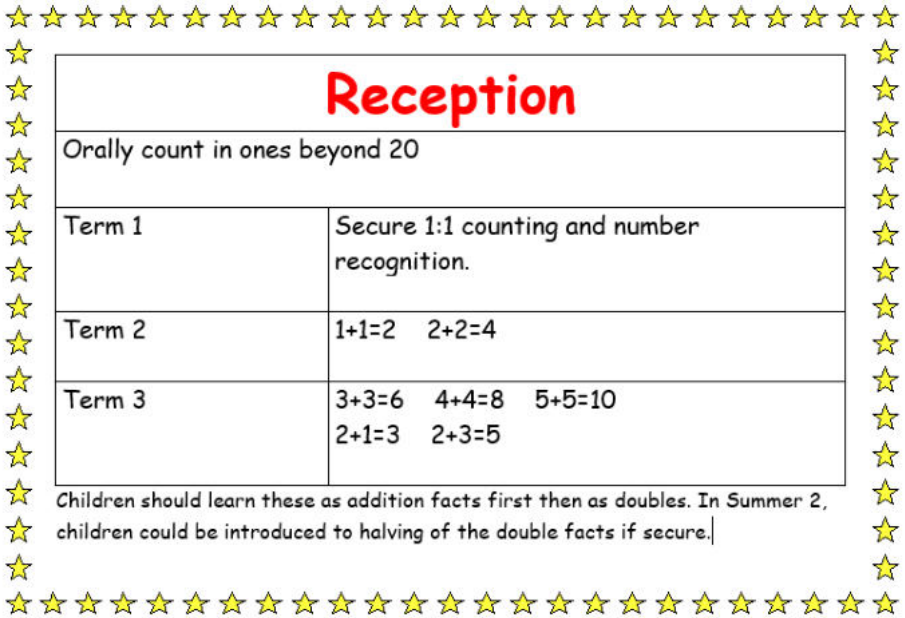
Addition Calculation Policy

Early Years

Learn its



Reception	
Orally count in ones beyond 20	
Term 1	Secure 1:1 counting and number recognition.
Term 2	1+1=2 2+2=4
Term 3	3+3=6 4+4=8 5+5=10 2+1=3 2+3=5

Children should learn these as addition facts first then as doubles. In Summer 2, children could be introduced to halving of the double facts if secure.

Vocab for Addition: Total, add, equals, groups, altogether, more

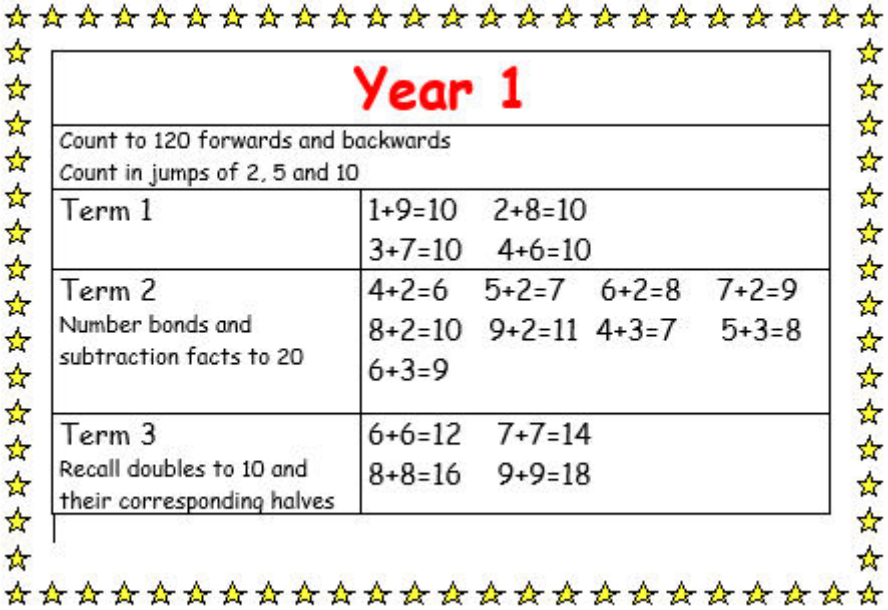
	Steps in learning for addition	Explanatory note
Using quantities and objects, add two single digit numbers and count on to find the answer. **Link to New ELG 2021: To automatically recall number bonds to 5 and some number bonds to ten**	1. **I know when to add some more** See that there are a group of objects Know that when we add some more we place/ add other objects to the group See that there must be a greater amount when they add more. 2. **I know to find the total** Have two groups of objects Look at how many there are in the first group Also look at how many there are in the second group Which group has more or less? Know that when they put them altogether it's the total.	1. When pouring water or counting objects, say shall we add some more and the child understands that there is now a greater amount than before. 2. Teach the child to find the total by asking how many altogether and telling the child to push the two groups together- this is the total.

