
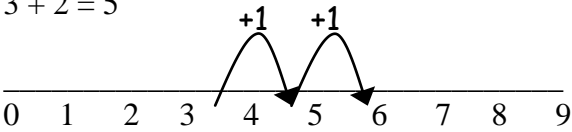
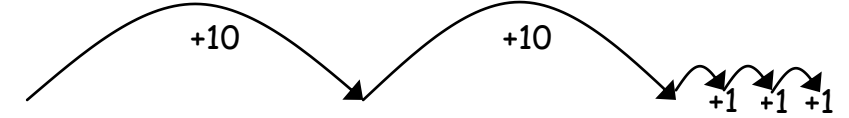
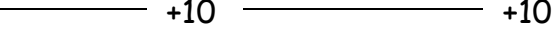
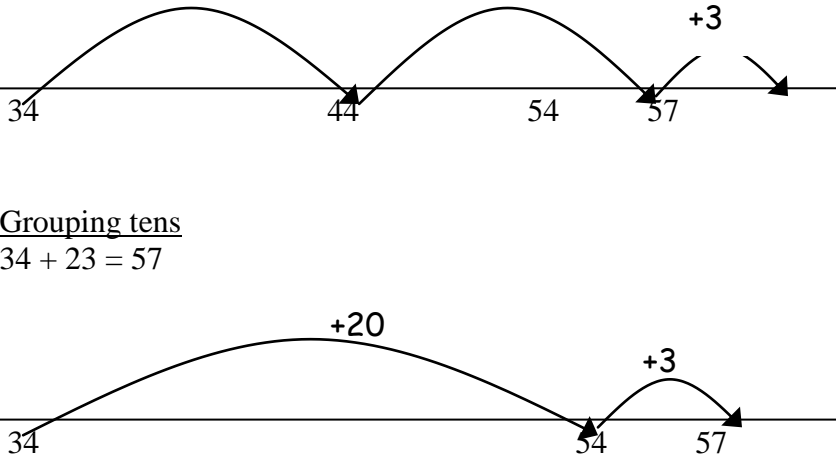


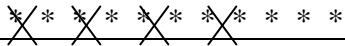
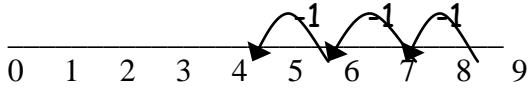
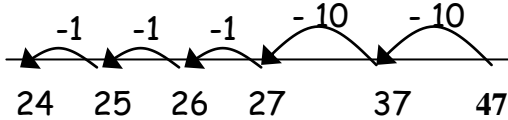
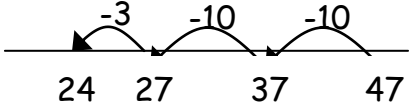
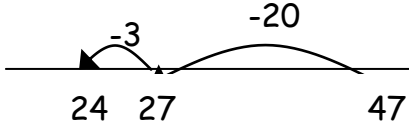
Addition

The Different Stages	Number Development	Strategy – What it Looks Like
Stage 1: Counting sets of object	Move on to combining	
Stage 2: Combining 2 sets of objects		For example $6 + 2$ the children may get 6 cubes, then 2 more and count how many altogether.
Stage 3: Drawing pictures/dots – informal jottings. Then counting back	Single unit add single unit	 = 5 $4 + 2 = 6$ * * * * + * *
Stage 4: Counting on a number line with numbers on it.		$3 + 2 = 5$ 
Stage 5: Steps in addition may be recorded on an empty number line. Steps often bridge through a multiple of ten.	1) Partition smaller number into tens and units 2) Add on the tens – progress to multiples of ten 3) Add on the units and groups of units	$34 + 23 = 57$  $34 \qquad \qquad \qquad 44 \qquad \qquad \qquad 54 \ 55 \ 56 \ 57$
		$34 + 23 = 57$  $\qquad \qquad \qquad +10 \qquad \qquad \qquad +10$

