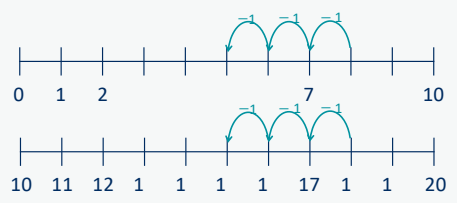
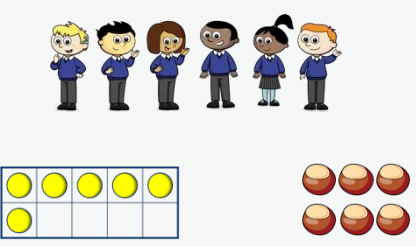
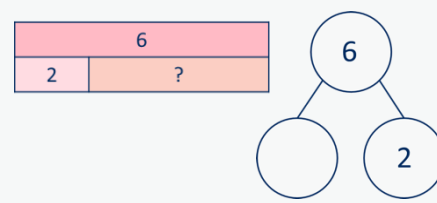
$$6 - 2 = 4$$

$$6 - 4 = 2$$

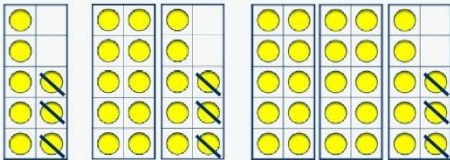
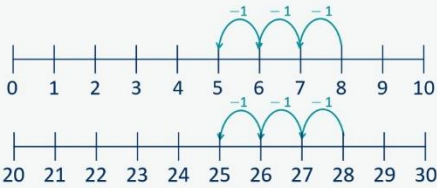
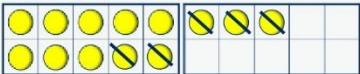
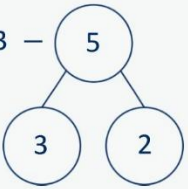
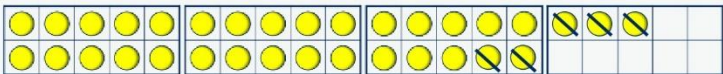
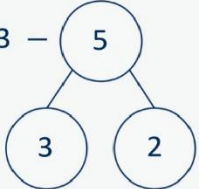
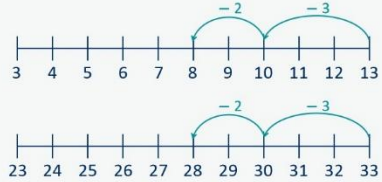
$$4 = 6 - 2$$

$$2 = 6 - 4$$

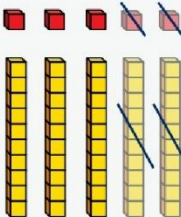
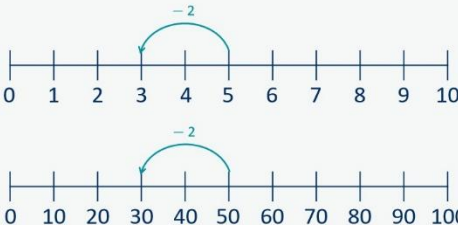
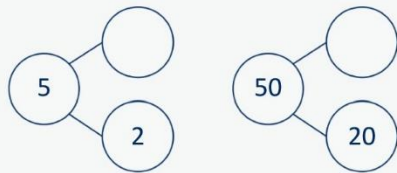
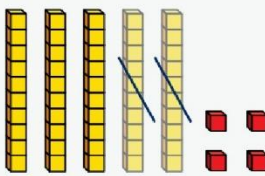
Subtraction

Progression of skills	Key representations		
Bonds within 10 Focus on subtraction facts. Encourage children to notice patterns.	... 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 Make links to known facts.	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 Make links 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 ... $6 - \square = 2$ $2 = 6 - \square$ 

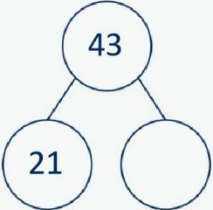
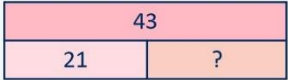
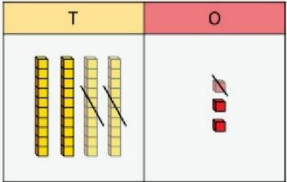
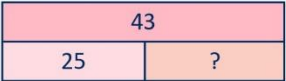
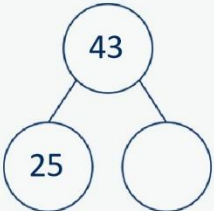
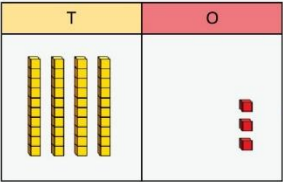
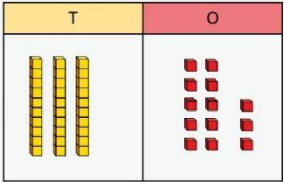
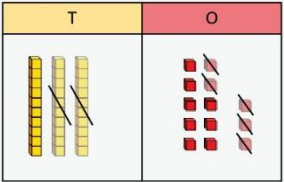
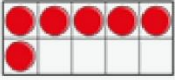
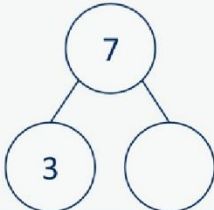
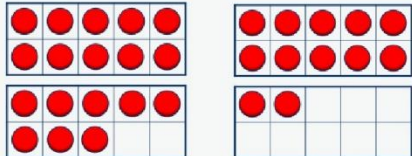
Subtraction

	- Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100 - Subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s 2 two-digit numbers - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
Progression of skills	Key representations		
Subtract ones from any number (related facts) Make links to known 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 10 Partition the number being subtracted to bridge through a ten.	... can be partitioned into ... and ...  $13 - 5$  	Make links with related facts.  $33 - 5$  	

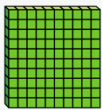
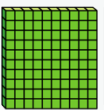
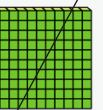
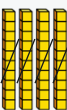
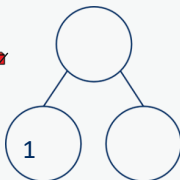
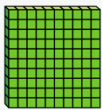
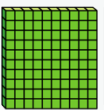
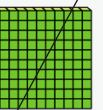
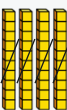
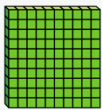
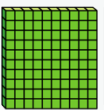
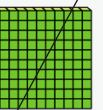
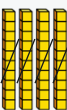
Subtraction

Progression of skills	Key representations																																																														
Subtract multiples of 10 Make links to known facts within ten.	... ones — ... ones = ... ones so ... tens — ... tens = ... tens  $5 - 2 = 3$ $50 - 20 = 30$	What is the same? What is different?   <table data-bbox="1630 491 1893 648"><tr><td colspan="2">5</td></tr><tr><td>2</td><td>?</td></tr><tr><td colspan="2">50</td></tr><tr><td>20</td><td>?</td></tr></table>	5		2	?	50		20	?																																																					
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2	?																																																														
50																																																															
20	?																																																														
Subtract 10s from any number Make links to known facts.	... tens — ... tens = ... tens ... tens and ... ones = ... 	To subtract ... I need to subtract 10 ... times. <table data-bbox="1079 841 1473 1066"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr><tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr><tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr></table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	I know that ... minus ... = ... so ... minus ... = ... $50 - 20 = 30$ $54 - 20 = 34$
1	2	3	4	5	6	7	8	9	10																																																						
11	12	13	14	15	16	17	18	19	20																																																						
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51	52	53	54	55	56	57	58	59	60																																																						

Subtraction

Progression of skills	Key representations		
Subtract two 2-digit numbers (not across a ten)	... 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 two 2-digit numbers (across a ten) Begin to 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 Solve missing number problems and use the inverse to check.	How many do you need to subtract to make ...?  $10 - \square = 6$ $6 + \square = 10$	If ... is a whole and ... is a part, then ... is the other part. $7 - 3 = \square$ $\square + 3 = 7$ 	... can be partitioned into ... and ... $18 - \square = 12 + 2$ 

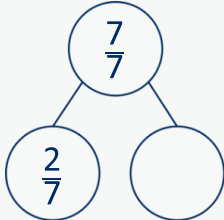
Subtraction

Year 3	- Subtract numbers mentally, including: a threedigit number and ones, a threedigit number and tens, a threedigit number and hundreds. - Subtract numbers with up to three digits, using formal written methods. - Subtract fractions with the same denominator within 1 whole.																																					
Progression of skills	Key representations																																					
Subtract 1s, 10s and 100s from a 3-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds column will decrease by ... <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr></table> $444 - 2 =$ $444 - 20 =$ $444 - 200 =$	Hundreds	Tens	Ones				<table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td></tr></table> $777 - 4 =$ $777 - 40 =$ $777 - 400 =$	H	T	O				What patterns do you notice? $235 - 3 =$ $235 - 30 =$ $235 - 300 =$ $118 - \square = 111$ $624 - 20 =$ $654 - 50 =$ $694 - 90 =$ $181 - \square = 111$ $811 - \square = 111$																							
Hundreds	Tens	Ones																																				
																																						
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Subtract two numbers (no exchange) Mental strategies and introduction of formal written method.	... ones – ... ones = ... ones ... tens – ... tens = ... tens ... hundreds – ... hundreds = ... hundreds <table><tr><td></td><td></td><td></td><td></td><td></td></tr></table> 								<table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr></table> <table><tr><td>1</td><td>7</td><td>?</td></tr></table> <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>7</td><td>6</td><td>9</td></tr><tr><td>-</td><td>1</td><td>4</td><td>7</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Hundreds	Tens	Ones				1	7	?		H	T	O		7	6	9	-	1	4	7								
																																						
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Subtraction

Progression of skills	Key representations																																																																					
Subtract two numbers across a 10 or 100 Formal written method involving up to 2 exchanges including 3-digit subtract 2-digit numbers.	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 ... <table><tr><td colspan="2">72</td></tr><tr><td>45</td><td>?</td></tr></table><table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td>2</td><td>7</td></tr></table><table><tr><td></td><td>T</td><td>O</td></tr><tr><td></td><td>7</td><td>2</td></tr><tr><td>-</td><td>4</td><td>5</td></tr><tr><td></td><td>2</td><td>7</td></tr></table><table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr><tr><td>1</td><td>8</td><td>7</td></tr></table><table><tr><td>2</td><td>15</td><td>5</td></tr><tr><td>1</td><td>7</td><td>8</td></tr><tr><td>1</td><td>8</td><td>7</td></tr></table><table><tr><td>2</td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table><table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr></table><table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>4</td><td>7</td><td>2</td></tr><tr><td>-</td><td></td><td>4</td><td>5</td></tr><tr><td></td><td>4</td><td>0</td><td>7</td></tr></table>		72		45	?	Tens	Ones			2	7		T	O		7	2	-	4	5		2	7	Hundreds	Tens	Ones				1	8	7	2	15	5	1	7	8	1	8	7	2						Hundreds	Tens	Ones					H	T	O		4	7	2	-		4	5		4	0	7
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Complements to 100 Focus on subtraction facts. Encourage children to notice patterns.	100 minus ... is equal to ... <table><tr><td>100</td><td></td></tr><tr><td>38</td><td></td></tr></table><table><tr><td>100</td><td></td></tr><tr><td>38</td><td>?</td></tr></table><table><tr><td>100</td><td></td></tr><tr><td>38</td><td></td></tr></table>	100		38		100		38	?	100		38		I subtract ... tens, then I subtract ... ones. <table><tr><td>100</td><td></td></tr><tr><td>38</td><td></td></tr></table><table><tr><td>100</td><td></td></tr><tr><td>38</td><td></td></tr></table><table><tr><td>100</td><td></td></tr><tr><td>38</td><td></td></tr></table> <table><tr><td>2</td><td>70</td><td>100</td></tr></table> $100 - 38 = 62$$100 - 62 = 38$$62 = 100 - 38$$38 = 100 - 62$	100		38		100		38		100		38		2	70	100																																									
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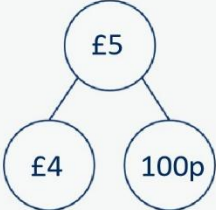
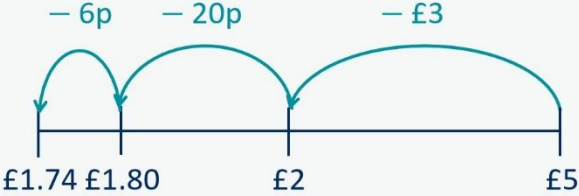
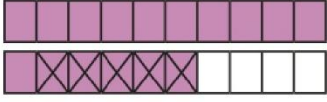
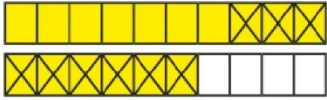
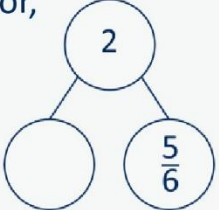
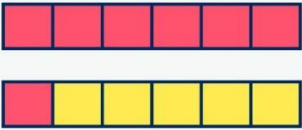
Subtraction