	They do not need to find the answer/ count the total amount at this stage. 3. **I can find and make the right amount and can count how many altogether to find the total** Orally say a number sentence 3 add 2 Make the first group of 3 Make the second group of 2 Put the two groups together to find the total or how many there all altogether Put the objects in the total in a line Count how many altogether to find the answer 4. **I can read a number sentence 3+4=** Read your number sentence Say add for + (see vocab) Say equals for = (see vocab) 5. **I can arrange a number sentence** Read the number sentence Set out the number of objects for the sentence 6. **I can solve a number sentence** Read the number sentence Set out the number of objects Add the two amount together Count how many altogether 7. **I can solve addition on a number line e.g. 5 + 3 =** Find the starting number and circle it e.g. 3 Count on the right amount e.g. 3 jumps above the line Do one jump for each number	3. Children need to be able to count to 10 with 1 to 1 correspondence at this stage. They should count out two piles ready to add (different colours help) and they should move the second pile to the first so they can see that there is a greater amount than at the start. This is the next step in understanding that there is a process to adding and finding a total. It is important that children learn to put the objects in a line to ensure accurate 1:1 counting 4. Children should be taught the terms add and equals and be able to read number sentences on flashcards 5. Children could use blocks or play objects to make the number sentence and should be taught to set out the calculation. 4 + 2 = ... + .. = 6. As above but finding the total as well. Children put all the steps they have learnt so far together to add 1d + 1d numbers with a total to 10. 7. Use numbered number lines e.g. 4 + 3 = 

	See where you have landed- this is the answer/ total amount Total up to 10 8. Follow Y1 expectations for number lines to find totals to 20 and for adding 1d + 1d using counting on in head strategy.	

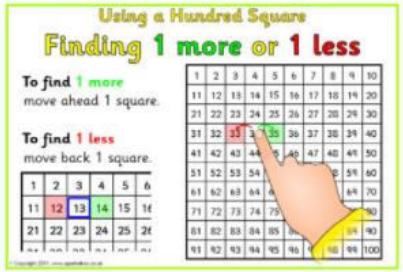
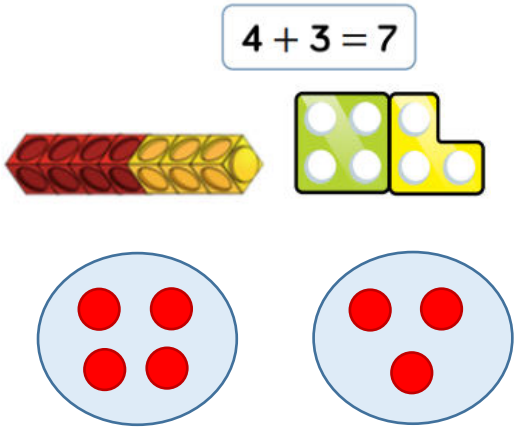
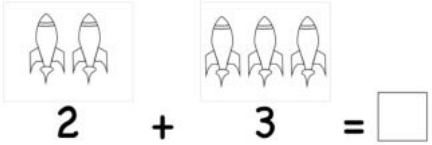
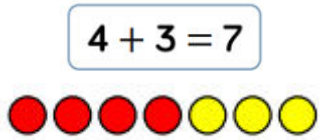
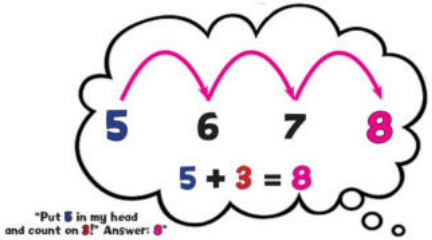
Year 1

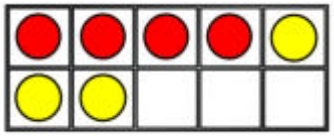
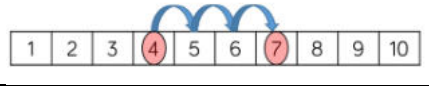
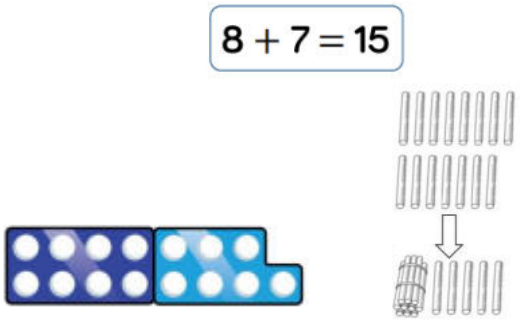
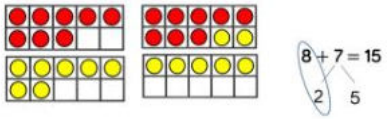
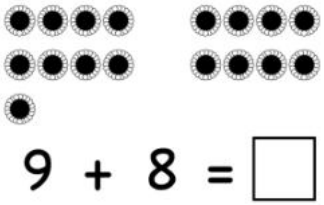
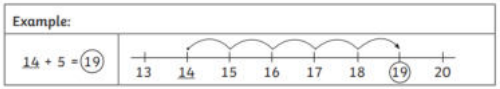
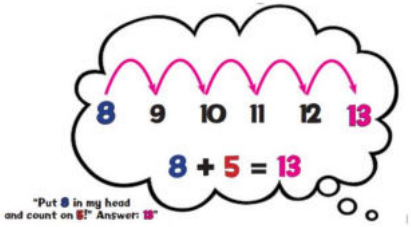
Learn its

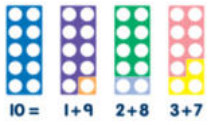


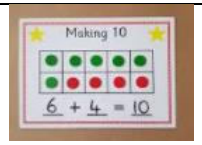
Year 1	
Count to 120 forwards and backwards Count in jumps of 2, 5 and 10	
Term 1	1+9=10 2+8=10 3+7=10 4+6=10
Term 2 Number bonds and subtraction facts to 20	4+2=6 5+2=7 6+2=8 7+2=9 8+2=10 9+2=11 4+3=7 5+3=8 6+3=9
Term 3 Recall doubles to 10 and their corresponding halves	6+6=12 7+7=14 8+8=16 9+9=18

