

Wellstead Maths Policy
+
Addition



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?

Calculation Strategies

Progression in Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, double, count on

Add 2 1-digit numbers

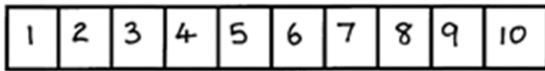
Combine 2 sets of objects to find the total

$$3 + 2 =$$

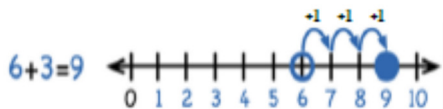


Using a structured number line

Jump along a physical number track



Use a structured number line



Children need to be able to:

- Count sets of objects accurately

Calculation Strategies

Progression in Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, double, count on

Add 1-digit and 2-digit numbers to 20

Building on EYFS addition of combining sets of objects to find the total

Using a structured number line

Children are encouraged to start with the larger number and count on in 1s.

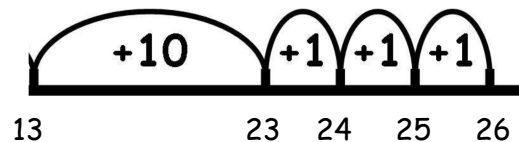


Using an unstructured number line

Including partitioning one number and counting on in tens and ones

$$13 + 13 =$$

$$13 + 10 + 3$$



Children need to be able to:

- Understand that addition & subtraction are inverse operations of each other & derive facts
- Understand that addition can be done in any order & use this to add a 1 digit number or a multiple of 10 to any 1 digit or 2 digit number
- Partition 2 digit numbers into tens and ones

Calculation Strategies

Progression in Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, double, count on, partition, tens, units

Add (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. $34 + 42 =$
3 1-digit numbers
 e.g. $8 + 9 + 7 =$

Building on strategy of addition using unstructured number line

Using expanded column method

$52 + 21 =$

	5	2	+	2	1	=	7	3
	5	0	and		2			
+	2	0	and		1			
	7	0	and		3			

Begin to cross over the tens boundary

	5	2	+	2	9	=	8	1
	5	0	and		2			
+	2	0	and		9			
	7	0	and	1	1			

Children use partitioning as a mental strategy to add $70 + 11$ to find the total
 $70 + 10 + 1 = 81$

Children need to be able to:

- Understand that addition & subtraction are inverse operations of each other & derive facts
- Understand that addition can be done in any order & use this to add a 1digit number or a multiple of 10 to any 1 digit or 2 digit number
- Partition 2 digit numbers in different ways including multiples of 10 & ones
e.g. $23 = 20 + 3$; $10 + 13$

Calculation Strategies

Progression in Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, sum, double, count on, partition, hundreds, tens, units, boundary, 'carry'

Add numbers with up to 3-digits

Building on the expanded column method

Using expanded column method

Crossing over a tens boundary

	1	5	8	+	1	2	4	=	2	8	2
	1	0	0	and	5	0	and	8			
+	1	0	0	and	2	0	and	4			
	2	0	0	and	7	0	and	12			

When they are secure with this method, they will move onto 'carrying' the 10 underneath the bottom line

	1	5	8	+	1	2	4	=	2	8	2
	1	0	0	and	5	0	and	8			
+	1	0	0	and	2	0	and	4			
	2	0	0	and	8	0	and	2			
					1	0					

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 Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, sum, double, count on, partition, thousands, hundreds, tens, units, boundary, 'carry', increase

Add numbers with up to 4-digits

Building on the expanded column method

Using column method

	5	8	+	2	4	=		
	T	U						
	5	8						
+	2	4						
	8	2						
	1							

NB ADD THE UNITS FIRST.

CARRY NUMBERS BELOW THE BOTTOM LINE

Crossing tens and hundreds boundary

	1	5	6	+	1	7	8	=	
	H	T	U						
	1	5	6						
+	1	7	8						
	3	3	4						
	1	1							

Children need to be able to:

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

Calculation Strategies

Progression in Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, sum, double, count on, partition, thousands, hundreds, tens, units, boundary, 'carry', increase, decimal place, decimal point, tenths, hundredths

Add numbers with more than 4-digits

$358.27 + 464.55 =$

	3	5	8	.	2	7			
+	4	6	4	.	5	5			
	8	2	2	.	8	2			
	1	1			1				

NB Decimal points should be aligned

Children should be able to add more than 2 values, making sure that place value columns are aligned

Empty decimal places can be filled with a 0 to show the place value

$358.27 + 1.1 + 24.55 =$

	3	5	8	.	2	7			
			1	.	1	0			
+		2	4	.	5	5			
	3	8	3	.	9	2			
		1			1				

Calculation Strategies

Progression in Addition - 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:

Addition, add, plus, makes, how many altogether, total, equals, sum, double, count on, partition, thousands, hundreds, tens, units, boundary, 'carry', increase, decimal place, decimal point, tenths, hundredths

Add several numbers with increasing complexity

$$23.361 + 9.08 + 59.77 + 1.3 =$$

		2	3	.	3	6	1			
			9	.	0	8	0			
		5	9	.	7	7	0			
	+		1	.	3	0	0			
		9	3	.	5	1	1			
		2	1		2					