Progression of skills	Key representations
Subtract fractions with the same denominator within 1 whole Make links with known facts.	When subtracting fractions with the same denominator, I only subtract the numerator. ... fifths – ... fifths = ... fifths $\frac{5}{5} - \frac{1}{5}$ $\frac{4}{5} - \frac{1}{5}$ $\frac{3}{5} - \frac{1}{5}$ 

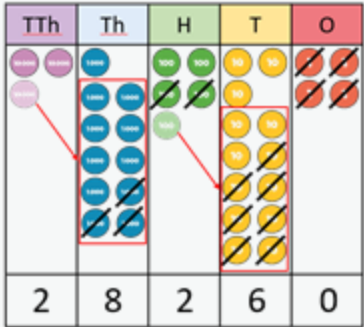
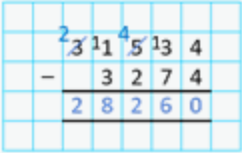
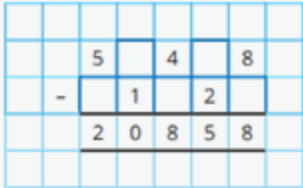
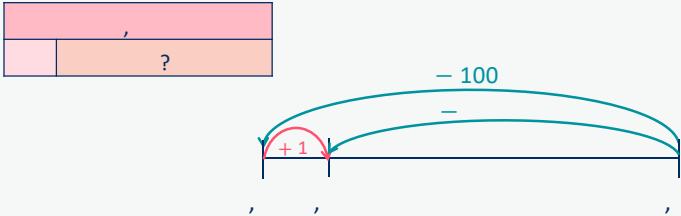
Subtraction

Year 4	- Subtract numbers with up to 4 digits using a formal written method. - Solve simple measure and money problems involving fractions and decimals to 2 decimal places. - Subtract fractions with the same denominator.																										
Progression of skills	Key representations																										
Subtract 1s, 10s, 100s and 1,000s from a 4-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds/thousands column will decrease by ... <table border="1"> <thead> <tr> <th>Thousands</th><th>Hundreds</th><th>Tens</th><th>Ones</th></tr> </thead> <tbody> <tr> <td>1,000 1,000 1,000</td><td>100 100 100 100</td><td>10 10</td><td>1 1 1 1 1</td></tr> </tbody> </table> $3,425 - 2 =$ $3,425 - 200 =$ $3,425 - 20 =$ $3,425 - 2,000 =$	Thousands	Hundreds	Tens	Ones	1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1	What patterns do you notice? $4,356 - 3 =$ $4,356 - 30 =$ $4,356 - 300 =$ $4,356 - 3,000 =$ $4,433 - \square = 4,430$ $4,433 - \square = 4,033$ $4,433 - \square = 4,403$																	
Thousands	Hundreds	Tens	Ones																								
1,000 1,000 1,000	100 100 100 100	10 10	1 1 1 1 1																								
Subtract up to two 4digit numbers Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations.	I need to subtract... ones/tens/hundreds. I do/do not need to make an exchange. I can exchange 1... for 10... <table border="1"> <thead> <tr> <th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr> <td>1,000 1,000 1,000</td><td>100 100</td><td>10 10 10</td><td>1 1 1</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr> <td>3</td><td>2</td><td>5</td><td>6</td></tr> <tr> <td>-</td><td>2</td><td>1</td><td>4</td></tr> <tr> <td>1</td><td>0</td><td>5</td><td>8</td></tr> </tbody> </table>			Th	H	T	O	1,000 1,000 1,000	100 100	10 10 10	1 1 1	Th	H	T	O	3	2	5	6	-	2	1	4	1	0	5	8
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Subtraction

Progression of skills	Key representations	
Subtract decimal numbers in the context of money Emphasis here is on partitioning and use of number lines rather than formal written calculations.	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 Include subtracting fractions from wholes.	When subtracting fractions with the same denominator, I only subtract the numerator. ... tenths – ... tenths = ... tenths  $\frac{16}{10} - \frac{5}{10}$  $\frac{16}{10} - \frac{9}{10}$	   

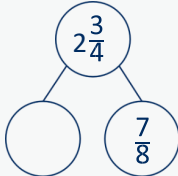
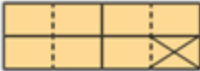
Subtraction

Year 5	- Subtract whole numbers with more than 4 digits. - Subtract numbers mentally with increasingly large numbers. - Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 - Subtract fractions with the same denominator, and denominators that are multiples of the same number.	
Progression of skills	Key representations	
Subtract whole numbers with more than 4 digits Encourage children to estimate and use inverse operations to check answers to calculations.	I can exchange 1 ... for 10 ...   	
Subtract using mental strategies Subtract 1s, 10s, 100s etc from any number. Use number bonds and related facts.	 $48,650 - 300 =$ $48,650 - 30,000 =$ $48,650 - 30 =$	To subtract ..., I can subtract ... then add ... 

Subtraction

Progression of skills	Key representations																																													
Subtract decimals with up to 2 decimal places Progress from the same number of decimal places to a different number of decimal places and from no exchange to exchange.	<table><tr><th>Ones</th><th>Tenths</th><th>Hundredths</th></tr><tr><td>1</td><td>0.1 0.1</td><td>0.01 0.01 0.01 0.01</td></tr><tr><td></td><td>0.1 0.1</td><td>0.01 0.01 0.01 0.01</td></tr><tr><td></td><td></td><td>0.01 0.01 0.01 0.01</td></tr></table> <table><tr><td>2</td><td>3</td><td>1</td><td>2</td></tr><tr><td>-</td><td>1</td><td>1</td><td>7</td></tr><tr><td colspan="4"> </td></tr><tr><td>1</td><td>2</td><td>5</td><td></td></tr></table> <table><tr><td>24.4</td></tr><tr><td>3.12 ?</td></tr></table> 24.4 3.12 <table><tr><td>2</td><td>4</td><td>4</td></tr><tr><td>-</td><td>3</td><td>1</td><td>2</td></tr><tr><td colspan="4"> </td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Ones	Tenths	Hundredths	1	0.1 0.1	0.01 0.01 0.01 0.01		0.1 0.1	0.01 0.01 0.01 0.01			0.01 0.01 0.01 0.01	2	3	1	2	-	1	1	7					1	2	5		24.4	3.12 ?	2	4	4	-	3	1	2								
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Complements to 1 Encourage children to make links with bonds to 10 and complements to 100 and 1,000 when finding a missing part or subtracting from 1	$0.3 + \square = 1$ $0.35 + \square = 1$ <table><tr><td>10</td></tr><tr><td>3 ?</td></tr></table> <table><tr><td>100</td></tr><tr><td>35 ?</td></tr></table> <table><tr><td>1</td></tr><tr><td>0.3 ?</td></tr></table> <table><tr><td>1</td></tr><tr><td>0.35 ?</td></tr></table> 1 0.4 1 0.44 1 0.444 $10 - 4 = 6$ $100 - 44 = 56$ $1,000 - 444 = 556$ $1 - 0.4 = 0.6$ $1 - 0.44 = 0.56$ $1 - 0.444 = 0.556$	10	3 ?	100	35 ?	1	0.3 ?	1	0.35 ?																																					
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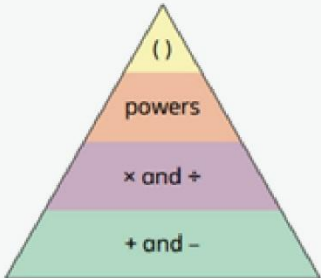
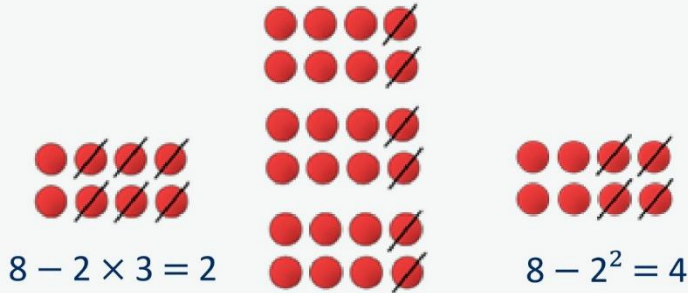
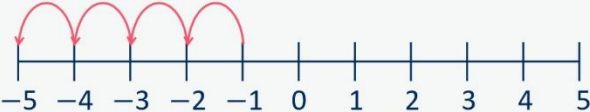
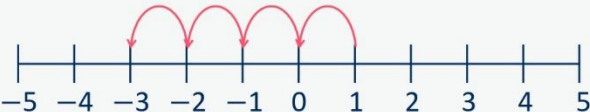
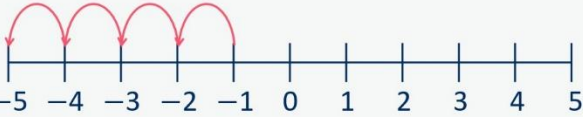
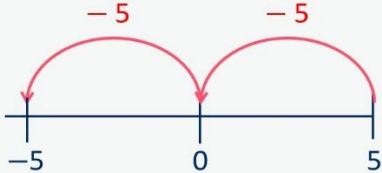
Subtraction

Progression of skills	Key representations
Subtract fractions with denominators that are a multiple of one another Convert fractions to the same denominator before subtracting. Progress from subtracting fractions within 1 whole to subtracting from a mixed number.	The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.  $\frac{1}{3} - \frac{1}{15} = \frac{5}{15} - \frac{1}{15} = \frac{4}{15}$  $\frac{2}{3} - \frac{2}{9} = \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$    

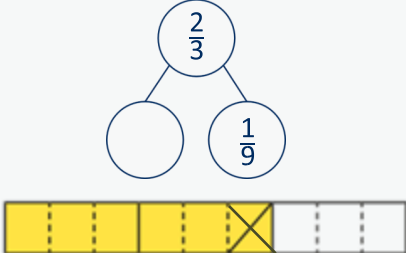
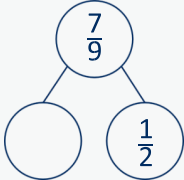
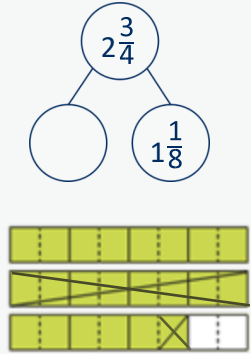
Subtraction