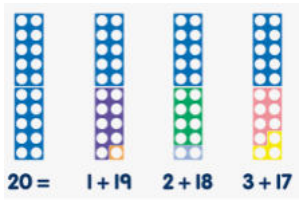
	Concrete and practical resources	Pictorial / Jottings	Abstract
Add 1 more to a number	Children add one more object to a group to find one more.	Use a number line or stick to find one more	Link to counting forwards to 100, children to be able mentally add one more by saying the next number in the count up to 100

	 *One more than 4 is 5.*	 Using a hundred square to find one more  Link orally counting on in ones to finding one more Link to one more being the next number in the count Link to change in ones digit	e.g. 18 + 1 = 9 45 + 1 = 46 79 + 1 = 80
Add two 1 digit numbers to 10 **e.g. 4 + 3 = 7** **Linked to read, write and interpret mathematical statements involving addition + and equals =**	Use practical resources such as cubes, counters, beads and numicon (refer back if needed to EY steps when adding 1d + 1d numbers) 	<u>Pictorial</u>  <u>Jottings</u> 	<u>Counting on mentally</u> Putting larger number in your head in and counting on, on fingers. e.g. 5 + 3 =  • Put largest number in your head

	Count them all together to find the total. Children must have accurate 1:1 correspondence for this.  Tens frames to encourage counting on	Drawing spots/ circles to represent objects then count how many altogether <u>Number lines/ Tracks</u> Begin to introduce counting on from the larger number using visuals of a number line e.g. 4 + 3 =  	• Hold up the number of fingers to be added on • Count on for each finger
Add 1 and 2 digit numbers to 20, including adding zero **e.g 8 + 7 = or 14 + 5 =**	Use numicon, counter, base ten, straws to represent the digits and count them all together  Tens frames can also be useful to see link to number bonds.  	<u>Pictorial</u>  <u>Jottings</u>- Draw spots/circles to represent the numbers in the number sentence and count them all. <u>Number lines</u> Find the starting number and count on  	<u>Counting on mentally</u> Putting the larger number in your head and counting on, on fingers (See above)  • Put largest number in your head • Hold up the number of fingers to be added on • Count on for each finger
Develop fluency in + facts within 10	Use numicon or tens frames to explore number bonds to 10 and represent number bonds to 20	<u>Pictorial</u> Draw in the missing objects/ spots and write the number sentence to 10	<u>Mental recall</u> Look for patterns in number bonds to aid recall.

<table>
<tr>
<td>Linked to Represent and use number bonds within 20</td>
<td> 

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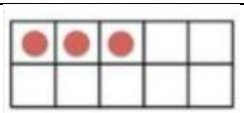
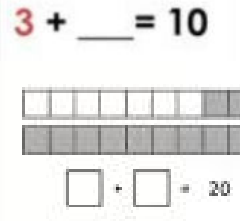
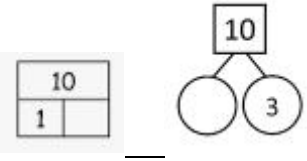
<td> 

</td>
<td>Learn facts and recall mentally (Link to learn its 4 + 6 = 10)
Use mental recall to complete sums with missing amounts e.g.
 

Use and apply number bonds to ten facts to learn number bonds to 20 facts.</td>
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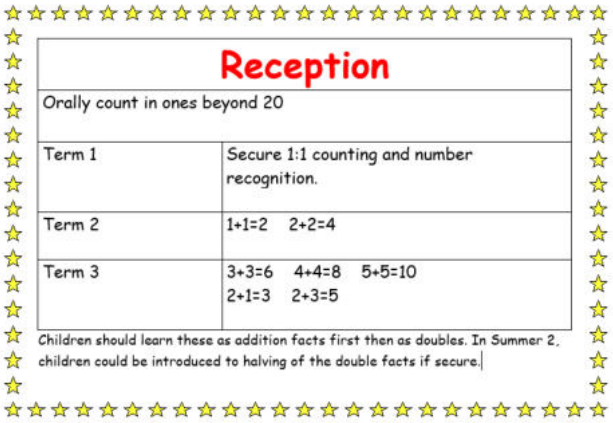
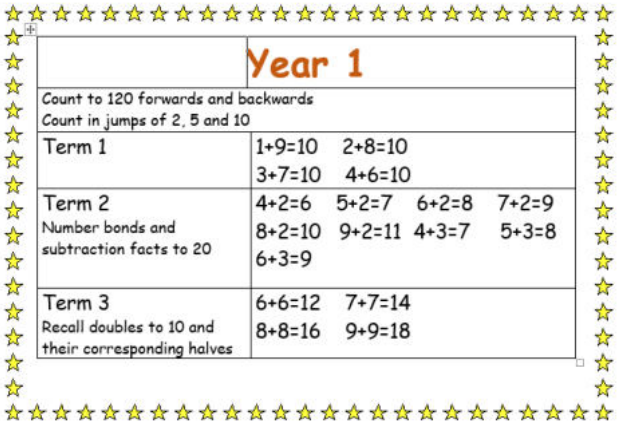
<tr>
<td>Know doubles up to double 10

