Calculation Knowledge and Skills Progression: ADDITION

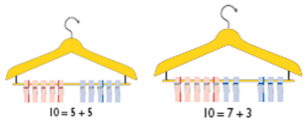
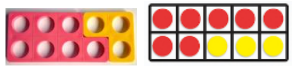
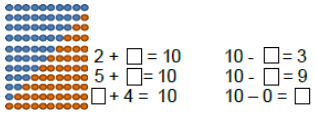
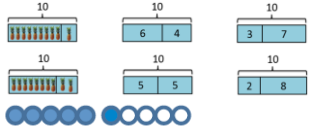
	Progression in Knowledge and Skills in NUMBER in Nursery and Reception - Bridging into Year 1 through 'subitising' activities and seeing INSIDE the number	
	Nursery: Birth to Three: • Combine objects like stacking blocks and cups. Put objects inside others and take them out again. • Take part in finger rhymes with numbers. • React to changes of amount in a group of up to three items. • Counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence. • Count in everyday contexts, sometimes skipping numbers - '1-2-3-5.' **Nursery: Three and Four year Olds:** • Fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Recite numbers past 5. • Say one number for each item in order: 1,2,3,4,5. • Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). • Show 'finger numbers' up to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals. • Solve real world mathematical problems with numbers up to 5. • Compare quantities using language: 'more than', 'fewer than'.	**Reception:** • Count objects, actions and sounds. • Subitise. • Link the number symbol (numeral) with its cardinal number value. • Count beyond ten. • Compare numbers. • Understand the 'one more than/one less than' relationship between consecutive numbers. • Explore the composition of numbers to 10. • Automatically recall number bonds for numbers 0–10.
	Key KNOWLEDGE and VOCABULARY	
	Early Learning Goals	
	Number • Have a deep understanding of number to 10, including the composition of each number. • Subitise (recognise quantities without counting) up to 5. • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. **Numerical Patterns** • Verbally count beyond 20, recognising the pattern of the counting system. • Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	

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<table>
<tr><th>Year</th><th colspan="3">1</th><th colspan="3">2</th></tr>
<tr><td>Layers of vocabulary

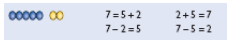
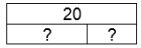
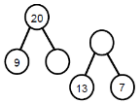
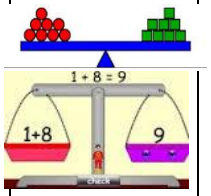
Appendix 1a
Beck’s Tiers of Vocabulary
Appendix 1b:
Vocabulary book</td><td colspan="3">Basic to subject specific (Beck’s Tiers):
+, add, more plus make, sum, total altogether score double, near double one more, two more… ten more how many more to make…? how many more is… than…? how much more is…?

Instructional vocabulary:
start from, start with, start at
look at point, to show me</td><td colspan="3">Basic to subject specific (Beck’s Tiers):
+, add, addition, more, plus make, sum, total altogether score double, near double one more, two more... ten more... one hundred more how many more to make…? how many more is… than…? how much more is…?

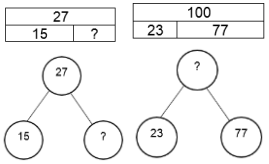
Instructional vocabulary:
tell me, describe, name, pick out, discuss, talk about, explain, explain your method, explain how you got your answer, give an example of… show how you…</td></tr>
<tr><td>NC 2014</td><td colspan="3">Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</td><td colspan="3">Recording addition in columns supports place value and prepares for formal written methods with larger numbers.</td></tr>
<tr><td></td><td colspan="3">Concrete, pictorial, abstract</td><td colspan="3">Concrete, pictorial, abstract</td></tr>
<tr><td>Developing Conceptual / Procedural Understanding</td><td>Number bonds

We have 10 pegs on the coathangers, how can we split them into 2 groups? Is there another way? How can we be sure we have got them all?

Numicon Ten Frame

Use the pattern to complete the number sentences.

Use bonds of 10 to calculate</td><td>


Count all

Count on

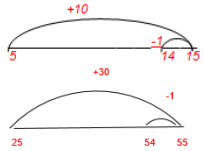
Count on, on number track in 1s.
Develop knowledge of fact families.
</td><td>Whole-part model


Fill in the missing numbers
Balance image for concept of equality.
</td><td>Multilink /unifix

Picture

Whole-part model

Fill in the missing numbers

All answers to be recorded in a number sentence following any informal recording.

Adding more than two numbers

Strategy to include looking for facts or bonds that are useful e.g. bonds up to and including 10, doubles or adding 10 to a given number.</td><td>Adjustment strategy
5 + 9 =
5 + 10 – 1=
14

(Round and adjust)
Doubles then near doubles
5 + 6 =
5 + 5 + 1 = 11

7 + 8 =
8 + 8 - 1 = 15

47+50 =
Re-arranging
18+4 =
Tell me what you</td><td>Partition and recombine
Record partitioned steps in number sentences then add mentally.
40+20=60
6+7 =13
60+13=73
Moving on to:
46 + 27 = 60 + 13 = 73


Balance in the equation
14 = 8 + 6, 7+6=8+5
☐= 13+9
3+ ☐+6 =16
14+ ◇= 15+27

Decision making

Using statements such</td></tr>
</table>

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	bonds of 20.			$\underbrace{6+3+4}_{10} = 13$ $\overbrace{6+\underbrace{3+4}_{10}+7}^{10} +2 = 22$ Children to show notation.	know about 4, e.g. 3+1, 2+2 18+4= Rearrange the 4 into 2+2 So 18+2+2= 20+2 =22 59+24 = Partition the 24 into 20 +4 and rearrange the 4 into 1+3. So 59+24= 59+20+1+3 = 59+1+20+3 = 83	as: Ben did 14 + 9 = 23 How could he have done it?
Known facts	Represent & use number bonds and related subtraction facts within 20 Add and subtract 1 digit and 2 digit numbers to 20, including zero			Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100.		
Essential Knowledge	1 more	Number bonds: 5 and 6		10 more	Number bonds:20,12 and 13	
	Largest number first.	Number bonds: 7 and 8		Add 1 digit to 2 digit by bridging	Number bonds: 14 and 15	
	Add 10.	Number bonds:9 and 10		Partition second number and add tens then ones.	Number bonds: 16 and 17	
	Ten plus ones.	Use number bonds of 10 to derive bonds of 11		Add 10 and multiples of 10.	Number bonds: 18 and 19	
	Doubles up to 10.			Doubles up to 20 and multiples of 5.	Partition and recombine.	
				Add near multiples of 10.		