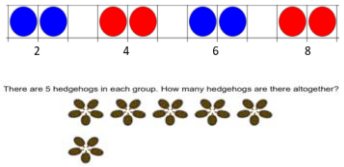
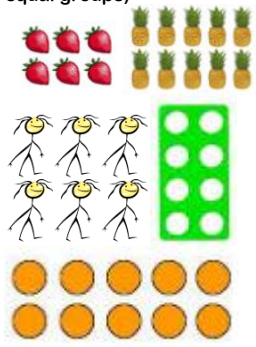
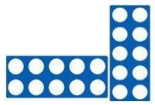
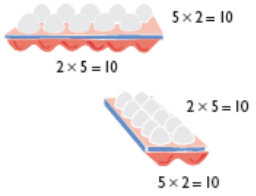
Multiplication and Division EYFS to Key Stage 1

<table>
<tr><td>EYFS</td><td colspan="3">Reception: Early Learning Goals
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>
<tr><td>Year</td><td colspan="2">1 Multiplication</td><td>2 Multiplication</td></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>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

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>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></td><td colspan="2">Concrete, pictorial, abstract</td><td>Concrete, pictorial, abstract</td></tr>
<tr><td>Developing Conceptual/ Procedural Understanding</td><td>Grouping
 
2 frogs on each lily pad
 
</td><td>Arrays
(rectangular arrangements to show equal groups)
  </td><td>Repeated addition
 

Introduce the x symbol once repeated addition is understood.

Complete
6, 8, 10, ……20
15, 20, 25……50
60, 70, 80……100</td><td>Commutativity
 
5 x2 = 2 x 5
 
</td></tr>
</table>

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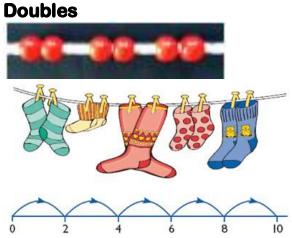
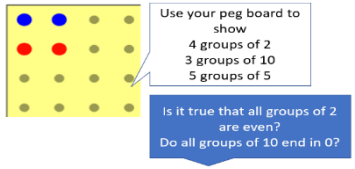
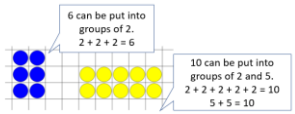
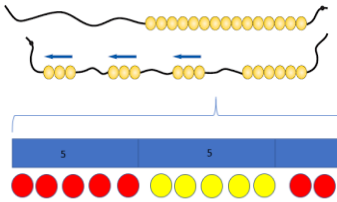
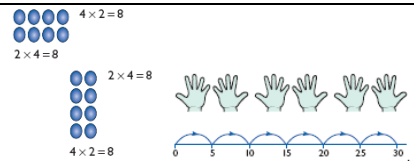
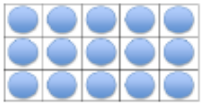
<table>
<tr>
<td></td>
<td colspan="2">Doubles
 

 
</td>
<td> 
</td>
<td colspan="2">Grouping
 
5 frogs on each lily pad 5 x 3 = 15
 

Building tables
 
Build tables using counting stick- forwards and backwards and with missing jumps</td>
<td colspan="2"> 

5 + 5 + 5 + 5 + 5 + 5 = 30
5 × 6 = 30
5 multiplied by 6
6 groups of 5
6 hops of 5
Decision making
How many number sentences can you write to describe this array? Can you use addition, multiplication and division?
 
Explain your answers.
6. Write a story to go with this equation.
$6 \times 10 = 60$
7. Complete the calculations.
$7 \times 5 = \square$ $10 \times 4 = \square$ $9 \times 2 = \square$</td>
</tr>
<tr>
<td>Known facts</td>
<td colspan="2">Count in multiples of twos, fives and tens.</td>
<td colspan="3">Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.</td>
</tr>
<tr>
<td rowspan="3">Essential Knowledge</td>
<td>Count in 2s</td>
<td>Doubles up to 10</td>
<td>2 x table</td>
<td colspan="2">Doubles up to 20</td>
</tr>
<tr>
<td>Count in 10s</td>
<td>Double multiples of 10</td>
<td>10 x table</td>
<td colspan="2">Doubles of multiples of 5</td>
</tr>
<tr>
<td>Count in 5s</td>
<td>Count in 2s, 5s and 10s</td>
<td>5x table</td>
<td colspan="2">Count in 3s</td>
</tr>
</table>

