

Maths Mastery Policy



ADDITION

Reception:

EHLT are implementing Mastering Number at Reception in September 2024.

The programme aims to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future. Over the year, the children will experience using a range of resources and representations.

Research shows that children with secure 'number sense' early on will make more progress later on in maths and across the curriculum.

<u>ADDITION KEY VOCABULARY</u>					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
number bonds; number facts; Addition facts; Fact family; sum; total; whole; parts; plus; add; altogether; more; is equal to; is the same as as many as; Tens, ones; exchange; digit; one more; count on; double; most;	Add; count on; more; Plus; total; sum; partition; bridge; adjust; Inverse; number line; number facts; hundred; tens; ones; tens boundary; whole; parts; altogether; is equal to; is the same as; number bonds; number facts; fact families;	Calculation; calculate; addition; Sum; total; whole; part; column addition; ones; tens; hundreds; exchange/regroup; operation; estimate; inverse; hundreds boundary; increase; expanded; compact	Calculation; calculate; addition; Sum; total; whole; part; column addition; ones; tens; hundreds; thousands; exchange/regroup; operation; estimate; inverse; hundreds boundary; thousand boundary; increase; expanded; compact	Calculation; calculate; addition; Sum; total; whole; part; column addition; ones; tens; hundreds; thousands; exchange/regroup; operation; estimate; inverse; hundreds boundary; thousand boundary; increase; expanded; compact; decimal place; decimal point; tenths; hundredths; thousandths	Calculation; calculate; addition; Sum; total; whole; part; column addition; ones; tens; hundreds; thousands; exchange/regroup; operation; estimate; inverse; hundreds boundary; thousand boundary; increase; expanded; compact; decimal place; decimal point; tenths; hundredths; thousandths

***This vocabulary is not an exhaustive list. Teachers will use recommended NCETM vocabulary in lessons.**

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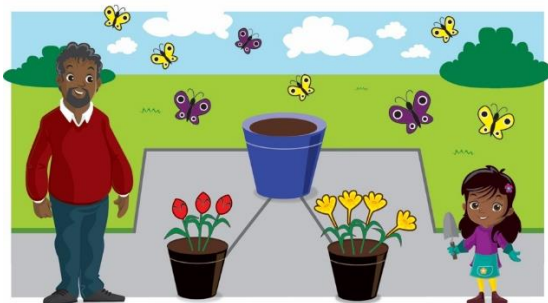
RECEPTION ADDITION

	REAL-LIFE REPRESENTATION	OTHER REPRESENTATION
Counting and adding more (within 5)	Children add one more person or object to a group to find one more.  <i>One more than 3 is 4.</i>	Children represent first, then, now stories on a five frame. They make the first number and then add one more. First  Then  Now  <i>First, there are 3 bikes. Then, 1 more bike came. Now, there are 4 bikes.</i>

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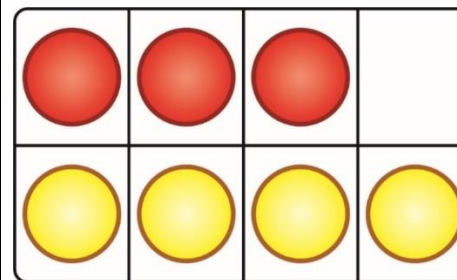
Combining groups to find the whole

Children sort people and objects into parts and combine them to find the whole.



The parts are 3 and 4. The whole is 7.

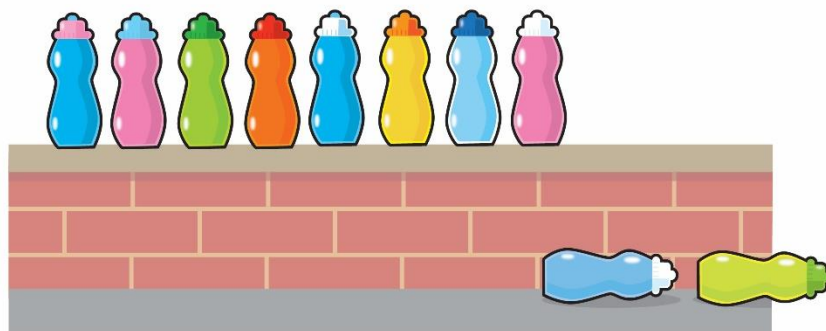
Children use counters or cubes in a part-whole model to find the whole.



The parts are 3 and 4. The whole is 7.

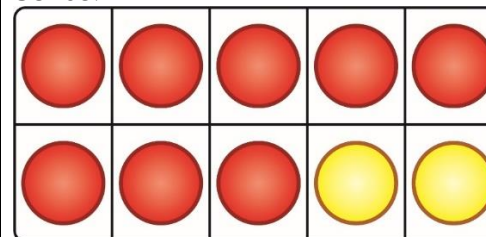
Finding number bonds to 10

Children combine two groups to find a number bond to 10.

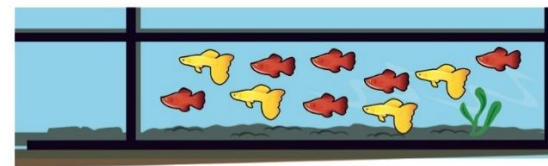


*There are 8 bottles on the wall.
There are 2 bottles on the floor.
There are 10 bottles altogether.*

Use ten frames and part-whole models to represent key number bonds.



*8 and 2 is 10.
There are 10 altogether.*



*6 and 4 is 10.
There are 10 altogether.*

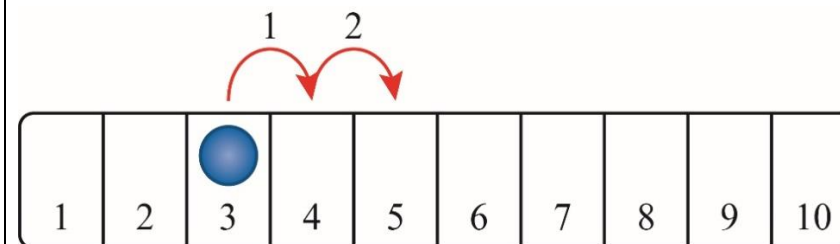
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Adding by counting on (number track)

Children jump along a physical number track. They start at the larger number and count on the smaller number to find the total.

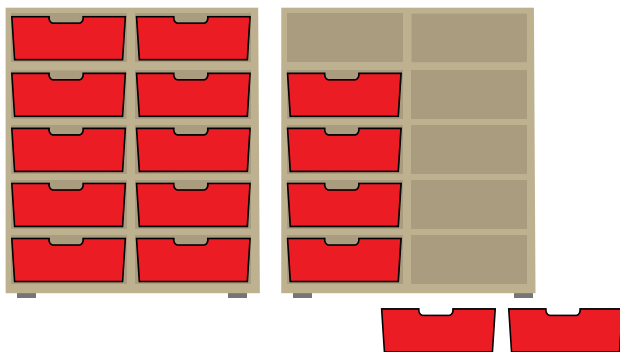


Children use a number track and a counter. They start at the larger number and count on the smaller number to find the total.

