Springwell Park

Calculation Policy 2022

Subtraction

Teaching for Mastery Calculation Policy

The aims of the policy

Mastery is for all children, and the aim of this policy is to ensure children leave Springwell Park with a secure understanding of the four operations and can confidently use both mental and written strategies in a range of contexts. It aims to ensure consistent strategies, model and images are used across our school to embed and deepen children's learning and understanding of mathematical concepts so children can:

- 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.
- **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.

How should this policy be used?

This policy is to support the teaching and planning of mathematics. This policy set out the progression of strategies and written methods children will be taught to develop their understanding of the four operations. Strategies set out in a Concrete, Pictorial and Abstract (CPA) approach to develop children's deep understanding and mastery of mathematical concepts. Children can use concrete objects to help them make sense of the concept or problem; this could be anything from real or plastic fruit, to straws, counters or cubes. This is then developed through the use of images, models and children's own pictorial representations before moving on to the abstract mathematics. Children will travel along the continuum again and again, often revisiting previous stages when a concept is extended. It is also worth noting that if a child has moved on from concrete to pictorial, it does not mean that the concrete cannot be used alongside the pictorial. Or if a child is working in the abstract, 'proving' something or 'working out' could involve use of the concrete or pictorial therefore building on prior learning. Then as children become more independent, they will be able to and encouraged to select strategies which are most efficient for the activity.

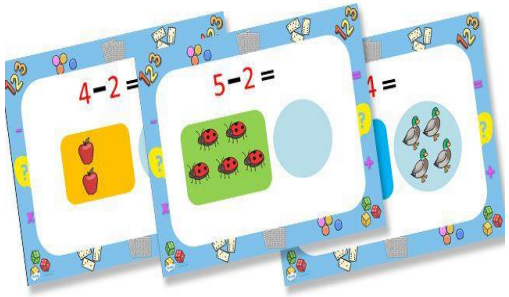
The strategies are separated into the 4 operations for easy reference. However, it is expected that addition and subtraction, and multiplication and division will be taught after each other to ensure that children are making connections and seeing relationships in their mathematics.

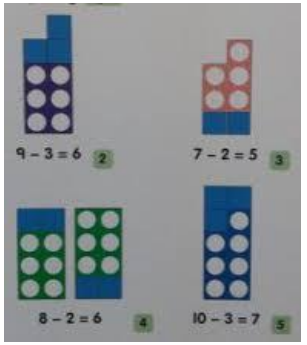
Children should be moved through the strategies at a pace appropriate to their age-related expectations as defined in the EYFS and National Curriculum. Teaching of the strategies rely on good levels of number sense, fluency and ability to reason mathematically. Children need to be supported to gain depth of understanding within the strategy through the CPA approach and not learn strategies as a procedure.

Subtraction

Nursery
Before subtraction can be introduced, children need to have a secure knowledge of number. In Nursery, children are introduced to the concept of counting backwards. This is taught through child-initiated games indoors and outdoors such as acting out counting songs, nursery rhymes and running races (children shouting “5,4,3,2,1,0 - GO!”).

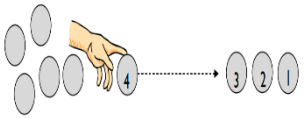
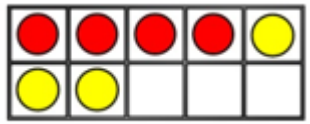
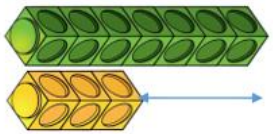
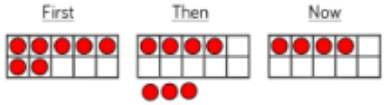
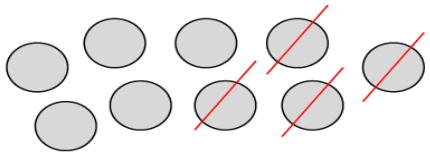
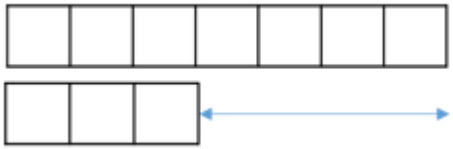
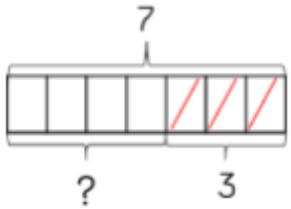
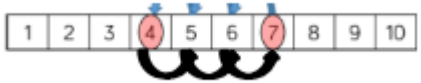
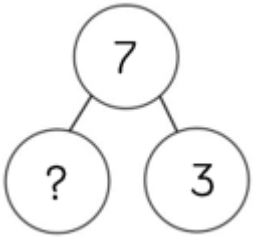
Reception
Before subtraction can be introduced, children in Reception build on concepts taught in Nursery by working through the number objectives in the ‘Children in Reception’ band of Development Matters. Children need to have a secure knowledge of number in order to begin subtraction. Children are then introduced to the concept of subtraction through practical games and activities. Children act out subtractions to physically subtract a number of objects from a group. Children use arm gestures to represent the signs - and =. This is reinforced by opportunities provided in the outdoor area for the children to count e.g., counting building blocks, twigs etc. Children build on their previous knowledge of ‘less’ by learning that subtracting means taking away a certain number of objects from a group (leaving them with less objects). Adults model subtraction vocabulary supported by age-appropriate definition. An example of this is “subtraction means we take away objects from a group. Adults support children in recording their subtractions in the written form on whiteboards and in their maths books.





EYFS

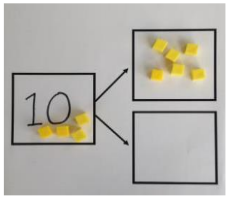
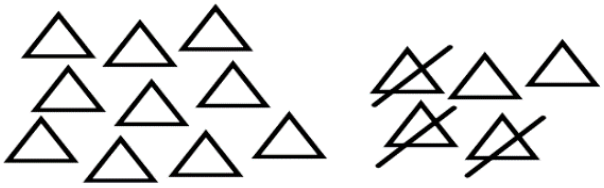
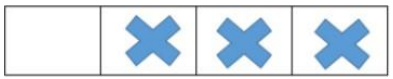
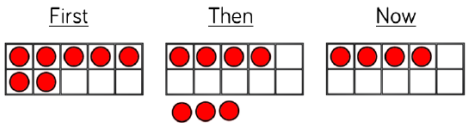
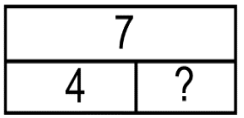
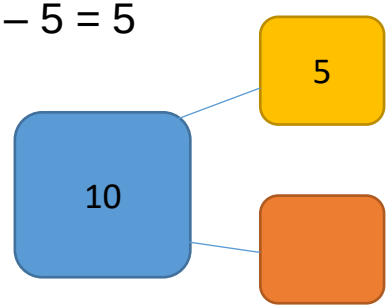
ELG Number Children at the expected level of development will:
Have a deep understanding of number to 10, including the composition of each number, subitise (recognise quantities without counting) up to 5, automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts
ELG Numerical Patterns Children at the expected level of development will:
Verbally count beyond 20, recognising the pattern of the counting system, compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity, explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed

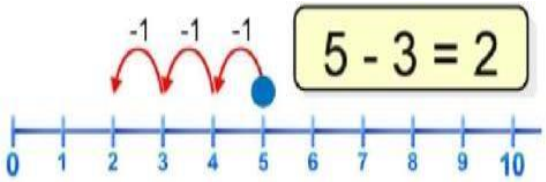
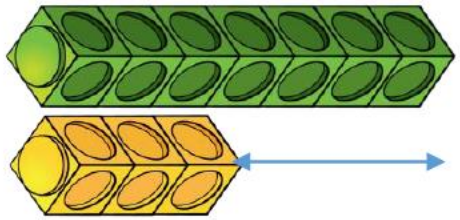
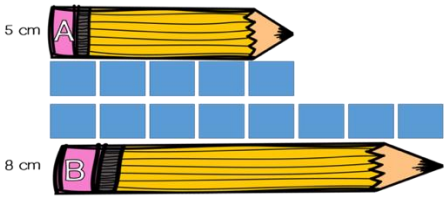
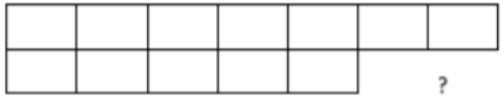
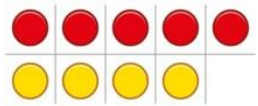
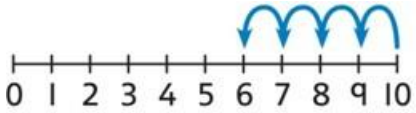
Subtraction within 10 – progression to Year 1	Concrete	Pictorial	Abstract
Part-whole models, bar models, ten frames and number shapes support partitioning. Ten frames, number tracks, single bar models and bead strings support reduction. Cubes and bar models with two bars can support finding the difference.	 Take one thing away      	   	  5 – 3 = 2

