

FS2 Addition and Subtraction

ELG:

- Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number.
- Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.


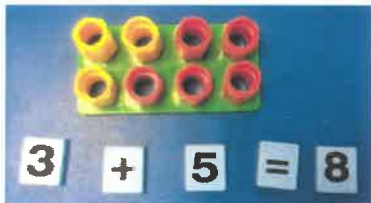

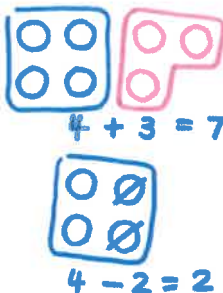
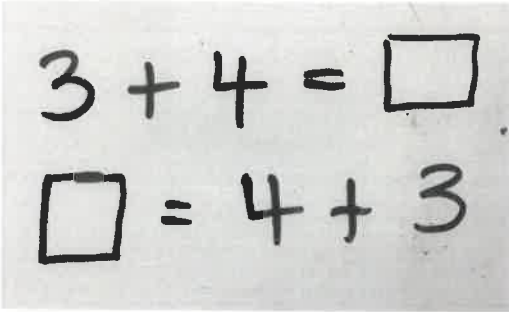

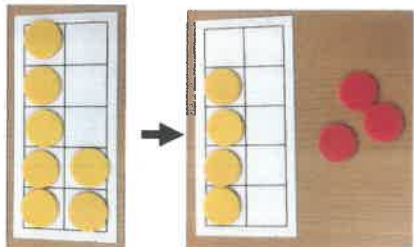
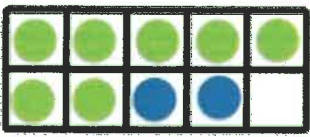
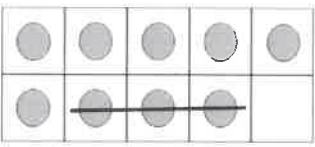
Mental calculation:

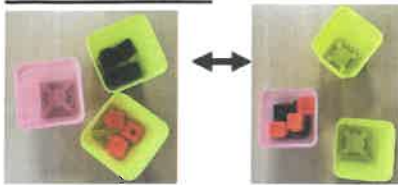
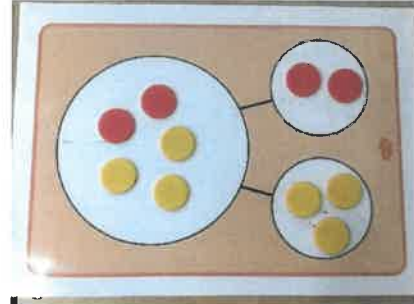
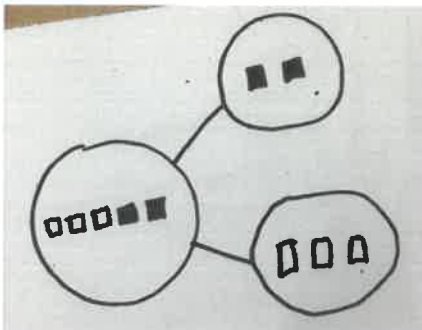
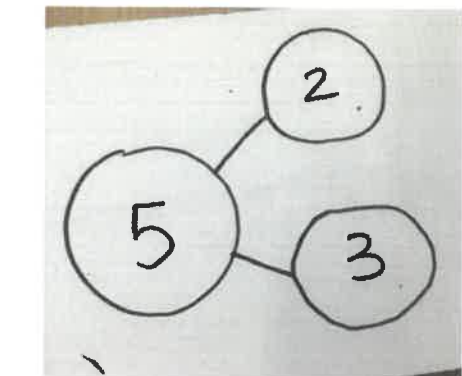
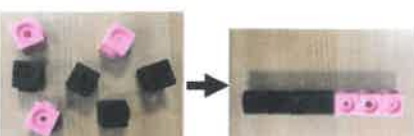
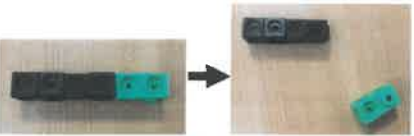


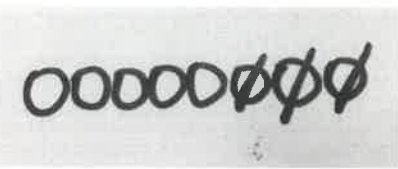
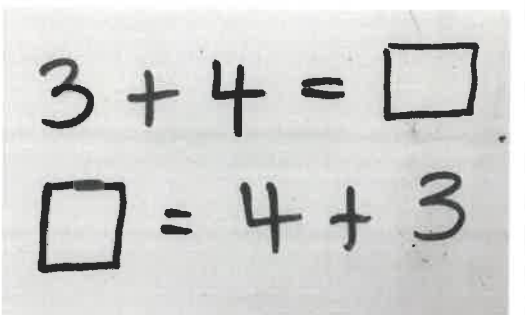
ELG:

- Say which number is one more or one less than a given number.

Number facts:

Begin to learn Number bonds to 10 (e.g. 6 add 4 makes 10). Begin to learn Addition facts up to 10 (e.g. ways to make 5).

Concrete	Pictorial	Abstract
<p>Manipulatives representing amounts:</p>  <p>Finding relevant pieces, putting them together to find the total for +. For subtraction, use the smaller piece to cover and count what isn't covered.</p>  <p>Use Numicon and counters to represent + and -. Particularly useful for Number facts and missing number problems.</p> <p>Cuisenaire should also be available for 'play' during self-directed learning. It can be used similarly to numicon or in a less formal way, e.g. a white one and a pink one are the same as a yellow one.</p>	<p>Use Numicon drawings to represent + and -.</p>  <p>Drawings given to children for children to add together circles or cross off circles for subtraction.</p>  <p>Children can draw around Numicon pieces to record and then count circles for + or cross off circle(s) for -.</p>	<p>Use symbolic representation to record + and - calculations alongside concrete and pictorial representation. Ensure that children have a sound understanding of additive reasoning at this stage.</p> 
Concrete	Pictorial	Abstract
<p>Ten frames:</p>  <p>Children add additional counters for +.</p>  <p>Children take away counters away from the ten frame for -.</p>	<p>$7 + 2 = 9$</p>  <p>Drawings given to children, for children to add different coloured 'counters' of images for +.</p>  <p>Counters or images on ten frame are crossed off counters to represent subtraction.</p>	<p>As above</p>