e.g 4 + 4 = 8</td>
<td colspan="3">Learn it facts
 



Show learn it facts using numicon and pictorially first</td>
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<tr>
<td colspan="4">Year 2</td>
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<tr>
<td colspan="4"><u>Learn its</u></td>
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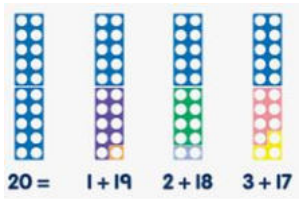
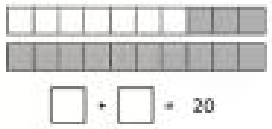
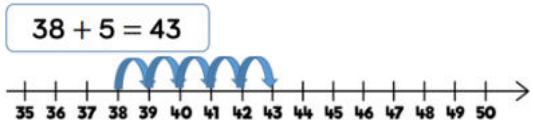
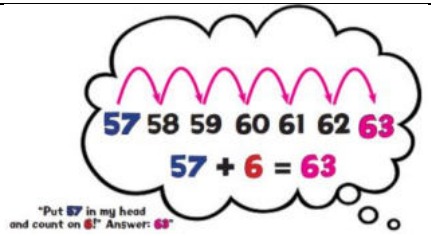
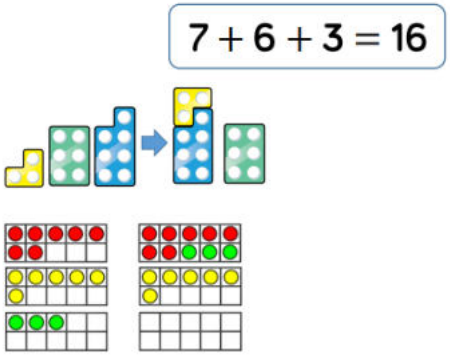
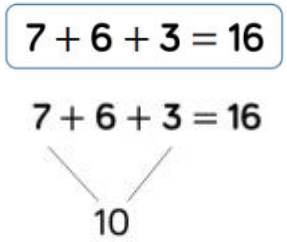
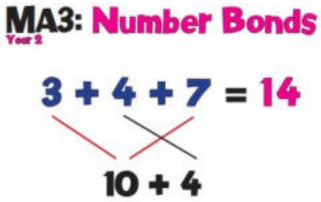
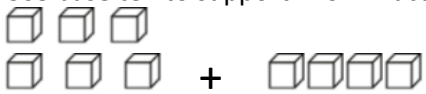
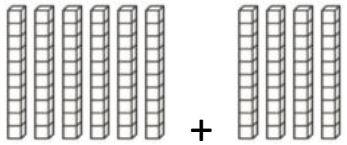
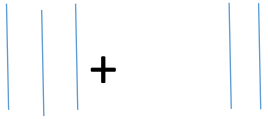
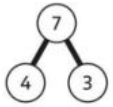
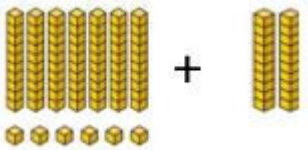
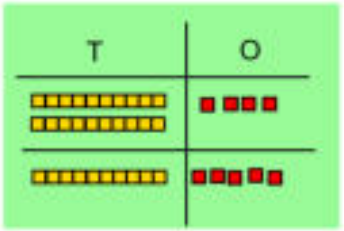
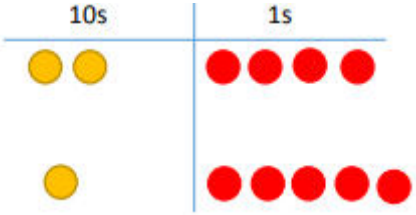
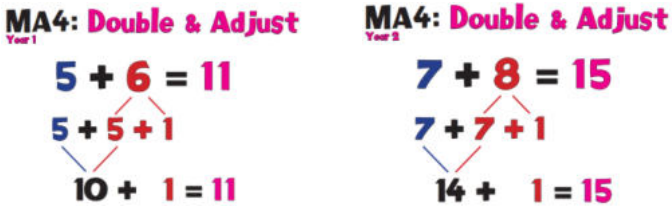
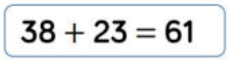
Year 2

Count forwards and backwards in jumps of 2, 5 and 10 from any number Count forwards and backwards in jumps of 3 from zero Derive related facts to 100 e.g. 90+10=100 100-80=20 Recognise odd and even numbers Derive halves and doubles of simple 2d numbers	
Term 1 Recall addition and subtraction facts to 20	Learn the 10x tables and related division facts 4+7=11 4+8=12 4+9=13 3+8=11 3+9=12
Term 2 Recall addition and subtraction facts to 20	Learn the 5x tables and related division facts 5+4=9 5+6=11 6+7=13 8+7=15 8+9=17
Term 3 Recall addition and subtraction facts to 20	Learn the 2x tables and related division facts 5+7=12 5+8=13 6+8=14 5+9=14 6+9=15 7+9=16

	Concrete and practical resources	Pictorial / Jottings	Abstract
Recall and use addition facts to 20	Use numicon to find bonds to 20 	Draw in the missing objects/look at the spots and write the number sentence to 20 	Use and apply number bonds to ten facts to explore number bonds to 20 facts e.g. if 3 + 7 = 10 then 13 + 7 = 20 and 3 + 17 = 20 See Learn its
Add 1d and 2d numbers to 100 e.g. 38 + 5 = 43	Use numicon or base ten practically to add 2d and 1d numbers to 100 	<u>Number lines</u> Find the starting number and count on 	<u>Counting on mentally</u> Putting larger number in your head in and counting on, on fingers as Y1 but with starting numbers above 20.