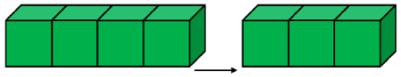
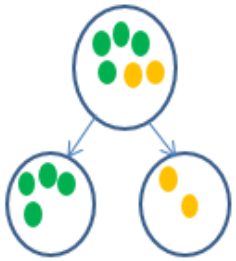
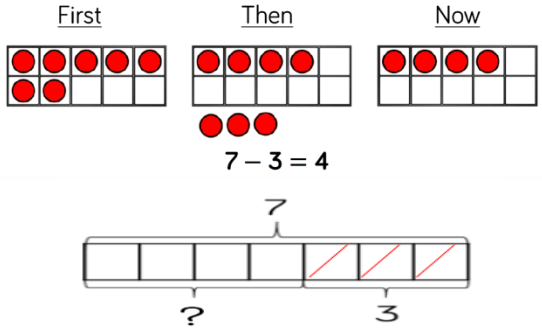
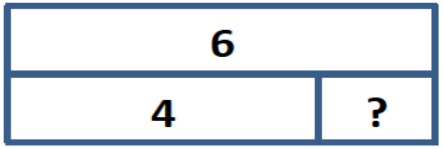
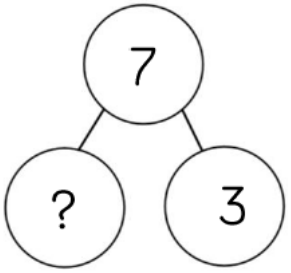
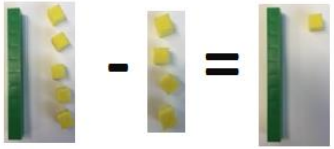
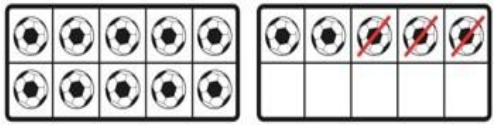
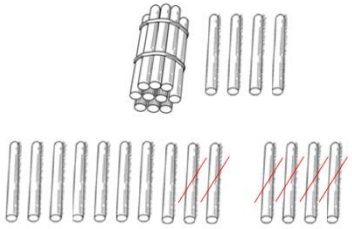
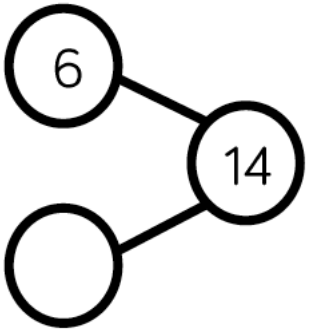
Year 1

Pupils should be taught to:

- 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 0
- solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 =? – 9

	Concrete	Pictorial	Abstract
Taking away ones .	Use physical objects, counters, cubes etc to show how objects can be taken away.  1less than 6 is 5 6 subtract 1 is 5  	Cross out drawn objects to show what has been taken away.  15-3=12 Use a simple bar model  	7—4 = 3  10 – 5 = 5 

Counting back In Year 1, subtracting one-digit numbers that cross 10, is done by counting back, using objects, number tracks and number lines	Move the objects away from the group and counting backwards  Move the beads along the bead string as you count backwards 	Count back in ones on a number track or line.  	Mental Strategies 14 – 5 = 9 Start with 14 and count back 5. What number are you left with?
Find the difference	Compare objects and amounts  	Represent using bars, cubes and counters etc.   XXXXXXXX XXXXXX	 *10 – 4 = 6* *The difference between 10 and 6 is 4.* Bill has 10 sweets, and his sister has 4. How many more does Bill have?

Number bonds and subtraction facts	  7 – 3 = 4  7 – 3 = 4	 	6 -2 = □  
Subtracting TO – O (using bonds)	 5 – 3 = 2 15 – 3 = 12 	 5 – 3 = 2 15 – 3 = 12 	14 –? = 6 

<table>
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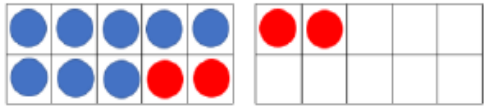
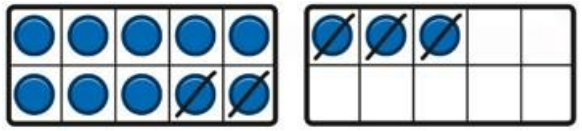
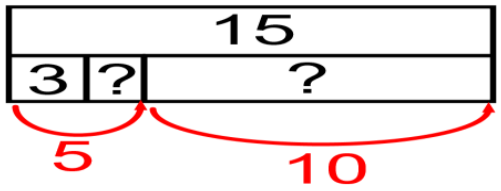
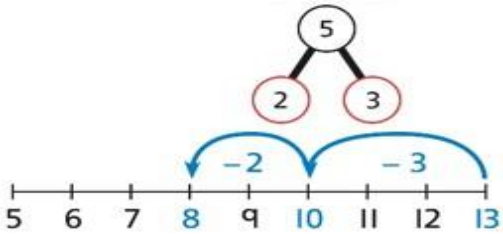
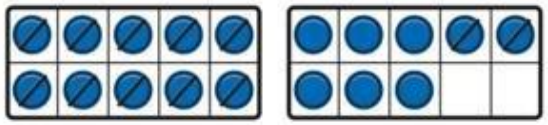
<td>Subtracting
TO – O
crossing the
boundary of 10</td>
<td>12 – 4 = 8
  </td>
<td> 
For 13 – 5, I take away 3 to make 10, then take away 2 to make 8.
 
</td>
<td>13 – 5
 

14 - 5 = 9
4 1
5 is made up of 4 and 1. I could subtract 4 to make 10 and then subtract 1 more.

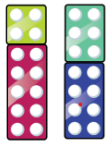
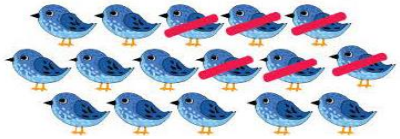
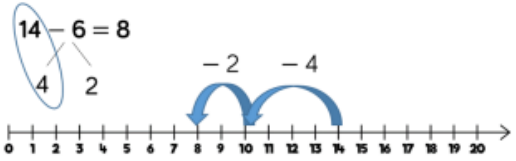
14 - 5 = 9
5 5
14 is made up of 5,5 and 4. I could subtract one five to be left with 5 and 4 which is 9.</td>
</tr>
<tr>
<td>Subtracting
TO – TO</td>
<td> 
First subtract the 10, then take away 2.</td>
<td> 
First subtract the 10, then subtract 2.</td>
<td>19-14 = 5

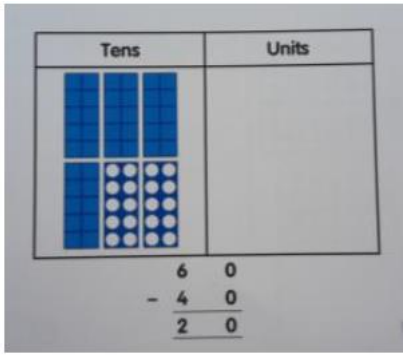
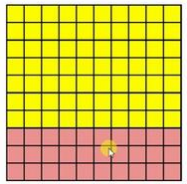
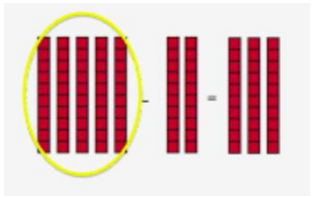
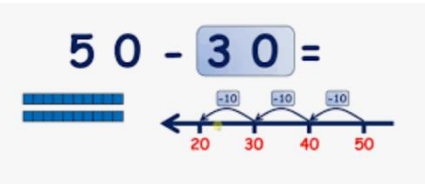
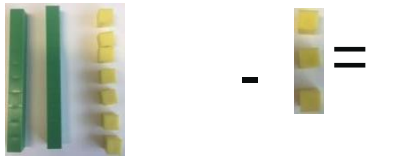
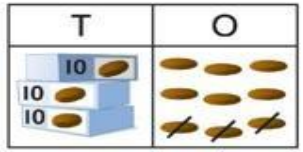
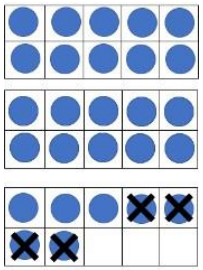
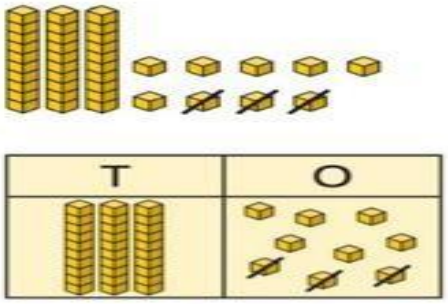
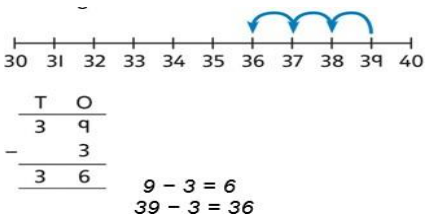
17 -? = 6</td>
</tr>
</table>