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EYFS	**Reception: Early Learning Goals** **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	
Year	1 Division	2 Division
Layers of vocabulary  **Appendix 1a** Beck's Tiers of Vocabulary **Appendix 1b:** Vocabulary book	**Basic to subject specific (Beck's Tiers):** count in ones, twos… tens… share, groups of, equal groups, odd, even **Instructional vocabulary:** count out, share out, left, left over.	**Basic to subject specific (Beck's Tiers):** share, share equally one each, two each, three each… group in pairs, threes… tens equal groups of ÷, divide, divided by, divided into left, left over. **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
NC 2014	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.	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.

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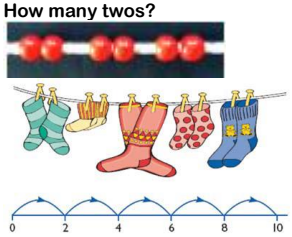
<tr><td>Developing Conceptual/ Procedural Understanding</td><td>Grouping/Sharing models
Using practical contexts and cross-curricular links (PE) such as socks and shoes; animals in the ark to get into groups.
Sharing models such as sharing pieces of fruit.

Sharing into equal groups
6 frogs shared equally between 2 lily pads gives 3 frogs on each lily pad
or
Grouping in equal groups
6 frogs grouped in 2s need 3 lily pads to sit on
 
How many twos?
 
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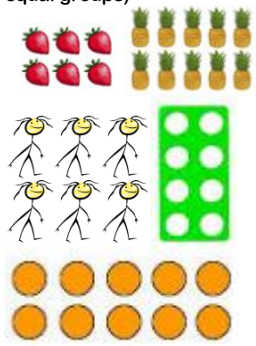
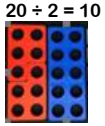
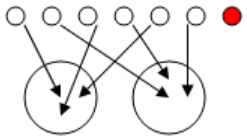
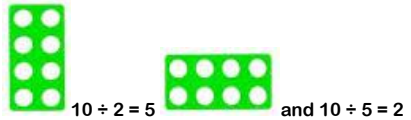
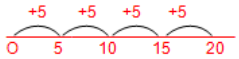
 
Decision making
How many cars can you make if you have 8 wheels?
 
How many different ways can you arrange 12 buttons in equal groups?
  </td><td>Grouping/Sharing models
Introduce the ÷ symbol
 
15 frogs shared equally between three lily pads
15 ÷3 = 5
or
15 frogs grouped in 5s need 3 lily pads to sit on
15 ÷5 = 3

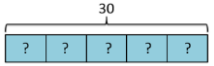
15 ÷ 3 = 5 groups of 3 (grouping)
 
20 ÷ 2 = 10
 
 

5 hops in 15. How big is each hop?
There are 7 cakes and 2 children. How many cakes will they get each? (Leftovers/remainders introduced)
 
7 ÷ 2 = 3r1</td><td>Arrays representing the dividend
 
10 ÷ 2 = 5 and 10 ÷ 5 = 2
Repeated addition (to reach a given target)
 

There are 20 sweets in a bag. How many children can have 5 each?
 

Repeated subtraction (from a given quantity)
 

Links to tables
 
Use language of division linked to tables using counting stick

Representing problems
Jane has 30 cakes. She wants to share them equally between 5 boxes. How many cakes should go in each box?
 

30 ÷ 5 = 6
Number of cakes in each box = 6</td></tr>
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<tr><td rowspan="3">Essential Knowledge</td><td>Count back in 2s</td><td>Halves up to 10</td><td>Division facts (2 x table)</td><td>Halves up to 20</td></tr>
<tr><td>Count back in 10s</td><td>Halve multiples of 10</td><td>Division facts (10 x table)</td><td>Review division facts (2 x, 5 x, 10 x tables)</td></tr>
<tr><td>Count back in 5s</td><td>How many 2s? 5s? 10s?</td><td>Division facts (5 x table)</td><td>Count back in 3s</td></tr>
<tr><td>Tests of divisibility</td><td>All even numbers will divide by 2</td><td></td><td>All numbers ending in 0 will divide by 10</td><td>All numbers ending in 5 and 0 will divide by 5</td></tr>
</table>