CONCRETE · PICTORIAL · ABSTRACT

Measham C of E Primary School

Calculation Guide

Addition

A guide for parents and carers on the methods used in school

Rationale

Mathematics is all around us; it underpins much of our daily lives and our futures as individuals and collectively. As the Secretary of State for Education said last year:

'... mathematical understanding is critical to our children's future. Our economic future depends on stimulating innovation, developing technological breakthroughs, making connections between scientific disciplines. And none of that is possible without ensuring more and more of our young people are mathematically literate and mathematically confident. Mathematical understanding underpins science and engineering, and it is the foundation of technological and economic progress. As information technology, computer science, modelling and simulation become integral to an ever-increasing group of industries, the importance of maths grows and grows.'[1]
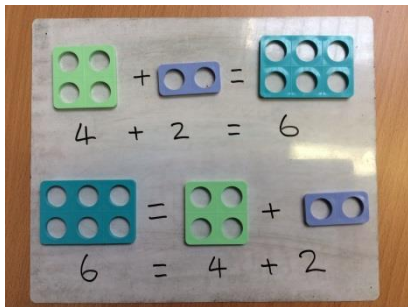
It is therefore of fundamental importance to ensure that children have the best possible grounding in mathematics during their primary years.
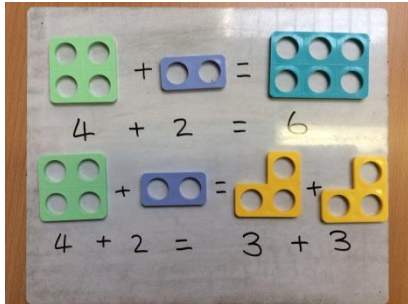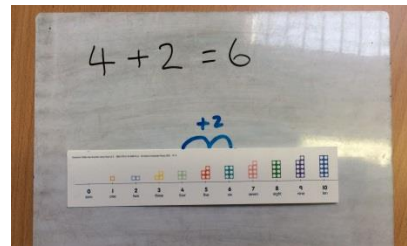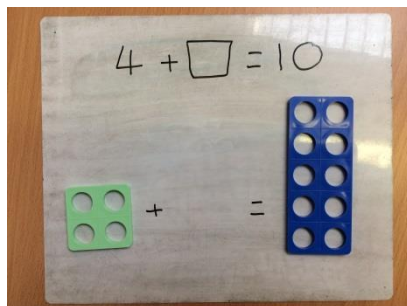
I can use objects to help me add sets of numbers
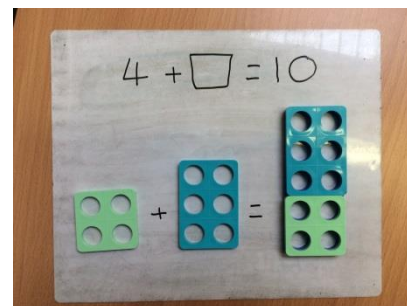
I can balance a calculation either side of an equals sign

I know that the equals sign can be either side of the calculation.

4 + 2 = 6

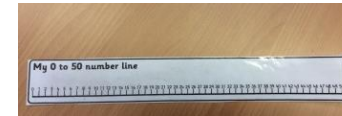I can use a number line to help count on from any number

I can find the missing number in a calculation by using different objects to help

Mental Strategies

- I can count on and back, in steps of 2,5 and 10.
- I can count forwards in ones from any number.
- I can say my number bonds to 20.
- I can relate 7+3 = 10 and 10-3=7.

Equipment

Key Vocabulary

Add, addition, forwards, put together, more than, total, altogether, distance between, difference, equals, same as, counting on
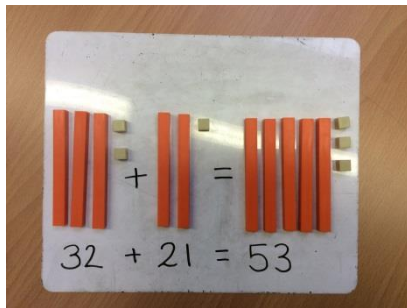
Example of Key Questions

I'm thinking of a number. I've added 8 and the answer is 19. What number was I thinking of?
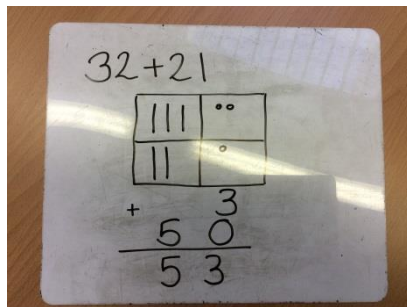
Explain how you know.