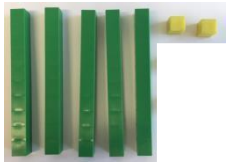
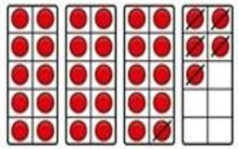
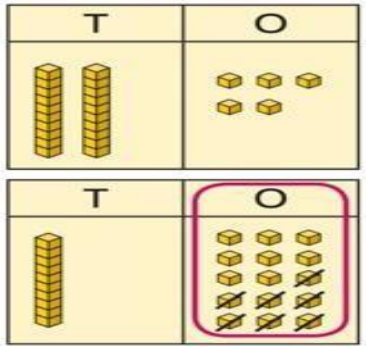
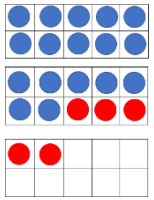
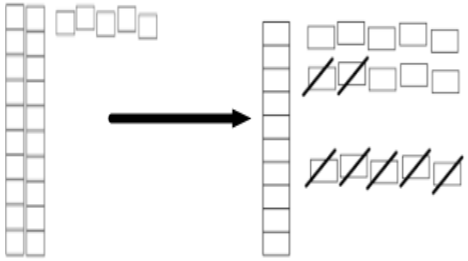
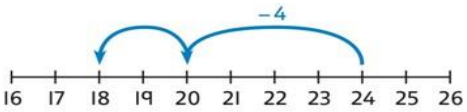
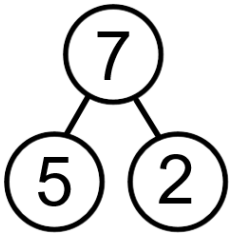
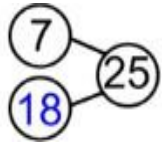
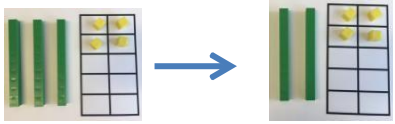
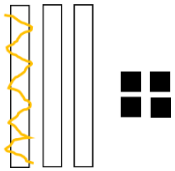
Year 2

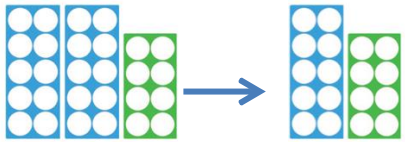
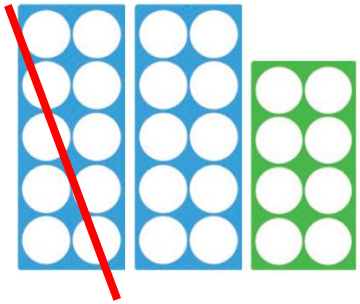
Pupils should be taught to:

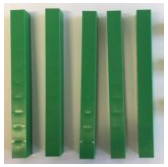
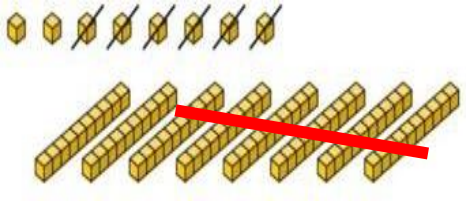
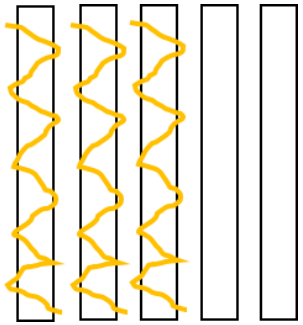
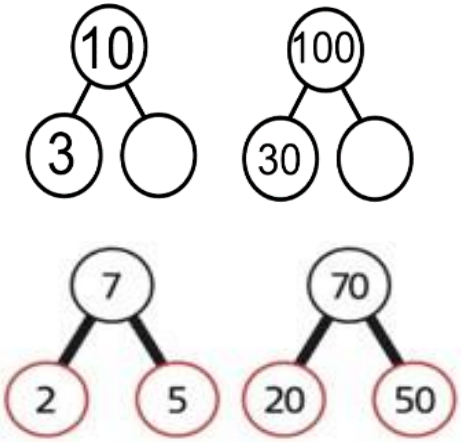
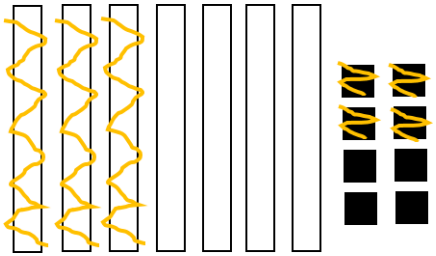
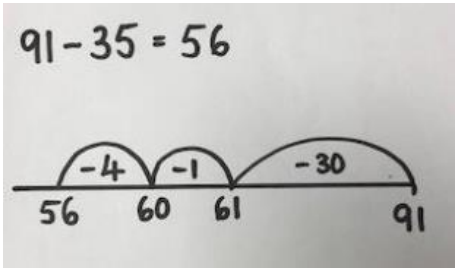
- recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100
- subtract numbers using concrete objects, pictorial representations, and mentally, including:
- a two-digit number and 1s
- a two-digit number and 10s
- 2 two-digit numbers
- adding 3 one-digit numbers

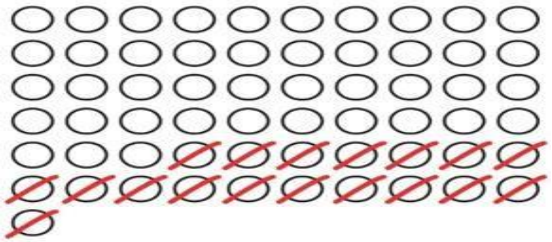
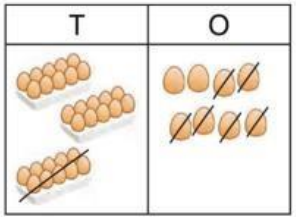
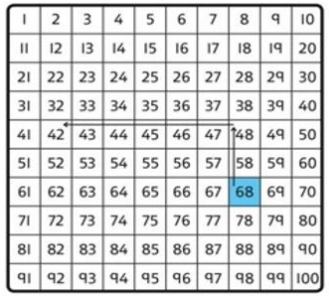
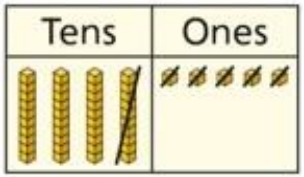
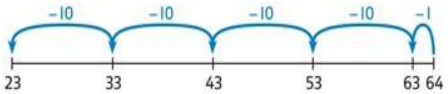
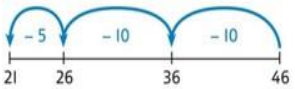
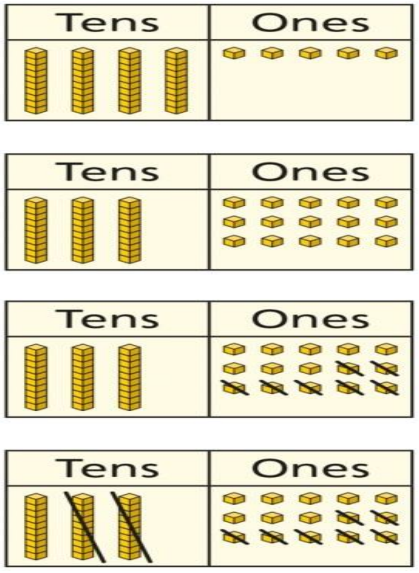
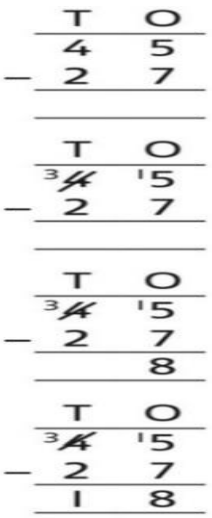
	Concrete	Pictorial	Abstract
Subtraction facts to 20	  	  	10 - 5 = 5 15 – 5 = 10 20 – 5 = 15