Year 6	- Subtract larger numbers, using the formal written methods of columnar subtraction. - Use their knowledge of the order of operations to carry out calculations involving the 4 operations. - Calculate intervals across zero. - Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.																																																																														
Progression of skills	Key representations																																																																														
Subtract integers up to 10 million Encourage children to estimate and use inverse operations to check answers to calculations.	<table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>²3</td><td>¹4</td><td>⁵6</td><td>¹2</td><td>2</td><td>1</td><td></td></tr><tr><td></td><td></td><td>– 1</td><td>8</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td></tr><tr><td></td><td></td><td></td><td>1</td><td>6</td><td>1</td><td>9</td><td>0</td><td>0</td></tr></table> <table><tr><td colspan="3">4,604</td></tr><tr><td>2,354</td><td>750</td><td>?</td></tr></table> <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>8</td><td></td><td>4</td><td>8</td><td>5</td><td></td><td></td></tr><tr><td></td><td></td><td>– 3</td><td>6</td><td></td><td></td><td></td><td></td><td>4</td></tr><tr><td></td><td></td><td></td><td>5</td><td>5</td><td>5</td><td>5</td><td>5</td><td></td></tr></table>												² 3	¹ 4	⁵ 6	¹ 2	2	1				– 1	8	4	3	2	1					1	6	1	9	0	0	4,604			2,354	750	?												8		4	8	5					– 3	6					4				5	5	5	5	5	
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Subtract decimals with up to 3 decimal places Progress from the same number of decimal and whole number places to a different number of decimal and whole number places.	I do/do not need to make an exchange because ... <table><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>6</td><td>⁶7</td><td>¹3</td></tr><tr><td></td><td></td><td>– 1</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td>5</td><td>3</td></tr><tr><td></td><td></td><td></td><td></td><td>9</td></tr></table> <table><tr><td>O</td><td>Tth</td><td>Hth</td><td>Thth</td></tr><tr><td>0</td><td>9</td><td>7</td><td>5</td></tr></table> <table><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>⁰1</td><td>¹⁵6</td><td>¹1</td><td>5</td></tr><tr><td></td><td></td><td>– 0</td><td>6</td><td>4</td><td></td></tr><tr><td></td><td></td><td></td><td>0</td><td>9</td><td>7</td></tr><tr><td></td><td></td><td></td><td></td><td>5</td><td></td></tr></table>								6	⁶ 7	¹ 3			– 1	3	4				5	3					9	O	Tth	Hth	Thth	0	9	7	5								⁰ 1	¹⁵ 6	¹ 1	5			– 0	6	4					0	9	7					5																	
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Subtraction

Progression of skills	Key representations	
Order of operations Children learn the order of priority for operations in a calculation. 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 ... 	 $8 - 2 \times 3 = 2$ $(8 - 2) \times 3 = 18$ $8 - 2^2 = 4$
Negative numbers Children subtract from positive and negative numbers and calculate intervals across 0	... minus ... is equal to ... $-1 - 4 = -5$  $1 - 4 = -3$ 	 The difference between -5 and -1 is 4  The difference between 5 and -5 is 10

Subtraction

Progression of skills	Key representations		
Subtract fractions Convert fractions to the same denominator before subtracting. Progress from fractions where one denominator is a multiple of the other, to any fractions and then subtracting from a mixed number.	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 ...  $2\frac{3}{4} - 1\frac{1}{8} = 1\frac{5}{8}$

Progression of skills- Multiplication

Year group	Skill
Nursery	Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)
Reception	- Double to 10 - Make equal groups
Year 1	- Count in 2s, 5s and 10s - Add equal groups - Make arrays - Make doubles

Progression of skills- Multiplication

Year group	Skill
Year 2	• Link repeated addition and multiplication • Use arrays • Double • The 2 times-table • The 10 times-table • The 5 times-table • Missing numbers
Year 3	• The 3 times-table • The 4 times-table • The 8 times-table • Related facts • Multiply a 2-digit number by a 1-digit number - no exchange • Multiply a 2-digit number by a 1-digit number - with exchange • Scaling • Correspondence problems

Progression of skills- Multiplication

Year group	Skill
Year 4	• Times-table facts to 12×12 • Multiply by 1 and 0 • Multiply 3 numbers • Factor pairs • Multiply by 10 and 100 • Related facts • Mental strategies • Multiply a 2 or 3-digit number by a 1-digit number • Scaling • Correspondence problems

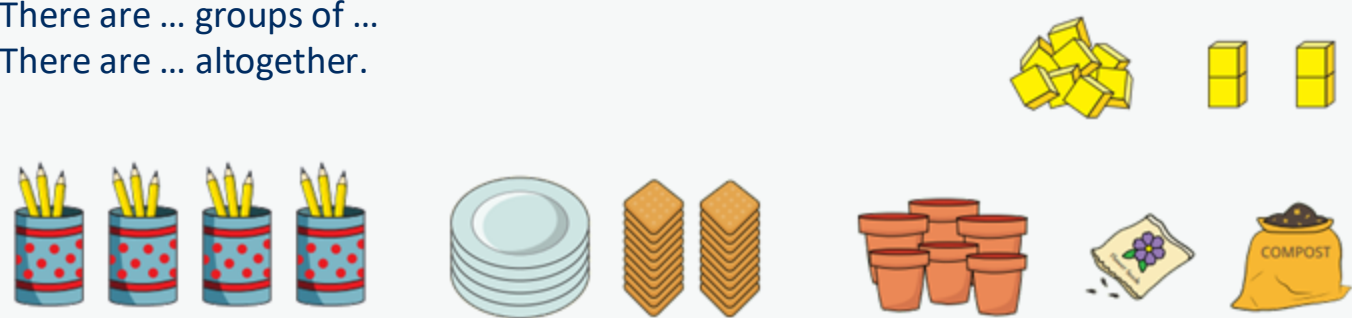
Progression of skills- Multiplication

Year group	Skill
Year 5	• Multiples and factors • Square and cube numbers • Multiply numbers up to 4 digits by a 1-digit number • Multiply numbers up to 4 digits by a 2-digit number • Multiply by 10, 100 and 1,000 • Mental strategies • Multiply fractions by a whole number • Multiply mixed numbers by a whole number • Find the whole

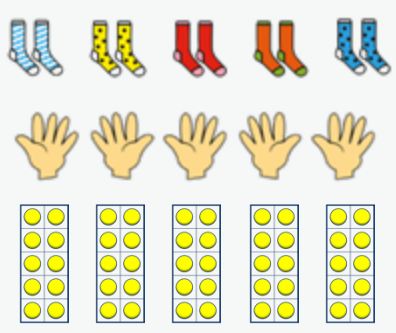
Progression of skills- Multiplication

Year group	Skill
Year 6	• Multiply numbers up to 4 digits by a 2-digit number • Multiply by 10, 100 and 1,000 • Order of operations • Multiply decimals by integers • Multiply fractions by fractions • Find the whole • Calculations involving ratio

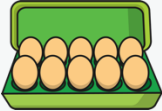
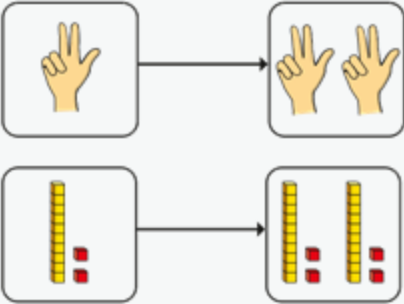
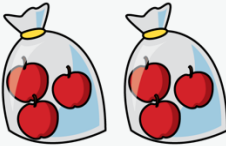
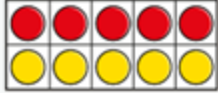
Multiplication

Reception	- Have a deep understanding of number to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5 - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
Progression of skills	Key representations
Double to 10 Prompt children to notice that double means twice as many and to notice that there are two equal groups.	Double ... is is double ... 
Make equal groups Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are ... groups of ... There are ... altogether. 

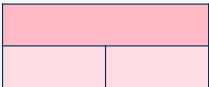
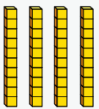
Multiplication

Year 1	- Count in multiples of twos, fives and tens. - Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher.		
Progression of skills	Key representations		
Count in 2s, 5s and 10s Begin by counting objects that naturally come in 2s, 5s and 10s, for example pairs of socks or fingers.	There are ... equal groups of ... There are ... altogether. 	Continue to colour in ...s What do you notice? 	Complete the number track/number line by counting in ...s. 5101520 010203040
Add equal groups (repeated addition) Children should be able to write a repeated addition to represent equal groups and to draw pictures or use objects to represent a 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.	

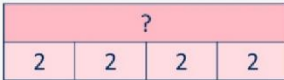
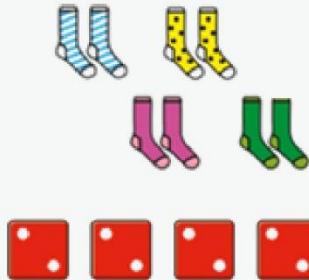
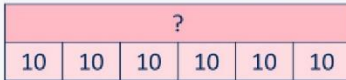
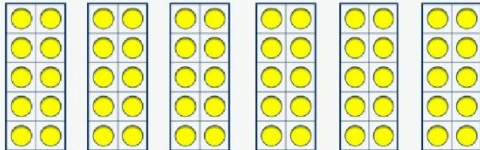
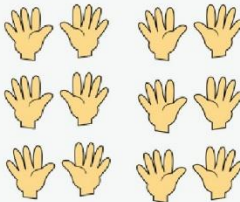
Multiplication

Progression of skills	Key representations
Make arrays Children use their knowledge of adding equal groups to arrange objects in columns and rows.	There are ... rows of ... There are ... altogether. There are ... columns of ... There are ... altogether.    
Make doubles Children understand that doubles are two equal groups. Children may begin to explore doubles beyond 20 using base10	Double ... is + ... = ...      

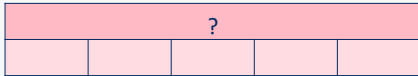
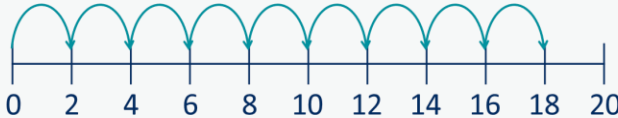
Multiplication

Year 2	- 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).	
Progression of skills	Key representations	
Link repeated addition and multiplication Encourage children to make the link between repeated addition and multiplication.	There are ... equal groups with ... in each group. There are ... altogether.   $3 + 3 = 6$ $2 \times 3 = 6$   $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$	
Use arrays Encourage children to see that multiplication is commutative.	There are ... rows with ... in each row. There are ... columns with ... in each column.  $3 \text{ lots of } 5 = 15$ $5 + 5 + 5 = 15$ $5 \text{ lots of } 3 = 15$ $3 + 3 + 3 + 3 + 3 = 15$	I can see ... × ... and ... × ... $3 \times 5 = 15$ $5 \times 3 = 15$ $3 \times 5 = 5 \times 3$
Double Encourage children to make links with related facts.	Double ... is ...   $\text{Double } 4 = 4 + 4$ $\text{Double } 4 \text{ is } 8$	Double ... is ... so double ... is ...   $\text{Double } 4 \text{ is } 8$   $\text{Double } 40 \text{ is } 80$

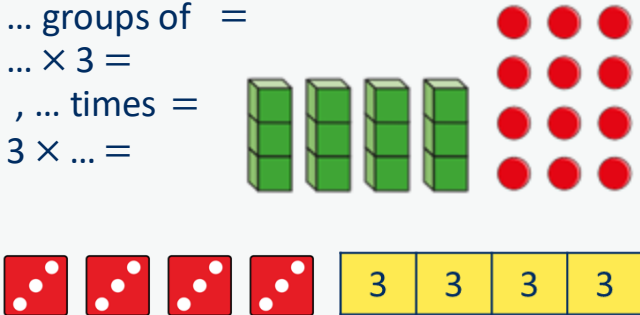
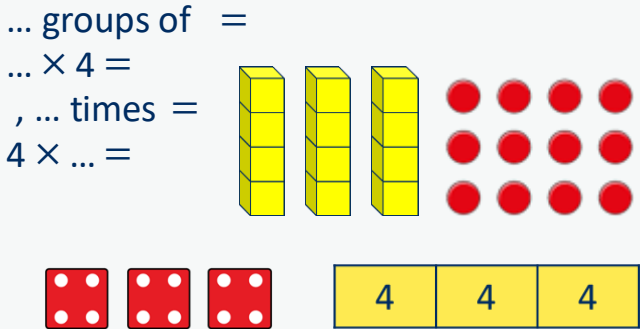
Multiplication

