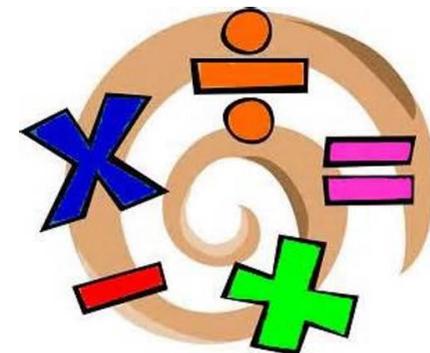


Culworth and Boddington CE Primary Academies



**Calculation handbook for
parents with children in
Year 2**



Progression towards standard written methods of calculation

INTRODUCTION

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

Statements taken directly from the programme of study are listed in italics at the top of each section.

The Federation of Culworth and Boddington C of E Primary Academies uses the Big Maths resources to teach mental calculation strategies, including the key number facts that children will need to know called 'learnits.'

Children will use mental methods as their first port of call, when appropriate, but for calculations they cannot do in their heads, they will need to use an efficient method accurately and with confidence.

Within school, children will be given opportunities to deepen their understanding of concepts through a range of problems and real life situations, rather than moving on to the content of the next year group.

"Decision about when to progress should always be based on the security of pupils understanding and their readiness to progress to the next stage."

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AIMS OF THE HANDBOOK

- To enable parents to have a secure knowledge and understanding of the informal (mental) and formal written methods of calculations for all four operations taught in school.

Year 2

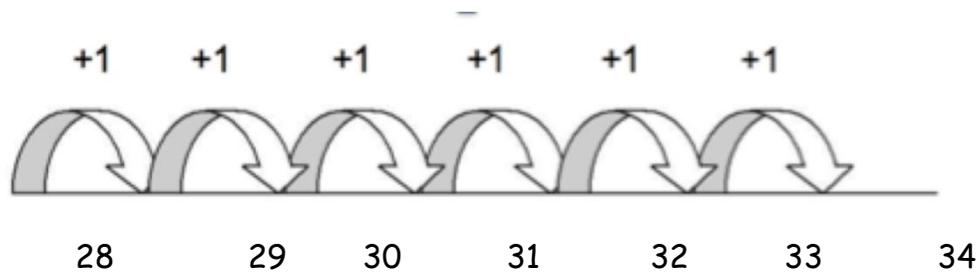
Addition - Year Two

- *Add numbers using concrete objects, pictorial representations, and mentally, including:*
 - A two digit number and ones
 - A two digit number and tens
 - Two two-digit numbers
 - Three one- digit numbers

NB Ensure that children are confident with the methods outline in the previous year's guidance before moving on.

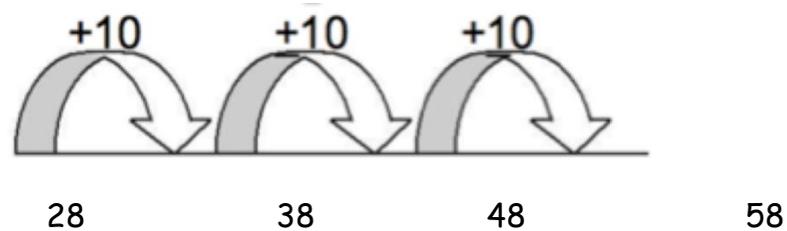
Counting on in ones using an empty number line, within 100....

$$28 + 6 = 34$$



... And in tens

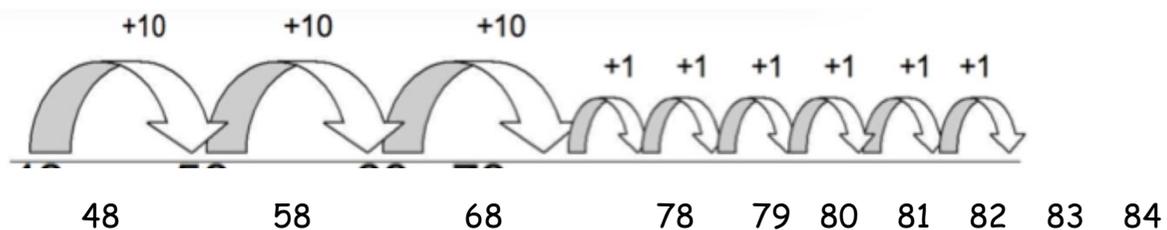
$$28 + 30 = 58$$



Use in conjunction with a 100 square to show jumps of tens.