Concrete	Pictorial	Abstract
<p>Part Part Whole:</p>  <p>Using real items in 'pots' to represent the 'whole' and 'part(s)' of a part part whole model.</p>  <p>Move to drawn 'Part, part, whole' models, which children can use real items with.</p> <p>Also use real Numicon Cuisenaire and with Part part whole models.</p>	 <p>Children use prepared 'Part, part, whole' models (or draw their own) and draw their own objects to represent the numbers.</p> <p>Images of Numicon and Cuisenaire should be used with Part part whole models. These can be drawn around to support understanding of the value of numbers.</p>	 <p>Children use prepared 'Part, part, whole' models (or draw their own) and write numbers in to represent the mathematical calculation(s).</p>
Concrete	Pictorial	Abstract
<p>Bar Model beginnings:</p> <p>Children use real items, unifix and beadstrings to 'line up' objects for addition and subtraction – early stages of bar modelling:</p>  <p>Children use unifix to 'add more'</p>  <p>Children use unifix to 'take away'</p>  <p>Children use beadstrings to count on and 'take away'.</p> <p>Cuisenaire can be used during play to make bar models and discussed what is being shown (2 bars being equal to 1 of a different colour).</p>	<p>Children draw pictures of real items (or circles to represent real items) lined up (early stages of bar modelling) to represent + and -:</p>  <p>Children 'add on' by drawing more for +.</p>  <p>Children cross off for -.</p>	<p>Use symbolic representation to record + and – calculations alongside concrete and pictorial representation. Ensure that children have a sound understanding of additive reasoning at this stage.</p> 

Y1 Addition and Subtraction

Pupils should be taught to:

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

Mental calculation:

Pupils should be taught to:

given a number, identify one more and one less

Addition facts (Within 10)

Adding 1 (e.g. $7 + 1$ and $1 + 7$)

Doubles of numbers to 5 (e.g. $4 + 4$)

Adding 2 (e.g. $4 + 2$ and $2 + 4$)

Number bonds to 10 (e.g. $8 + 2$ and $2 + 8$)



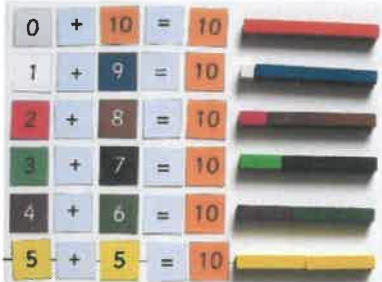


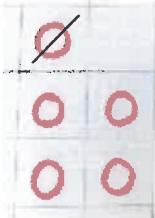
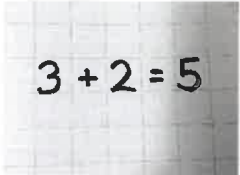
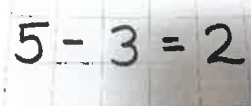
Adding 10 to a number (e.g. $5 + 10$ and $10 + 5$)

Adding 0 to a number (e.g. $3 + 0$ and $0 + 3$)

Near doubles (e.g. $3 + 4$ and $4 + 3$)

The ones without a family! $5 + 3$, $3 + 5$, $6 + 3$, $3 + 6$

Fluency in addition facts, alongside conceptual understanding, will support fluency in subtraction facts.

Concrete	Pictorial	Abstract
<p>Manipulatives representing amounts:</p>  <p>For +, Numicon pushed together, overlaid with the matched size and shape Numicon.</p>  <p>For −, Numicon number 5 found, Numicon number 3 collected, the number to be taken away laid over the total to start reveals to 'left over' amount.</p>  <p>Use Cuisenaire as well as Numicon to investigate numbers bonds to and within 10. Use investigation through these manipulative to find different ways of making amounts.</p>  <p>Through varied play, pupils should gain a secure understanding of additive reasoning. Making links between addition facts and associated subtraction facts.</p>	<p>Informal jottings:</p>  <p>$3 + 2 = 5$</p>  <p>$5 - 1 = 4$</p> <p>Numicon as well as Cuisenaire can be used to draw around. Used alongside abstract representation, as shown, or explained through discussion.</p>	<p>Number sentences:</p>  <p>Clear and accurate number formation with appropriate addition and equal to symbols to record a description of the calculation.</p>  <p>Clear and accurate number formation with appropriate subtraction and equal to symbols to record a description of the calculation.</p> <p>Appropriate vocabulary should be used and understood alongside mathematical symbols, e.g. = equals, is the same as</p>

Diennes should be used to support understanding on 'tens' and 'ones' when moving to numbers larger than ten. These manipulatives should then be used to support + and - within 20:



$$15 + 3 = ? \text{ or } 18 - 3 = ?$$

Finding the difference between amounts using **diennes**, in a way that will lead into bar models:



$$15 - 11 = 4$$

$$17 + 1 = \boxed{}$$

Children should be able to draw 'tens' and 'ones' to support + and -, as well as being given pictures of diennes:

$$13 + 6 = 19$$

Encourage children to cross off to 'take away'.

$$18 - 3 = 15 \quad 19 - 12 = 7$$

Recorded as above.

Begin recording in column style as well, once working with numbers larger than 10. But *alongside* **concrete** and **pictorial** representation to aid conceptual understanding of 'tens' and 'ones':

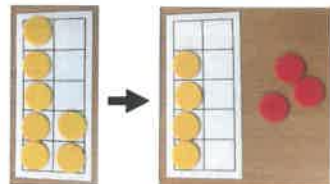
$$\begin{array}{r} 18 \\ - 3 \\ \hline 15 \end{array}$$

Concrete

Ten frames:



Children add additional counters for +.

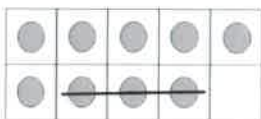


Children take away counters away from the ten frame for -.



Number bonds to 10 **and within** 10 should be represented on the ten frame with coloured counters.

Pictorial



Pictures of ten frames given to children. Then can draw / colour counters, using different colours to represent + and crossing off to represent -.

Multiple ten frames can be use when working with numbers larger than 10. This should help to consolidate understanding of number bonds to 10.

