Calculation Knowledge and Skills Progression: MULTIPLICATION

<table>
<tr><td></td><td colspan="2">Progression in Knowledge and Skills in NUMBER in Nursery and Reception - Bridging into Year 1 through ‘subitising’ activities and seeing INSIDE the number</td></tr>
<tr><td rowspan="3"></td><td>Nursery: Birth to Three
• Compare amounts, saying ‘lots’, ‘more’ or ‘same’.
• 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.’
• Notice patterns and arrange things in patterns.

Nursery: Three and Four-Year-Olds:
• Show ‘finger numbers’ up to 5.
• Experiment with their own symbols and marks as well as numerals.
• Solve real world mathematical problems with numbers up to 5.</td><td>Reception:
• Subitise.
• Link the number symbol (numeral) with its cardinal number value.
• Count beyond ten.
• Compare numbers.</td></tr>
<tr><td colspan="2">Key KNOWLEDGE and VOCABULARY</td></tr>
<tr><td colspan="2">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.</td></tr>
</table>

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

Appendix 1a Beck's Tiers of Vocabulary Appendix 1b: Vocabulary book</td><td colspan="2">Basic to subject specific (Beck's Tiers):
count in ones, twos… tens…
array, groups of, equal groups
odd, even

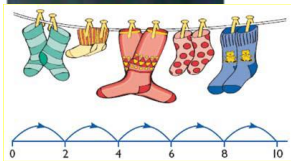
Instructional vocabulary:
carry on, continue repeat what comes next?
find, choose, collect
use, make, build
tell me, describe, pick out, talk about, explain, show me, read, write, record</td><td colspan="2">Basic to subject specific (Beck's Tiers):
lots of, groups of ×, times, multiply, multiplied by multiple of once, twice, three times… ten times… times as (big, long, wide… and so on) repeated addition array row, column double, halve share, share equally, commutative

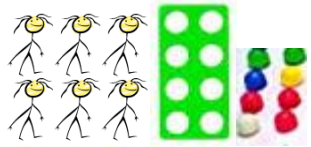
Instructional vocabulary:
carry on, continue, repeat, what comes next? predict describe the pattern describe the rule
find, find all, find different, investigate</td></tr>
<tr><td>NC 2014</td><td colspan="2">Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</td><td colspan="2">Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.</td></tr>
<tr><td>Developing Conceptual / Procedural Understanding</td><td>Grouping

2 frogs on each lily pad

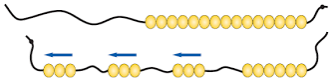
GROUPING ITP
Pictures to show 2 groups of 3 or 3 groups of 2 etc.

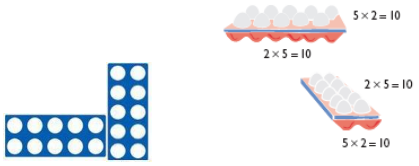
Doubles

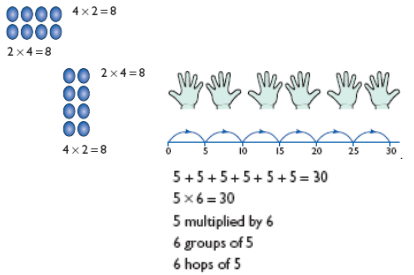

</td><td>Arrays
(rectangular arrangements to show equal groups)


</td><td>Repeated addition


Introduce the x symbol once repeated addition is understood.
Grouping

5 frogs on each lily pad 5 x 3 = 15

Arrays

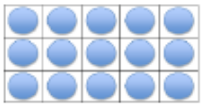
Building tables
</td><td>Commutativity


5 x2 = 2 x 5


Decision making

How many number sentences can you write to describe this array? Can you use addition, multiplication and division?</td></tr>
</table>

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			Build tables using counting stick-forwards and backwards and with missing jumps	 Explain your answers.
Known facts	Count in multiples of twos, fives and tens.		Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.	
Essential Knowledge	Count in 2s	Doubles up to 10	2 x table	Doubles up to 20
	Count in 10s	Double multiples of 10	10 x table	Doubles of multiples of 5
	Count in 5s	Count in 2s, 5s and 10s	5x table	Count in 3s