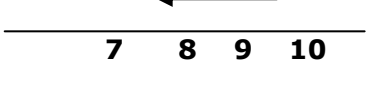
Subtraction Policy January 2015

MARWOOD SCHOOL

PROGRESSION IN SUBTRACTION

Key skills	Say numbers Counting forwards Counting backwards Recognise numerals Write numerals Counting objects/ symbols assigning each number to 1 object...1-1 correspondence In practical activities and discussions use mathematical vocabulary involved with addition. Using and understanding conventional symbols	
Counting backwards in 1s	Practical activities, songs and rhymes.	
Can find 1 less than any number to 10	Use of appropriate number lines / 100 squares to count back	Teacher models 1 less than 5 = (is the same as) 4
Relate less than to take away	Use fingers, objects to take an amount away.	
Reduction How many are left from a set of objects after taking some away.	Picture/ story representations of subtraction.	We made 6 cakes. We ate 2 of them. How many cakes are left? 
Finding the difference using concrete apparatus by comparison	Practical work comparing 2 sets of objects and finding the difference (use this particularly when the numbers are close together)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ There are 2 more / 2 less
Finding the difference using number lines by	**Number lines** **Counting back**	11 – 7 = 4  **7 8 9 10** **11**

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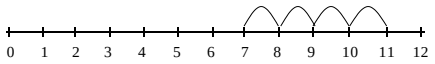
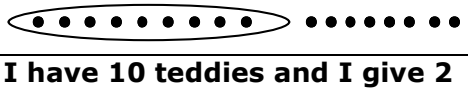
counting back		
Finding the difference by counting on	Understand when it is sensible to count back e.g. 18 – 5 and when to count on e.g. 18 – 13.	**counting on** The difference between 7 and 11 = 4  Recording by - drawing jumps on prepared lines - constructing own lines
Key skills Knowing number bonds to 10. Knowing what the symbols -, = mean	Recite subtraction facts to 10	**Signs and symbols** 5 - 2 = = 5 - 2 5 - = 3 3 = - 2 - 2 = 3 3 = 5 - - = 3 3 = - Reciting number bonds
Subtraction using larger numbers to 20	Practical work and ensure that child can read symbols to make sense of them	
Solving one step practical problems	Use pictures/images to reinforce the meaning	There were 17 bean bags in a bucket. Luke took 9. 
Inverse operations And missing number sums	Practical work to show that subtraction is the inverse of addition.	**I have 10 teddies and I give 2 away to my friend I have 8 left.** **I have 8 teddies and my friend gives me the 2 teddies back now I have 10 teddies.** **Repeat with 8 teddies being given away etc** **Recording this using symbols** **10-2=8 10-8=2** **8+2=10 2+8=10** **8+?=10 2+?=10**
Descending number sequences		**20,18,16,14 ?**
Key skill knowing	**These need to be known by heart and continually reinforced.**	

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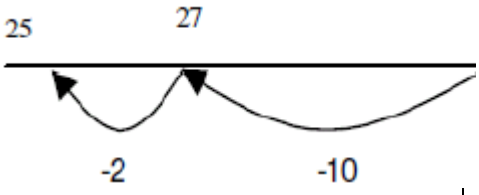
number bonds to 20 quickly.		
Key skills doubling and halving numbers to 20	**These need to be known by heart and continually reinforced.**	
Subtracting 2 digit numbers. Crossing the tens boundary by partitioning numbers	Use a number line of hundred square to bridge through a multiple of 10	
Problem solving Practical work	It is important to use everyday examples to make connections between finding the difference, subtraction, counting on and counting back.	
Standard written method without decompostion		48 - 16 32
Rounding and adjusting	Subtract mentally a near multiple of 10 by taking away a multiple of 10 and adjusting it eg 78 – 49 is the same as 78-50+1 Models and representations to support this	**78-49= 78-50+1** **78-52=78-50+2**
The expanded method. Working towards a standard method of subtraction with decomposition.	Children need to appreciate the exchange process and place value. They need plenty of practical work and modeling of this using diennes blocks, place value counters etc The expanded method enables children to see what happens to numbers in the standard written method.	Example: 74 – 27 70 + 4 − 20 + 7 ~~70~~ + ~~4~~ − 20 + 7 = 40 + 7 ~~7~~ ~~4~~ − 2 7 = 4 7
Key skills	place value and partitioning number bonds	
Continue to use mental methods where efficient and to estimate.	Encourage informal jottings with larger numbers if necessary	

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Children need to have a secure understanding of the expanded method in order to understand the compact method	Use place value counters to illustrate this and ensure understanding of concept	$\begin{array}{r} {}^{6}\cancel{7}\ {}^{14}\cancel{4} \\ -\ 2\ 7 \\ \hline 4\ 7 \end{array}$
The expanded method of subtraction for 3 digit numbers	This is to illustrate partitioning and ensure understanding of what is happening before moving on to more abstract compact method	Expanded method $\begin{array}{r} 500 + 60 + 3 \\ -\ 200 + 40 + 1 \\ \hline 300 + 20 + 2 \end{array}$
Compact method	**With good understanding** this will enable children to become more efficient and faster in calculations.	leading to $\begin{array}{r} 563 \\ -\ 241 \\ \hline 322 \end{array}$
Expanded method of subtraction with decomposition	Use place value counters/ manipulatives to model this	$\begin{array}{r} {}^{400}\cancel{500} + {}^{160}\cancel{60} + 3 \\ -\ 200 + 70 + 1 \\ \hline 200 + 90 + 2 \end{array}$

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Compact method		$\begin{array}{r} {\scriptstyle 4\ \ 16} \\ \cancel{5}\ \cancel{6}\ 3 \\ -\ 2\ 7\ 1 \\ \hline 2\ 9\ 2 \end{array}$
How to deal with zeros when subtracting. Compact method	Experience is needed with: manipulatives, 100 squares, practical maths.	$\begin{array}{r} {\scriptstyle 400\ \ 90\ \ 13} \\ \cancel{500}+\cancel{0}+\cancel{3} \\ -\ 200+70+8 \\ \hline 200+20+5 \end{array}$ $\begin{array}{r} {\scriptstyle 4\ \ 9\ \ 13} \\ \cancel{5}\ \cancel{0}\ \cancel{3} \\ -\ 2\ 7\ 8 \\ \hline 2\ 2\ 5 \end{array}$
Extend this to subtracting decimals and working with money.		$\begin{array}{r} £8.95 \\ -\ £4.38 \\ \hline £4.57 \end{array}$
Continue to use mental methods	Look at the calculation and decide which method will be the most efficient. A written algorithm, a number line, finding the difference by counting on or counting back. Rounding and adjusting.	

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