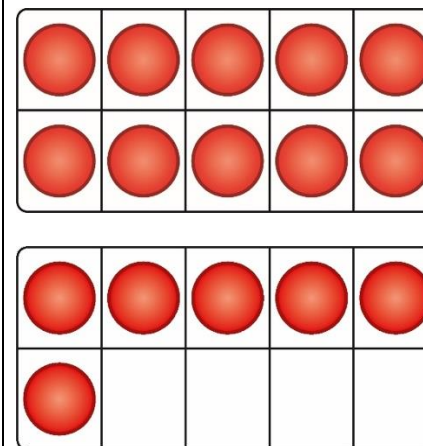


Adding by counting on (ten frames)

Children find the total number by counting on from the larger number.

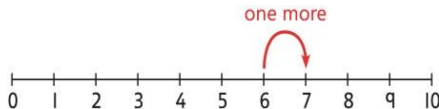
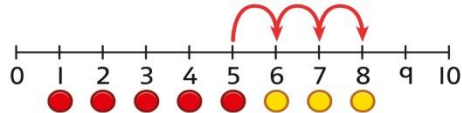
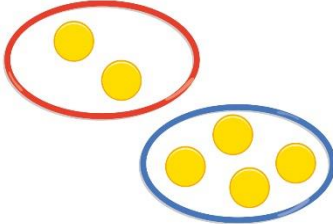
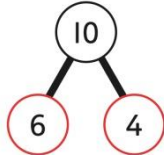


Children make the larger number on the ten frames and then make the smaller number, counting on to find the total. They can use counters, cubes or other objects on the ten frames.

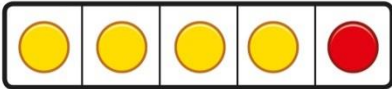
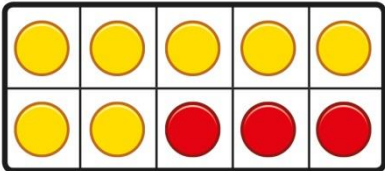
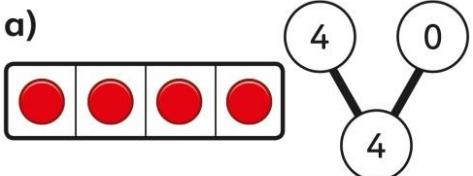
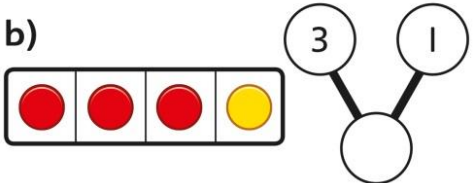
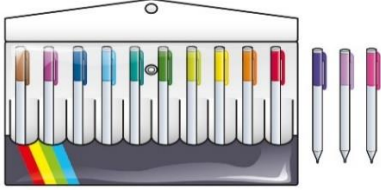
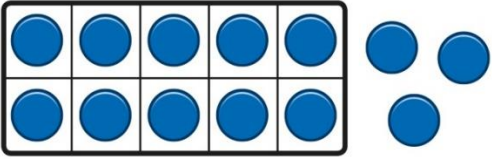


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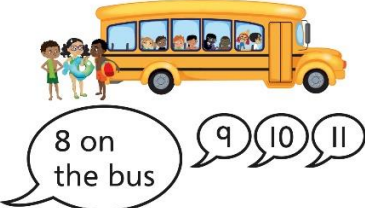
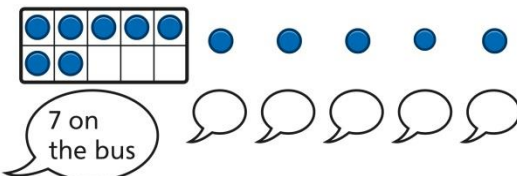
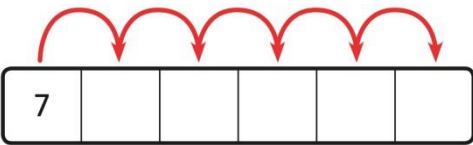
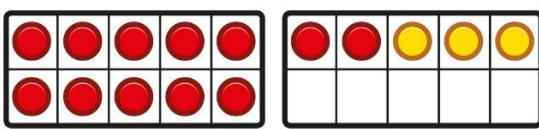
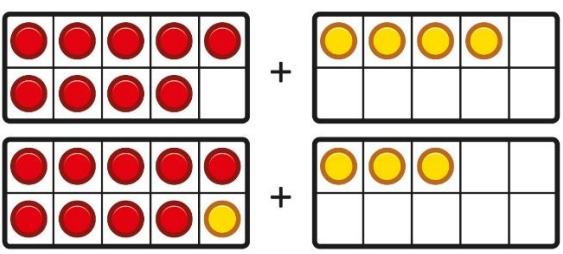
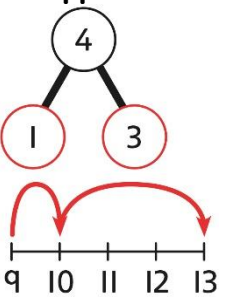
YEAR 1 ADDITION

	CONCRETE	PICTORIAL	ABSTRACT
Counting and adding more	Children add one more person or object to a group to find one more.	Children add one more cube or counter to a group to represent one more.  <i>One more than 4 is 5.</i>	Use a number line to understand how to link counting on with finding one more.  <i>One more than 6 is 7. 7 is one more than 6.</i> Learn to link counting on with adding more than one.  <i>5 + 3 = 8</i>
Understanding part-part-whole relationship	Sort people and objects into parts and understand the relationship with the whole.  <i>The parts are 2 and 4. The whole is 6.</i>	Children draw to represent the parts and understand the relationship with the whole.  <i>The parts are 1 and 5. The whole is 6.</i>	Use a part-whole model to represent the numbers.  $6 + 4 = 10$ $6 + 4 = 10$