		 <p><u>Grouping tens</u>  <math>34 + 23 = 57</math></p>
<p>Stage 6: Partitioning tens and units horizontally (KS2 or when appropriate)</p>	<p>Move on to vertical partitioning Tens and units and hundreds and tens and units.</p>	$47 + 76 = (40 + 70) + (7 + 6) \text{ leading to}$ $= 110 + 13$ $= 123$
<p>Stage 7: Partition numbers vertically in a column</p>		$\begin{array}{r} 47 = 40 + 7 \\ + 76 = 70 + 6 \\ \hline 110 + 13 = 123 \end{array}$

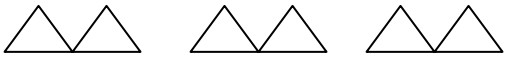


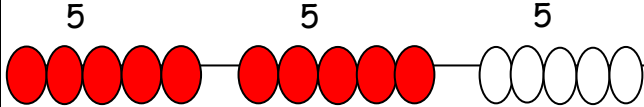
<p>Stage 8: The numbers in columns adding the units first</p>		$  \begin{array}{r}  67 + 24 \\  67 \\  + 24 \\  \hline  11 \\  \underline{80} \\  91  \end{array}  $ $  \begin{array}{r}  131 + 209 \\  131 \\  + 209 \\  \hline  10 \\  30 \\  \underline{300} \\  340  \end{array}  $
<p>Stage 9: Compact method – where numbers get carried into the next column</p>	<p>Move on to adding with decimals up to three decimal places</p>	$  \begin{array}{r}  587 + 475 \\  587 \\  + 475 \\  \hline  1062 \\  \underline{11}  \end{array}  $ $  \begin{array}{r}  3587 + 675 \\  3587 \\  + 675 \\  \hline  4262 \\  \underline{111}  \end{array}  $

Subtraction

The Different Stages	Number Development	Strategy – What it Looks Like
Stage 1: Practical -	Practically get a group of objects and take some away	
Stage 2: Jottings: drawing a set of objects and then crossing some out.		$11 - 4 = 7$ 
Stage 3: count back on a number line with numbers on		$6 - 3 = 3$ 
Stage 4: Learning to count forward and back on an empty line		$47 - 23 = 24$  $47 - 23 = 24$  $47 - 23 = 24$ 
Stage 5: Partitioned numbers are then		$74 - 23$

<p>written under one another – this is how we start to introduce the column subtraction method (KS2 or when appropriate)</p>		$\begin{array}{r} 70 + 4 \\ \underline{20 + 3} \\ 50 + 1 = 51 \end{array}$	
<p>Stage 6: Expanded decomposition (2 digit numbers) Leads to the shorter version of the column subtraction method. We always start with the units number</p>		$\begin{array}{r} 74 - 27 \\ 70 + 4 \\ \underline{20 + 7} \end{array}$	$\begin{array}{r} 60 \quad 14 \\ \underline{70 + 4} \\ \underline{20 + 7} \\ 40 + 7 = 47 \end{array}$
<p>Stage 6: Expanded decomposition (3 digit numbers)</p>		$\begin{array}{r} 741 - 367 \\ 700 + 40 + 1 \\ \underline{-300 + 60 + 7} \end{array}$	$\begin{array}{r} 600 \quad 130 \quad 11 \\ \underline{700 + 40 + 1} \\ \underline{-300 + 60 + 7} \\ 300 + 70 + 4 = 374 \end{array}$
<p>Stage 7: Compact Decomposition</p>		$\begin{array}{r} 74 - 27 \\ 6 \quad 14 \\ 7 - 4 \quad \text{---} \\ \underline{2 \quad 7} \\ 4 \quad 7 \end{array}$ $\begin{array}{r} 6 \quad 13 \quad 11 \\ 741 \quad \text{---} \\ \underline{-367} \\ 374 \end{array}$ $\begin{array}{r} 5008 - 1257 \\ 9 \\ 4 \quad \underline{10} \quad 10 \\ \underline{-5008} \\ 3751 \end{array}$	