			 Link to lots of oral counting forwards in ones to 100 and especially across tens boundaries.
Add three 1 digit numbers (encourage to look for doubles or number bonds) e.g. 7 + 6 + 3 =16	Manipulatives that highlight bonds to ten are effective to highlight number bonds 	Look for number bonds to ten or doubles  	
Use number bonds to 10 to derive related facts to 100 e.g. 30 + 70 =	Use base ten to support known facts   I know that 6 + 4 = 10 So, I know that 6 tens and 4 tens is 10 tens		Use recall of number bonds to 10 to answer questions such as **20 + 80 = 30 + 70 =** 1+ 9 = 1 tens and 9 tens is ___ tens 10 + 90 =

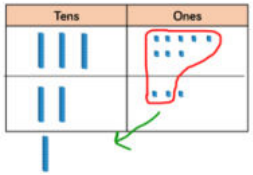
Add a multiple of ten to a multiple of ten e.g. 30 + 20 = **Linked to counting in multiples of ten (Y1)**	Use base ten materials. Start by adding one ten first then extend to multiples of ten. **<u>Children must be able to count in multiples of ten Y1</u>** e.g. 30 + 20 = 	<u>Jottings</u> Use lines to represent tens e.g. 30 + 20 =  Lots of work around **the hundred square** can support this understanding. Use to add on one ten from any given number and looking at the patterns/digit changes when adding ten. (Link to counting in multiples of ten)	Mentally adding multiples of ten by counting on in tens and looking at place value change in tens digit e.g. 50 + 10 = <u>6</u>0 60 + 10 = 30 + 20 = Use known bonds/ learn its/ What else do I know facts  4 + 3 = 7 40 + 30 = 70
Add a two digit number and multiple of ten e.g. 76 + 20 = **Linked to counting in tens from any number**	Use base ten materials e.g. 76 + 20 =  Count all of the tens first then count on the ones Count 70 then count on 6 ones Or use real life objects in groups of tens e.g. bundles of straws, numicon e.g. 27 + 40 = 	Jottings using lines for base ten tens and circles for ones e.g. 32 + 20 =  Lots of work around the hundred square can support this understanding. **Use to count on in tens from any given number** and looking at the patterns/digit changes when adding ten. 	Mentally counting on in multiples of ten on fingers (Link to counting on in tens orally from any 2d number) Use place value to manipulate digits 27 + 10 = 37 27 + 20 = 47 27 + ☐ = 57

Add 2 two-digit numbers e.g. 35 + 23 = 58 using concrete objects, pictorial representations and mentally Linked: Solve problems with + and apply knowledge of mental and <u>written methods</u> **No exchange**	Use base ten to add TO + TO No exchange. Use place value grid to support understanding of Tens and Ones 	Children represent the place value counters or base ten in a place value chart e.g. 24 + 15 = 	Children use formal column written method to add numbers (no exchange)  **Introduce formal written columnar method**
Double and adjust To + 2 1d numbers less than 10.		Link to learn its and doubles- Must know double facts to double ten first from Learn its (Y1) 	
Round and adjust		Moved to Y4 - See Year 4 objectives Y2 to identify the previous and next multiple of ten to prepare them for rounding- use number lines	
Year 2/3			
Add up to two 2 digit numbers e.g. 38 + 23 = using concrete apparatus, pictorially and mentally	Use base ten/ Place value counters to add TO + TO. When there are ten ones in the ones column we exchange for 1 ten 	Children represent the place value counters or base ten in a place value chart, circling when they need to make an exchange e.g. 36 + 25 =	Children use formal column written method to find the answer.

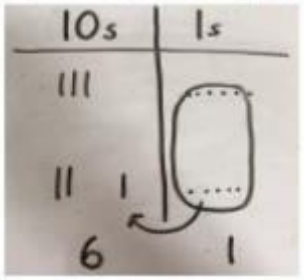
Linked: Solve problems with + and apply knowledge of mental and written methods

With exchange

Formal written method



38
+ 23
61
1



38
+ 23
61
1

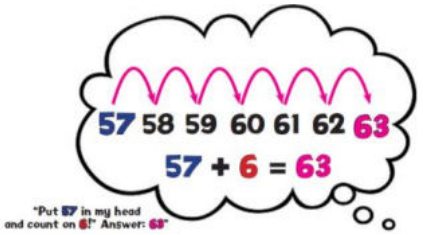
57
+ 25
82
1

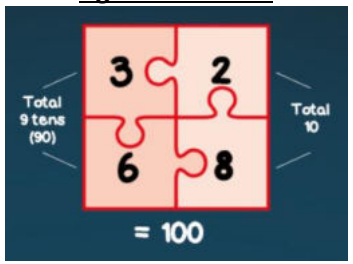
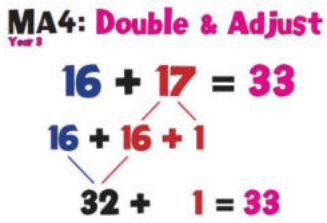
86
+ 48
134
1 1

Year 3

Learn its

Year 3	
Check children's knowledge of previous Learn Its Count in 10s and 100s from any 3 digit number Count from 0 in multiples of 4, 8, 50 and 100 Derive doubles of multiples of 10 up to 100 and their corresponding halves Count up and down in tenths	
Term 1	Learn the 3 times tables and their related division facts Learn 'teen doubles'- double 11, 12, 13 and 14.
Term 2	Learn 4 the times tables and their related division facts Learn 'teen doubles'- double 15, 16, 17, 18 and 19.
Term 3	Learn 8 the times tables and their related division facts