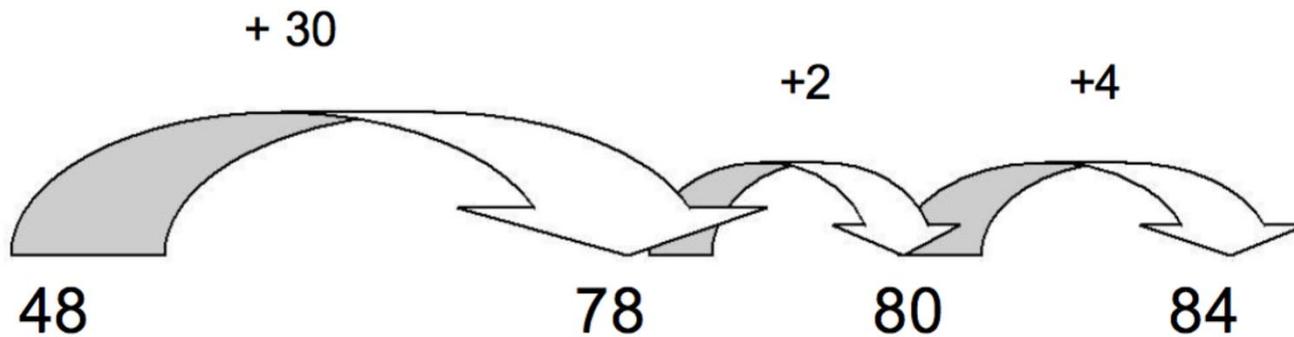
$$48 + 36 = 84$$

'Put the biggest number first (48), and then partition the smallest number (36 = 30 and 6) and count on: 48 + 30 + 6



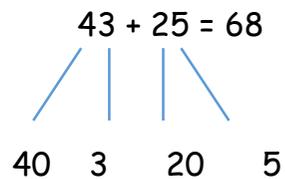
Use in conjunction with a 100 square to show jumps of tens and ones.

If children are confident, use more efficient jumps....



Use in conjunction with a 100 square to show jumps of tens and ones/units.

Also use the partitioning method to add two two-digit numbers:



$$40 + 20 = 60$$

$$3 + 5 = 8$$

$$60 + 8 = 68$$

'Partition the numbers into tens and ones/units.

Add the tens together and then add the ones/units together.

Recombine to give the answer'.

Then move on to calculations that bridge the tens:

$$48 + 36 = 40 + 8 + 30 + 6$$

$$40 + 30 = 70$$

$$8 + 6 = 14$$

$$70 + 14 = 84$$

$$48 + 36 = 84$$

This is an alternative way of recording the partitioning method.

Further develop addition with numbers that bridge 100, using a 200 grid to support.

NB If, at any time, children are making significant errors, return to the previous stage in calculation.

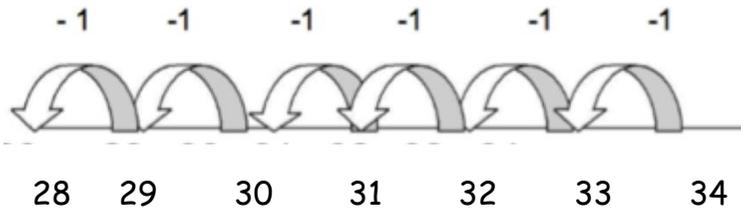
Subtraction - Year Two

- Subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - A two digit number and ones
 - A two digit number and tens
 - Two two-digit numbers

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

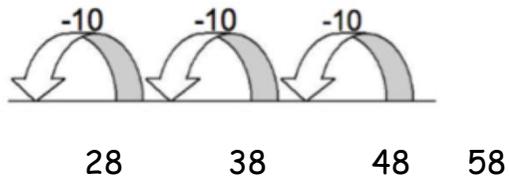
Counting back using an empty number line within 100, in ones ...

$$34 - 6 = 28$$



... and in tens:

$$58 - 30 = 28$$



Use in conjunction with a 100 square to show jumps of tens.