Maths Mastery Policy

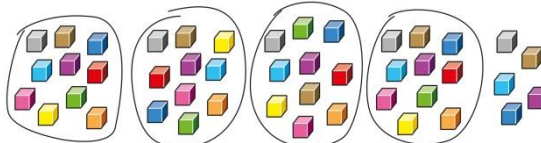
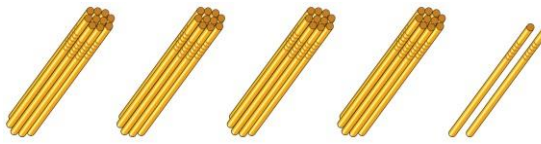
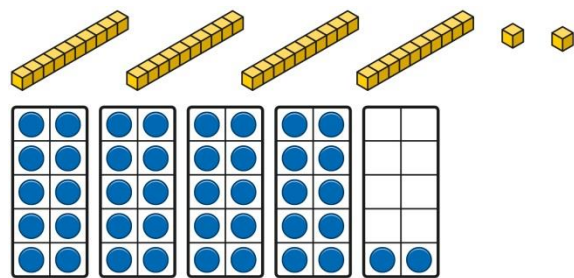
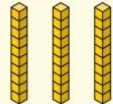
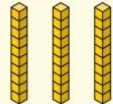
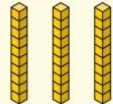
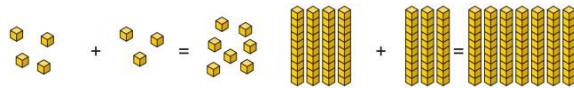
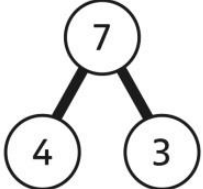
Knowing and finding number bonds within 10	Break apart a group and put back together to find and form number bonds.  $3 + 4 = 7$  $6 = 2 + 4$	Use five and ten frames to represent key number bonds.  $5 = 4 + 1$  $10 = 7 + 3$	Use a part-whole model alongside other representations to find number bonds. Make sure to include examples where one of the parts is zero. a)  b)  $4 + 0 = 4$ $3 + 1 = 4$
Understanding teen numbers as a complete 10 and some more	Complete a group of 10 objects and count more.  <i>13 is 10 and 3 more.</i>	Use a ten frame to support understanding of a complete 10 for teen numbers.  <i>13 is 10 and 3 more.</i>	<i>1 ten and 3 ones equal 13.</i> $10 + 3 = 13$

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Adding by counting on	Children use knowledge of counting to 20 to find a total by counting on using people or objects. 	Children use counters to support and represent their counting on strategy. 	Children use number lines or number tracks to support their counting on strategy.  $7 + 5 = \square$
Adding the 1s	Children use bead strings to recognise how to add the 1s to find the total efficiently.  $2 + 3 = 5$ $12 + 3 = 15$	Children represent calculations using ten frames to add a teen and 1s.  $2 + 3 = 5$ $12 + 3 = 15$	Children recognise that a teen is made from a 10 and some 1s and use their knowledge of addition within 10 to work efficiently. $3 + 5 = 8$ <i>So, $13 + 5 = 18$</i>
Bridging the 10 using number bonds	Children use a bead string to complete a 10 and understand how this relates to the addition.  <i>7 add 3 makes 10.</i> <i>So, 7 add 5 is 10 and 2 more.</i>	Children use counters to complete a ten frame and understand how they can add using knowledge of number bonds to 10. 	Use a part-whole model and a number line to support the calculation.  $9 + 4 = 13$

Maths Mastery Policy

YEAR 2 ADDITION

	CONCRETE	PICTORIAL	ABSTRACT										
Understanding 10s and 1s	Group objects into 10s and 1s.  Bundle straws to understand unitising of 10s. 	Understand 10s and 1s equipment, and link with visual representations on ten frames. 	Represent numbers on a place value grid, using equipment or numerals. <table><tr><td>Tens</td><td>Ones</td></tr><tr><td></td><td></td></tr><tr><td>3</td><td>2</td></tr></table> <table><tr><td>Tens</td><td>Ones</td></tr><tr><td>4</td><td>3</td></tr></table>	Tens	Ones			3	2	Tens	Ones	4	3
Tens	Ones												
													
3	2												
Tens	Ones												
4	3												
Adding 10s	Use known bonds and unitising to add 10s.  <i>I know that $4 + 3 = 7$. So, I know that 4 tens add 3 tens is 7 tens.</i>	Use known bonds and unitising to add 10s.  <i>I know that $4 + 3 = 7$. So, I know that 4 tens add 3 tens is 7 tens.</i>	Use known bonds and unitising to add 10s.  $4 + 3 = \square$ $4 + 3 = 7$ $4 \text{ tens} + 3 \text{ tens} = 7 \text{ tens}$ $40 + 30 = 70$										

Maths Mastery Policy

Adding a 1-digit number to a 2-digit number not bridging a 10

Add the 1s to find the total. Use known bonds within 10.



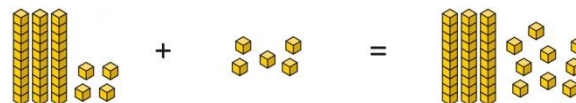
41 is 4 tens and 1 one.

41 add 6 ones is 4 tens and 7 ones.

This can also be done in a place value grid.

T	O

Add the 1s.



34 is 3 tens and 4 ones.

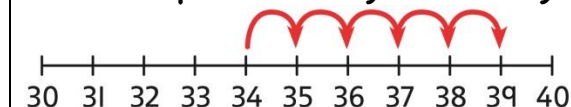
4 ones and 5 ones are 9 ones.

The total is 3 tens and 9 ones.

T	O

Add the 1s.

Understand the link between counting on and using known number facts. Children should be encouraged to use known number bonds to improve efficiency and accuracy.



This can be represented horizontally or vertically.

$$34 + 5 = 39 \quad \text{or} \quad \begin{array}{|c|c|} \hline \text{T} & \text{O} \\ \hline 3 & 4 \\ + & 5 \\ \hline & 9 \\ \hline \end{array}$$

Adding a 1-digit number to a 2-digit number bridging 10

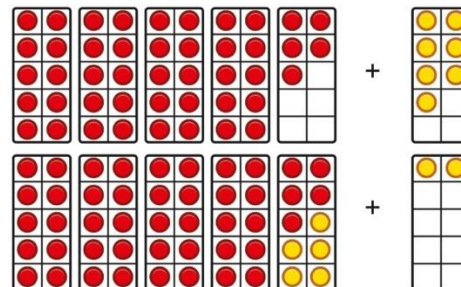
Complete a 10 using number bonds.



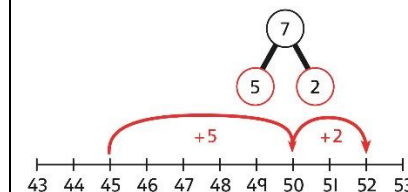
There are 4 tens and 5 ones.

I need to add 7. I will use 5 to complete a 10, then add 2 more.

Complete a 10 using number bonds.



Complete a 10 using number bonds.



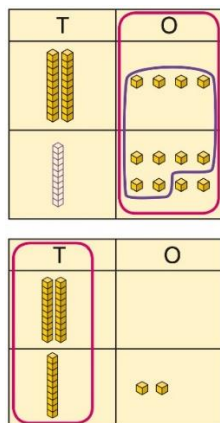
$$7 = 5 + 2$$

$$45 + 5 + 2 = 52$$

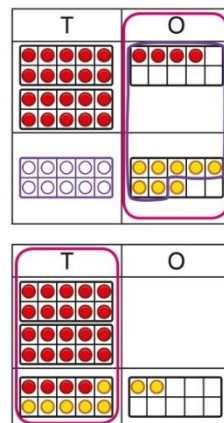
Maths Mastery Policy

Adding a 1-digit number to a 2-digit number using exchange

Exchange 10 ones for 1 ten.