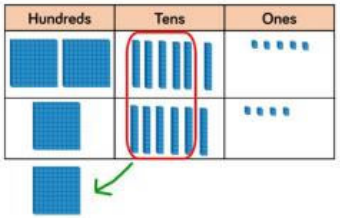
Solve addition problems using number facts and place value and more complex addition problems – See strategies below		
Add mentally 3 digit numbers and 1's **e.g.** **341 + 6 =** **498 + 7 =**		Link to oral counting forwards in ones starting from any 3 digit number. Link to Y2 strategy mentally counting on in head but from **3 digit numbers.** Also link to place value of ones 
Find 10 more than a given number mentally **e.g.** **653 + 10 =**		Link to counting on in tens from any three digit number. Link to place value and the manipulation of numbers/ changes in digits. Answer questions such as **92 + 10 =** **260 + 10 =** **347 + 10 =** **495 + 10 =**
Add mentally 3 digit numbers and 10s **e.g.** **225 + 60 =**		Linking to place value of digits. Answer questions such as **154 + 20 =** **320 + 30 =** **675 + 30 =**
Find 100 more than a given number mentally **e.g.** **470 + 100 =** **356 + 100 =**		Link to oral counting in 100s from any 3 digit number. Answer questions such as **54 + 100 =** **300 + 100 =** **661 + 100 =** **934 + 100 =**
Add mentally 3 digit numbers and 100s **e.g. 345 + 200 =**		Link to oral counting in 100s from any 3 digit number and place value of digits. Answer questions such as **400 + 300 =** **451 + 400 =**

To recall rapidly complements to 100 **e.g.** **54 + 46 = 100**		**Jigsaw numbers**  **Specific teaching point: Ensure there is a discussion around how this does not apply when adding multiples of ten e.g. 70 and 30. (Children should know how to work these out from Y2 adding multiples of ten- but this may need to be revisited)**	
Apply place-value knowledge to known additive number facts (scaling facts by 10)		Using number bonds to ten and known number facts from previous Learn its answer questions such as: 8 + 6 = 14 80 + 60 = 800 + 600 = Link to place value and scaling by 10	
Round and adjust		**Moved to Y4 - See Year 4 objectives** Y3 to identify the previous and next multiple of ten and 100 to prepare them for rounding.	
Double and adjust		Link to Learn its Y3- Derive teen doubles  	
Add up to two 3 digit numbers using	Use base ten/ Place value counters to add HTO + TO and HTO + HTO. When there are ten ones in the ones	Children represent the place vlaue counters or base ten in a place vlue chart, circling when they need to make an exchange	Children use formal column written method

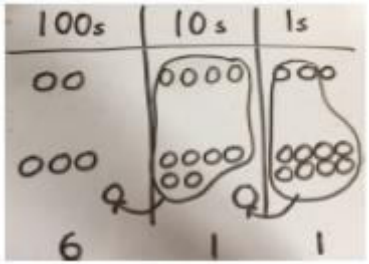
<table>
<tr>
<td>formal columnar method.
e.g.
456 + 34 =
235 + 146=

Formal Written method
Complete without exchange first</td>
<td>column we exchange for 1 ten, when there are ten 10s in the tens column we exchange for one hundred

265 + 164 = 429

265
+ 164
429
1</td>
<td>e.g. 243+ 368

 
</td>
<td>265
+ 164
429
1

687
+ 248
935
1 1</td>
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<tr>
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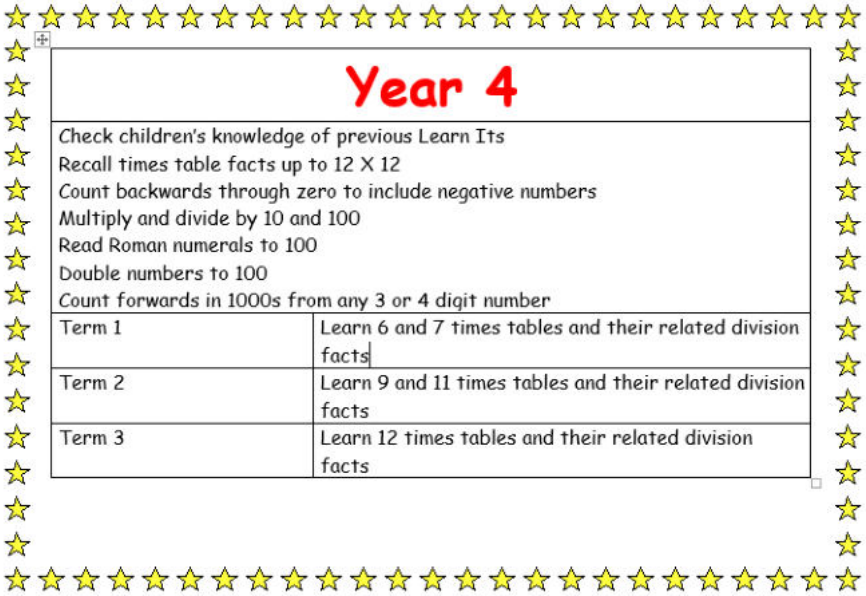
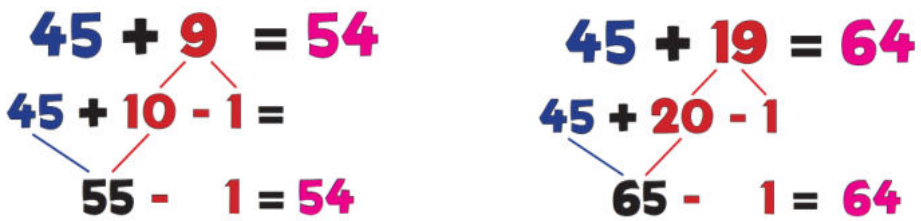
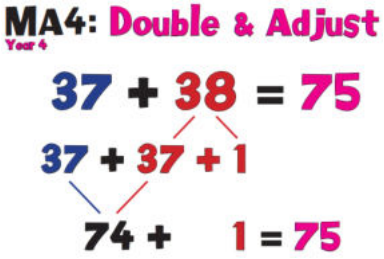
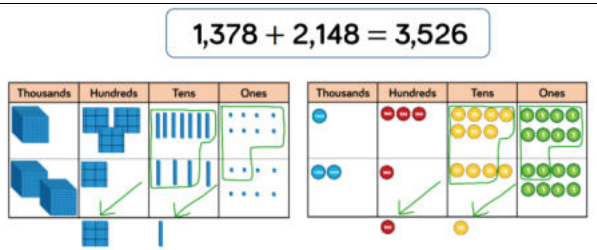
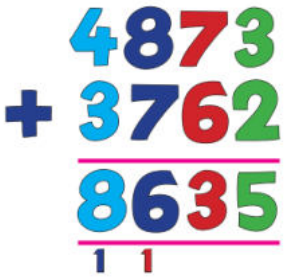
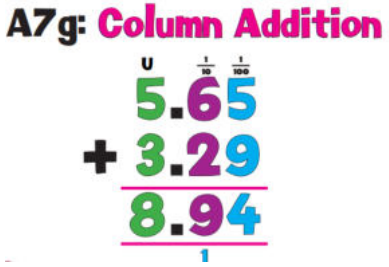
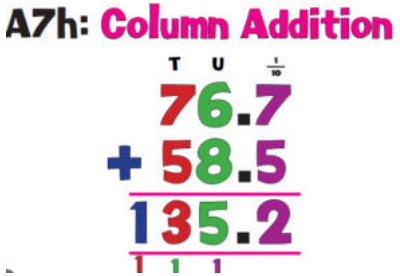
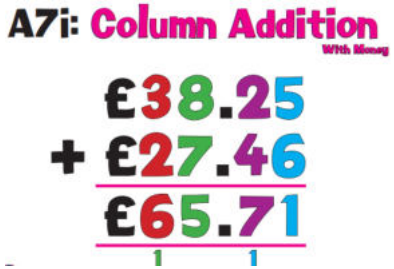
</tr>
<tr>
<td colspan="4"><u>Learn its</u>

