Written Calculation Policy
for
Acle St Edmund
Primary School

Help your child with maths

Year 2

Progression towards a standard written method of calculation

Introduction

This calculation policy has been written in line with the programmes of study taken from the revised **National Curriculum for Mathematics (2014)**. It provides guidance on the appropriate calculation methods and progression. The content is set out in Year blocks under the following headings: addition, subtraction, multiplication and division.

Alongside written calculations, mental calculation strategies will be taught in Maths lessons throughout the school. Pupils will be encouraged to use a range of mental strategies to solve number problems and will be equipped with the necessary recall skills to aid problem solving.

Pupils will be taught to use the most efficient methods for solving both mental and written calculations and to make the right choice, depending on the size and context of the numbers. Children will use mental methods as their first port of call, but for calculations that cannot be done in their heads; they will need to use an efficient written method accurately and with confidence.

Aims of the policy

- To ensure consistency and progression in our approach to calculation.
- To ensure that children develop an efficient, reliable, formal written method of calculation for all operations (addition, subtraction, multiplication and division).
- To ensure that children can use these methods accurately and fluently with confidence and understanding.

How to use this policy

- Use the year group your child belongs to as a guide.
- Always use suitable resources to support your child's understanding of calculation e.g. number line/track, a 100 square, counting apparatus or encourage their use of recording their work by drawing their own number line, multiplication grid or recording their jottings.
- Use the language of place value when supporting your child. Try to use the same language as your child's class teacher (examples are included with each year group) and check their answers are sensible.
- Encourage your child to make suitable choices about the methods they use when solving problems.
- Support your child to develop quick recall of number facts as this is essential in your child's development of efficient and accurate problem-solving e.g. number bonds, doubles and halves and multiplication tables.

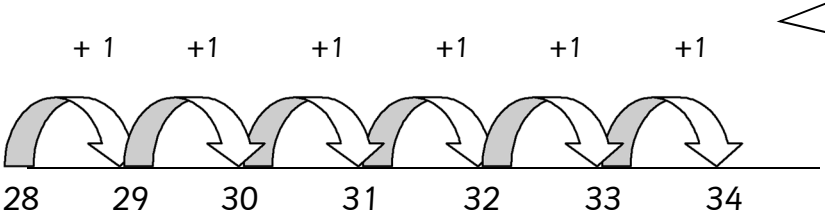
+ Addition +

Year 2

Children are introduced to **counting on** using an **empty number line** when they are secure with combining groups and using a number track/marked number line.

Children continue to count on in ones/units using an empty number line within 100. They record the numbers themselves, using only the numbers they need:

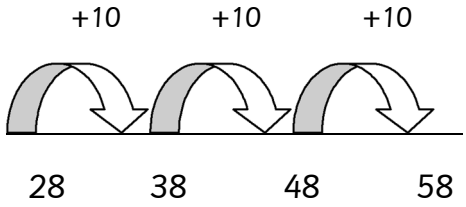
28 + 6 = 34



Put your finger on the largest number. Count on six.

Children also learn to count on in tens using a number line

28 + 30 = 58



and with a 100 number square:

28 + 30 = 58

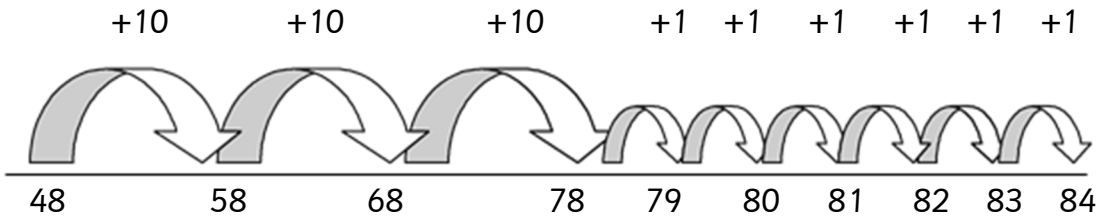
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Find 28 on the 100 square. Count on ten, twenty, thirty. What number are you on now?

Confident children are taught to add two 2-digit numbers on an empty number line:

Put the biggest number first (48) and then **partition** the smaller number (36 = 30 + 6). Count on in tens first, then in ones.