## Multiplication

The Different Stages	Number Development	Strategy – What it Looks Like
See Mental Calculation policy section to review gaps and progression in mental times table and division facts knowledge.		
Stage 1: Counting practically in repeated groups/patterns.	Numbers up to 30	
Stage 2: Grouping using pictorial representations	2,5 10 times tables	$3 \times 2 = 6$ 
Stage 3: Arrays	2,5 10 times tables	$3 \times 2 = 6$ or $2 \times 3 = 6$ 
Stage 4: Repeated Addition 5 times 3 is $5+5+5=15$ or 3 lots of 5 or $5 \times 3$ Repeated addition can be shown easily on a number line.	All times tables TU x U	$5 \times 3 = 5 + 5 + 5$  0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 $5 \times 3 = 5 + 5 + 5$ 
Stage 5: Partitioning	TU x U HTU x U	$13 \times 5 =$ $10 \times 5 = 50$ $3 \times 5 = 15$ $50 + 15 = 65$

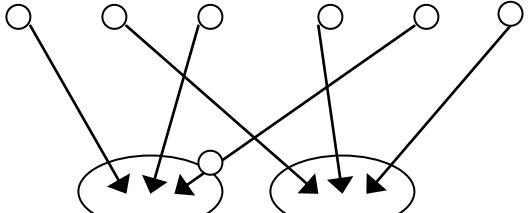
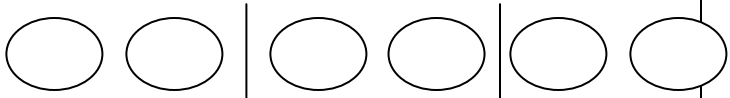
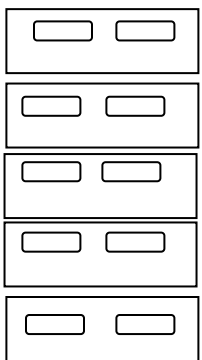
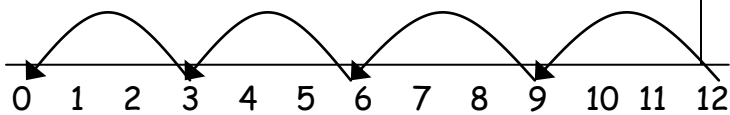
<p>Stage 6: Long Multiplication. The next step is to show the method of recording in a column format but showing the working. This links to the grid method above.</p> <p>Children should describe what they do by saying the actual values of digits in the columns for example the first step in 38 x 7 is 30 multiplied by 7 not 3 x 7.</p>	<p>TU x U TU x TU HTU x TU ThHTU x U</p>	$38 \times 7 = 266$ $\begin{array}{r} 30 + 8 \\ \times 7 \\ \hline 56 \\ 210 \\ \hline 266 \end{array}$ <p>8 x 7 = 56 30 x 7 = 210</p> <p>Leading to condensed version of long multiplication</p> $\begin{array}{r} 38 \\ \times 7 \\ \hline 56 \\ 210 \\ \hline 266 \end{array}$ <p>56x27 is approximately 60 x 30= 1800</p> $\begin{array}{r} 56 \\ \times 27 \\ \hline 1000 \\ 120 \\ 350 \\ 42 \\ \hline 1512 \\ 1 \end{array}$
<p>Stage 7: Short multiplication The step here involves adding 210 and 50 mentally with only the 5 in the tens column being recorded.</p>	<p>TU x U TU x TU HTU x TU ThHTU x U</p>	$\begin{array}{r} 38 \\ \times 7 \\ \hline 266 \\ \hline 5 \end{array}$