 
</td>
</tr>
<tr>
<td>Find 1000 more than a number
e.g.</td>
<td></td>
<td colspan="2">Link to oral counting forwards in 1000s. Link to place value</td>
</tr>
</table>

3451 +1000 =		
Round and adjust +9, +19 to a two digit number		
Round and adjust + a near multiple of 100 to a 3 digit number e.g. + 99, +98, 199, 298		Children must have experienced how to round to the nearest hundred first 
Know how to double all numbers to 100		Use previously taught known facts to double all numbers to 100. Pay attention to doubles with numbers that include digits 5, 6, 7, 8, 9.
Double and adjust		
Add numbers with up to 4 digits using formal written method of	Use Base ten or place value counters and grids	Use formal written method. Also link to money and measure using formal method to add decimals.

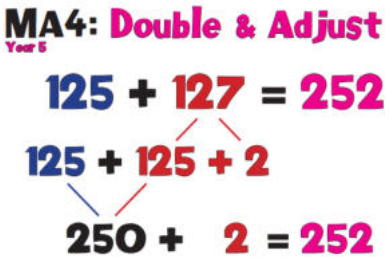
columnar addition e.g. 1378 + 2148 = 3526 Formal Written method Without exchange first		
Solve simple money and measure problems involving decimals to two decimal places.		Use the formal column method to add decimals in the context of measures and money    
Year 5		
Add numbers mentally with increasingly larger numbers		

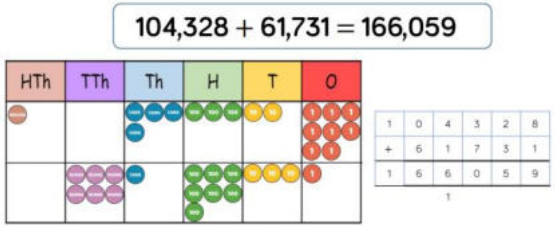
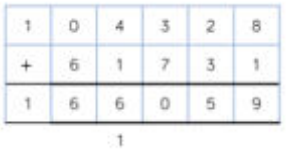
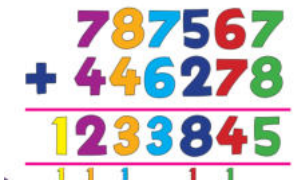
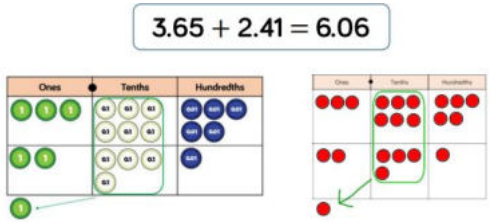
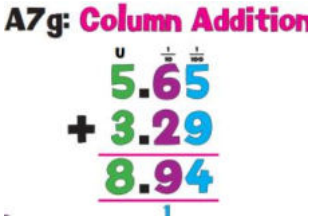
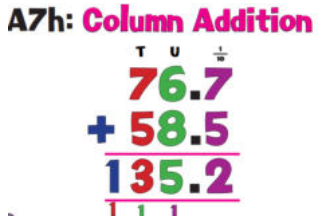
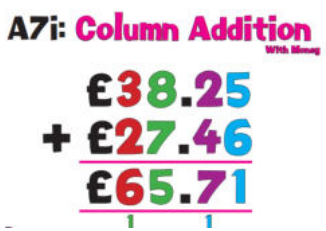
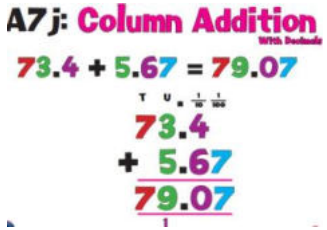
Learn its