Progression of skills	Key representations																																									
The 2 times-table Encourage daily counting in multiples both forwards and back. Notice that all multiples of 2 are even numbers.	... lots of 2 = ... $\times 2 =$ 	... times 2 is equal to ... <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> $1 \times 2 = 2$ $2 = 1 \times 2$ $2 \times 2 = 4$ $4 = 2 \times 2$ $3 \times 2 = 6$ $6 = 3 \times 2$ 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30										
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The 10 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.	... lots of 10 = ... $\times 10 =$ 	... times 10 is equal to ... <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr></table> $1 \times 10 = 10$ $10 = 1 \times 10$ $2 \times 10 = 20$ $20 = 2 \times 10$ $3 \times 10 = 30$ $30 = 3 \times 10$ 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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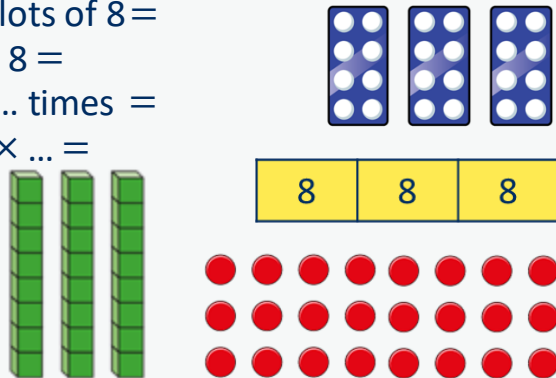
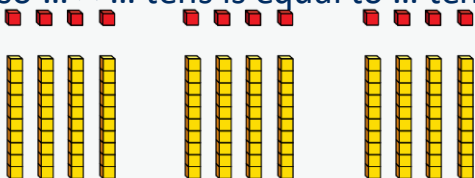
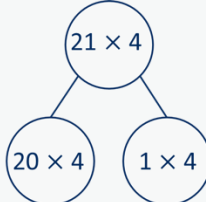
Multiplication

Progression of skills	Key representations																																									
The 5 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.	... lots of = ... $\times 5 =$    	... times is equal to ... <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr></table> $1 \times 5 = 5$$5 = 1 \times 5$ $2 \times 5 = 10$$10 = 2 \times 5$ $3 \times 5 = 15$$15 = 3 \times 5$ 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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Missing numbers Make links to known facts.	... is equal to ... groups of ... 18 socks, how many pairs?  	... times ... is equal to ... $\square \times 2 = 18$ $18 = 2 \times \square$																																								

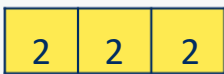
Multiplication

Year 3	- 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 onedigit 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.																															
Progression of skills	Key representations																															
The 3 times-table Encourage daily counting in multiples both forwards and back.	... groups of = ... × 3 = , ... times = 3 × ... = 	... times is equal to ... <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> 4 × 3 = 12 12 = 4 × 3 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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The 4 times-table Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2 and 4 times-tables.	... groups of = ... × 4 = , ... times = 4 × ... = 	... times is equal to ... <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> 3 × 4 = 12 12 = 3 × 4 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Multiplication

Progression of skills	Key representations																															
The 8 timestable Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2, 4 and 8 timestables.	... lots of 8 = $\times 8 =$, ... times = $8 \times \dots =$ 	... times is equal to ... <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> $3 \times 8 = 24$ $24 = 3 \times 8$ 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Related facts Use knowledge of multiplying by 10 to scale times-table facts.	... $\times$... ones is equal to ... ones so ... $\times$... tens is equal to ... tens.  	$3 \times 4 = 12$ $3 \times 40 = 120$																														
Multiply a 2-digit number by a 1-digit number- no exchange Children apply their understanding of partitioning to represent and solve calculations using the expanded method.	... tens multiplied by ... is equal to ... tens. ...ones multiplied by ... is equal to ... ones. <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> $30 \times 2 = 60$ $2 \times 2 = 4$ $32 \times 2 = 64$	Tens	Ones											 <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table>	Tens	Ones																
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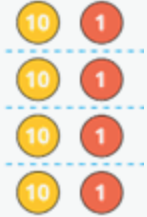
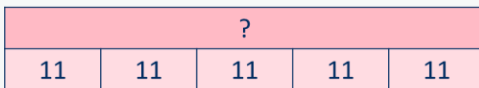
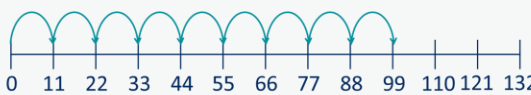
Multiplication

Progression of skills	Key representations																					
Multiply a 2-digit number by a 1-digit number- with exchange Children apply their understanding of partitioning to represent and solve calculations using the expanded method.	... tens multiplied by ... is equal to ... tens. ... ones multiplied by ... is equal to ... ones. <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> $20 \times 4 = 80$ $4 \times 4 = 16$ $24 \times 4 = 96$ × 0 × × <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table>	Tens	Ones											Tens	Ones							
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Scaling Children focus on multiplication as scaling (... times the size) as opposed to repeated addition.	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.																				

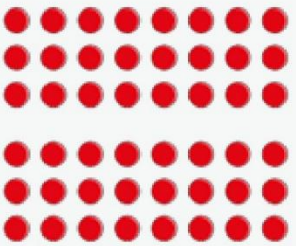
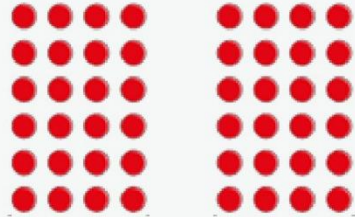
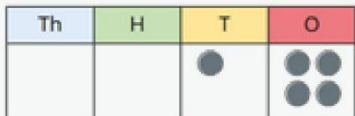
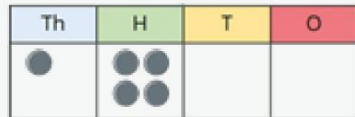
Multiplication

Progression of skills	Key representations								
Correspondence problems (How many ways?) Encourage children to work systematically to find all the different possible combinations.	For every ... , there are ... possible ... There are ... $\times$... possibilities altogether.  <table><tr><th>hats</th><th>scarves</th></tr><tr><td>blue </td><td> </td></tr><tr><td>orange </td><td> </td></tr><tr><td>purple </td><td> </td></tr></table> For every hat, there are two possible scarves. $3 \times 2 = 6$ There are 6 possibilities altogether.	hats	scarves	blue 	 	orange 	 	purple 	 
hats	scarves								
blue 	 								
orange 	 								
purple 	 								

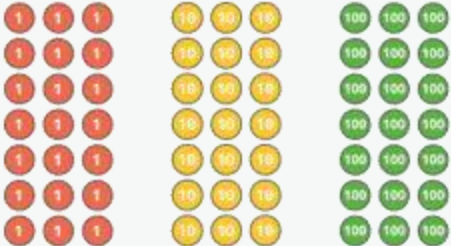
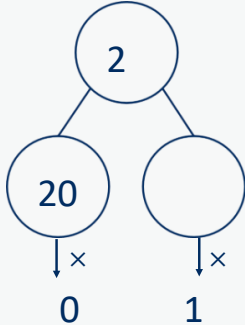
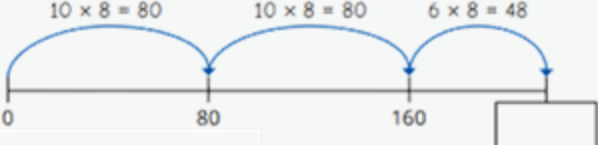
Multiplication

Year 4	- Recall multiplication facts for multiplication tables up to 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 threedigit numbers by a onedigit 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.																																																																																																					
Progression of skills	Key representations																																																																																																					
Times-table facts to 12 × 12 Encourage daily counting in multiples both forwards and back. Encourage children to notice links between related times-tables.	... groups of ... = ... times ... is equal to × ... =     <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr><tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr><tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr><tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr><tr><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td></tr><tr><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td></tr><tr><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td></tr></table>		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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91	92	93	94	95	96	97	98	99	100																																																																																													
Multiply by 1 and 0	Any number multiplied by 1 is equal to ... Any number multiplied by 0 is equal to ...  	... × ... = ... <table><tr><td>1 × 1 = 1</td><td>1 × 0 = 0</td></tr><tr><td>2 × 1 = 2</td><td>2 × 0 = 0</td></tr><tr><td>3 × 1 = 3</td><td>3 × 0 = 0</td></tr><tr><td>4 × 1 = 4</td><td>4 × 0 = 0</td></tr></table>	1 × 1 = 1	1 × 0 = 0	2 × 1 = 2	2 × 0 = 0	3 × 1 = 3	3 × 0 = 0	4 × 1 = 4	4 × 0 = 0																																																																																												
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4 × 1 = 4	4 × 0 = 0																																																																																																					

Multiplication

Progression of skills	Key representations	
Multiply 3 numbers Children use their understanding of commutativity to multiply more efficiently.	To work out $\dots \times \dots \times \dots$, I can first calculate $\dots \times \dots$ 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 Children explore equivalent calculations using different factors pairs.	$12 = \dots \times \dots$, so $\dots \times 12 = \dots \times \dots \times \dots$  $8 \times 6 = 8 \times 3 \times 2$ $8 \times 6 = 24 \times 2$  $6 \times 8 = 6 \times 4 \times 2$ $6 \times 8 = 24 \times 2$	
Multiply by 10 and 100 Some children may over-generalise that multiplying by 10 or 100 always results in adding zeros. This will cause issues later when multiplying decimals.	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 ...   $14 \times 100 = 1,400$

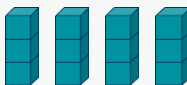
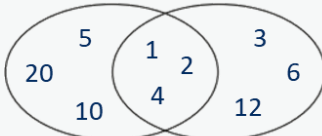
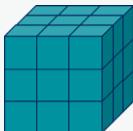
Multiplication

Progression of skills	Key representations								
Related facts Use knowledge of multiplying by 10 and 100 to scale timestable facts.	... × ... 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 2 or 3digit numbers to multiply using informal methods.	... tens multiplied by ... is equal to ... tens. ...ones multiplied by ... is equal to ... ones. <table border="1"> <thead> <tr> <th>Tens</th><th>Ones</th></tr> </thead> <tbody> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table>   $3 \times 26 = 60 + 18 = 78$ $26 \times 8 = 80 + 80 + 48 = 208$	Tens	Ones						
Tens	Ones								

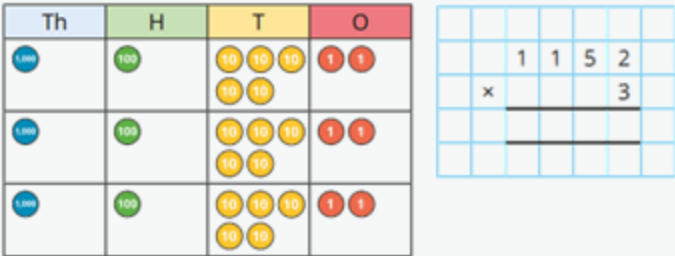
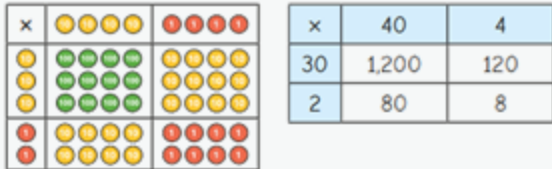
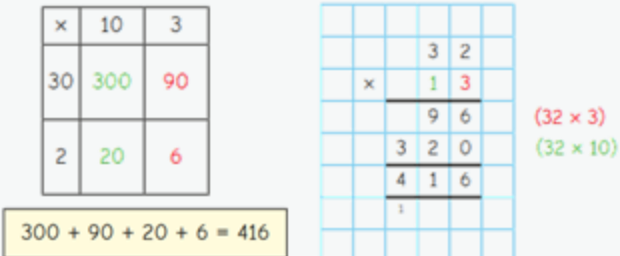
Multiplication