Subtraction facts to 100		 	100 – 70 = 30 100 – 30 = 70 
Subtraction of TO – O using bonds not crossing tens boundary	27 - 3 = 24   	27 – 3 = 24 Drawing out counters with tens frames  	27 - 3 = 24 7 - 3 = 4 20 + 4 = 24 Leading to using bonds without partitioning 25 - 3 = 22 

Subtraction of TO – O crossing the boundary From Year 2, children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this. Children can also use a blank number line to count back to find the difference. Encourage them to jump to multiples of 10 to become more efficient.	32 – 5 = Model exchanging a ten for 10 ones.    	32 -5 = Draw out on tens frames.    25-5=20 20-2=18	32 – 5 = 2 3  24 – 6 = ? 24 – 4 – 2 = ? 25-7= 25-5=20 20-2=18  25-7=18 
Subtract TO – 10	34 - 10 = 24 	34 – 10 = 24 	34 – 10 = 24 Using bonds of 3 – 1 = 2

			28 – 10 = 18

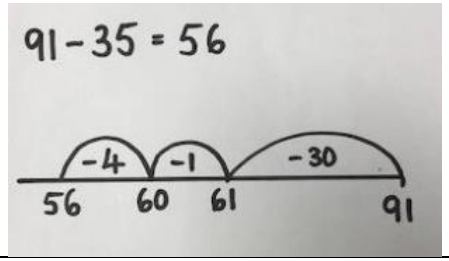
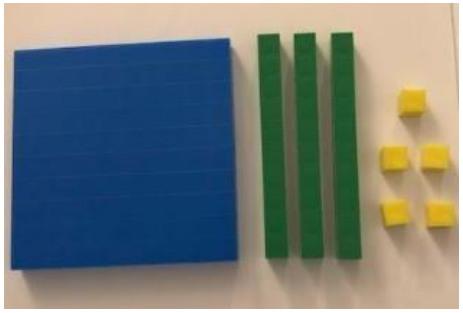
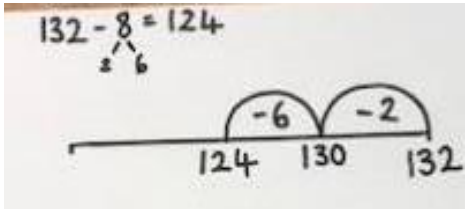
Multiple of T – Multiple of T (using bonds)	50 – 30 =   8-6=2 so... 8 tens subtract 6 tens is 2 tens.	50 – 30 =  10-3=7 so... 10 tens subtract 3 tens is 7 tens.	50 – 30 = Using bonds 70 – 30 = 40 because 7 – 4 = 3 
Subtraction of TO -TO (using bonds)	78 – 34 =  Take three tens and four ones away	78 – 34 = 	78 – 34 = 44 because 7 – 3 = 4 and 8 – 4 = 4 95 – 43 = 52 bec ause 9 – 4 = 5 and 5 – 3 = 2
Subtract any TO – TO Using partitioning	72 – 26 = Use dienes to model 72 – 20 – 2 – 4 = 46		78 – 49 = 29 78 – 40 – 8 – 1 = 29

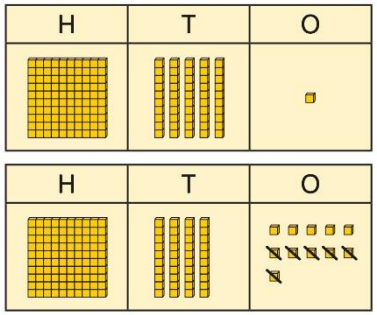
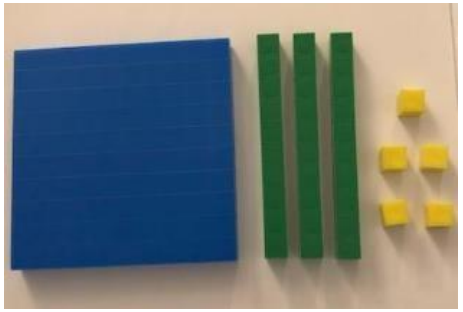
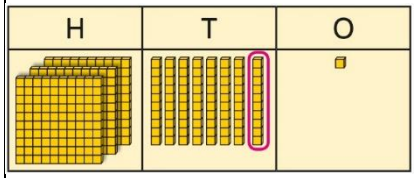
Subtracting a two-digit number.	Use place value knowledge to subtract the tens then ones or ones then tens.  	This can be represented on a hundred square or place value grid.  	Use of number line and written method to reinforce.  *64 − 41 = ?* *64 − 1 = 63* *63 − 40 = 23* *64 − 41 = 23*  *46 − 20 = 26* *26 − 5 = 21* *46 − 25 = 21*
Subtracting a two-digit number with exchange		Exchange 1 ten for 10 ones. Then subtract the 1s. Then subtract the 10s. 	Using column subtraction, exchange 1 ten for 10 ones. Then subtract the 1s. Then subtract the 10s. 

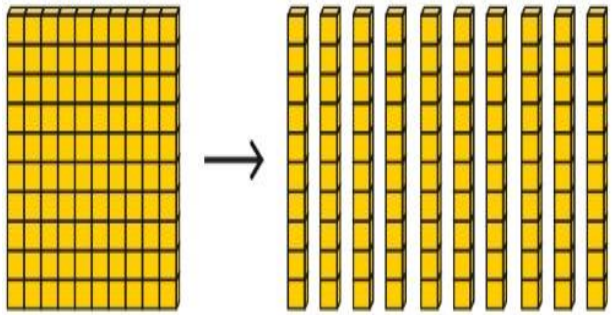
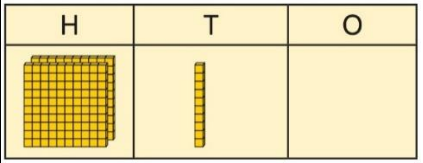
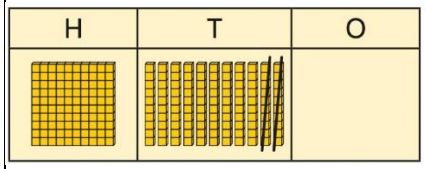
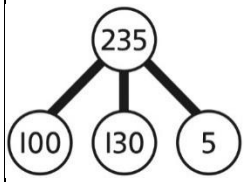
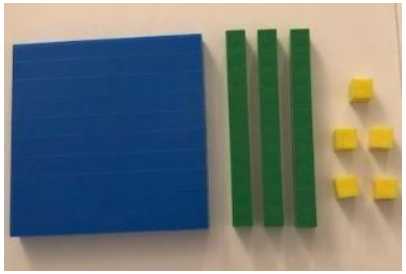
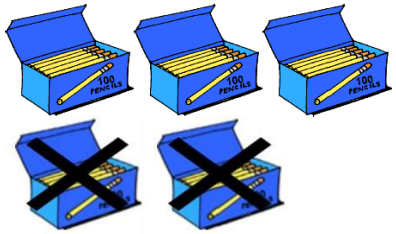
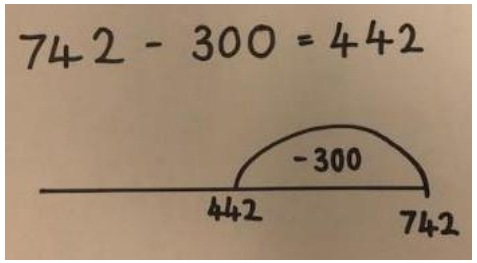
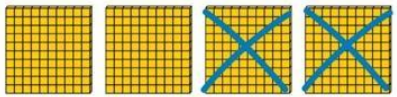
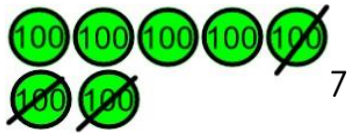
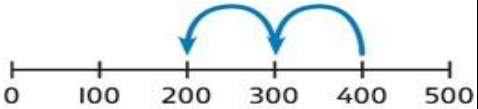
Year 3