48 + 36 = 84



Along with using a 100 number square:

48 + 36 = 84

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Find the biggest number (48). Count on in tens first, then in ones/units.

Children are then introduced to adding by using the **partitioning method**:

43 + 25 = 68

40 3 20 5

40 + 20 = 60
3 + 5 = 8
60 + 8 = 68

Partition the numbers into tens and ones/units. Add the tens together, and then add the ones/units together. Add together.

Children further develop addition with numbers that bridge 100, using number lines and a 200 number square for support.

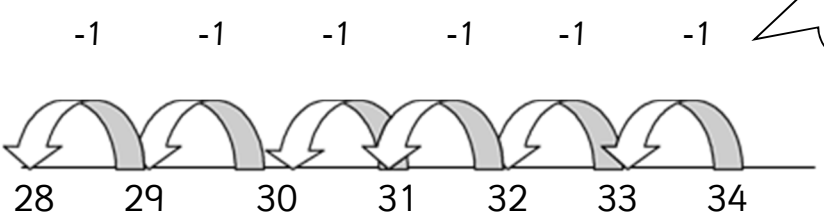
- Subtraction -

Year 2

Children continue to use apparatus, a number track or marked number line to **count back** in ones to work out a subtraction.

If secure, they can count back using an empty number line within 100, in ones…

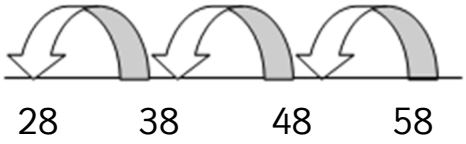
34 – 6 = 28



Start at 34. Count back 6. What number are you on now?

…and in tens:

58 – 30 = 28



Start at 58. Count back 3 tens. Ten, twenty, thirty. What number are you on now?

Children are also shown how to use a 100 number square to count back:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

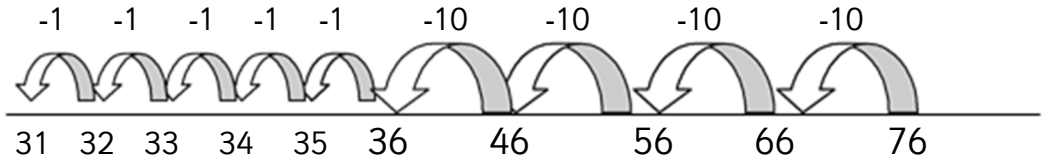
Find 58 on the 100 square. Count back ten, twenty, thirty.
What number are you on now?

58 – 30 = 28

If secure, children can use **partitioning** to work out 2–digit subtractions:

76 – 45 = 31

Partition the smaller number (45 = 40 + 5) and count back from the biggest number in tens and then in ones/units.

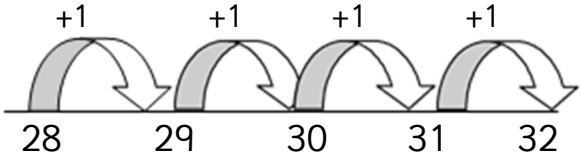


They also use a 100 number square to count back in tens and ones/units.

Counting on to find a small **difference**

If children are secure finding the difference using apparatus and models (see Year 1), they begin to use a **blank number line**, where they record the numbers they need to count up in ones/units from the smallest number to the largest number to 'find the difference.'

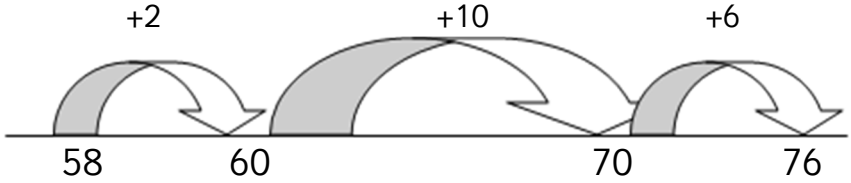
32 – 28 = 4



If children are confident, the method can be developed further with more efficient jumps using number facts and place value:

76 – 58 = 18

The difference between 58 and 76 is 18.