Exchange 10 ones for 1 ten.



Exchange 10 ones for 1 ten.



Adding a multiple of 10 to a 2-digit number

Add the 10s and then recombine.



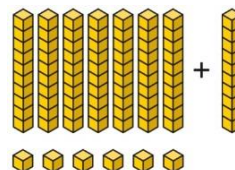
27 is 2 tens and 7 ones.

50 is 5 tens.

There are 7 tens in total and 7 ones.

So, 27 + 50 is 7 tens and 7 ones.

Add the 10s and then recombine.



66 is 6 tens and 6 ones.

66 + 10 = 76

A 100 square can support this understanding.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Add the 10s and then recombine.

37 + 20 = ?

30 + 20 = 50

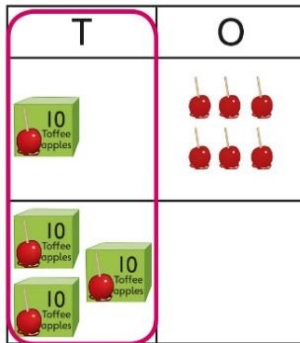
50 + 7 = 57

37 + 20 = 57

Maths Mastery Policy

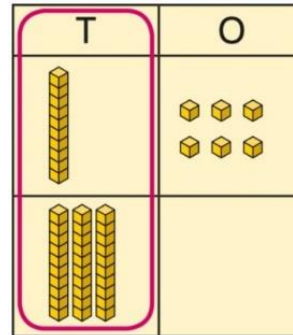
Adding a multiple of 10 to a 2-digit number using columns

Add the 10s using a place value grid to support.



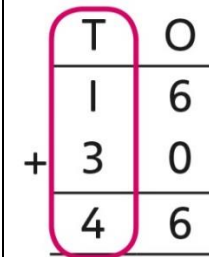
*16 is 1 ten and 6 ones.
30 is 3 tens.
There are 4 tens and 6 ones in total.*

Add the 10s using a place value grid to support.



*16 is 1 ten and 6 ones.
30 is 3 tens.
There are 4 tens and 6 ones in total.*

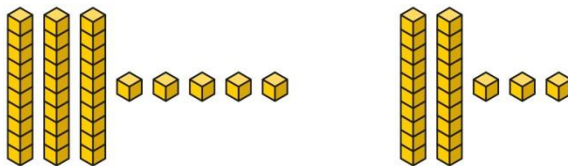
Add the 10s represented vertically. Children must understand how the method relates to unitising of 10s and place value.



*1 + 3 = 4
1 ten + 3 tens = 4 tens
16 + 30 = 46*

Adding two 2-digit numbers

Add the 10s and 1s separately.

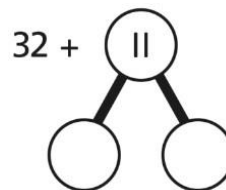


*5 + 3 = 8
There are 8 ones in total.*

*3 + 2 = 5
There are 5 tens in total.*

35 + 23 = 58

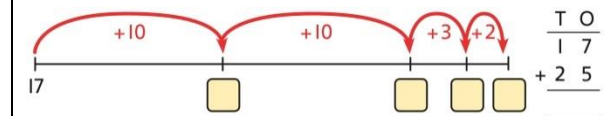
Add the 10s and 1s separately. Use a part-whole model to support.



*11 = 10 + 1
32 + 10 = 42
42 + 1 = 43*

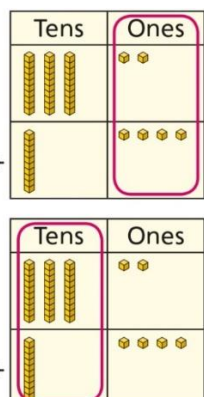
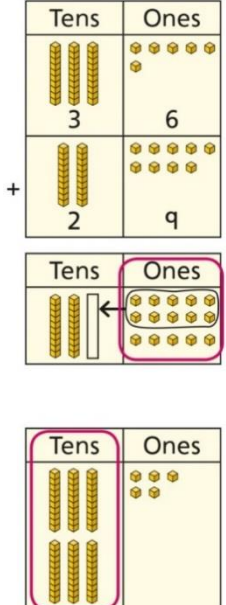
32 + 11 = 43

Add the 10s and the 1s separately, bridging 10s where required. A number line can support the calculations.



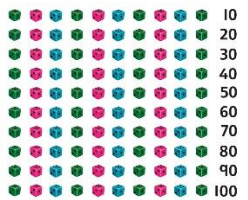
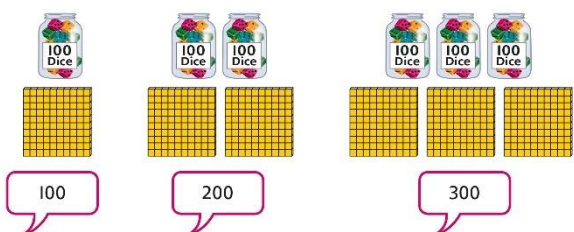
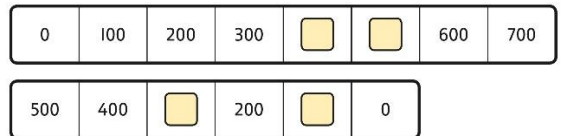
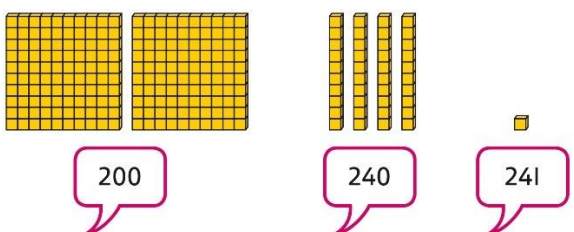
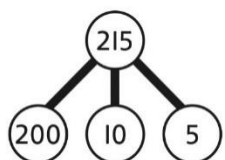
17 + 25