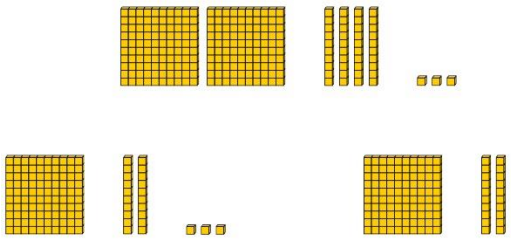
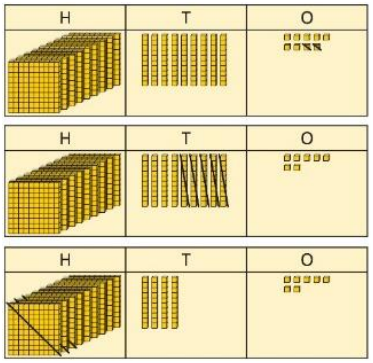
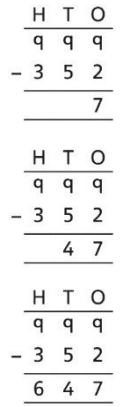
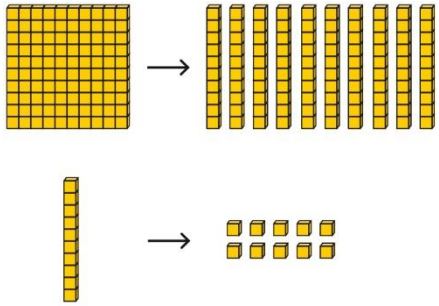
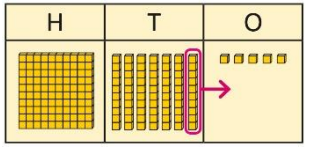
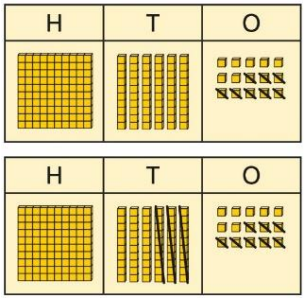
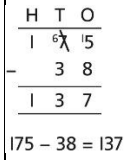
Pupils should be taught to:

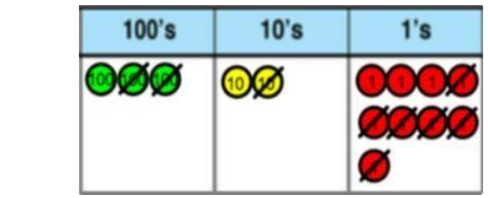
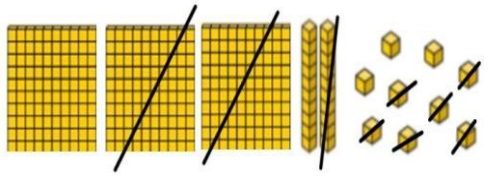
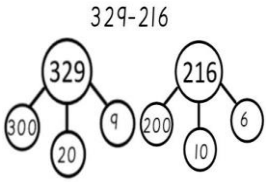
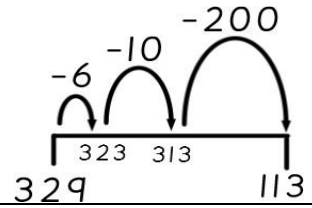
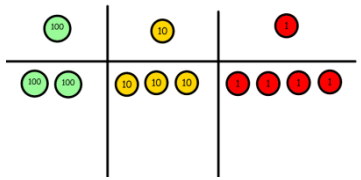
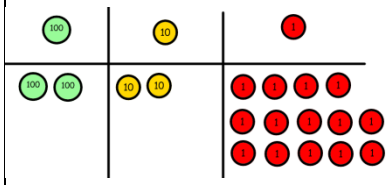
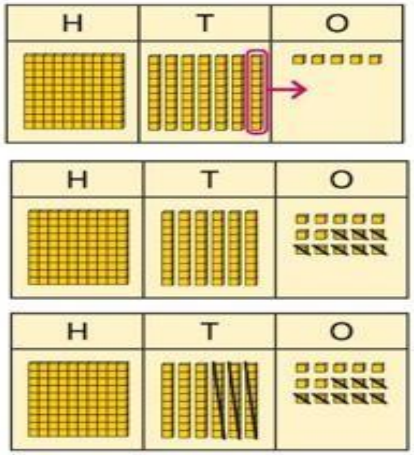
- subtract numbers mentally, including:
  - a three-digit number and 1s
  - a three-digit number and 10s
  - a three-digit number and 100s
- subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- solve problems, including missing number problems, using number facts, place value, and more complex subtraction

	Concrete	Pictorial	Abstract
Subtract any TO – TO Using partitioning	72 – 26 = 46 Use dienes to model 72 – 20 – 2 – 4 = 46		78 – 49 = 29 78 – 40 – 8 – 1 = 29
Subtract HTO – O (using bonds leading to partitioning)	135 – 2 = 133 		148 – 5 = 143 152 – 7 = 152 - 2 – 5 = 145

Subtract 3-digit number − 1s, exchange or bridging required	Understand why an exchange is necessary by exploring why 1 ten must be exchanged. Use place value equipment.	Represent the required exchange on a place value grid. 151 − 6 =? 	Calculate mentally by using known bonds. 151 − 6 =? 151 − 1 − 5 = 145
Subtract HTO – T (using bonds leading to partitioning)	135 – 20 = 115 	Subtract the 10s using known bonds.  8 tens − 1 ten = 7 tens 381 − 10 = 371	372 − 50 =? 70 − 50 = 20 So, 372 − 50 = 322

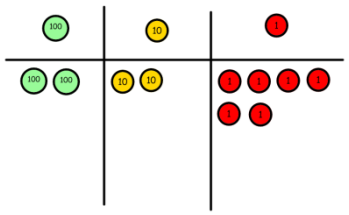
Subtract 3-digit number − 10s, exchange or bridging required	Use equipment to understand the exchange of 1 hundred for 10 tens. 	Represent the exchange on a place value grid using equipment. 210 − 20 =?  I need to exchange 1 hundred for 10 tens, to help subtract 2 tens.  210 − 20 = 190	Understand the link with counting back on a number line. Use flexible partitioning to support the calculation. 235 − 60 =?  235 = 100 + 130 + 5 235 − 60 = 100 + 70 + 5 = 175
Subtract HTO –H (using bonds)	635 – 400 = 235   5-2=3 500-200=300	  4-2 400-200  7-3 700-300	478 – 200 = 278  400 − 200 = 200 Use known facts and unitising as efficient methods. I know that 7 − 4 = 3. Therefore, I know tha 700 − 400 = 300.

Subtract 3-digit number − up to 3-digit number	Use place value equipment to explore the effect of splitting a whole into two parts, understand the link with taking away. 	Represent the calculation on a place value grid. 	Use column subtraction to calculate accurately and efficiently. 
Subtract 3-digit number − up to 3-digit number, exchange required	Use equipment to enact the exchange of 1 hundred for 10 tens, and 1 ten for 10 ones. 	Model the required exchange on a place value grid. 175 − 38 =? I need to subtract 8 ones, so I will exchange a ten for 10 ones.  	Use column subtraction to work accurately and efficiently.  175 − 38 = 137 If the subtraction is a 3-digit number subtract a 2-digit number, children should understand how the recording relates to the place value, and so how to line up the digits correctly. Children should also understand how to exchange in calculations where there is a zero in the 10s column. 

Column subtraction (without exchange)	Use known facts and place value knowledge to subtract 1s, 10s and 100s separately.  	Subtract in stages - 1s, 10's and 100's.  329-216 9-6=3 20-10=10 300-200=100 100+10+3=113  	Written methods for subtraction. Begin with partitioning before moving to more formal method. No exchange 300+20+9 − 200+10+6 100+10+3 No exchange 329 − 216 113
Column subtraction (with exchange) From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.	Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges. Make the larger number with the place value counters  Calculations 234 - 88 Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.  Calculations 234 - 88	Model the required exchange on place value grid. Children can draw the PV counters /base 10 /numicon/cross off.  175-38 I need to subtract 8 ones. I will exchange a ten for 10 ones.	Written methods for subtraction. Begin with partitioning to ensure place value understanding. Then, move to more formal method. With exchange 700 800+30+6 − 200+50+4 500+80+2

Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Plain counters on a place value grid can also be used to support learning.

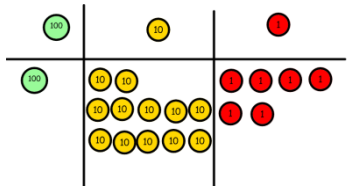
Now I can subtract my ones.



Calculations

234
- 88

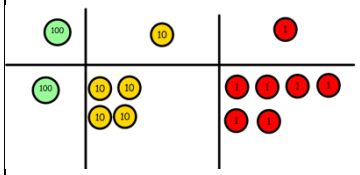
Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.