A 200 number square and apparatus, e.g. cubes, diennes, can be used to support subtractions that bridge 100.

X Multiplication X

Year 2

Children continue to use a range of vocabulary to describe multiplication and use practical resources, pictures, diagrams and the multiplication (x) symbol to record their work. Children are expected to begin learning their times tables starting with 2x, 5x and 10x.

Multiplication is described as **repeated addition** or combining groups.

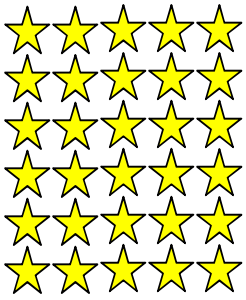
There are three ***groups*** *of ten crayons. How many crayons are there altogether?*

What is 3 **times** 10?

We also say:
10 + 10 + 10 = 30
3 **groups** of 10
3 **lots** of 10
3 x 10 = 30 or 10 x 3 = 30

Children use **arrays** to support multiplication:

6 x 5 = 30



Different ways to describe this ***array*** *are:*

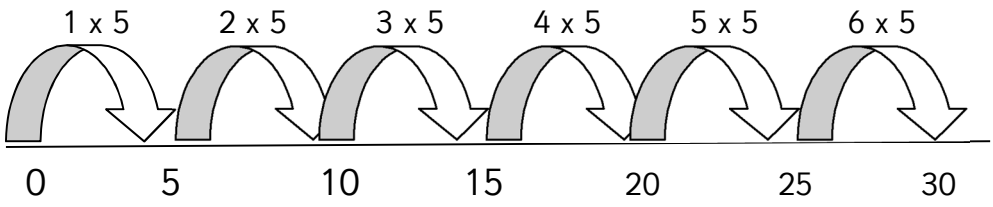
5 + 5 + 5 + 5 + 5 + 5 = 30

6 **rows** of 5

6 **groups** of 5

5 x 6 = 30 and 6 x 5 = 30

Children begin to use an **empty number line** to record their work and make the link to **repeated addition**:



÷ Division ÷

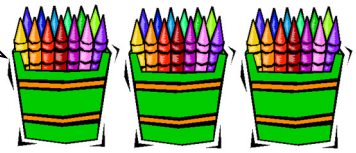
Year 2

Children continue to use a range of vocabulary to describe division as well as practical resources, pictures and diagrams, and begin to use the division (÷) symbol to record their work. They learn the multiplication and division facts for the 2x, 5x and 10x tables and apply them in their problem solving.

Division as **sharing**

30 crayons shared between 3 pots.

Division as **grouping**



If we have 30 crayons and put ten crayons in a pot, how many pots do we need?

We also say,
30 divided by 10 = 3
30 divided by 3 equals 10
30 ÷ 10 = 3
30 ÷ 3 = 10

Children continue to use **arrays** to support their understanding of division.

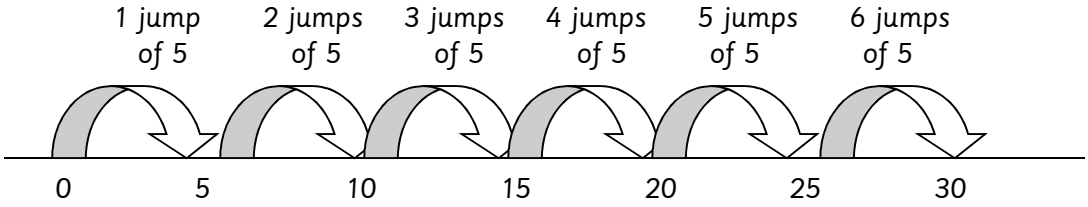
15 ÷ 5 = 3
15 ÷ 3 = 5

How many groups of 3?
How many groups of 5?
What is 15 shared between 3 people?
15 shared between 5 people is?

15 divided by 5 = 3
15 divided by 3 equals 5

When children are secure solving problems using practical resources and **arrays**, they move onto using an **empty number line** to count forwards:

$$30 \div 5 = 6$$



And make the link with **repeated subtraction**:

Start at 30 and keep taking away 5.

$$30 \div 5 = 6$$