Wellstead PRIMARY SCHOOL

Wellstead Maths Policy

Subtraction

Wellstead Primary School

Written Calculation Policy for Maths

The calculation policy has been devised to meet the requirements of the National Curriculum 2014 for the teaching and learning of mathematics. It is designed to give a clear progression of learning in calculations across the school. Early learning in number and calculation in Reception (Early Years) follows the 'Development Matters' EYFS document. This policy builds on this learning.

END OF YEAR EXPECTATIONS

This calculation policy has been devised according to the end of year expectations as set out in the National Curriculum 2014, **however** it is vital that children are taught according to the development stage that they are currently working at. Children will be moved onto the next level when the class teacher feels they are secure enough to move on. Some children may be working at a lower than expected level and they will be moved onto the next level accordingly when the class teacher feels they are secure enough to do so.

PROVIDING A CONTEXT FOR CALCULATION

It is important that any type of calculation is given within a real life context or problem solving approach to help build children's understanding of the purpose of calculations. This also helps them to develop skill in choosing appropriate number operations and strategies to solve the calculation.

CHOOSING A CALCULATION METHOD:

Children need to develop skill in deciding which appropriate method to use to solve calculations, depending on the numbers involved.
They will be encouraged to consider which approach to take:

Can I do it in my head using a mental strategy?

Could using jottings help me?

Should I use a written method to work out the answer?

July 2014

Calculation Strategies

Progression in Subtraction – end of year expectations

EARLY YEARS

Key skills:

- Identify 1 more or less than a given number up to 10; extend to 20
- Know number bonds to 5; extend to number bonds to 10
- Know pairs of numbers totalling 10
- Know double facts to 5+5; extend to 10

Vocabulary:
Subtraction, subtract, take away, how many are left, leaves, equals

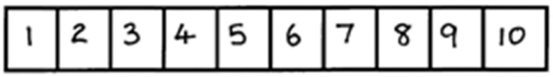
Subtract 2 1-digit numbers

Count out a set of objects and take away a given number

6 – 2 = 

Using a structured number line

Jump back along a physical number track



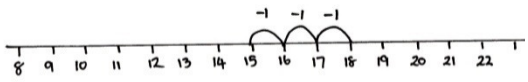
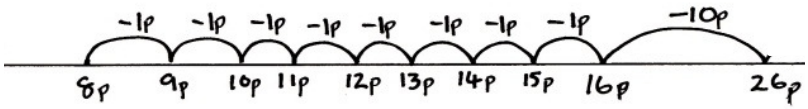
Count back on a structured number line

Children need to be able to:

- Count sets of objects accurately

Calculation Strategies

Progression in Subtraction – end of year expectations

Year 1
Key skills: • Identify 1 more or less than a given number • Know number bonds to 10; extend to number bonds to 20 and related subtraction facts • Know pairs of numbers totalling 10 • Know double facts to 10; extend to 20
Vocabulary: Subtraction, subtract, take away, how many are left, leaves, equals, difference, count back
Subtract 1-digit and 2-digit numbers to 20 Building on EYFS addition of physical removal of objects <u>Using a structured number line</u> Children are given a starting number and count back in 1s 18 – 3 =    <u>Using an unstructured number line</u> Including partitioning one number and counting back in tens and ones 26- 18= 26 – 10 - 8 
Children need to be able to: • Understand that addition & subtraction are inverse operations of each other & derive facts • Partition 2 digit numbers into tens and ones

Calculation Strategies

Progression in Subtraction – end of year expectations

Year 2

Key skills:

- Recognise the place value of each digit in a 2-digit number (tens, units)
- Recall addition and subtraction facts to 20 confidently
- Derive related facts up to 100
  e.g. 3 + 6 = 9 so 30+60= 90
- Find sums & differences of multiples of 10

Vocabulary:
Subtraction, subtract, take away, how many are left, leaves, equals, difference, count back, partition, tens, units

Subtract (mentally/ recording)
2-digit number and 1-digit number
e.g. 25 - 8 =
2-digit number and multiple of 10
e.g. 47 - 40 =
2 2-digit numbers
e.g. 64 - 42 =
3 1-digit numbers
e.g. 28 - 9 - 7 =

Building on strategy of subtraction using unstructured number line

<u>Using expanded column method</u>

For calculations that do not require exchanging or borrowing tens

	5	2	-	2	1	=		
	5	0	and		2			
-	2	0	and		1			
	3	0	and		1	=	3	1

Children will continue to use the unstructured number line for calculations where the units require 'tens' to be exchanged or borrowed.