Calculations

234
- 88

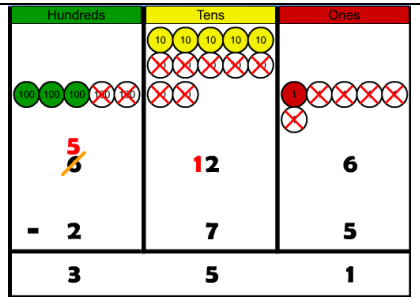
Now I can take away eight tens and complete my subtraction



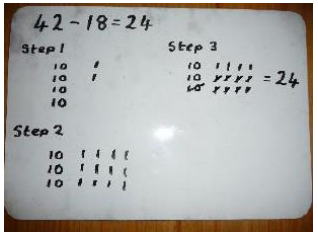
Calculations

~~2~~ 234
- 88
146

Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.



Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.



When confident, children can find their own way to record the exchange/regrouping.

Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.

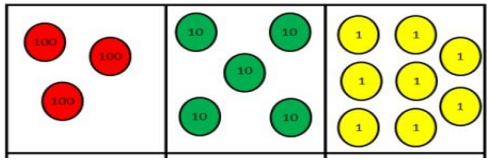
With exchange

$$\begin{array}{r} {}^{7}\not{8}^{1}36 \\ -\ 254 \\ \hline 582 \end{array}$$

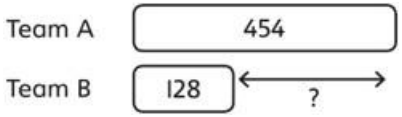
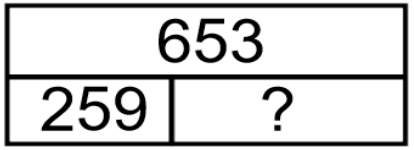
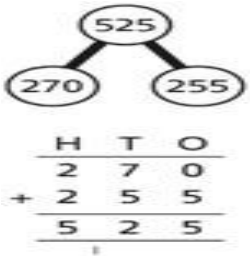
836 – 254 = 582

	H	T	O
	700 ~~800~~	$^{1}30$	6
-	200	50	4
	500	80	2

Children can start their formal written method by partitioning the number into clear place value columns.

Subtraction of two numbers, HTO – HTO Using expanded method	358 – 173 =  Show using place value counters (modelling exchange of ten 10s for one 100)	343 -165 = 200 140 ~~300~~ ~~40~~ 7 100 60 5 Children to rewrite the calculation after exchanging. 200 140 7 100 60 5 100 80 2
Exceeding children may begin to use formal columnar method. Subtraction of two numbers, HTO – HTO Using formal method (Only when pupil secure in expanded)	7 9 6 - 5 8 1 2 1 5 5 1 ~~6~~ 3 5 - 2 8 2 3 5 3	

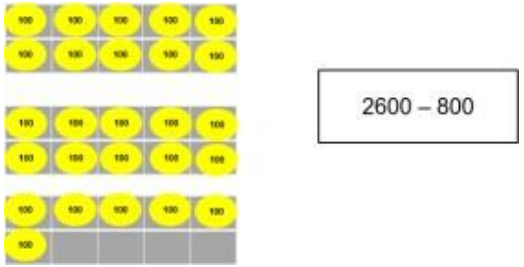
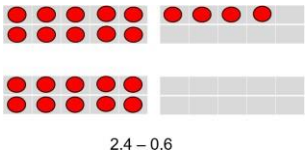
Children should also be taught to calculate the difference when two numbers are close in range e.g., 114 – 98, counting on 98 + 2 = 100 then 100 + 14 = 114, therefore the difference is 16.

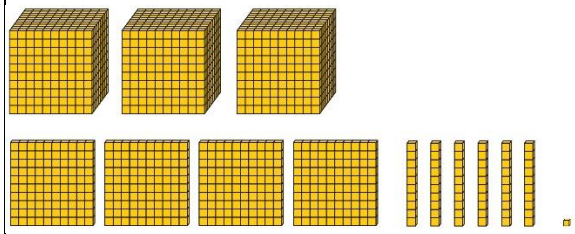
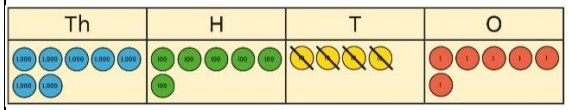
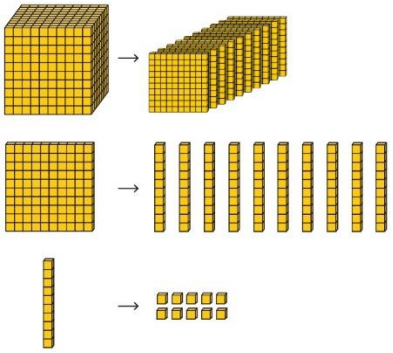
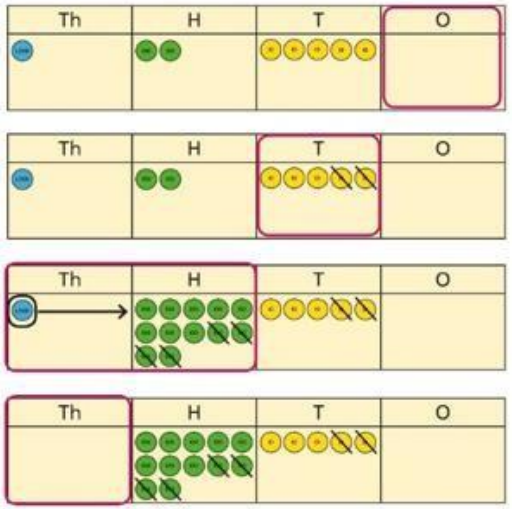
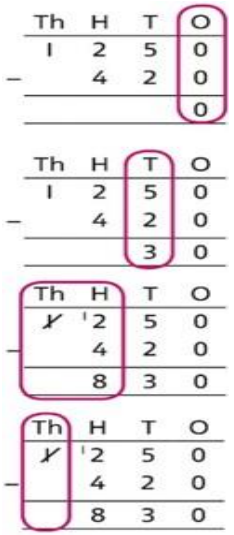
Representing subtraction problems.	Encourage all children to explore using a range of manipulatives.  Part-part-whole, bar models, place value grids may be used.	Use bar models to represent find the difference comparisons  and to show that a part must be taken away from the whole.  	Children use alternative representations, including the inverse, to check calculations. *I have completed this subtraction.* *525 – 270 = 255* *I will check using addition.* 

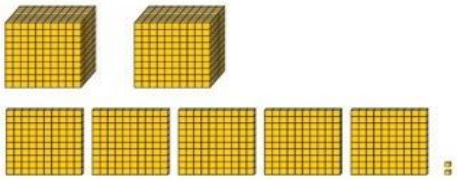
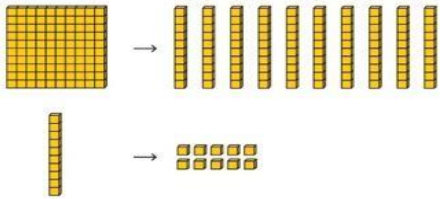
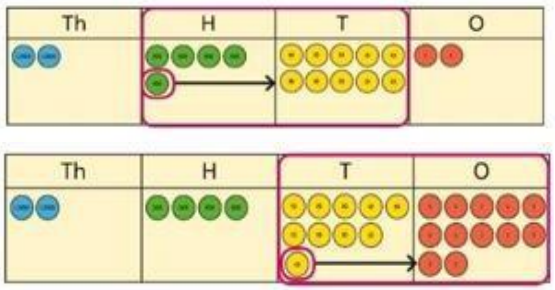
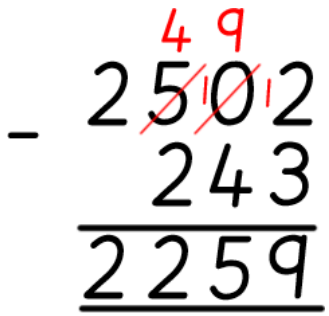
Year 4

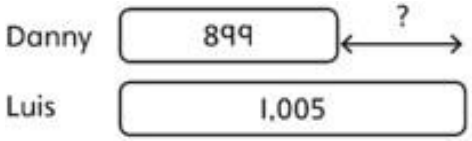
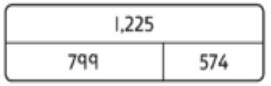
Pupils should be taught to:

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

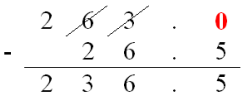
Subtraction of multiples 10/100/1000		2600 – 800 or 2600 – 800 = 2600 –1000 + 200 600 200
Subtract a pair of numbers to 1 decimal point		2.4 – 0.6 0.4 0.2
<u>Learners should have a solid understanding of expanded method of subtraction (Year 3)</u> Subtraction of two numbers (up to four digits) using columnar subtraction Formal method	Formal method (using borrowing) with numbers up to four digits.	Leading to using columnar method to solve problems using decimals up to 2 places. $\begin{array}{r} {}^{4}5\,{}^{14}5\,{}^{10}1\,{}^{1}2 \\ -\ 3\,7\,4\,8 \\ \hline 1\,7\,3\,4 \end{array}$ $\begin{array}{r} {}^{2}£3\,{}^{10}1\,{}^{1}\bullet 2\,7 \\ -\ £1\,4\bullet 8\,1 \\ \hline £1\,6\bullet 4\,6 \end{array}$

Choosing mental methods where appropriate	Use place value equipment to justify mental methods.  What number will be left if we take away 300?	Use place value grids to support mental methods where appropriate.  7,646 − 40 = 7,606	Use knowledge of place value and unitising to subtract mentally where appropriate. 3,501 − 2,000 3 thousand − 2 thousand = 1 thousand 3,501 − 2,000 = 1,501
Column subtraction with exchange	Understand why exchange of a 1,000 for 100s, a 100 for 10s, or a 10 for 1s may be necessary. 	Use place value grid to model exchange and subtraction. 	Column subtraction, with understanding of the place value of any exchange required.  Children can use place value resources to aid and support understanding.

Column subtraction with exchanges across more than 1 column Base 10 and place value counters are the most effective manipulatives when subtracting numbers with up to 4 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Plain counters on a place value grid can also be used to support learning.	Recognise when two exchanges may be required. 2,502 − 243 = ?  As there are no tens, two exchanges may be required. 	Recognise the need for more than one exchange when a zero is a place holder. 2,502 − 243 = ?  	Children to use formal column subtraction method with increasing confidence.  Children may use supporting manipulatives alongside written calculation.

Representing subtractions and checking strategies	Encourage all children to explore using a range of manipulatives.  	Use bar models to represent subtractions where a part needs to be calculated  and finding the difference  Part-part-whole models may also be used.	Use inverse operations to check subtractions. *I calculated 1,225 − 799 = 574.* *I will check by adding the parts.*   *The parts do not add to make 1,225.* *I must have made a mistake.*

Formal Written Method Column Subtraction	Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.	Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make. When confident, children can find their own way to record the exchange/regrouping.	<u>No exchanging</u> TH H T O 7 3 4 5 - 2 1 2 3 5 2 2 2 <u>Exchanging</u> TH H T O 7 3 $^{3}\cancel{4}$ $^{1}5$ - 2 1 2 7 5 2 1 8 <u>Missing Numbers</u> TH H T O ? 3 ? 5 - 2 ? 2 ? (no exchanging) 5 2 2 2 <u>Exchanging</u> TH H T O 7 ? 4- 5 - ? 1 2 ? (exchanging) 5 2 1 8 This will lead to an understanding of subtracting any number including decimals. 5 12 1 2 $\cancel{6}$ $\cancel{3}$. 0 - 2 6 . 5 2 3 6 . 5

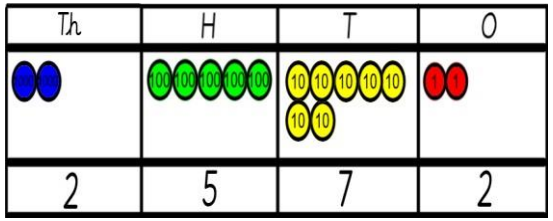


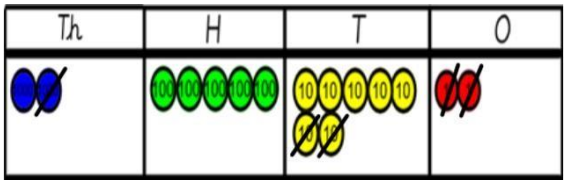
Year 5

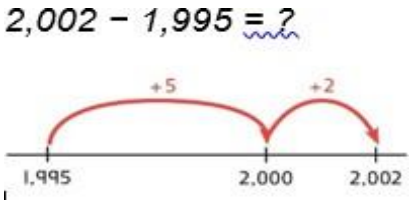
Pupils should be taught to:

- subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)
- subtract numbers mentally with increasingly large numbers
- solve subtraction multi-step problems in contexts, deciding which methods to use and why

Use of mental methods, where appropriate	Children should be taught to complete mental calculations by: - rounding up/down and adjusting - counting up - using number bond knowledge - subtracting without bridging 1, 10, 100 or 1000 (including decimals) Use mixed decimal and whole (9 – 1.9) Used mixed decimal 1dp and 2dp (1.52 – 0.3, 1.5 – 0.07)	Examples 4532 – 1999 4532 – 2000 + 1 £10 - £7.71 = £2.29 £7.71 + 29p = £8 + £2 = £10 2507 – 57 2507 – 7 – 50 75839 – 41725 8.67 – 0.6 = 8.07 Subtract each column individually using place value knowledge
Subtraction of two numbers (more than four digits) using columnar subtraction Formal method	Formal method (using borrowing) with numbers up to four digits. $\begin{array}{r} {}^{4}{}^{14}{}^{10}{}^{1} \\ 5\,5\,1\,2\,5 \\ -\;3\,7\,4\,8\,3 \\ \hline 1\,7\,3\,4\,2 \end{array}$ $\begin{array}{r} {}^{4}{}^{14}{}^{10}{}^{1} \\ 5\,5\,1\,2\,9 \\ -\;\;\;7\,4\,8\,6 \\ \hline 4\,7\,3\,4\,3 \end{array}$	Using formal method to solve two-step problems in contexts, including decimals. $\begin{array}{r} {}^{2}{}^{10}{}^{1} \\ £3\,1{\bullet}2\,7 \\ -\;£1\,4{\bullet}8\,1 \\ \hline £1\,6{\bullet}4\,6 \end{array}$

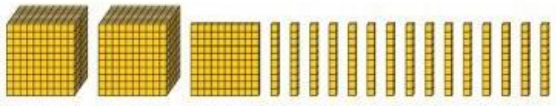
<table>
<tr>
<td>Choose efficient methods, including mental methods when appropriate.</td>
<td>Recognise when a written method is not necessary. Use place value equipment to justify mental methods.
 

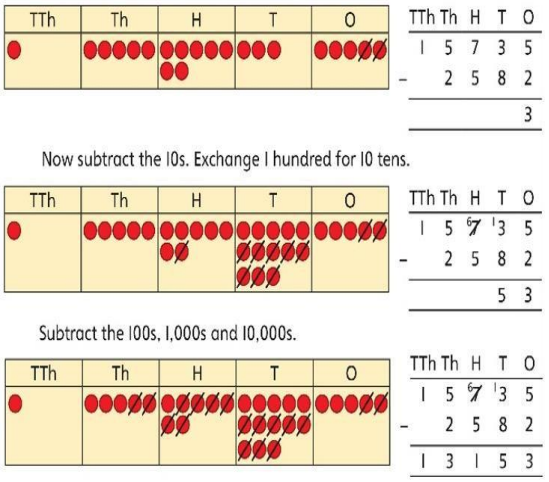
- If I subtract 50, it will be 2522.
- Subtracting 12 will give me 2560.</td>
<td>Crossing out or removing place value counters to assist mental methods.
 

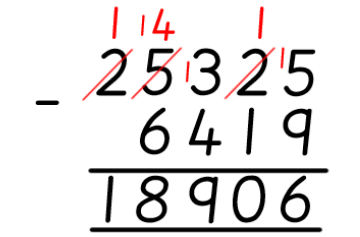
What was the question?
What is the answer?</td>
<td>Finding the difference by counting on when the numbers are close.
 

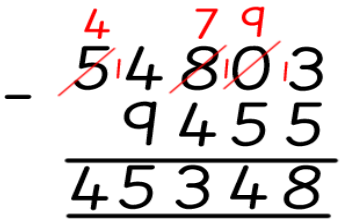
Use addition to check subtractions.
I calculated 7,546 − 2,355 = 5,191.
I will check using the inverse.</td>
</tr>
<tr>
<td>Column subtraction with whole numbers

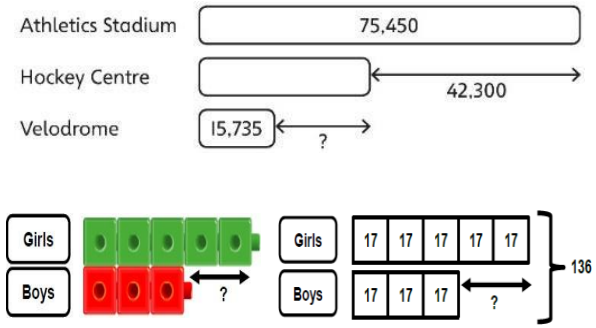
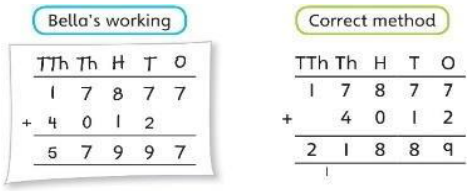
Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits. At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently</td>
<td>Use place value equipment to understand where exchanges are required.