Maths Mastery Policy

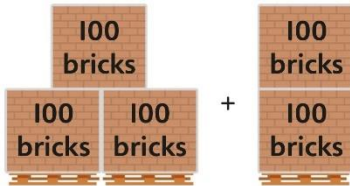
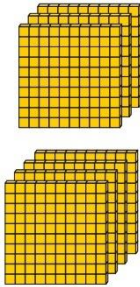
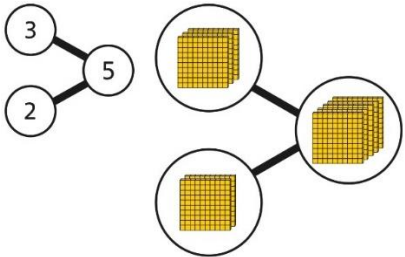
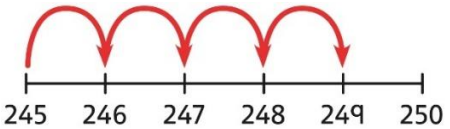
Adding two 2-digit numbers using a place value grid	Add the 1s. Then add the 10s. 		Add the 1s. Then add the 10s. $\begin{array}{r} \text{T} \quad \text{O} \\ 3 \quad 2 \\ + 1 \quad 4 \\ \hline \end{array}$ $\begin{array}{r} \text{T} \quad \text{O} \\ 3 \quad 2 \\ + 1 \quad 4 \\ \hline 4 \quad 6 \end{array}$
Adding two 2-digit numbers with exchange	Add the 1s. Exchange 10 ones for a ten. Then add the 10s. 		Add the 1s. Exchange 10 ones for a ten. Then add the 10s. $\begin{array}{r} \text{T} \quad \text{O} \\ 3 \quad 6 \\ + 2 \quad 9 \\ \hline \end{array}$ $\begin{array}{r} \text{T} \quad \text{O} \\ 3 \quad 6 \\ + 2 \quad 9 \\ \hline 6 \quad 5 \end{array}$

Maths Mastery Policy

YEAR 3 ADDITION

	CONCRETE	PICTORIAL	ABSTRACT
Understanding 100s	Understand the cardinality of 100, and the link with 10 tens. Use cubes to place into groups of 10 tens. 	Unitise 100 and count in steps of 100. 	Represent steps of 100 on a number line and a number track and count up to 1,000 and back to 0. 
Understanding place value to 1,000	Unitise 100s, 10s and 1s to build 3-digit numbers. 	Use equipment to represent numbers to 1,000.  Use a place value grid to support the structure of numbers to 1,000. Place value counters are used alongside other equipment. Children should understand how each counter represents a different unitised amount.	Represent the parts of numbers to 1,000 using a part-whole model.  $215 = 200 + 10 + 5$ Recognise numbers to 1,000 represented on a number line, including those between intervals.

Maths Mastery Policy

Adding 100s	Use known facts and unitising to add multiples of 100.  $3 + 2 = 5$ $3 \text{ hundreds} + 2 \text{ hundreds} = 5 \text{ hundreds}$ $300 + 200 = 500$	Use known facts and unitising to add multiples of 100.  $3 + 4 = 7$ $3 \text{ hundreds} + 4 \text{ hundreds} = 7 \text{ hundreds}$ $300 + 400 = 700$	Use known facts and unitising to add multiples of 100. Represent the addition on a number line. Use a part-whole model to support unitising.  $3 + 2 = 5$ $300 + 200 = 500$												
3-digit number + 1s, no exchange or bridging	Use number bonds to add the 1s.  $214 + 4 = ?$ Now there are 4 + 4 ones in total. $4 + 4 = 8$ $214 + 4 = 218$	Use number bonds to add the 1s. <table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td>2</td><td>4</td><td>9</td></tr></table> Use number bonds to add the 1s. $5 + 4 = 9$ $245 + 4$ $5 + 4 = 9$ $245 + 4 = 249$	H	T	O							2	4	9	Understand the link with counting on. $245 + 4$  Use number bonds to add the 1s and understand that this is more efficient and less prone to error. $245 + 4 = ?$ I will add the 1s. $5 + 4 = 9$ So, $245 + 4 = 249$
H	T	O													
2	4	9													

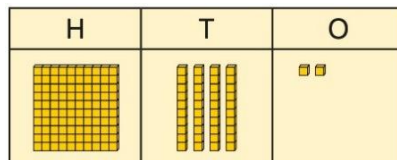
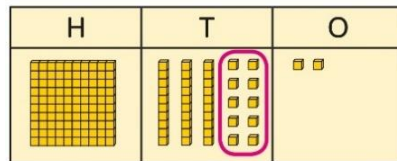
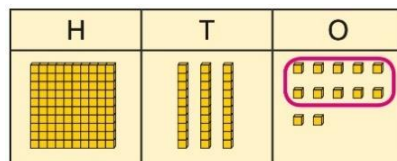
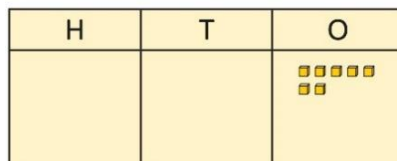
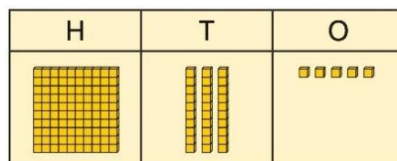
Maths Mastery Policy

3-digit number + 1s with exchange

Understand that when the 1s sum to 10 or more, this requires an exchange of 10 ones for 1 ten.

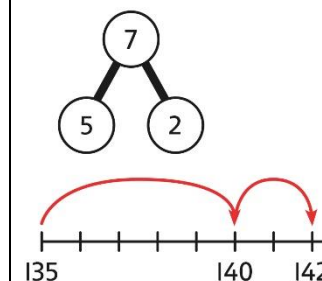
Children should explore this using unitised objects or physical apparatus.

Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding.



$$135 + 7 = 142$$

Understand how to bridge by partitioning to the 1s to make the next 10.



$$135 + 7 = ?$$

$$135 + 5 + 2 = 142$$

Ensure that children understand how to add 1s bridging a 100.

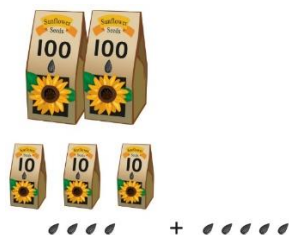
$$198 + 5 = ?$$

$$198 + 2 + 3 = 203$$

Maths Mastery Policy

**3-digit
number + 10s,
no exchange**

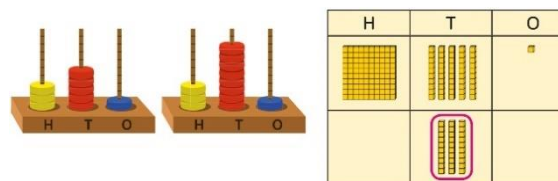
Calculate mentally by forming the number bond for the 10s.



$234 + 50$
There are 3 tens and 5 tens altogether.
 $3 + 5 = 8$
In total there are 8 tens.
 $234 + 50 = 284$

Calculate mentally by forming the number bond for the 10s.

$$351 + 30 = ?$$



$5 \text{ tens} + 3 \text{ tens} = 8 \text{ tens}$
 $351 + 30 = 381$

Calculate mentally by forming the number bond for the 10s.

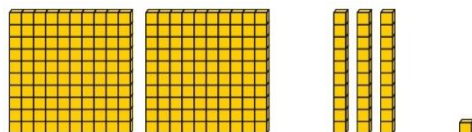
$$753 + 40$$

I know that $5 + 4 = 9$

So, $50 + 40 = 90$
 $753 + 40 = 793$

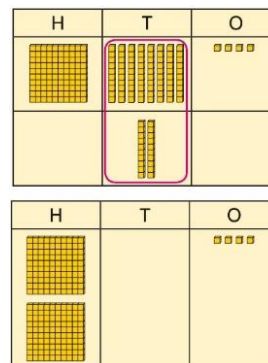
**3-digit
number + 10s,
with exchange**

Understand the exchange of 10 tens for 1 hundred.