Children need to be able to:

- Understand that addition & subtraction are inverse operations of each other & derive facts
- Partition 2 digit numbers in different ways including multiples of 10 & ones
  e.g. 23 = 20 + 3; 10 + 13

Calculation Strategies

Progression in Subtraction – end of year expectations

Year 3

Key skills:

- Recognise the place value of each digit in a 3-digit number (hundreds, tens, units)
- Find 10 or 100 more or less than a given number
- Add and subtract mentally;

3-digit number and 1-digit number
3-digit number and multiple of 10
3-digit numbers and multiples of 100

Vocabulary:
Subtraction, subtract, take away, how many are left, leaves, equals, difference, count back, partition, tens, units, hundreds, boundary, 'borrow', exchange

Subtract numbers with up to 3-digits

Building on the expanded method

Using expanded column method

					2	5	2	-	1	2	1	=			
	2	0	0	and		5	0	and			2				
	1	0	0	and		2	0	and			1				
	1	0	0	and		3	0	and			1	=	1	3	1

Crossing over a tens boundary; exchange or' borrow' tens

					2	5	3	-	1	2	7	=		
						4	0							
	2	0	0	and		~~5~~	~~0~~	and	1	3				
-	1	0	0	and		2	0	and		7				
	1	0	0	and		2	0	and		6	=	1	2	6

When the class teacher feels that the children show that they are secure and confident using the expanded column method to add 3-digit numbers, they will be moved onto the standard column method (see Y4)

Calculation Strategies

Progression in Subtraction – end of year expectations

Year 4

Key skills:

- Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, units)
- Find 1000 more or less than a given number
- Add and subtract mentally;

4-digit number and 1-digit number
4-digit number and multiple of 10
4-digit numbers and multiples of 100
4-digit numbers and multiples of 1000

Vocabulary:

Subtraction, subtract, take away, how many are left, leaves, equals, difference, count back, half, partition, tens, units, hundreds, thousands, boundary, 'borrow', exchange, decrease

Subtract numbers with up to 4-digits

Building on the expanded column method

Using column method

	3	2	5	3	-	2	1	2	7	=
	Th	H	T	U						
			4							
	3	2	~~5~~	13						
-	2	1	2	7						
	1	1	2	6						

NB SUBTRACT THE **UNITS** FIRST.

'BORROW' (EXCHANGE) NUMBERS ABOVE THE TOP ROW DIGITS

Crossing tens and hundreds boundary

2	2	5	6	-	1	1	7	8	=
	Th	H	T	U					
		1	14	1					
	2	~~2~~	~~5~~	6					
-	1	1	7	8					
	1	0	7	8					

Children need to be able to:

- Add or subtract the nearest multiple of 10/ 100/ 1000 and adjust
- Use knowledge of halving
- Use knowledge of partitioning

Calculation Strategies

Progression in Subtraction – end of year expectations

Year 5
Key skills: • Determine the value of each digit of numbers to at least 1,000,000 • Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 • Add and subtract numbers mentally with increasingly large numbers e.g. 12462 – 2350 =
Vocabulary: Subtraction, subtract, take away, how many are left, leaves, equals, difference, count back, half, partition, tens, units, hundreds, thousands, boundary, 'borrow', exchange, decrease, decimal place, decimal point, tenths, hundredths

Subtract numbers with more than 4-digits

3706 – 1547 =

			6	9				
		3	~~7~~	~~1~~0	16			
-		1	5	4	7			
		2	1	5	9			

Explaining this example:
Where 0 is a place holder, the children will be taught to borrow from the next number (hundreds in the example) to make it 10, then can 'borrow' or exchange 10 so the tens column becomes 9 and the units column becomes 16.

NB Decimal points should be aligned
Empty decimal places can be filled with a 0 to show the place value

55.27 – 24.5 =

		4		1				
	5	~~5~~	.	2	7			
-	2	4	.	5	0			
	3	0	.	7	7			

Calculation Strategies

Progression in Subtraction – end of year expectations

Year 6
Key skills: • Determine the value of each digit of numbers to at least 1,000,000 • Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 • Add and subtract numbers mentally with increasingly large numbers e.g. 12462 – 2350 =
Vocabulary: Subtraction, subtract, take away, how many are left, leaves, equals, difference, count back, half, partition, tens, units, hundreds, thousands, boundary, 'borrow', exchange, decrease, decimal place, decimal point, tenths, hundredths
Subtract numbers with increasing complexity and decimal values **150699 - 89949** =

	0	14	9						
	~~1~~	~~5~~	~~0~~	16	9	9			
-		8	9	9	4	9			
		6	0	7	5	0			