Progression of skills	Key representations																																																																						
Multiply a 2 or 3-digit number by a 1-digit number The short multiplication method is introduced for the first time, initially in an expanded form.	To multiply a 2digit number by ... , I multiply the ones by ... and the tens by ... To multiply a 3digit number by ... , I multiply the ones by ... , the tens by ... and the hundreds by ... <table><tr><th>T</th><th>O</th></tr><tr><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td>10 10 10</td><td>1 1 1 1</td></tr></table> <table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>3</td><td>4</td></tr><tr><td>x</td><td></td><td>5</td></tr><tr><td></td><td>2</td><td>0</td></tr><tr><td></td><td>1</td><td>5</td><td>0</td></tr><tr><td></td><td>1</td><td>7</td><td>0</td></tr></table> (4 × 5) (30 × 5) <table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>3</td><td>4</td></tr><tr><td>x</td><td></td><td>5</td></tr><tr><td></td><td>1</td><td>7</td><td>0</td></tr><tr><td></td><td>1</td><td>7</td><td>0</td></tr></table> <table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td></td><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td></td><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td></td><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td></td><td>10 10 10</td><td>1 1 1 1</td></tr><tr><td></td><td>10 10</td><td></td></tr></table> 100	T	O	10 10 10	1 1 1 1	10 10 10	1 1 1 1	10 10 10	1 1 1 1	10 10 10	1 1 1 1	10 10 10	1 1 1 1	H	T	O		3	4	x		5		2	0		1	5	0		1	7	0	H	T	O		3	4	x		5		1	7	0		1	7	0	H	T	O		10 10 10	1 1 1 1		10 10 10	1 1 1 1		10 10 10	1 1 1 1		10 10 10	1 1 1 1		10 10 10	1 1 1 1		10 10	
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Scaling Children focus on multiplication as scaling (... times the size).	... is ... times the size of ... <table><tr><td>7</td></tr></table> <table><tr><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td></tr></table> A computer mouse costs £7 A keyboard costs 6 times as much. <table><tr><td>6</td></tr></table> <table><tr><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr></table> A red ribbon is 6 cm. A yellow ribbon is 7 times as long.	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6																																																							
7																																																																							
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6	6	6	6	6	6	6																																																																	
Correspondence problems Encourage children to use tables to show all the different possible combinations.	For every ... , there are ... possibilities. There are ... × ... possibilities altogether. A pizza company offers a choice of 5 toppings and 3 bases. 5 × 3 = 15 <table><tr><th></th><th>Deep pan</th><th>Italian</th><th>Thin</th></tr><tr><th>Cheese</th><td>C DP</td><td>C I</td><td>C Th</td></tr><tr><th>Mushroom</th><td>M DP</td><td>M I</td><td>M Th</td></tr><tr><th>Vegetable</th><td>V DP</td><td>V I</td><td>V Th</td></tr><tr><th>Chicken</th><td>C DP</td><td>C I</td><td>C Th</td></tr><tr><th>Tuna</th><td>T DP</td><td>T I</td><td>T Th</td></tr></table>		Deep pan	Italian	Thin	Cheese	C DP	C I	C Th	Mushroom	M DP	M I	M Th	Vegetable	V DP	V I	V Th	Chicken	C DP	C I	C Th	Tuna	T DP	T I	T Th																																														
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Tuna	T DP	T I	T Th																																																																				

Multiplication

Year 5	- 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.																																
Progression of skills	Key representations																																
Multiples and factors Encourage children to notice patterns and make links with known facts.	... is a multiple of ... because ... × ... = ...  <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	... is a factor of ... because ... × ... = ...  1 × 8  2 × 4 1, 2, 4 and 8 are factors of 8	The common factors of ... and ... are ... Factors of 20 Factors of 12 
1	2	3	4	5	6	7	8	9	10																								
11	12	13	14	15	16	17	18	19	20																								
21	22	23	24	25	26	27	28	29	30																								
Square and cube numbers	... 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																															

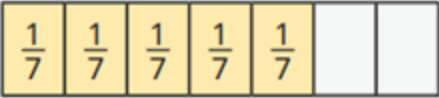
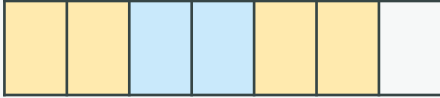
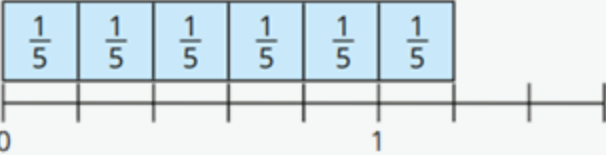
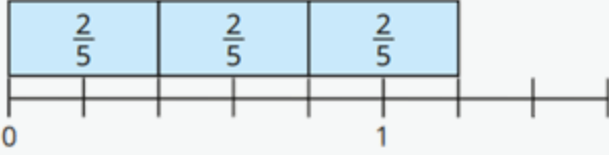
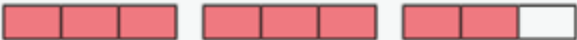
Multiplication

Progression of skills	Key representations	
Multiply numbers up to 4 digits by a 1-digit number This builds on the short multiplication method introduced in Y4	To multiply a 4digit number by ... , I multiply the ones by ... , the tens by ... , the hundreds by ... and the thousands by ...	 The image shows base ten blocks representing 1152 (1 thousand, 1 hundred, 5 tens, 2 ones) and a short multiplication grid for 1152 multiplied by 3, showing the calculation of each digit's value and the resulting product.
Multiply numbers up to 4 digits by a 2-digit number Numbers are first partitioned using an area model then long multiplication is introduced for the first time.	I can partition ... into ... and ...  The image shows an area model for 32 x 44, partitioned into four parts: 30 x 40, 30 x 4, 2 x 40, and 2 x 4. Below it is a table showing the partitioning of 32 into 30 and 2, and 44 into 40 and 4. $32 \times 44 = 1,200 + 80 + 120 + 8$ $32 \times 44 = 1,408$	First, I multiply by the ... Then I multiply by the ...  The image shows a long multiplication grid for 32 x 44, with the calculation of 32 x 3 and 32 x 40, and the final sum: 300 + 90 + 20 + 6 = 416.

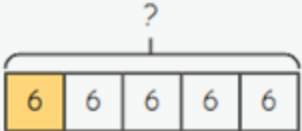
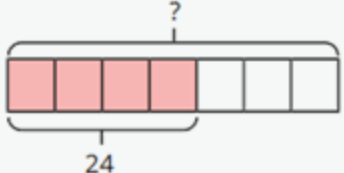
Multiplication

Progression of skills	Key representations																										
Multiply by 10, 100 and 1,000 Some children may over-generalise that multiplying by a power of 10 always results in adding zeros. This will cause issues later when multiplying decimals.	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 ... <table><tr><th>M</th><th>HTh</th><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td><td></td><td>●●</td><td>●●</td><td>●●</td></tr></table><table><tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr><tr><td></td><td></td><td></td><td>●●</td><td>●●</td><td>●●</td></tr></table> $234 \times 10 = 2,340$ $234 \times 100 = 23,400$ $234 \times 1,000 = 234,000$ $2.34 \times 10 = 23.4$ $2.34 \times 100 = 234$ $2.34 \times 1,000 = 2,340$	M	HTh	TTh	Th	H	T	O					●●	●●	●●	Th	H	T	O	Tth	Hth				●●	●●	●●
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				●●	●●	●●																					
Th	H	T	O	Tth	Hth																						
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Mental strategies Children continue to use efficient mental strategies such as partitioning and knowledge of factor pairs and related facts to multiply.	The most efficient strategy to calculate ... $\times$... is ... To calculate ... $\times$ 12, I can do ... $\times$... $\times$... 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 $121 \times 6 \times 2$ I could calculate $121 \times 4 \times 3$																										

Multiplication

Progression of skills	Key representations
Multiply fractions by a whole number Make links with repeated addition. E.g. $\frac{1}{7} \times 4 = \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7}$	To multiply a fraction by an integer, I multiply the numerator by the integer and the denominator remains the same.   $\frac{1}{7} \times 5 = \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{5}{7}$ $\frac{2}{7} \times 3 = \frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7}$   $\frac{1}{5} \times 6 = 1\frac{1}{5}$ $\frac{2}{5} \times 3 = 1\frac{1}{5}$
Multiply mixed numbers by a whole number	I can partition $\frac{\square}{\square}$ into $\frac{\square}{\square}$ and $\frac{\square}{\square}$    $2\frac{2}{3} \times 3$ $2 \times 3 = 6 \quad \frac{2}{3} \times 3 = 2$ $2\frac{2}{3} \times 3 = 6 + 2 = 8$

Multiplication

Progression of skills	Key representations	
Find the whole Children multiply to find the whole from a given part.	If $\frac{1}{\square}$ is ... , then the whole is ...$\times$... $\frac{1}{\square}$ of $\square$ = 6  $5 \times 6 = 30$ $\frac{1}{\square}$ of 30 = 6	If $\frac{\square}{\square}$ is ... , then $\frac{1}{\square}$ is ... and the whole is ...$\times$... $\frac{1}{7}$ of $\square$ = 24  $\frac{1}{7} = 24 \div 4 = 6$ $7 \times 6 = 42$ $\frac{1}{7}$ of 42 = 24

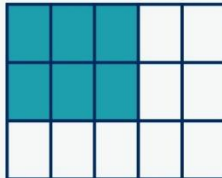
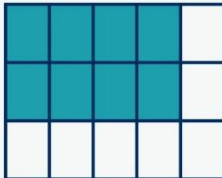
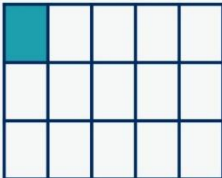
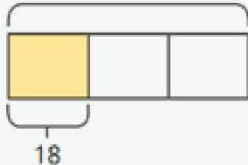
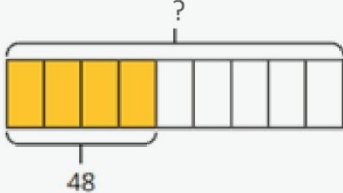
Multiplication

Year 6	- Identify common factors and common multiples. - Multiply multi-digit numbers up to 4 digits by a twedigit whole number using the formal written method of long multiplication. - Multiply numbers by 10, 100 and 1,000 - Multiply one-digit numbers with up to two decimal places by whole numbers. - Use their knowledge of the order of operations to carry out calculations involving the 4 operations. - Multiply simple pairs of proper fractions, writing the answer in its simplest form. - Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. - Solve problems involving the calculation of percentages.																																																								
Progression of skills	Key representations																																																								
Multiply numbers up to 4 digits by a 2-digit number	To multiply by a 2digit number, first multiply by the ones, then multiply by the tens and then find the total. <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>1</td><td>2</td><td>0</td><td>7</td><td></td><td></td></tr><tr><td></td><td>×</td><td></td><td></td><td>3</td><td>6</td><td></td><td></td></tr><tr><td>+</td><td></td><td>7</td><td>2</td><td>4</td><td>2</td><td></td><td>(1,207 × 6)</td></tr><tr><td></td><td></td><td>3</td><td>6</td><td>2</td><td>1</td><td>0</td><td>(1,207 × 30)</td></tr><tr><td></td><td></td><td>4</td><td>3</td><td>4</td><td>5</td><td>2</td><td></td></tr><tr><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr></table>											1	2	0	7				×			3	6			+		7	2	4	2		(1,207 × 6)			3	6	2	1	0	(1,207 × 30)			4	3	4	5	2				1					
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Multiply by 10, 100 and 1,000 Some children may over generalise that multiplying by a power of 10 always results in adding zeros.	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 ... <table><tr><td>M</td><td>HTh</td><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td></td><td></td><td></td><td>● ●</td><td>● ●</td><td>● ●</td></tr></table> <table><tr><td>Th</td><td>H</td><td>T</td><td>O</td><td>Tth</td><td>Hth</td><td>Thth</td></tr><tr><td></td><td></td><td></td><td></td><td>● ●</td><td>● ●</td><td>● ●</td></tr></table> 234 × 10 = 2,340 234 × 100 = 23,400 234 × 1,000 = 234,000 0.234 × 10 = 2.34 0.234 × 100 = 23.4 0.234 × 1,000 = 234	M	HTh	TTh	Th	H	T	O					● ●	● ●	● ●	Th	H	T	O	Tth	Hth	Thth					● ●	● ●	● ●																												
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Multiplication