Subtraction, using partitioning, on an empty number line:

$$76 - 45 = 31$$

-1 -1 -1 -1 -1 -10 -10 -10 -10

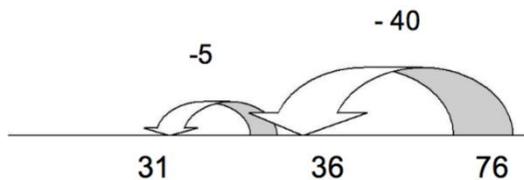


31 32 33 34 35 36 46 56 66 76

Use in conjunction with a 100 square to show jumps of tens and ones.

If children are confident, use more efficient jumps:

$$76 - 45 = 31$$



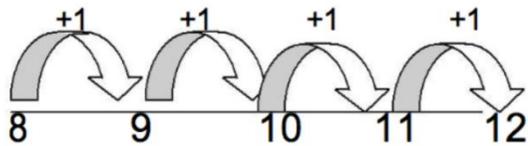
$$76 - 40 - 5 = 31$$

Use in conjunction with a 100 square to show jumps of tens and ones.

Counting on to find a small difference

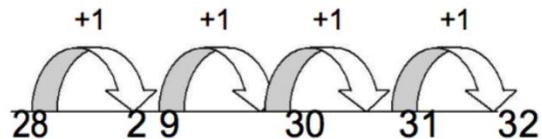
Introduce complementary addition to find differences (only use for small differences). The use of model is extremely important here to understand the idea of 'difference' (see Y1 guidance).

$$12 - 8 = 4$$



'The difference between 8 and 12 is 4.'

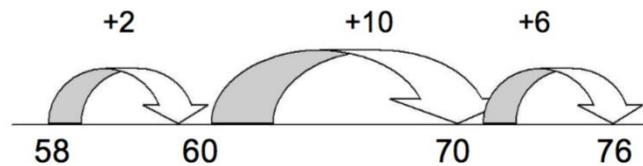
$$32 - 28 = 4$$



'The difference between 28 and 32 is 4.'

If children are confident, further develop this method:

$$76 - 58 = 18$$



'The difference between 58 and 76 is

Further develop subtraction with numbers that bridge 100, using a 200 grid to support.

NB If, at any time, children are making significant errors, return to the previous stage in calculation.

Multiplication - Year 2

- *Recall and use multiplication facts for the 2, 5 and 10 multiplication tables*
- *Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (x) and equal (=) signs*
- *Solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts*
- *Show that multiplication of two numbers can be done in any order (commutative)*

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Children will use a range of vocabulary to describe multiplication and use practical resources, pictures, diagrams and the x sign to record.

Combining Groups (repeated addition):



'3 groups of 10 crayons'

'How many crayons altogether?'

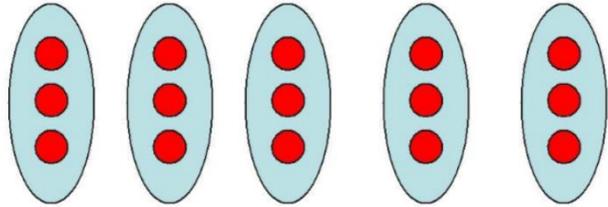
' $10+10+10 = 30$ '

'3 groups of 10'

'3 times 10'

' $3 \times 10 = 30$ '

' $10 \times 3 = 30$ '



'5 groups of 3'

'3+3+3+3+3=15'

'3 multiplied by 5'

'3x5 = 15'

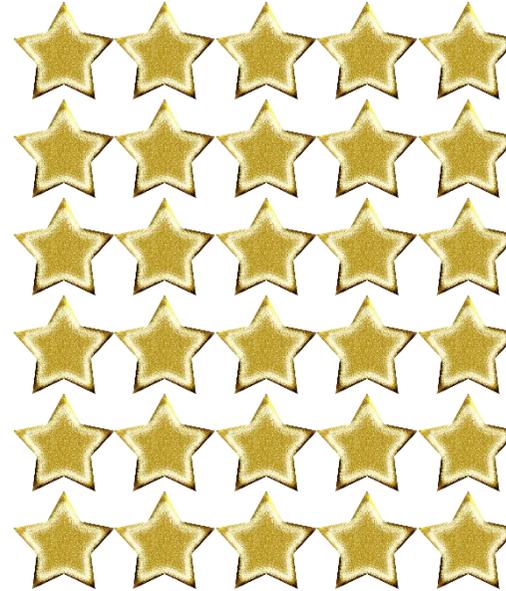
'5 lots of 3'