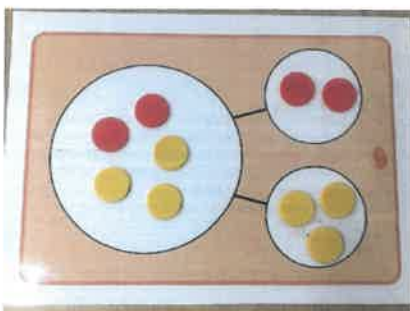
Abstract

As above

Concrete

Part Part Whole:

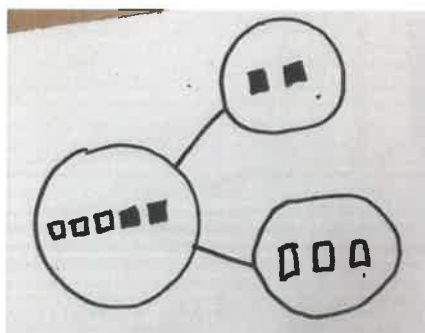
Use part part whole models to support additive reasoning:



Drawn 'Part, part, whole' models, which children can use **real items** with.

Also use real **Numicon**, **Cuisenaire** and **diennes** with Part part whole models. When moving on to numbers larger than 10, **diennes** should also be used to support understanding of 'tens' and 'ones'.

Pictorial



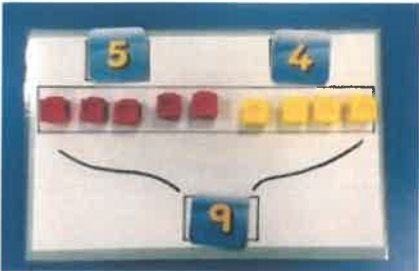



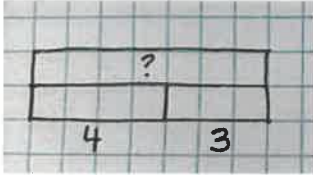
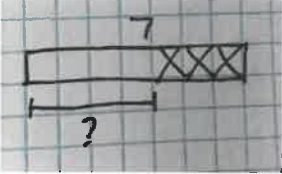
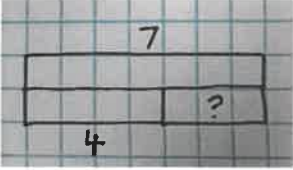
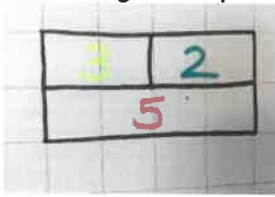
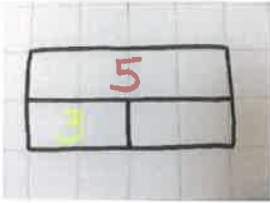
Children use prepared 'Part, part, whole' models (or draw their own) and draw their own objects to represent the numbers.


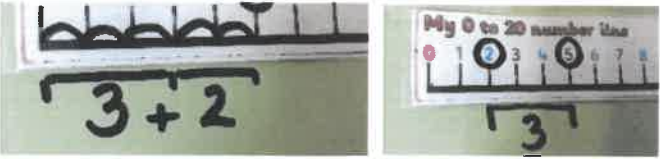
Pictures of

Abstract



Children use prepared 'Part, part, whole' models (or draw their own) and write numbers in to represent the mathematical calculation(s).

Concrete	Pictorial	Abstract
<p>Bar models: Use bar models to support additive reasoning:</p>  <p>Children use unifix and beadstrings to 'line up' objects for addition and subtraction – making jotting similar to bar models.</p>   <p>Using Cuisenaire to represent bar models.</p> <p>Use diennes to support representation of + and – with bar models e.g.</p>  <p>$15 - 11 = 4$ Finding the difference between amounts using diennes, in a way that will lead into bar models:</p>	<p>Drawn bar models with one for one representation. Pupils can also draw around Cuisenaire to create bar models.</p>  <p>Finding total for +</p>  <p>Crossing off or colouring to subtract</p>  <p>Finding the difference</p>	<p>Drawn bar charts without one for one representation. Focussing on using additive reasoning and mental calculating to complete models:</p>  

Concrete	Pictorial	Abstract
<p>Number lines:</p>	<p>100 square:</p>  <p>Using a 100 square to count on and back to support + and – as shown. Ideal for + and – of 10 from 2 digit numbers.</p> <p>Number line:</p>  <p>Using prepared number lines to count on and back to support + and – as shown. This would move on to unprepared number lines.</p>	

Y2 Addition and Subtraction

(NC) Pupils should be taught to:

- ☐ solve problems with addition and subtraction:
- ☐ using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- ☐ applying their increasing knowledge of mental and written methods
- ☐ recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- ☐ add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - ☐ a two-digit number and ones
 - ☐ a two-digit number and tens
 - ☐ two two-digit numbers
 - ☐ adding three one-digit numbers
- ☐ show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- ☐ recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Mental calculation:

Pupils should be taught to:

- ☐ add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - ☐ a two-digit number and ones
 - ☐ a two-digit number and tens
 - ☐ two two-digit numbers
 - ☐ adding three one-digit numbers

Addition facts (Beyond 10)


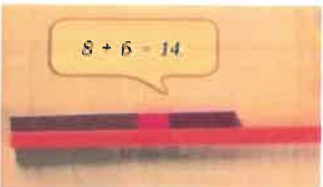
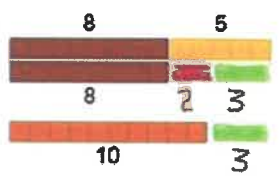

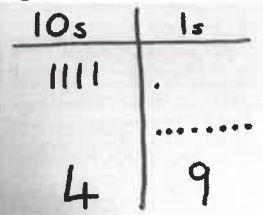
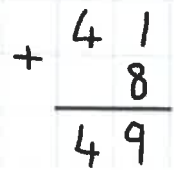
Doubles of numbers to 10 (e.g. $7 + 7$)

Near doubles (e.g. $5 + 6$ and $6 + 5$)

Bridging (e.g. $8 + 4$ and $4 + 8$)

Compensating

Fluency in addition facts, alongside conceptual understanding, will support fluency in subtraction facts.