Progression of skills	Key representations	
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 This is the first time children multiply decimals by numbers other than 10, 100 or 1,000. Encourage them to make links with known facts and whole number multiplication.	I know that ... × ... = ..., so I also know that ... × ... = ... $6 \times 2 = 12$ $6 \times 0.2 = 1.2$	
	I need to exchange 10 ... for 1 ... $213 \times 4 = 852$ $2.13 \times 4 = 8.52$	

Multiplication

Progression of skills	Key representations	
Multiply fractions by fractions Encourage children to give answers in their simplest form.	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}$$\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$$\frac{2}{3} \times \frac{3}{5} = \frac{6}{15} = \frac{2}{5}$	
Find the whole Children multiply to find the whole from a given part.	If $\frac{1}{\square}$ is ... , then the whole is ... $\times$... $\frac{1}{3}$ of $\underline{\hspace{1cm}}$ = 18  $18 \times 3 = 54$ $\frac{1}{3}$ of 54 = 18	If $\frac{\square}{\square}$ is ... , then $\frac{1}{\square}$ is ... and the whole is ... $\times$... $\frac{4}{9}$ of $\underline{\hspace{1cm}}$ = 48  $\frac{1}{9} = 48 \div 4 = 12$ $9 \times 12 = 108$ $\frac{4}{9}$ of 108 = 48

Multiplication

Progression of skills	Key representations																																	
Calculate percentages Children first learn how to find 1%, 10%, 20%, 25% and 50% before using multiples of these amounts to find any percentage.	There are ... lots of ... % in 100% To find ... %, I need to divide by ... <table><tr><td colspan="4">100%</td></tr><tr><td colspan="2">50%</td><td colspan="2">50%</td></tr><tr><td>25%</td><td>25%</td><td>25%</td><td>25%</td></tr></table> 0% of ... = ... ÷ 2 2 % of ... = ... ÷ 4	100%				50%		50%		25%	25%	25%	25%	... % is made up of ... %, and ... % <table><tr><td colspan="10">100%</td></tr><tr><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td></tr></table> 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%	100%										10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
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Calculations involving ratio Encourage children to see the multiplicative relationship between ratios. They will need to multiply or divide each value by the same number to keep the ratio equivalent. Double number lines and ratio tables help children to see both horizontal and vertical multiplicative relationships.	For every ... , there are ... For every 1 adult on a school trip, there are 6 children. adults children The ratio of adults to children is 1 : 6 <table><tr><th>Adults</th><th>Children</th></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>12</td></tr><tr><td>3</td><td>18</td></tr></table> 012 AdultsChildren 0121		Adults	Children	1	6	2	12	3	18																								
Adults	Children																																	
1	6																																	
2	12																																	
3	18																																	

Progression of skills- Division

Year group	Skill
Nursery	• Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)
Reception	• Sharing • Grouping
Year 1	• Make equal groups – grouping • Make equal groups – sharing • Find a half • Find a quarter

Progression of skills- Division

Year group	Skill
Year 2	• Divide by 2 • Divide by 10 • Divide by 5 • Missing numbers • Unit fractions • Non-unit fractions
Year 3	• Divide by 3 • Divide by 4 • Divide by 8 • Related facts • Divide a 2-digit number by a 1-digit number - no exchange • Divide a 2-digit number by a 1-digit number - with remainders • Unit fractions of a set of objects • Non-unit fractions of a set of objects

Progression of skills- Division

Year group	Skill
Year 4	• Division facts to 12×12 • Divide a number by 1 and itself • Related facts • Divide a 2 or 3-digit number by a 1-digit number • Divide by 10 and 100
Year 5	• Mental strategies • Divide numbers up to 4 digits by a 1-digit number • Divide by 10, 100 and 1,000 • Fraction of an amount

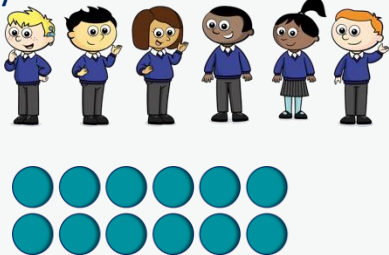
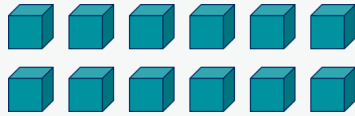
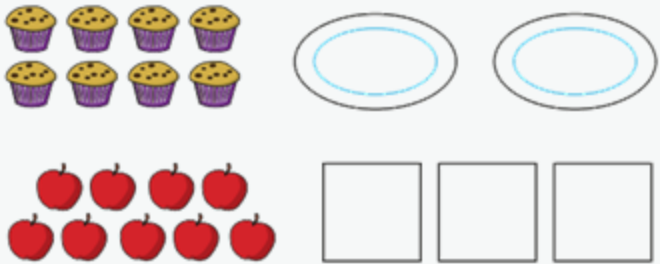
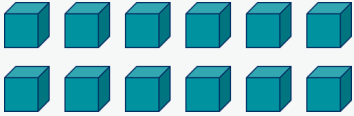
Progression of skills- Division

Year group	Skill
Year 6	• Short division • Mental strategies • Long division • Order of operations • Divide by 10, 100 and 1,000 • Divide decimals by integers • Decimal and fraction equivalents • Divide a fraction by an integer • Fraction of an amount • Calculate percentages • Calculations involving ratio

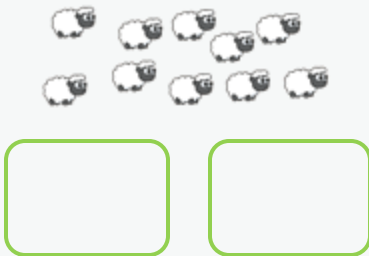
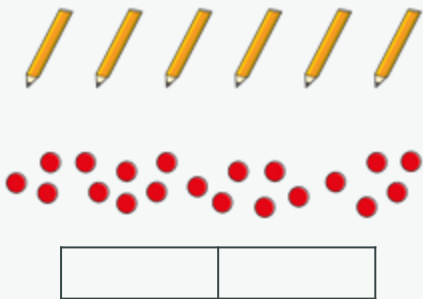
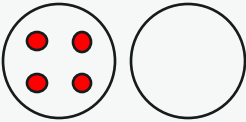
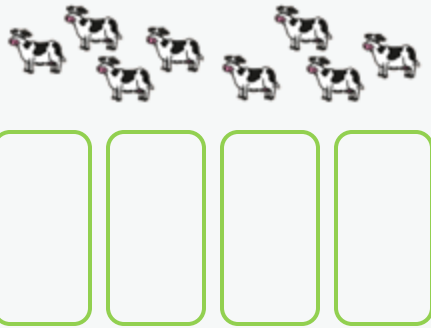
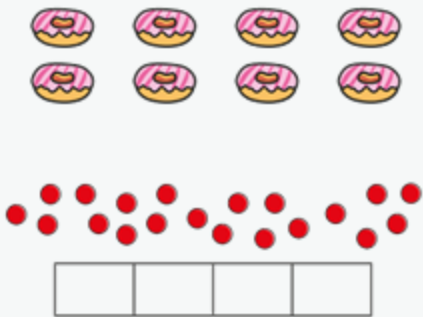
Division

Reception	• Have a deep understanding of number to 10, including the composition of each number. • Subitise (recognise quantities without counting) up to 5 • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
Progression of skills	Key representations
Sharing Provide practical activities such as sharing items during snack time. Encourage children to check whether items have been shared fairly (equally).	There are ... altogether. They are shared equally between ... groups. 
Grouping Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are ... groups of ... There are ... altogether. 

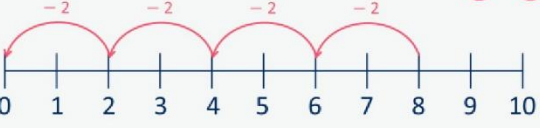
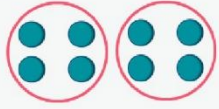
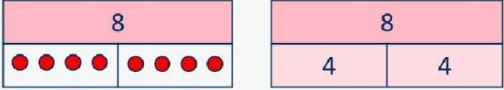
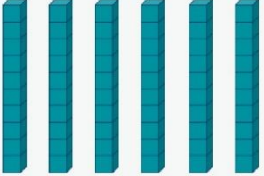
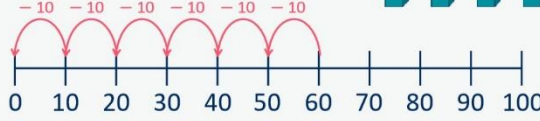
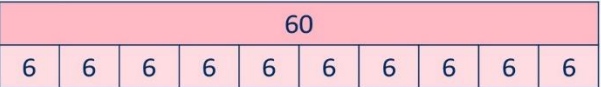
Division

Year 1	- Solve simple onestep 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.		
Progression of skills	Key representations		
Make equal groups-grouping Encourage children to physically move objects into equal groups. They can also circle equal groups when using pictures.	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 Encourage children to check that the objects have been shared fairly and each group is the same.	... have been shared equally between... There are ... on/in each ... 	Take ... cubes. Share them between ...  12 shared between ... is ...	

Division

Progression of skills	Key representations		
Find a half Start with practical opportunities to share a quantity into 2 groups. Progress to circling half of the objects in a picture and then to finding the whole from a given 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?  is half of ...
Find a quarter Start with practical opportunities to share a quantity into 4 groups. Progress to using pictures or bar models to find a quarter and then to finding the whole from a given 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?  is one quarter of ...