'5 times 3'

'5x3 = 15'

Using arrays to support multiplication

$$6 \times 5 = 30$$



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

'6 rows of 5'

'6 groups of 5'

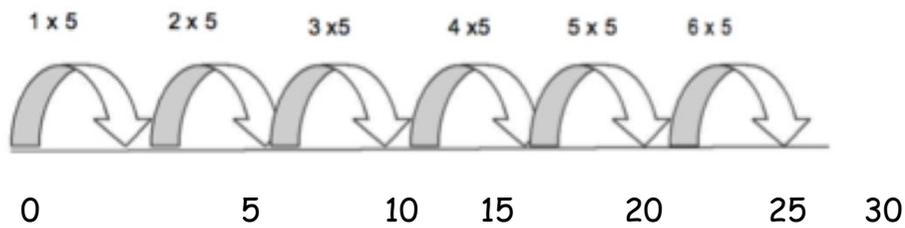
'5 groups of 6'

'5x6= 30'

'6x5 = 30'

Use an empty number line:

$$6 \times 5 = 30$$



Make the link to repeated addition.

NB If, at any time, children are making significant errors, return to the previous stage in calculation.

Division - year 2

- *Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables*
- *Calculate mathematical statements for division within the multiplication tables they know and write them use the division (\div) equals (=) signs*
- *Solve problems involving division, and multiplication and division facts, including problems in contexts*

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Children will use a range of vocabulary to describe division and use practical resources, pictures, diagrams and the \div sign to record, using multiples that they know.

Sharing and grouping:



'30 crayons shared equally between three pots' (Sharing)

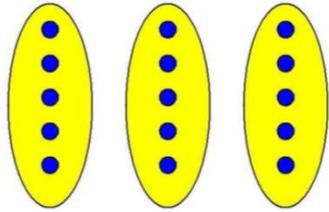
'We have 30 crayons and put ten crayons in each pot. How many pots do we need?' (Grouping)

'30 divided by 10 = 3'

$$30 \div 10 = 3$$

'30 divided by 3 = 10'

$$30 \div 3 = 10$$



$$15 \div 5 = 3$$

$$15 \div 3 = 5$$

'How many groups of 5?'

'15 shared equally between 3 people is?'

'15 divided by 3 equals 5'

'15 divided by 5 equals 3'

Using arrays to support division

$$15 \div 5 = 3$$

$$15 \div 3 = 5$$



How many groups of 3?

How many groups of 5?

15 shared between 3 people is ...?

15 shared between 5 people is....?

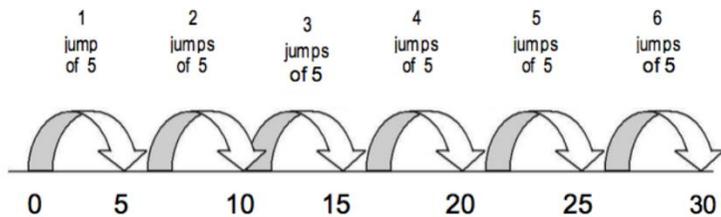
15 divided by 5 = 3

15 divided by 3 = 5

When children are ready, use an empty number line to count forwards:

$$30 \div 5 = 6$$

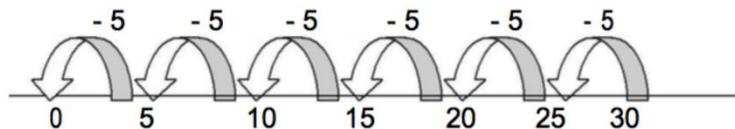
'How many jumps of five make thirty?'



Also jump back to make the link with repeated subtraction:

$$30 \div 5 = 6$$

'How many groups of five?'



NB If, at any time, children are making significant errors, return to the previous stage in calculation.