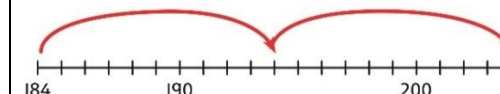
Add by exchanging 10 tens for 1 hundred.

$$184 + 20 = ?$$



$$184 + 20 = 204$$

Understand how the addition relates to counting on in 10s across 100.



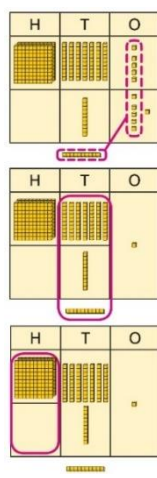
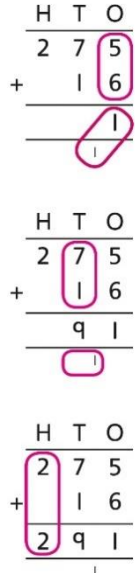
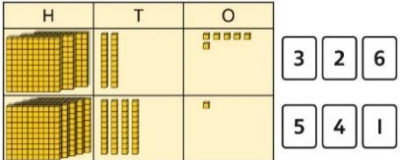
$$184 + 20 = ?$$

I can count in 10s ... 194 ... 204
 $184 + 20 = 204$

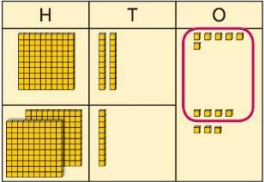
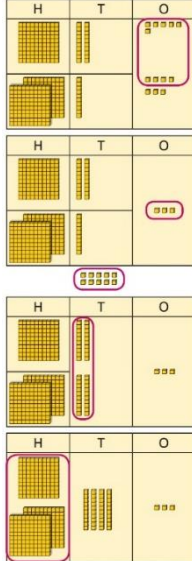
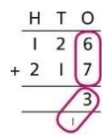
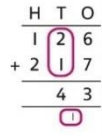
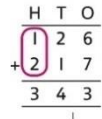
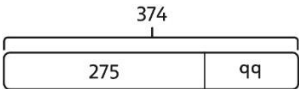
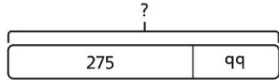
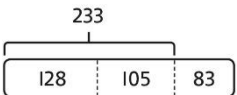
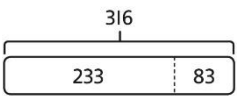
Use number bonds within 20 to support efficient mental calculations.

$385 + 50$
There are 8 tens and 5 tens.
That is 13 tens.
 $385 + 50 = 300 + 130 + 5$
 $385 + 50 = 435$

Maths Mastery Policy

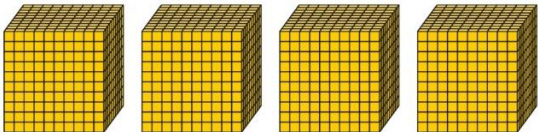
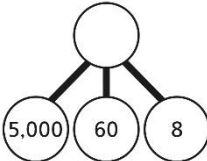
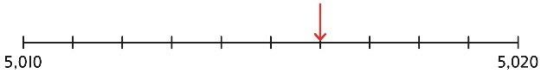
3-digit number + 2-digit number	Use place value equipment to make and combine groups to model addition. 	Use a place value grid to organise thinking and adding of 1s, then 10s.	Use the vertical column method to represent the addition. Children must understand how this relates to place value at each stage of the calculation.
3-digit number + 2-digit number, exchange required	Use place value equipment to model addition and understand where exchange is required. <i>Use place value counters to represent $154 + 72$.</i> <i>Use this to decide if any exchange is required.</i> <i>There are 5 tens and 7 tens. That is 12 tens so I will exchange.</i>	Represent the required exchange on a place value grid using equipment. $275 + 16 = ?$  $275 + 16 = 291$ Note: In this example, a mental method may be more efficient. The numbers for the example calculation have been chosen to allow children to visualise the concept and see how the method relates to place value. Children should be encouraged at every stage to select methods that are accurate and efficient.	Use a column method with exchange. Children must understand how the method relates to place value at each stage of the calculation. $275 + 16 = 291$ 
3-digit number + 3-digit number, no exchange	Use place value equipment to make a representation of a calculation. This may or may not be structured in a place value grid. $326 + 541$ is represented as: 	Represent the place value grid with equipment to model the stages of column addition.	Use a column method to solve efficiently, using known bonds. Children must understand how this relates to place value at every stage of the calculation.

Maths Mastery Policy

3-digit number + 3-digit number, exchange required	Use place value equipment to enact the exchange required.  <i>There are 13 ones. I will exchange 10 ones for 1 ten.</i>	Model the stages of column addition using place value equipment on a place value grid. 	Use column addition, ensuring understanding of place value at every stage of the calculation.  $126 + 217 = 343$ Note: Children should also study examples where exchange is required in more than one column, for example $185 + 318 = ?$  
Representing addition problems, and selecting appropriate methods	Encourage children to use their own drawings and choices of place value equipment to represent problems with one or more steps. These representations will help them to select appropriate methods.	Children understand and create bar models to represent addition problems. $275 + 99 = ?$  $275 + 99 = 374$	Use representations to support choices of appropriate methods.  <i>I will add 100, then subtract 1 to find the solution.</i> $128 + 105 + 83 = ?$ <i>I need to add three numbers.</i>  

Maths Mastery Policy

YEAR 4 ADDITION

	CONCRETE	PICTORIAL	ABSTRACT												
Understanding numbers to 10,000	Use place value equipment to understand the place value of 4-digit numbers.  <i>4 thousands equal 4,000.</i> <i>1 thousand is 10 hundreds.</i>	Represent numbers using place value counters once children understand the relationship between 1,000s and 100s.  $2,000 + 500 + 40 + 2 = 2,542$	Understand partitioning of 4-digit numbers, including numbers with digits of 0.  $5,000 + 60 + 8 = 5,068$ Understand and read 4-digit numbers on a number line. 												
Choosing mental methods where appropriate	Use unitising and known facts to support mental calculations. <i>Make 1,405 from place value equipment.</i> <i>Add 2,000.</i> <i>Now add the 1,000s.</i> <i>1 thousand + 2 thousands = 3 thousands</i> $1,405 + 2,000 = 3,405$	Use unitising and known facts to support mental calculations. <table border="1" data-bbox="952 1070 1503 1230"> <thead> <tr> <th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </tbody> </table> <i>I can add the 100s mentally.</i> $200 + 300 = 500$ <i>So, $4,256 + 300 = 4,556$</i>	Th	H	T	O									Use unitising and known facts to support mental calculations. $4,256 + 300 = ?$ $2 + 3 = 5 \quad 200 + 300 = 500$ $4,256 + 300 = 4,556$
Th	H	T	O												
															
															

Maths Mastery Policy

Column addition with exchange

Use place value equipment on a place value grid to organise thinking.