2,250 – 1,070
  </td>
<td>Represent the stages of the calculation.

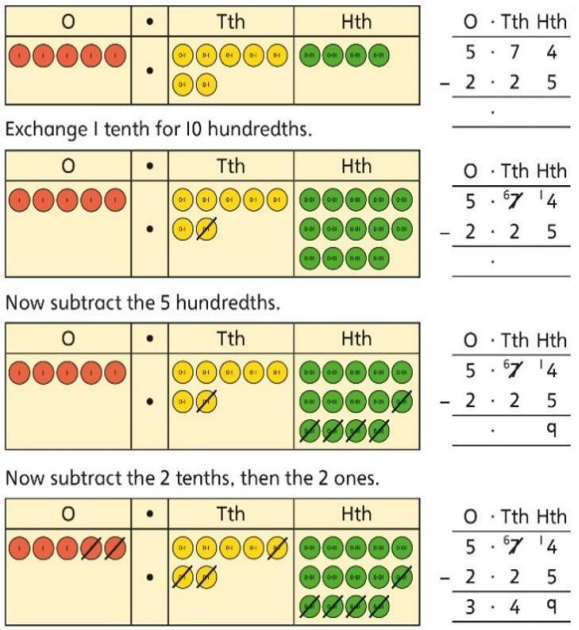
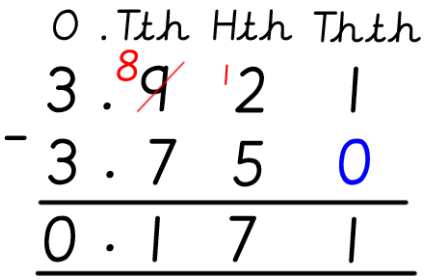
15,735 − 2,582 = 13,153
 
</td>
<td>Children to use formal column subtraction method, including exchanging.

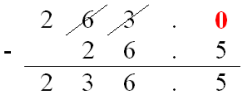
More than one exchange
 

Zero place holder
 
</td>
</tr>
</table>

<table>
<tr>
<td>Checking strategies and representing subtractions</td>
<td>Encourage all children to explore using a range of manipulatives.
 
</td>
<td>Bar models represent subtractions in problem contexts, including 'find the difference'.
 
</td>
<td>Explain mistakes made when the columns have not been ordered correctly.
 

Use approximation to check calculations.
I calculated 18,000 + 4,000 mentally to check my subtraction</td>
</tr>
<tr>
<td>Subtracting decimals.
Place value counters and plain counters on a place value grid are the most effective manipulative when subtracting decimals with 1, 2 and then 3 decimal places.</td>
<td>Explore compliments to a whole.
 

1m - __m = __m
1 – 0.49 =
£1 - __p = __p
1 - 0.49=</td>
<td>Represent the stages of column subtraction.
 
</td>
<td>Use column subtraction, with an understanding of place value, including subtracting numbers with different numbers of decimal places.
3·921 – 3·75 =?
 
</td>
</tr>
</table>

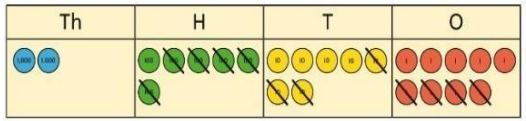
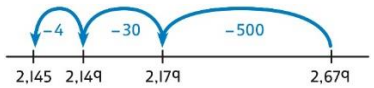
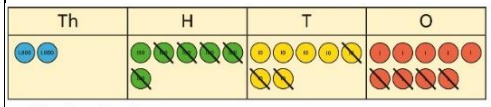
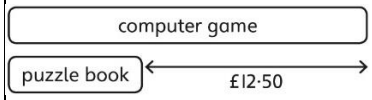
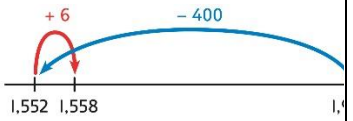
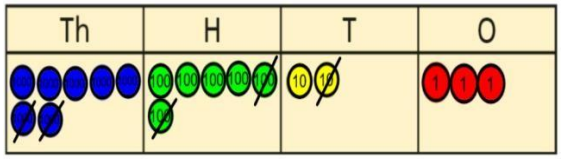
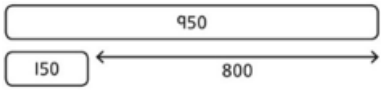
Formal Written Method Column Subtraction	Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.	Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make. When confident, children can find their own way to record the exchange/regrouping.	<u>No exchanging</u> TTH TH H T O 3 7 3 4 5 - 2 2 1 2 3 1 5 2 2 2 <u>Exchanging</u> TTH TH H T O 5 7 3 $^{3}\cancel{4}$ $^{1}5$ - 2 2 1 2 7 3 5 2 1 8 <u>Missing Numbers</u> (no exchanging) TTH TH H T O 3 ? 3 4 ? - 2 2 1 ? 3 1 5 2 2 2 (exchanging) TTH TH H T O ? 7 3 $\cancel{4}$ 5 - 2 ? 1 2 ? 3 5 2 1 8 This will lead to an understanding of subtracting any number including decimals. 

Year 6

Pupils should be taught to:

- perform mental calculations, including with increasingly large numbers
- use their knowledge of the order of operations to carry out calculations involving the 4 operations
- solve subtraction multi-step problems in contexts, deciding which methods to use and why
- solve problems using subtraction

Use of mental methods, where appropriate Ensure children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money and other measures.	Children should be taught to complete mental calculations by: - rounding up/down and adjusting - counting up - using number bond knowledge - subtracting without bridging 1, 10, 100 or 1000 (including decimals) Use mixed wholes Use mixed whole and decimals Use mixed decimals up to 3 dp.	Examples 74532 – 19996 74532 – 20000 + 4 £10 - £7.71 = £2.29 £7.71 + 29p = £8 + £2 = £10 308 – 289 = 19 (found by 1 + 10 + 8) 289 + 1 + 10 + 8 = 308 2507 – 57 2507 – 7 – 50 75839 – 41725 7.57 – 0.07 = 7.5 6.982 – 0.08 = 6.902 Subtract each column individually using place value knowledge

	Use counters on a place value grid to represent subtractions of larger numbers. 2679 - 534  	Compare subtraction methods alongside place value representations.   Th H T O 2 6 7 9 − 5 3 4 2 1 4 5 Use a bar model to represent calculations, including 'find the difference' with two bars as comparison.  	Compare and select methods. Use column subtraction when mental methods are not efficient. Use two different methods for one calculation as a checking strategy. Th H T O 1 ⁸~~9~~ ¹⁴~~3~~ ¹2 − 1 5 5 8 3 9 4  Use column subtraction for decimal problems, including in the context of measure. H T O · Tth Hth 3 0 9 · 6 0 − 2 0 6 · 4 0 1 0 3 · 2 0
Subtracting mentally with larger numbers	Use place value equipment to support explanations of mental subtractions. 7623 - 2210  	Use a bar model to show how unitising can support mental calculations. 950,000 − 150,000 That is 950 thousand - 150 thousand  So, the difference is 800 thousand. 950,000 - 150,000 = 800,000	Subtract efficiently using mental methods with powers of 10. 10,000 − 500 =? 55,000 − 100 =? 4371 − 60 =? 87,841 − 700 =?

Formal Written Method Column Subtraction	Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.	Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make. When confident, children can find their own way to record the exchange/regrouping.	<u>No exchanging</u> TTH TH H T O 3 7 3 4 5 - 2 2 1 2 3 1 5 2 2 2 <u>Exchanging</u> TTH TH H T O 5 7 3 $^{3}\cancel{4}$ $^{1}5$ - 2 2 1 2 7 3 5 2 1 8 <u>Missing Numbers</u> (no exchanging) TTH TH H T O 3 ? 3 4 ? - 2 2 1 ? 3 1 5 2 2 2 (exchanging) TTH TH H T O ? 7 3 $\cancel{4}$ 5 - 2 ? 1 2 ? 3 5 2 1 8 This will lead to an understanding of subtracting any number including decimals.