Concrete	Pictorial	Abstract
Manipulatives representing amounts:  Regrouping to bridge 10 using Numicon  Regrouping to bridge 10 using Cuisenaire	 $8 + 5 = 13$ Using pictures / drawing around Cuisenaire and Numicon to support bridging.	(This is an essential concrete/pictorial skill that will support the make ten-strategy and column addition.) $8 + 6 = 8 + 2 + 4 = 14$
Diennes  Representing addition and subtraction of a 1 digit number from a 2 digit number with diennes to support partitioning.	Children draw pictures of diennes to support addition and subtraction of a 1 digit number to/from a 2 digit number: 	Record using standard column method ALONGSIDE manipulatives: 

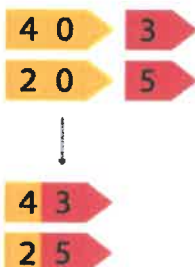
Using place value charts alongside diennes for + of two 2 digit numbers without regrouping.



Pupils should be able to draw 'tens' and 'ones' to support addition and subtraction of a 2 digit number to / from a 2 digit number:

Tens	Ones	Tens	Ones
4	2	4	2
2	6	2	6
6	8	6	8

Using **place value cards** to support partitioning into 'tens' and 'ones' for addition and subtraction.



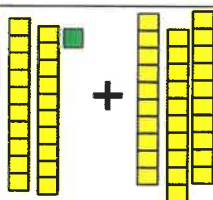
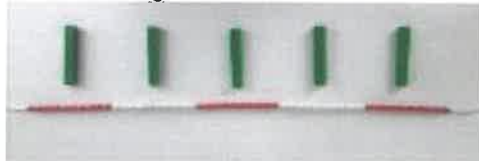
Record using standard column method **ALONGSIDE** manipulatives:

$$\begin{array}{r} 42 + \\ 26 \\ \hline 68 \end{array}$$

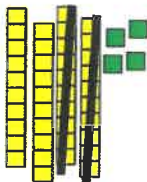
$$\begin{array}{r} 46 - \\ 22 \\ \hline 44 \end{array}$$

Using place value charts alongside diennes for - of two 2 digit numbers without regrouping.

Add a two digit number and tens



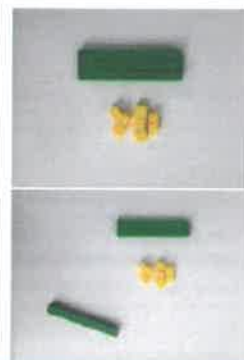
Drawing pictures of **diennes** to support addition of tens to 2 digit numbers.



Drawing pictures of **diennes** to support subtraction of tens to 2 digit numbers.

As above

Use **diennes**, **bead strings** and groups of **straws** to support adding and subtracting multiples tens to 2 digit numbers.

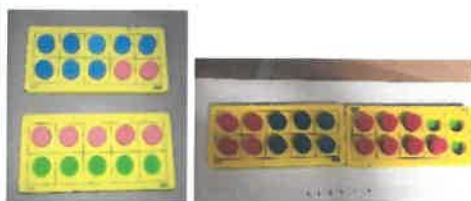


Concrete

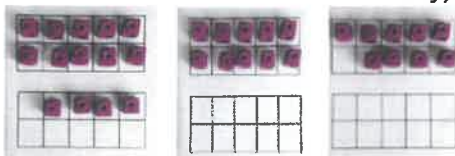
Pictorial

Abstract

Ten frames

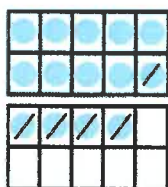


Regrouping to make 10 using ten frames when adding. Adding 3 single digit numbers (Use knowledge of number bonds to solve this efficiently)



14 - 5

Subtract the 4 first then the 1 to consolidate bridging.



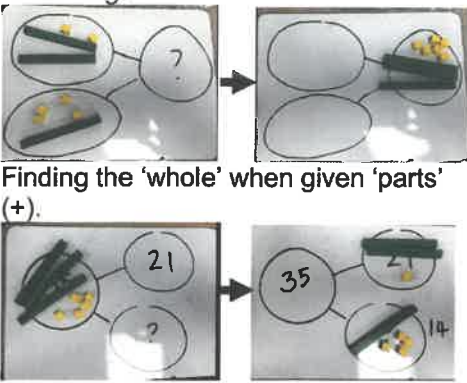
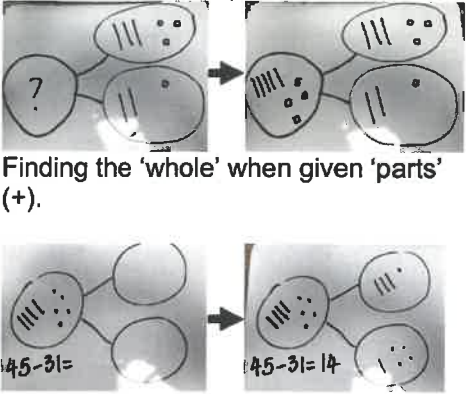
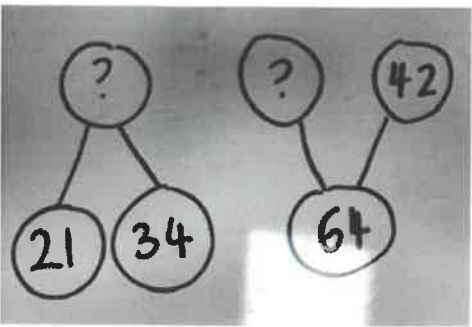
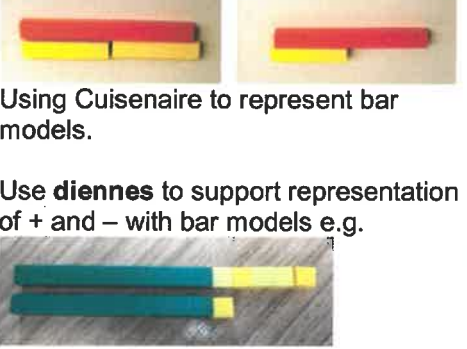


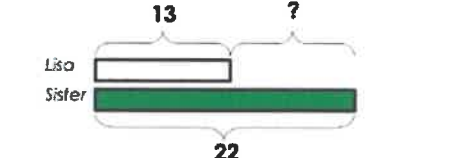
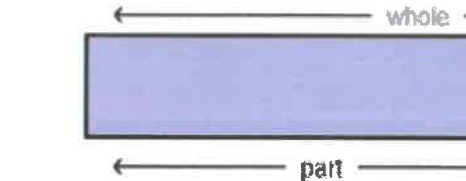

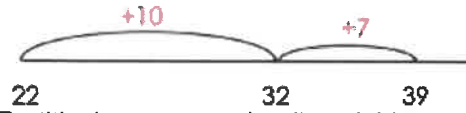

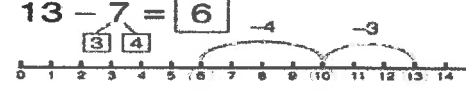

Use pictures of multiple frames to support + and - of 1 digit numbers to and from 2 digit numbers. This should also consolidate bridging to ten.