Ensure that children understand how the columns relate to place value and what to do if the numbers are not all 4-digit numbers.

Use equipment to show $1,905 + 775$.

Th	H	T	O
1000	900 900 900 900		50 50 50 50
	700 700	70 70 70 70	50 50 50 50

Why have only three columns been used for the second row? Why is the Thousands box empty?

Which columns will total 10 or more?

Use place value equipment to model required exchanges.

Th	H	T	O
1000	900 900 900 900	50 50 50 50	50 50 50 50
1000 1000 1000 1000	700 700	70 70 70 70	50 50 50 50

Th	H	T	O
1000	900 900 900 900	50 50 50 50	
1000 1000 1000 1000	700 700	70 70 70 70	50

Th	H	T	O
1000	900 900 900 900	50 50 50 50	
1000 1000 1000 1000	700 700	70 70 70 70	50

Th	H	T	O
1000	900 900 900 900	50 50 50 50	
1000 1000 1000 1000	700 700	70 70 70 70	50

Include examples that exchange in more than one column.

Use a column method to add, including exchanges.

Th	H	T	O
1	5	5	4
+ 4	2	3	7
			1

Th	H	T	O
1	5	5	4
+ 4	2	3	7
		9	1

Th	H	T	O
1	5	5	4
+ 4	2	3	7
	7	9	1

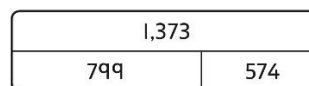
Th	H	T	O
1	5	5	4
+ 4	2	3	7
5	7	9	1

Include examples that exchange in more than one column.

Maths Mastery Policy

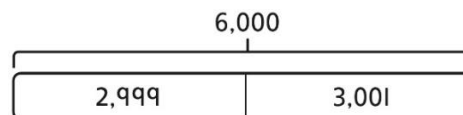
Representing additions and checking strategies

Bar models may be used to represent additions in problem contexts, and to justify mental methods where appropriate.



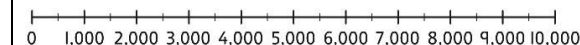
Th	H	T	O
	7	9	9
+	5	7	4
	1	3	7
			3

I chose to work out $574 + 800$, then subtract 1.



This is equivalent to $3,000 + 3,000$.

Use rounding and estimating on a number line to check the reasonableness of an addition.

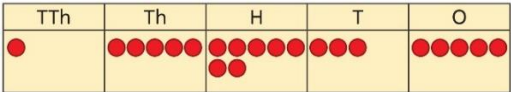
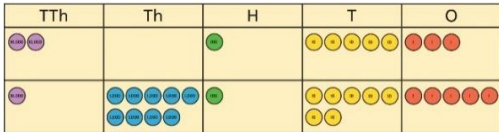
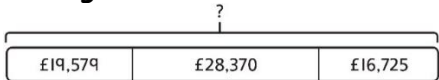


$912 + 6,149 = ?$

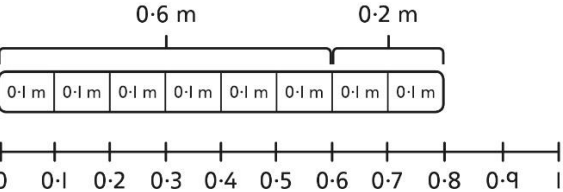
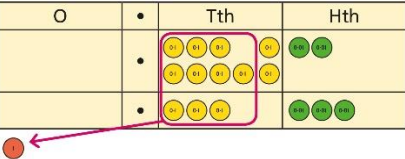
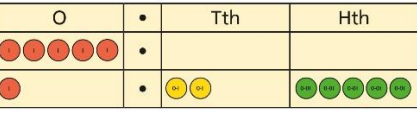
I used rounding to work out that the answer should be approximately $1,000 + 6,000 = 7,000$.

Maths Mastery Policy

YEAR 5 ADDITION

	CONCRETE	PICTORIAL	ABSTRACT
Column addition with whole numbers	Use place value equipment to represent additions. <i>Add a row of counters onto the place value grid to show $15,735 + 4,012$.</i> 	Represent additions, using place value equipment on a place value grid alongside written methods.  <i>I need to exchange 10 tens for a 100.</i> $\begin{array}{r} \text{TTh} \text{ Th} \text{ H} \text{ T} \text{ O} \\ 2 \quad 0 \quad 1 \quad 5 \quad 3 \\ + 1 \quad 9 \quad 1 \quad 7 \quad 5 \\ \hline 3 \quad 9 \quad 3 \quad 2 \quad 8 \end{array}$	Use column addition, including exchanges. $\begin{array}{r} \text{TTh} \text{ Th} \text{ H} \text{ T} \text{ O} \\ 1 \quad 9 \quad 1 \quad 7 \quad 5 \\ + 1 \quad 8 \quad 4 \quad 1 \quad 7 \\ \hline 3 \quad 7 \quad 5 \quad 9 \quad 2 \end{array}$
Representing additions		Bar models represent addition of two or more numbers in the context of problem solving.  Jen: £2,600 Holly: £2,600, £1,450 £4,050 $\begin{array}{r} \text{Th} \text{ H} \text{ T} \text{ O} \\ 2 \quad 6 \quad 0 \quad 0 \\ + 1 \quad 4 \quad 5 \quad 0 \\ \hline 4 \quad 0 \quad 5 \quad 0 \end{array}$ $\begin{array}{r} \text{Th} \text{ H} \text{ T} \text{ O} \\ 2 \quad 6 \quad 0 \quad 0 \\ + 4 \quad 0 \quad 5 \quad 0 \\ \hline 6 \quad 6 \quad 5 \quad 0 \end{array}$	Use approximation to check whether answers are reasonable. $\begin{array}{r} \text{TTh} \text{ Th} \text{ H} \text{ T} \text{ O} \\ 2 \quad 3 \quad 4 \quad 0 \quad 5 \\ + \quad 7 \quad 8 \quad 9 \quad 2 \\ \hline 2 \quad 0 \quad 2 \quad 9 \quad 7 \end{array}$ $\begin{array}{r} \text{TTh} \text{ Th} \text{ H} \text{ T} \text{ O} \\ 2 \quad 3 \quad 4 \quad 0 \quad 5 \\ + \quad 7 \quad 8 \quad 9 \quad 2 \\ \hline 3 \quad 1 \quad 2 \quad 9 \quad 7 \end{array}$ <i>I will use $23,000 + 8,000$ to check.</i>