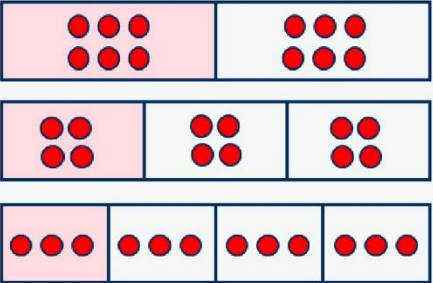
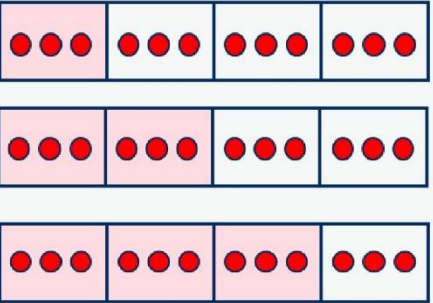
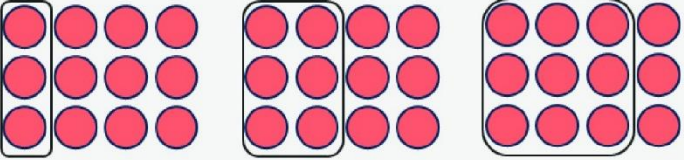
Division

Year 2	- 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 ($\div$) and equals ($=$) signs. - Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a quantity.	
Progression of skills	Key representations	
Divide by 2 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts and halving.	There are ... equal groups of 2 $\dots \div 2 = \dots$  $4 \times 2 = 8$ $8 \div 2 = 4$  	... shared equally between 2 is ... Half of ... is ... $\dots \div 2 = \dots$  $4 \times 2 = 8$ $8 \div 2 = 4$  
Divide by 10 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... equal groups of 10 $\dots \div 10 = \dots$ $6 \times 10 = 60$ $60 \div 10 = 6$  	... shared equally between 10 is ... $\dots \div 10 = \dots$ $6 \times 10 = 60$ $60 \div 10 = 6$  

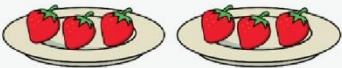
Division

Progression of skills	Key representations	
Divide by 5 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... equal groups of 5 ... $\div 5 = \dots$ $6 \times 5 = 30$ $30 \div 5 = 6$ $-5 \quad -5 \quad -5 \quad -5 \quad -5 \quad -5$	... shared equally between 5 is $\div 5 = \dots$ $6 \times 5 = 30$ $30 \div 5 = 6$
Missing numbers Bar models are useful to show the link between multiplication and division.	... divided by 2/5/10 is equal to ... ? 10 10 $\div 2 = 10$? 10 10 10 10 10 $\div 5 = 10$? 10 10 10 10 10 10 10 10 10 $\div 10 = 10$	

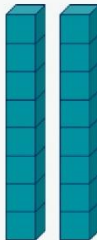
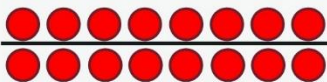
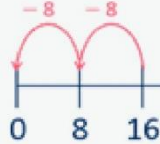
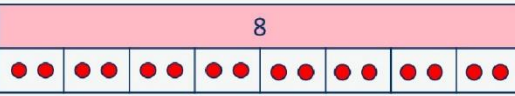
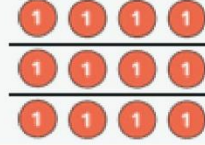
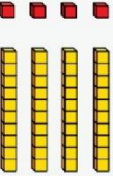
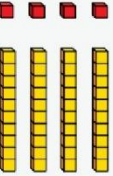
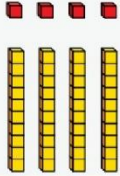
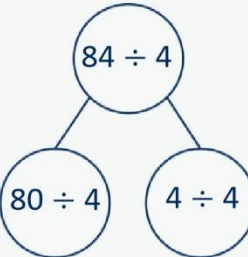
Division

Progression of skills	Key representations	
Unit fractions In Y2 the focus is on finding $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$ Bar models are useful to show the link between division and finding a fraction.	The objects have been shared fairly into ... groups. $\frac{1}{\square}$ of ... is ... 	There are ... equal parts. There is ... part circled. $\frac{1}{\square}$ is circled. 
Non-unit fractions In Y2 the focus is on finding $\frac{2}{4}$ and $\frac{3}{4}$ Prompt children to notice that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$	The objects have been shared fairly into ... groups. $\frac{\square}{\square}$ of ... is ... 	There are ... equal parts. There are ... parts circled. $\frac{\square}{\square}$ is circled. 

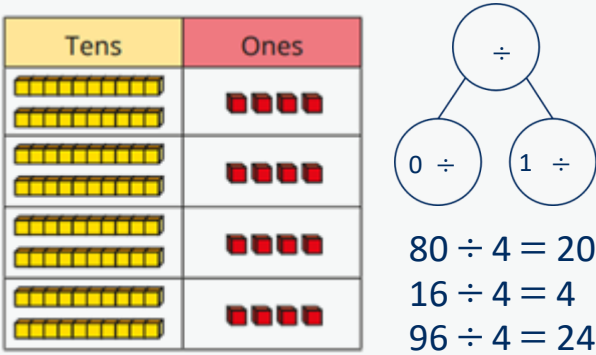
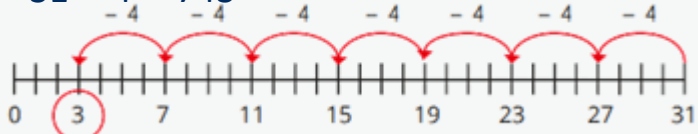
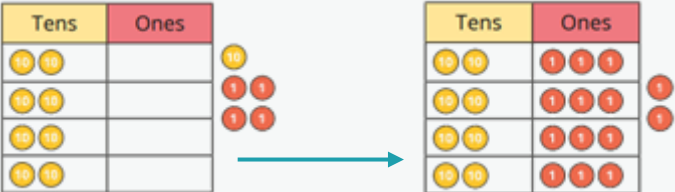
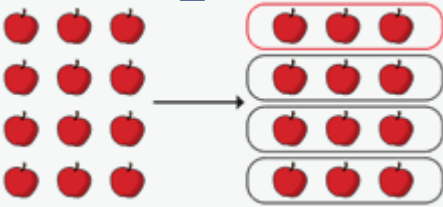
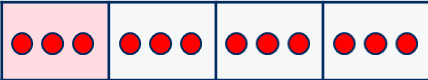
Division

Year 3	- 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.	
Progression of skills	Key representations	
Divide by 3 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of 3 in ... $\dots \div 3 =$  $2 \times 3 = 6$ $6 \div 3 = 2$	... has been shared equally into 3 equal groups. $\dots \div 3 =$  $2 \times 3 = 6$ $6 \div 3 = 2$
Divide by 4 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of 4 in ... $\dots \div 4 =$  $2 \times 4 = 8$ $8 \div 4 = 2$	... has been shared equally into 4 equal groups. $\dots \div 4 =$  $2 \times 4 = 8$ $8 \div 4 = 2$

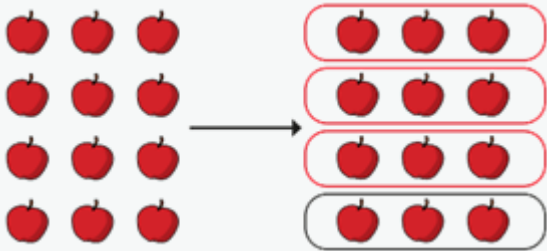
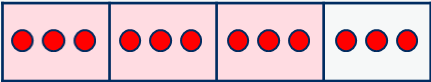
Division

Progression of skills	Key representations																					
Divide by 8 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of 8 in ... $\dots \div 8 =$ $2 \times 8 = 16$ $16 \div 8 = 2$	... has been shared equally into 8 equal groups. $\dots \div 8 =$ $2 \times 8 = 16$ $16 \div 8 = 2$																				
Related facts Link to known times-table facts.	... $\div$... is equal to ..., so ... tens $\div$... is equal to ... tens. $12 \div 3 = 4$ $120 \div 3 = 40$																					
Divide a 2-digit number by a 1-digit number - no exchange Partition into tens and ones to divide and then recombine.	... tens divided by ... is equal to ... tens. ... ones divided by ... is equal to ... ones. <table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>$60 \div 2 = 30$ $4 \div 2 = 2$ $64 \div 2 = 32$  <table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>		Tens	Ones									Tens	Ones								
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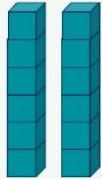
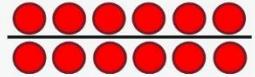
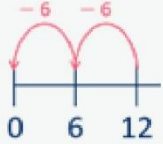
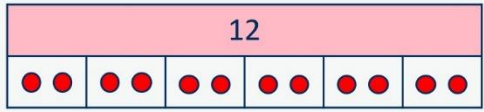
Division

Progression of skills	Key representations	
Divide a 2-digit number by a 1-digit number- with remainders Encourage children to partition numbers flexibly to help them to divide more efficiently.	... tens divided by ... is equal to ... tens. ... ones divided by ... is equal to ... ones. 	There are ... groups of ... There are ... remaining. $31 \div 4 = 7 \text{ r}3$  $94 \div 4 = 23 \text{ r}2$ 
Unit fractions of a set of objects Bar models are useful to show the link between division and fractions, for example, dividing by 3 and finding a third.	The whole is divided into ... equal parts. Each part is $\frac{1}{\square}$ of the whole.  $\frac{1}{3}$ of 12 apples is 3 apples.	ne ... of ... is ... $\frac{1}{4}$ of 12 is 3  $\frac{1}{3}$ of 36 is 12 

Division

Progression of skills	Key representations	
Non-unit fractions of a set of objects Bar models are a useful representation and show the links with division and multiplication.	The whole is divided into ... equal parts. Each part is $\frac{1}{\square}$ of the whole.  of 12 apples is 9 apples.	$\frac{1}{\square}$ of ... is ..., so $\frac{\square}{\square}$ of ... is ... of 12 is 9  $\frac{2}{\square}$ of 36 is 24 

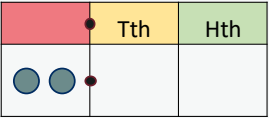
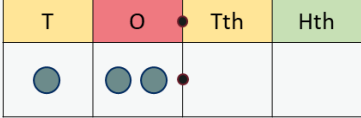
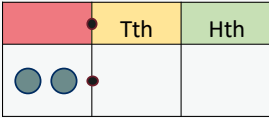
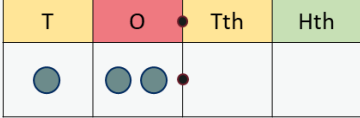
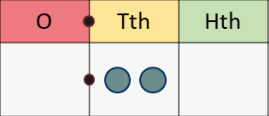
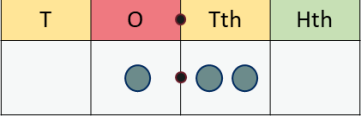
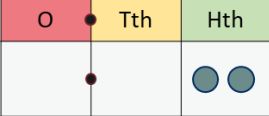
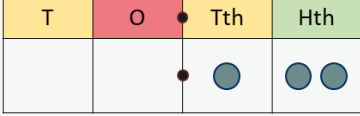
Division

Year 4	- Recall division facts for multiplication tables up to 12×12 - Use place value, known and derived facts to divide mentally, including: dividing by 1 - Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	
Progression of skills	Key representations	
Division facts to 12×12 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of ... in ... $\dots \div \dots =$    $2 \times 6 = 12$ $12 \div 6 = 2$	... has been shared equally into ... equal groups. $\dots \div \dots =$    $2 \times 6 = 12$ $12 \div 6 = 2$
Divide a number by 1 and itself Children may try to divide a number by zero and it should be highlighted that this is not possible.	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 

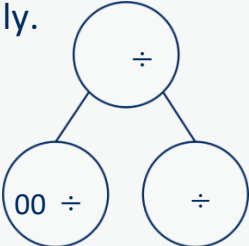
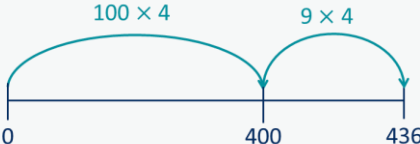
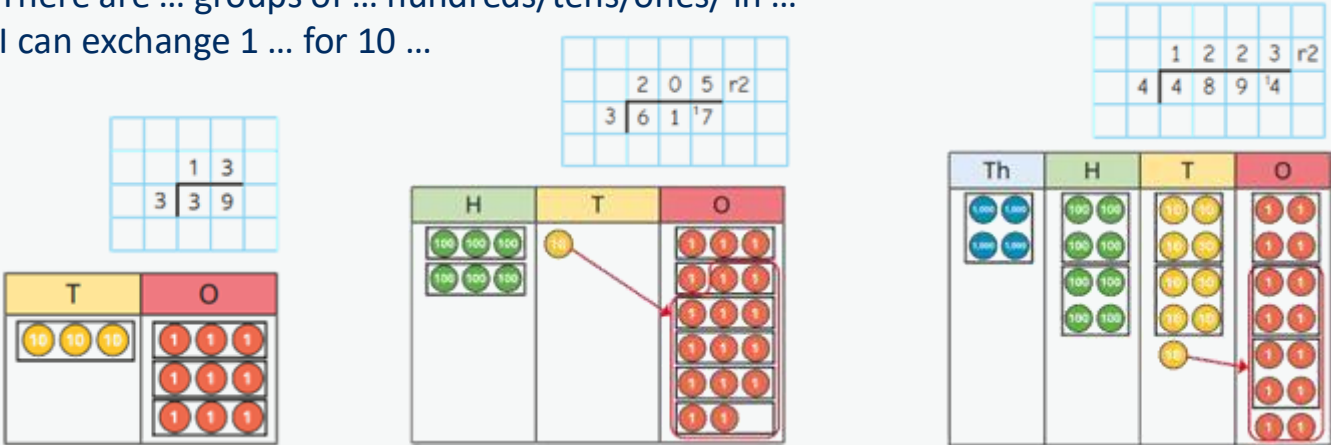
Division