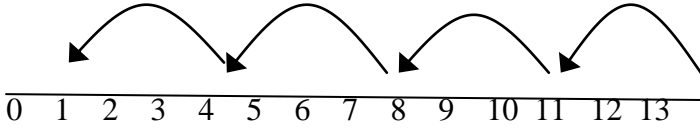
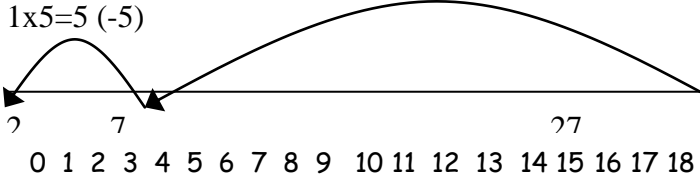
<p>2 digit x 2 digit and beyond. Using rounding to make an estimation prior to the calculation.</p>		<p><math>38 \times 56</math> is approximately <math>30 \times 60 = 1800</math></p> $  \begin{array}{r}  38 \\  \times 56 \\  \hline  48 \\  180 \\  40 \\  1500 \\  \hline  1768 \\  1  \end{array}  $
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### Division

The Different Stages	Number Development	Strategy – What it Looks Like
See Mental Calculation policy section to review gaps and progression in mental times table and division facts knowledge.		
Stage 1: Children physically sharing objects	Numbers up to 30	6 sweets shared between 2 children.
Stage 2: Children will develop their understanding of division and use jottings to support calculations. (Pictoral and arrays)	2,5 10 times tables	Sharing equally 6 sweets shared between 2 people. How many do they get each?



		<p>1. Pictorial division</p>  <p>6 divided by 3 – 6 sweets divided between 3 people</p>  <p><math>10 \div 2 = 5</math></p> 
<p>Stage 3: Repeated Subtraction</p>	<p>All times tables</p>	<p><math>12 \div 3 = 4</math></p> 

<p>Including repeated subtraction leading to a remainder.</p>		<p><math>13 \div 3 = 4r1</math></p> 
<p>Stage 4: Repeated Subtraction, subtracting multiples of the divisor. (KS2 or when appropriate)</p>	<p>All times tables <math>TU \div U</math></p>	<p><math>1 \times 5 = 5</math> (-5)      <math>4 \times 5 = 20</math> (-20)</p> 
<p>Stage 5: Chunking method</p>	<p><math>TU \div U</math> <math>HTU \div U</math> <math>TU \div TU</math></p>	<p><math>96 \div 6</math></p> $  \begin{array}{r}  16 \\  6 \overline{) 96} \\  \underline{- 60} \quad 10x \\  36 \\  \underline{- 36} \quad 6x \\  0  \end{array}  $ <p>Answer : 16</p> <p><math>256 \div 7 =</math></p>

		$  \begin{array}{r}  7 \overline{) 56} \\  \underline{70} \quad 10 \times 7 \\  186 \\  - \underline{140} \quad 20 \times 7 \\  46 \\  42 \quad \underline{6 \times 7} \\  4  \end{array}  $ <p>So <math>10 + 20 + 6 = 36 \text{ r } 4</math></p>
Stage 5: Short Division	TU $\div$ U HTU $\div$ U TU $\div$ TU HTU $\div$ TU	$  \begin{array}{r}  560 \div 4 \\  140 \quad \underline{\hspace{2cm}} \\  4) 5160  \end{array}  $
Stage 6: Long Division	TU $\div$ U HTU $\div$ U TU $\div$ TU HTU $\div$ TU	$  \begin{array}{r}  560 \div 24 \\  \quad \quad \quad 23 \\  \quad \quad 24) \underline{560} \\  480 \quad \underline{\hspace{2cm}} \\  80 \\  72 \quad \underline{\hspace{2cm}} \\  8  \end{array}  $ <p>Answer 23 r 8</p>

Signed:



Date: October 2016

Review Date: November 2017