Children identify $4 + 6 = 10$, then add the 7 mentally before recording:

$$4 + 7 + 6 = 17$$

or

$$\begin{array}{r} 4 \\ 7 + \\ \hline 6 \\ 17 \end{array}$$

Concrete	Pictorial	Abstract
<p>Part Part Whole</p> <p>Use diennes in hoops / images of part part whole to explore + and – facts and support understanding of additive reasoning:</p>  <p>Finding the 'whole' when given 'parts' (+).</p> <p>Finding a 'part' when given the 'whole' and a 'part' (-).</p>	<p>Draw pictures of diennes in part part whole models to explore + and – facts:</p>  <p>Finding the 'whole' when given 'parts' (+).</p> <p>Finding a 'part' when given the 'whole' and a 'part' (-).</p>	<p>Write numbers in part part whole models to explore + and – facts and support understanding of additive reasoning:</p> 
Concrete	Pictorial	Abstract
<p>Bar Model</p>  <p>Using Cuisenaire to represent bar models.</p> <p>Use diennes to support representation of + and – with bar models e.g.</p>  <p>$15 - 11 = 4$</p> <p>Finding the difference between amounts using diennes, in a way that will lead into bar models:</p>	<p>Finding the total, represented on a bar model:</p>  <p>Finding the difference, represented on a bar model:</p>  <p>Using part part whole bar model for subtractions (knowing the whole and one part):</p> 	
Concrete	Pictorial	Abstract
<p>Number lines</p>  <p>Using Cuisenaire alongside a number line (ruler) to support counting on and back for addition and subtraction.</p>	<p>Partitioning on a number line. Adding tens and then ones.</p>  <p>$16 + 7$</p>  <p>Using bridging to support addition on a number line.</p> <p>$13 - 7 = 6$</p>  <p>Using bridging to support subtraction on a number line.</p> <p>$43 - 30$</p>  <p>Counting on (+) and back (-) in tens, using a number line to support.</p>	

Y3 Addition and Subtraction

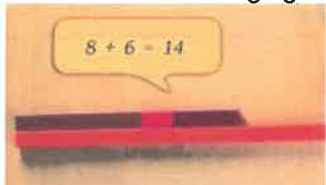
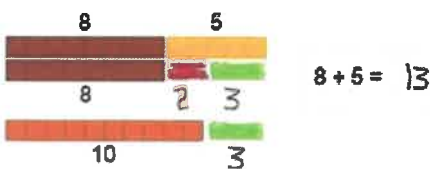
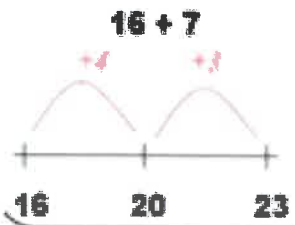

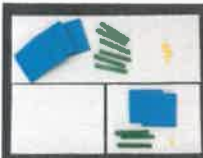


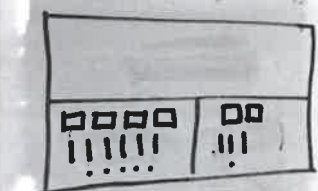
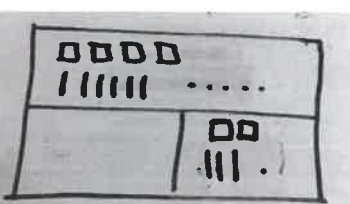
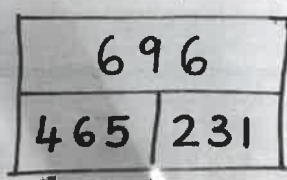
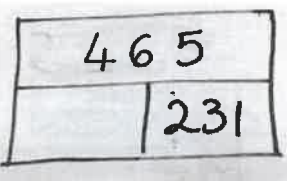
(NC) Pupils should be taught to:

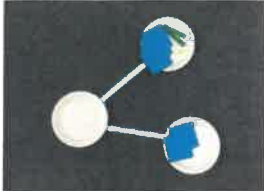
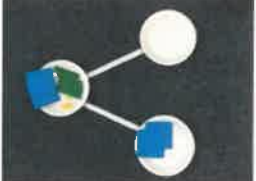
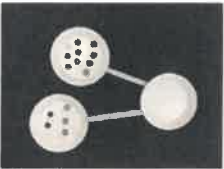
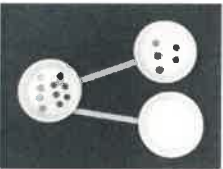
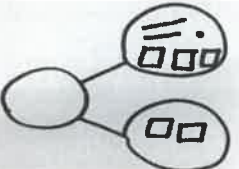
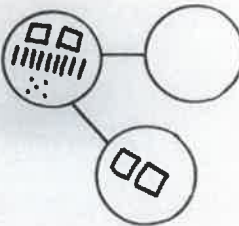
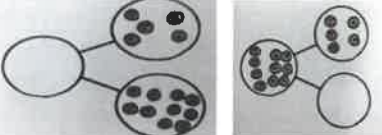
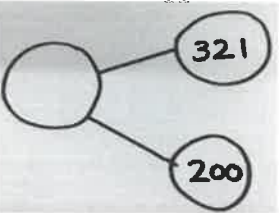
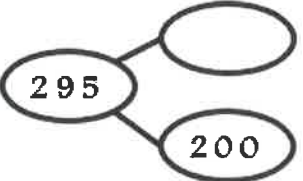
- ☐ add and subtract numbers mentally, including:
 - ☐ a three-digit number and ones
 - ☐ a three-digit number and tens
 - ☐ a three-digit number and hundreds
- ☐ add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- ☐ estimate the answer to a calculation and use inverse operations to check answers
- ☐ solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