Maths Mastery Policy

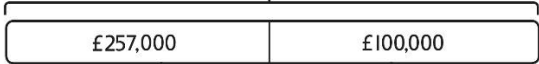
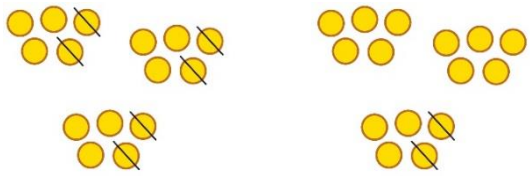
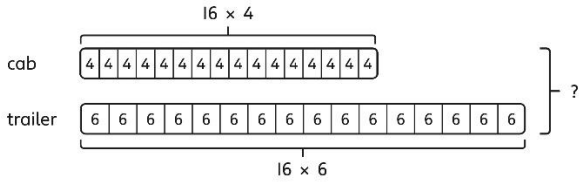
Adding tenths	Link measure with addition of decimals. <i>Two lengths of fencing are 0.6 m and 0.2 m.</i> <i>How long are they when added together?</i> 	Use a bar model with a number line to add tenths.  $0.6 + 0.2 = 0.8$ 6 tenths + 2 tenths = 8 tenths	Understand the link with adding fractions. $\frac{6}{10} + \frac{2}{10} = \frac{8}{10}$ <i>6 tenths + 2 tenths = 8 tenths</i> $0.6 + 0.2 = 0.8$
Adding decimals using column addition	Use place value equipment to represent additions. <i>Show $0.23 + 0.45$ using place value counters.</i>	Use place value equipment on a place value grid to represent additions. Represent exchange where necessary.  Include examples where the numbers of decimal places are different. 	Add using a column method, ensuring that children understand the link with place value. $\begin{array}{r} 0.23 \\ + 0.45 \\ \hline 0.68 \end{array}$ Include exchange where required, alongside an understanding of place value. $\begin{array}{r} 0.23 \\ + 0.45 \\ \hline 0.68 \end{array}$ Include additions where the numbers of decimal places are different. $3.4 + 0.65 = ?$ $\begin{array}{r} 3.40 \\ + 0.65 \\ \hline 4.05 \end{array}$

Maths Mastery Policy

YEAR 6 ADDITION

	CONCRETE	PICTORIAL	ABSTRACT																																																																																																																																													
Comparing and selecting efficient methods	Represent 7-digit numbers on a place value grid, and use this to support thinking and mental methods. <table><tr><td>M</td><td>HTh</td><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td>●●</td><td>●●●●</td><td>●</td><td>●</td><td>●●●</td><td></td><td>●</td></tr></table>	M	HTh	TTh	Th	H	T	O	●●	●●●●	●	●	●●●		●	Discuss similarities and differences between methods, and choose efficient methods based on the specific calculation. Compare written and mental methods alongside place value representations. + 3,000 + 500 + 20 + 2 40,265 43,265 <table><tr><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td>●●●●</td><td></td><td>●●</td><td>●●●●●</td><td>●●●●●</td></tr><tr><td></td><td>●●●</td><td>●●●●●</td><td>●●</td><td>●●</td></tr></table> <table><tr><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td>4</td><td>0</td><td>2</td><td>6</td><td>5</td></tr><tr><td>+</td><td>3</td><td>5</td><td>2</td><td>2</td></tr><tr><td colspan="5"></td></tr></table>	TTh	Th	H	T	O	●●●●		●●	●●●●●	●●●●●		●●●	●●●●●	●●	●●	TTh	Th	H	T	O	4	0	2	6	5	+	3	5	2	2						Use column addition where mental methods are not efficient. Recognise common errors with column addition. 32,145 + 4,302 = ? <table><tr><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td>3</td><td>2</td><td>1</td><td>4</td><td>5</td></tr><tr><td>+</td><td>4</td><td>3</td><td>0</td><td>2</td></tr><tr><td colspan="5"> </td></tr><tr><td>3</td><td>6</td><td>4</td><td>4</td><td>7</td></tr></table> <table><tr><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td>3</td><td>2</td><td>1</td><td>4</td><td>5</td></tr><tr><td>+</td><td>4</td><td>3</td><td>0</td><td>2</td></tr><tr><td colspan="5"> </td></tr><tr><td>7</td><td>5</td><td>1</td><td>6</td><td>5</td></tr></table> Which method has been completed accurately? What mistake has been made? Column methods are also used for decimal additions where mental methods are not efficient. <table><tr><td>H</td><td>T</td><td>O</td><td>·</td><td>Tth</td><td>Hth</td></tr><tr><td>1</td><td>4</td><td>0</td><td>·</td><td>0</td><td>9</td></tr><tr><td>+</td><td>4</td><td>9</td><td>·</td><td>8</td><td>9</td></tr><tr><td colspan="6"> </td></tr><tr><td>1</td><td>8</td><td>9</td><td>·</td><td>9</td><td>8</td></tr><tr><td colspan="6"> </td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>1</td></tr></table>	TTh	Th	H	T	O	3	2	1	4	5	+	4	3	0	2						3	6	4	4	7	TTh	Th	H	T	O	3	2	1	4	5	+	4	3	0	2						7	5	1	6	5	H	T	O	·	Tth	Hth	1	4	0	·	0	9	+	4	9	·	8	9							1	8	9	·	9	8												1
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Maths Mastery Policy

Selecting mental methods for larger numbers where appropriate	Represent 7-digit numbers on a place value grid, and use this to support thinking and mental methods.  $2,411,301 + 500,000 = ?$ <i>This would be 5 more counters in the HTh place.</i> <i>So, the total is 2,911,301.</i> $2,411,301 + 500,000 = 2,911,301$	Use a bar model to support thinking in addition problems. $257,000 + 99,000 = ?$  <i>I added 100 thousands then subtracted 1 thousand.</i> $257 \text{ thousands} + 100 \text{ thousands} = 357 \text{ thousands}$ $257,000 + 100,000 = 357,000$ $357,000 - 1,000 = 356,000$ <i>So, $257,000 + 99,000 = 356,000$</i>	Use place value and unitising to support mental calculations with larger numbers. $195,000 + 6,000 = ?$ $195 + 5 + 1 = 201$ $195 \text{ thousands} + 6 \text{ thousands} = 201 \text{ thousands}$ <i>So, $195,000 + 6,000 = 201,000$</i>
Understanding order of operations in calculations	Use equipment to model different interpretations of a calculation with more than one operation. Explore different results.  $3 \times 5 - 2$ $3 \times 3 = 9$ $3 \times 5 - 2$ $15 - 2 = 13$ $3 \times 5 - 2 = ?$	Model calculations using a bar model to demonstrate the correct order of operations in multi-step calculations.  This can be written as: $16 \times 4 + 16 \times 6$ $16 \times 4 + 16 \times 6$ $64 + 96 = 160$	Understand the correct order of operations in calculations without brackets. Understand how brackets affect the order of operations in a calculation. $4 + 6 \times 16$ $4 + 96 = 100$ $(4 + 6) \times 16$ $10 \times 16 = 160$