Progression of skills	Key representations																										
Related facts Link to known timestable facts.	... ÷ ... is equal to ... so ... tens ÷ ... is equal to ... tens and ... hundreds ÷ ... is equal to ... hundreds. 1 1 1 1 1 1 1 10 10 10 10 10 10 10 100 100 100 100 100 100 100 $21 \div 7 = 3$ $210 \div 7 = 30$ $2,100 \div 7 = 300$ $21 \div 3 = 7$ $210 \div 3 = 70$ $2,100 \div 3 = 700$																										
Divide a 2 or 3-digit number by a 1-digit number Progress from divisions with no exchange, to divisions with exchange and then divisions with remainders.	I can partition ... into ... tens and ... ones. ÷ 0 ÷ ÷ $80 \div 4 = 20$ $4 \div 4 = 1$ $84 \div 4 = 21$ <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td> 10 10 </td><td> 1 </td></tr><tr><td> 10 10 </td><td> 1 </td></tr><tr><td> 10 10 </td><td> 1 </td></tr><tr><td> 10 10 </td><td> 1 </td></tr></tbody></table>	Tens	Ones	10 10	1	10 10	1	10 10	1	10 10	1	I cannot share the hundreds/tens equally, so I need to exchange 1 ... for 10 ... 435 ÷ 3 300 ÷ 3 120 ÷ 3 15 ÷ 3 $300 \div 3 = 100$ $120 \div 3 = 40$ $15 \div 3 = 5$ $435 \div 3 = 145$ <table><thead><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td> 100 </td><td> 10 10 10 10 </td><td> 1 1 1 1 1 </td></tr><tr><td> 100 </td><td> 10 10 10 10 </td><td> 1 1 1 1 1 </td></tr><tr><td> 100 </td><td> 10 10 10 10 </td><td> 1 1 1 1 1 </td></tr><tr><td> 100 </td><td> 10 10 10 10 </td><td> 1 1 1 1 1 </td></tr></tbody></table>	Hundreds	Tens	Ones	100	10 10 10 10	1 1 1 1 1	100	10 10 10 10	1 1 1 1 1	100	10 10 10 10	1 1 1 1 1	100	10 10 10 10	1 1 1 1 1
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Division

Progression of skills	Key representations			
Divide by 10 and 100 Encourage children to notice that dividing by 100 is the same as dividing by 10 twice.	When I divide by 10, the digits move 1 place value column to the right. ... is one-tenth the size of ...		When I divide by 100, the digits move 2 place value columns to the right. ... is one-hundredth the size of ...	
				
				
	$2 \div 10 = 0.2$	$12 \div 10 = 1.2$	$2 \div 100 = 0.02$	$12 \div 100 = 0.12$

Division

Year 5	- 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		
Progression of skills	Key representations		
Mental strategies	I can partition ... into ... and ... to help me to divide more easily. 	I can show groups of ... on a number line. 	To divide by ..., I can divide by ... and then divide the result by ... $436 \div 4 = 436 \div 2 \div 2$ $436 \div 2 = 218$ $218 \div 2 = 109$
Divide numbers up to 4 digits by a 1-digit number The short division method is introduced for the first time.	There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ... 		

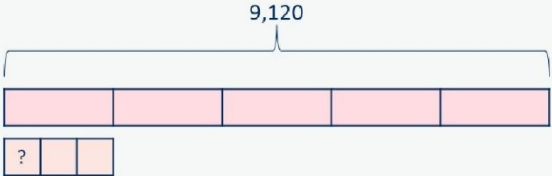
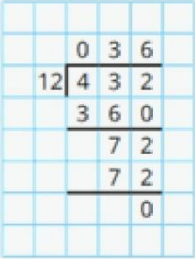
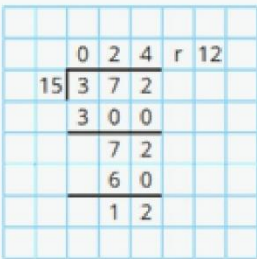
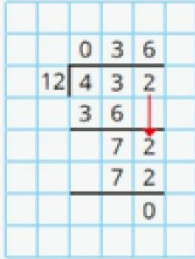
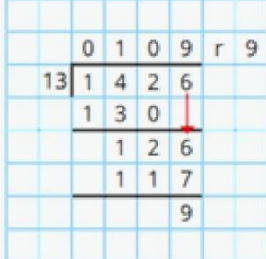
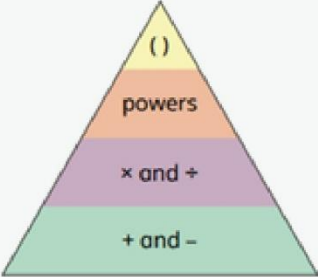
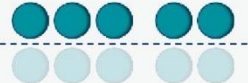
Division

Progression of skills	Key representations																																																	
Divide by 10, 100 and 1,000 Encourage children to notice that dividing by 100 is the same as dividing by 10 twice, and that dividing by 1,000 is the same as dividing by 10 three times.	To divide by 10/100/1,000, I move all the digits ... places to the right. ... is one-tenth/one-hundredth/onethousandth the size of ... <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr><tr><td></td><td>●</td><td>●●</td><td></td><td>●</td><td></td></tr></table> <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr><tr><td></td><td></td><td>●</td><td>●●</td><td>●</td><td></td></tr></table> <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr><tr><td></td><td></td><td></td><td>●</td><td>●●</td><td>●</td></tr></table> <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th></tr><tr><td></td><td></td><td></td><td></td><td>●</td><td>●●</td></tr></table> $120 \div 10 = 12$ $120 \div 100 = 1.2$ $120 \div 1,000 = 0.12$		Th	H	T	O	Tth	Hth		●	●●		●		Th	H	T	O	Tth	Hth			●	●●	●		Th	H	T	O	Tth	Hth				●	●●	●	Th	H	T	O	Tth	Hth					●	●●
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Fraction of an amount Bar models support children to understand that to find a fraction of an amount, we divide by the denominator and multiply by the numerator.	To find $\frac{\square}{\square}$ of ... , I need to divide by ... and multiply by ... <table><tr><td>●●</td><td>●●</td><td>●●</td><td>●●</td><td>●●</td></tr><tr><td>●●</td><td>●●</td><td>●●</td><td>●●</td><td>●●</td></tr></table> <table><tr><td>10 10</td><td>10 10</td><td>10 10</td><td>10 10</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr></table> $\frac{1}{\square}$ of 20 = $\frac{\square}{\square}$ of 20 =	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	10 10	10 10	10 10	10 10	1	1	1	1	If $\frac{1}{\square}$ is ... , then the whole is ...$\times$... <table><tr><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr></table> $\frac{1}{\square}$ of $\square$ = 6 <table><tr><td></td><td></td><td></td><td></td><td></td></tr></table> $\frac{\square}{7}$ of $\square$ = 24	6	6	6	6	6																									
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Division

Year 6	- Perform mental calculations, including with mixed operations and large numbers. - Divide numbers up to 4 digits by a twodigit 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 twodigit 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 $\frac{1}{2} \div 2 = \frac{1}{4}$] - Solve problems involving the calculation of percentages.
Progression of skills	Key representations
Short division Encourage children to interpret remainders in context, for example knowing that “ remainder 1” could mean complete boxes with 1 left over so 5 boxes will be needed.	There are ... groups of ... hundreds/tens/ones/ in ... I can exchange 1 ... for 10 ...

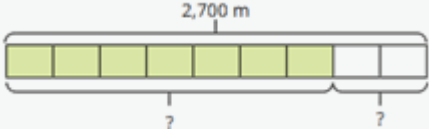
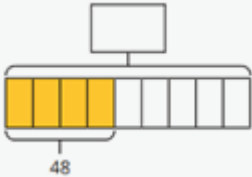
Division

Progression of skills	Key representations	
Mental strategies Include partitioning and number line strategies outlined in Y5 as well as division using factors.	To divide by ... , I can first divide by ... and then divide the answer by ... $240 \div 60 = 240 \div 10 \div 6$  $480 \div 24 = 480 \div 4 \div 6$  $9,120 \div 15 = 9,120 \div 5 \div 3$ 	
Long division The long division method is introduced for the first time. Two alternative methods are shown.	Method 1  (12×30) (12×6)  (15×20) (15×4)	Method 2   $r\ 9$
Order of operations Calculations in brackets should be done first, then powers. 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 ...   $(6 + 4) \div 2 = 5$  $6 + 4 \div 2 = 8$	

Division

Progression of skills	Key representations	
Divide by 10, 100 and 1,000 Encourage children to notice that dividing by 100 is the same as dividing by 10 twice, and that dividing by 1,000 is the same as dividing by 10 three times.	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 This is the first time children divide decimals by numbers other than 10, 100 or 1,000	I know that ... $\div$... = ..., so I also know that ... $\div$... = ... $39 \div 3 = 13$ $3.9 \div 3 = 1.3$ $0.39 \div 3 = 0.13$	I need to exchange 1 ... for 10 ...
Decimal and fraction equivalents	The fraction ... is equivalent to the decimal ... $\frac{1}{2} = 0.2$ $\frac{2}{5} = 0.4$ $\frac{3}{5} = 0.6$	$\frac{\square}{\square}$ is equal to $\frac{\square}{100}$

Division

Progression of skills	Key representations		
Divide a fraction by an integer This is the first time children divide fractions by an integer.	... ones divided by 2 is ... ones so ... sevenths divided by 2 is ... sevenths.  $7 \div = \frac{1}{7}$ $7 \div 2 = \frac{2}{7}$	I am dividing by ... , so I can split each part into ... equal parts.  $\frac{1}{2} \div 2 = \frac{1}{4}$	... is equivalent to ... so ... $\div$... = ... $\div$...  $\frac{2}{2} =$ so $\frac{2}{2} \div = \div = \frac{1}{1}$
Fraction of an amount Children divide and multiply to find fractions of an amount. Bar models can still be used to support understanding where needed.	To find $\frac{1}{2}$ I divide by ... $\frac{1}{2} \text{ of } = \div 2$ $\frac{1}{12} \text{ of } 36 = \div 12$	If $\frac{1}{2}$ is equal to ..., then $\frac{1}{2}$ are equal to ...  $\frac{7}{12} \text{ of } 2,700 = \frac{1}{12} \text{ of } 2,700 \times 7$	If $\frac{1}{2}$ is equal to ..., then the whole is equal to ...  $\text{of } = 48$

Division

Progression of skills	Key representations																																	
Calculate percentages Children first learn how to find 1%, 10%, 20%, 25% and 50% before using multiples of these amounts to find any percentage.	There are ... lots of ... % in 100% To find ... %, I need to divide by ... <table><tr><td colspan="4">100%</td></tr><tr><td colspan="2">50%</td><td colspan="2">50%</td></tr><tr><td>25%</td><td>25%</td><td>25%</td><td>25%</td></tr></table> 0% of ... = ... ÷ 2 2 % of ... = ... ÷ 4	100%				50%		50%		25%	25%	25%	25%	... % is made up of ... %, and ... % <table><tr><td colspan="10">100%</td></tr><tr><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td></tr></table> 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%	100%										10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
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Calculations involving ratio Encourage children to see the multiplicative relationship between ratios. They will need to multiply or divide each value by the same number to keep the ratio equivalent. Double number lines and ratio tables help children to see both horizontal and vertical multiplicative relationships.	For every ... , there are ... For every 6 children on a school trip, there is 1 adult. adults <table><tr><td></td></tr></table> children <table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> The ratio of children to adults is 6 : 1																																	