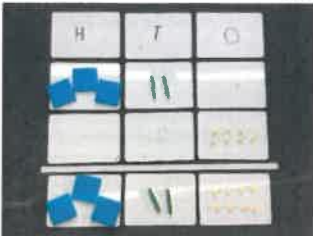
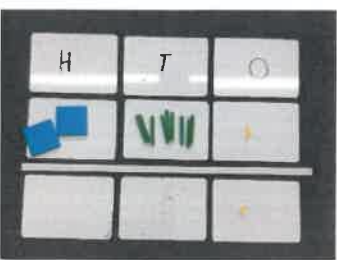
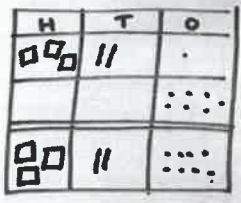
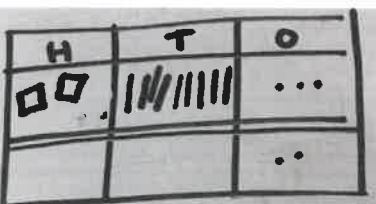
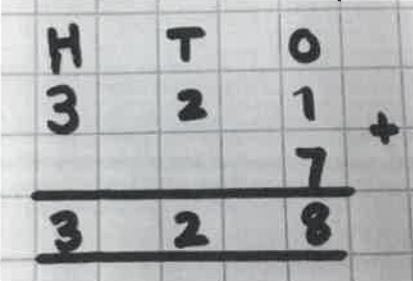
Mental calculation:

Pupils should be taught to:

- ☐ add and subtract numbers mentally, including:
 - ☐ a three-digit number and ones
 - ☐ a three-digit number and tens
 - ☐ a three-digit number and hundreds

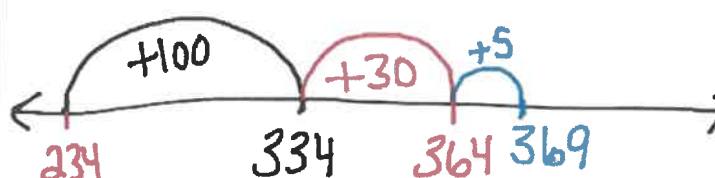
Concrete	Pictorial	Abstract
<p>Manipulatives representing amounts, supporting mental calculation:</p> <p>Consolidation of bridging from KS1:</p>  <p>Regrouping to bridge 10 using Cuisenaire</p>	 <p>Using pictures / drawing around Cuisenaire and Numicon to support bridging.</p> <p>Use the Cuisenaire alongside a number line/ruler to support bridging too.</p>	 <p>Using bridging to support addition on a number line.</p>
Concrete	Pictorial	Abstract
<p>Bar modelling:</p> <p>Using bar models to support additive reasoning:</p>  <p>Using diennes to represent parts on a bar model for +.</p>  <p>Using diennes to represent whole and one part on a bar model for -.</p>  <p>Using money to represent parts on a bar model for +.</p>  <p>Using money to represent whole and one part on a bar model for -.</p>	<p>Children should be able to draw pictures of bar models with diennes to represent + and -, supporting additive reasoning:</p>  <p>Drawn bar model showing +.</p>  <p>Drawn bar model showing -.</p>	<p>Drawing bar models with numbers to support additive reasoning:</p>  <p>$465 + 231 = 696$</p>  <p>$465 - 231 = 234$</p>

Concrete	Pictorial	Abstract
<p>Part Part Whole: Using part part whole models to support additive reasoning:</p>  <p>Using diennes on a part part whole model to represent +.</p>  <p>Using diennes on a part part whole model to represent -.</p>   <p>Part Part Whole using money to represent + and -.</p>	<p>Children should be able to draw Part Part Whole using pictures of diennes:</p>  <p>Part part whole showing + with diennes.</p>  <p>Part part whole showing - with diennes.</p>  <p>Part part whole showing + and - with money.</p>	<p>Drawing part part whole models with numbers to support additive reasoning:</p>  <p>$321 + 200 =$</p>  <p>$295 - 200 =$</p>

Concrete	Pictorial	Abstract																				
<p>Column method: Diennes to model column method:</p>  <p>321 + 7 = 3218 Using place value mats alongside diennes to represent the column method for +.</p> 	<p>Children should be able to draw place value mats with diennes:</p>  <p>321 + 7 = 328 Totalling pictures representing amounts.</p>  <p>295 - 2 = 293 Crossing off or rubbing off (when on whiteboards) to show 'taking away'.</p>	<p>Using standard column method</p>  <table data-bbox="1067 1442 1299 1688"><tr><td>H</td><td>T</td><td>O</td><td></td></tr><tr><td>2</td><td>9</td><td>5</td><td>-</td></tr><tr><td></td><td></td><td>2</td><td></td></tr><tr><td>2</td><td>9</td><td>3</td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	H	T	O		2	9	5	-			2		2	9	3					
H	T	O																				
2	9	5	-																			
		2																				
2	9	3																				

Number lines:

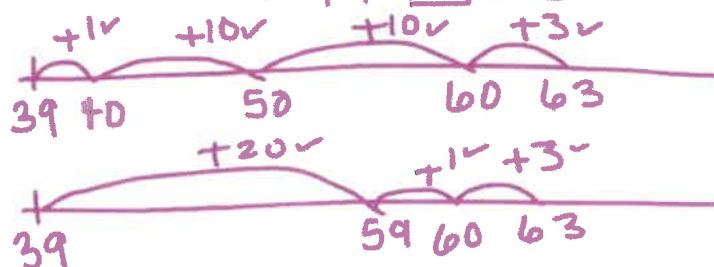
$$\textcircled{234} + \textcircled{135}$$



Counting on for + on a number line, using partitioning to support mental calculations.

$$63 - 39 = \boxed{24}$$

$$39 + \boxed{24} = 63$$



Using additive reasoning to rework a - calculation. Then, counting on a number line, using partitioning in different ways to support mental calculations.