Year 5

Check children's knowledge of previous Learn Its and times tables Count forwards and backwards with positive and negative numbers through zero Count forwards and backwards in steps of powers of 10 Read Roman numerals to 1000 Multiply and divide whole and decimal numbers by 10, 100 and 1000 Know key doubles and halves (See below)	
Term 1	**Square Numbers** 1,4,9,16,25,36,49,64,81,100,121,144 **Doubles of whole numbers** 15, 25, 50, 75, 100, 125, 150, 175, 250, 500, 750, 1000, 1250, 1500, 1750, 2500, 5000
Term 2	**Prime Numbers up to 19** 2,3,5,7,11,13,17,19 **Doubles of decimal numbers** 1.5,2.5, 3.5, 4.5, 7.5, 12.5, (and the corresponding halves 3, 5, 7, 9, 15 and 25
Term 3	Revise and consolidate key facts from Terms 1 and 2 Consolidate scaling facts e.g. double 6 is 12, double 0.6 is 1.2

+ 10, 100 and 1000 to any number up to 6 digits		For example using the number 65, 213 add 10, add 100 and add 1000 (Numbers up to 6 digits) Use Place value and number decomposition. Display numbers and look at patterns and changes when adding 10, 100 etc. Pay particular attention to boundaries.
+ 10,000 and 100,000 to any number up to 6 digits		For example using the number 175, 213 add 10,000 and add 100, 000 (Numbers up to 6 digits)
+ any multiple of 10, 100 and 1000 to any number up to 6 digits		For example using the number 65, 213 add 40, add 700 and add 7000 (Numbers up to 6 digits)

+ any multiple of 10,000 and 100, 000 to any number up to 6 digits		For example using the number 641362- add 30,000, add 200,000 Work out mentally questions such as 12561 + 2300 =
Add numbers mentally with increasingly larger numbers (Using round and adjust, double and adjust and number bonds strategies)		
Round and adjust Add a near multiple of 1000 to a four digit number		
Double and adjust Add 2 three digit numbers		Double numbers that are identified in key doubles list in Learn it's e.g. 250, 500 etc 
Add more than 4 digits (+5/6 digit numbers)	Use place value charts and place value counters	Most children should by now be working more in abstract and using column method to add efficiently Use formal column method to add 5/6 digit numbers

		 
Add numbers up to three decimal places Formal Written method	Use place value charts and place value counters 	Use formal column method to add decimals. See following examples. They may be in the context of real life problems involving money or measures.     73.4 + 1.856 _____

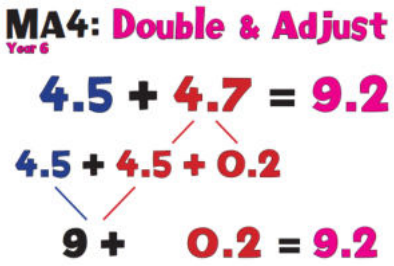
Year 6

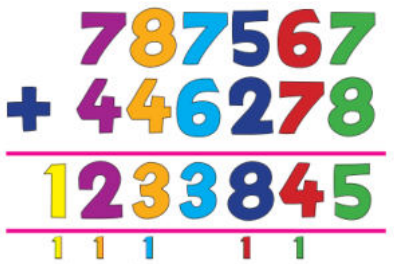
Learn its

Year 6

Check children's knowledge of previous Learn Its and times tables
Count forwards and backwards in steps of powers of 10
Know fraction and decimal equivalents of ½ ¼ 1/3 1/8 etc
Read Roman numerals to 1000
Multiply and divide whole and decimal numbers (up to 3dp) by 10, 100 and 1000

Term 1	Recap square numbers Cube Numbers
Term 2	Check children's knowledge of previous Learn Its and times tables
Term 3	Check children's knowledge of previous Learn Its and times tables

Double and adjust (Using decimal numbers)		
Perform mental calculations, including with mixed operations and large numbers		

		<table><tr><td>B</td><td>Brackets</td><td>10 × (4 + 2) = 10 × 6 = 60</td></tr><tr><td>O</td><td>Order</td><td>5 + 2^2 = 5 + 4 = 9</td></tr><tr><td>D</td><td>Division</td><td>10 + 6 ÷ 2 = 10 + 3 = 13</td></tr><tr><td>M</td><td>Multiplication</td><td>10 - 4 × 2 = 10 - 8 = 2</td></tr><tr><td>A</td><td>Addition</td><td>10 × 4 + 7 = 40 + 7 = 47</td></tr><tr><td>S</td><td>Subtraction</td><td>10 + 2 - 3 = 5 - 3 = 2</td></tr></table> **e.g** **75 + 5 x 5 =** **Multiply first then complete the subtraction.** **5 x 5 = 25** **75 + 25 = 100**
Use efficient methods to add 6/7 digit numbers **Formal written method** Linked to solve problems involving addition and solving addition multistep problems in context		Use formal written column addition method to add numbers up to 6/7 digits 
Examples from SATs arithmetic		987 + 100 = **adding multiples** 46 + 304 = **crossing boundaries** ? = 936 + 285 **formal column** 89,994 + 7,643 = **formal column** 3.005 + 6.12 = **formal column – place value** 15.98 + 26.314 = **formal column – place value**