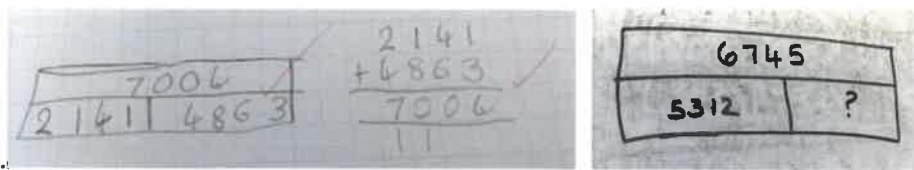
Y4 Addition and Subtraction

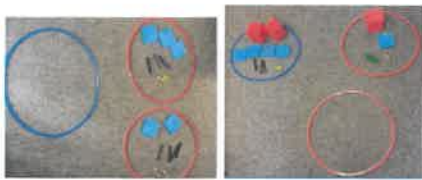
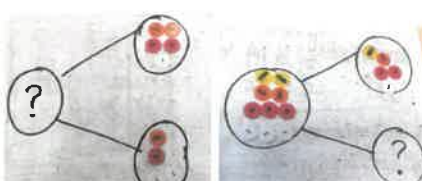
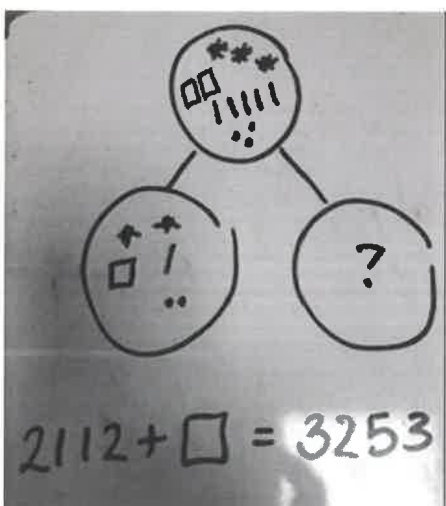
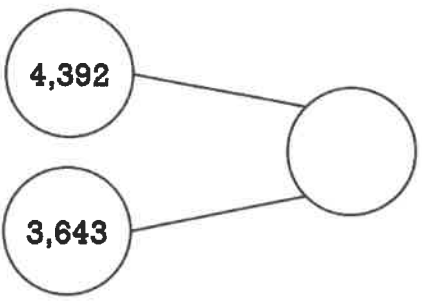
(NC) Pupils should be taught to:

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

Mental calculation:

- 1000 more and less

Concrete	Pictorial	Abstract								
<p>Bar modelling:</p>  <p>Using Cuisenaire rods to represent different amounts making a total amount for + (rods not used to scale, more representative).</p>  <p>Using Cuisenaire rods to represent 'finding the difference' or 'taking away' an amount for - (rods not used to scale, more representative).</p>	<p>Children use prepared bar models and write in the numbers to represent the mathematical calculation, supporting additive reaoning and problem solving:</p> <table border="1" data-bbox="515 512 956 636"><tr><td colspan="2">?</td></tr><tr><td>3,452</td><td>2,337</td></tr></table> $\begin{array}{r} 3452 \\ +2337 \\ \hline 5789 \end{array}$ <table border="1" data-bbox="994 512 1442 613"><tr><td colspan="2">5002</td></tr><tr><td>2450</td><td>2552</td></tr></table> $\begin{array}{r} 5002 \\ -2450 \\ \hline 2552 \end{array}$ <p>Children use draw their own bar models and write in the numbers to represent the mathematical calculation, supporting additive reaoning and problem solving:</p> 	?		3,452	2,337	5002		2450	2552	
?										
3,452	2,337									
5002										
2450	2552									

Concrete	Pictorial	Abstract
<p>Part part whole:</p> <p>Children use manipulatives representing place value with the part part whole model to support additive reasoning and problem solving:</p>  <p>Using diennes on a part part whole model.</p>  <p>Using place value counters on a part part whole model.</p>	<p>Children draw manipulatives representing place value with the part part whole model to support additive reasoning and problem solving:</p> 	<p>Children use prepared or draw their own part, part, whole model and write in the numbers to represent the mathematical calculation, supporting additive reasoning and problem solving:</p>  $\begin{array}{r} 4392 \\ +3643 \\ \hline 8035 \\ 11 \end{array}$

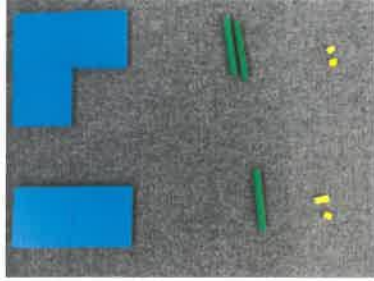
Concrete

Column method:

Children continue to use **dienes** and **place value counters** to add and subtract, exchanging for regrouping:

Hundreds	Tens	Ones

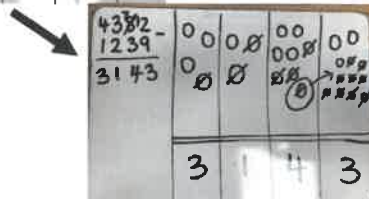
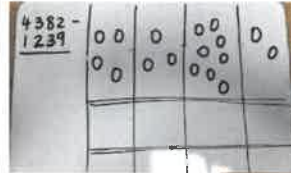
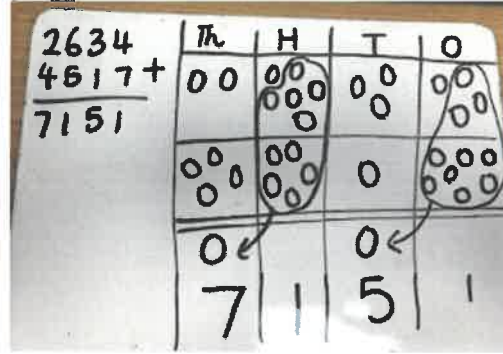
$$\begin{array}{r} 268 \\ + 157 \\ \hline 425 \\ 11 \end{array}$$



$$\begin{array}{r} 535 \\ - 213 \\ \hline 322 \end{array}$$

Pictorial

Draw pictorial representations using a place value grid, using either **diennes** or **place value counters**:



Abstract

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

$$\begin{array}{r} 874 \\ - 523 \\ \hline 351 \end{array}$$

$$\begin{array}{r} 8121 \\ - 457 \\ \hline 475 \end{array}$$

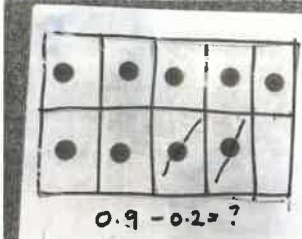
Concrete

Ten frames:

Using ten frames to support + and - of tenths:

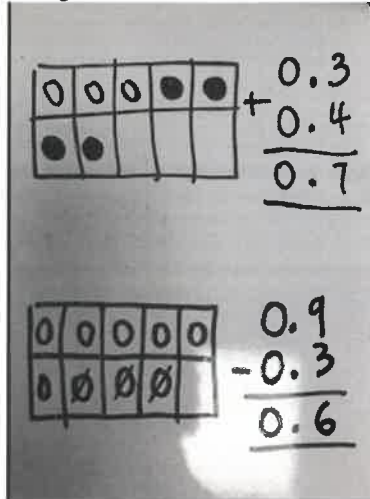


$$10/10 + 3/10 = 1 \text{ and } 3/10$$



Pictorial

Drawing ten frames, where counters represent $1/10$, to support + and -. Record using fractions or decimal notation:



Abstract

Children then use their knowledge of addition to apply it to other other areas of the maths curriculum

$$4/10 + 3/10 = 7/10$$

Y5/6 Addition and Subtraction


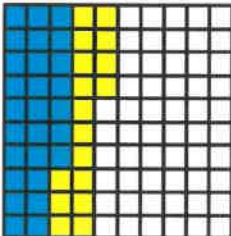

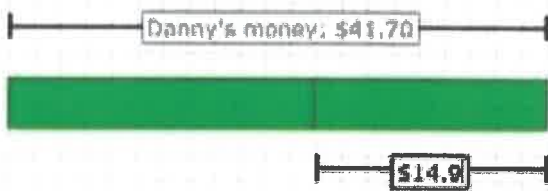
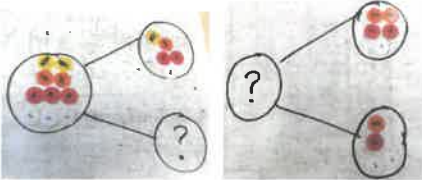
(NC) Pupils should be taught to (Y5 Y6):


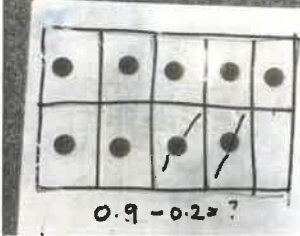
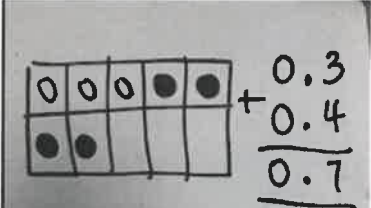
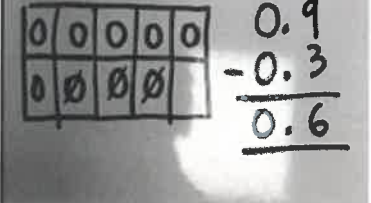
- ☐ add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- ☐ use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- ☐ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- ☐ use their knowledge of the order of operations to carry out calculations involving the four operations
- ☐ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Mental calculation:

Pupils should be taught to:

- ☐ Powers of 10 more and less
- ☐ add and subtract numbers mentally with increasingly large numbers
- ☐ Perform mental calculations, including with mixed and large numbers

Concrete	Pictorial	Abstract
<p>Manipulatives representing amounts, supporting decimal understanding:</p>  <p>2.43</p> <p>Using diennes where a whole is represented by a 'hundred square', a tenth is represented by a 'ten' and a hundredth is represented by a 'one'. This should be talked through with reference to 'parts' of a whole, making links between the language and how many parts the whole is split into, e.g. tenths = whole split into ten parts</p>	 <p>$0.27 + 0.17 = 0.44$</p> <p>Using 100 square to represent a whole, where tenths = a column, and hundredths = individual squares. Draw on these to support + and - of tenths and hundredths.</p>	<p>As Year 4, applying to larger numbers and those with decimals (to 2dp).</p>
Concrete	Pictorial	Abstract
<p>Bar modelling:</p> <p>As Year 4, applying to larger numbers and those with decimals (to 2dp), using place value counters to represent quantities:</p>  <p>$0.8 + 0.2 = 1$</p>	<p>As Year 4, applying to larger numbers and those with decimals (to 2dp), using drawn place value counters to represent quantities:</p> <p>Danny had \$41.70 before shopping at Mind Games. After buying 2 identical chess sets, Danny had \$14.90 left. How much did each chess set cost?</p> 	
Concrete	Pictorial	Abstract
<p>Part part whole:</p> <p>As Year 4, applying to larger numbers and those with decimals (to 2dp), using place value counters to represent quantities:</p>  <p>Use place value counters which represent tenths and hundredths.</p>	<p>As Year 4, applying to larger numbers and those with decimals (to 2dp), using drawn place value counters to represent quantities.</p>	<p>As Year 4, applying to larger numbers and those with decimals (to 2dp).</p>

Concrete	Pictorial	Abstract
<p>Column method: As Year 4, applying to larger numbers and those with decimals (to 2dp), using place value counters to represent quantities.</p>	<p>As Year 4, applying to larger numbers and those with decimals (to 2dp), using drawn place value counters to represent quantities.</p>	<p>As Year 4, applying to larger numbers and those with decimals (to 2dp).</p>
Concrete	Pictorial	Abstract
<p>Ten frames: Using ten frames with counters to support + and – of tenths:</p>  <p>$10/10 + 3/10 = 1 \text{ and } 3/10$</p>  <p>$0.9 - 0.2 = 0.7$</p>	<p>Drawing ten frames, where drawn counters represent $1/10$, to support + and -. Record using fractions or decimal notation:</p>  	<p>Children then use their knowledge of addition to apply it to other other areas of the maths curriculum</p> $4/10 + 3/10 = 7/10$ $\begin{array}{r} 0.4 \\ + 0.8 \\ \hline 1.2 \end{array}$