I know that 7 and 3 is 10. How can I find 8 + 3?
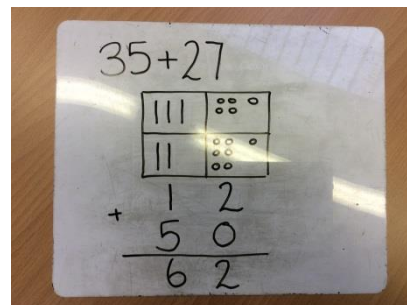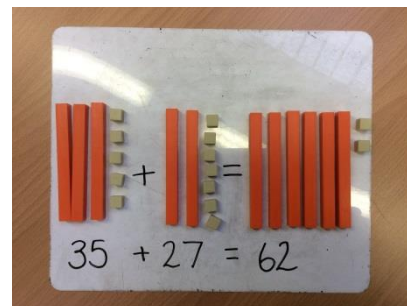
How could you work it out?

Year 2

I can use different equipment to help me add. For example, to calculate 32 + 21, I count the Units/Ones first and then the Tens

I can draw my own pictures/jottings to help with my addition.

32 + 21 = 53

When the Units/Ones total more than 10, I can change my Ten Units/Ones for one Ten. For example, when adding 35 + 27, I can work it out like this:
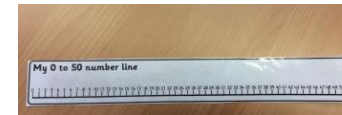
I can draw my own pictures to help with my addition.

35 + 27 = 62

Year 3
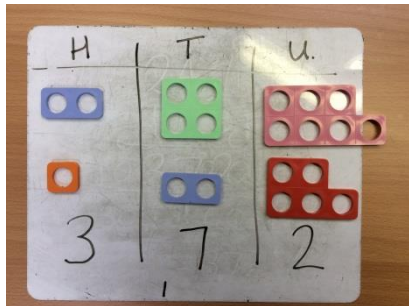
I can add by partitioning both numbers, adding them and then putting them back together
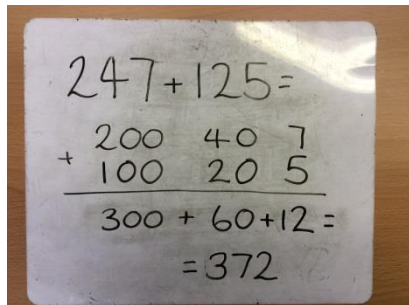
I can use Numicon shapes to help

$$247 + 125 =$$

$$
\begin{array}{ccc}
 & 200 & 40 & 7 \\
+ & 100 & 20 & 5 \\
\hline
 & 300 & + 60 + 12 = \\
 & & = 372
\end{array}
$$

When I am secure with adding by using partitioning - I can then use a column method, carrying the tens across to the next column

I can use Numicon to help

$$
\begin{array}{r}
247 \\
+ 125 \\
\hline
372 \\
\hline
\end{array}
$$

Mental Strategies

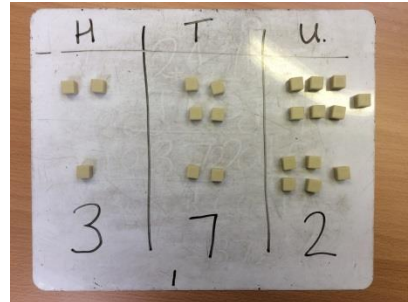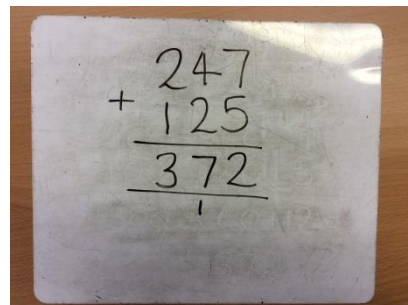- I can count on and back, in steps of 4, 8, 50 and 100.
- I can add the nearest multiple of 10 then adjust e.g. 63+29 is the same as 63+30-1.
- I can count on by partitioning e.g. 72+31 = 72+30+1 = 102+1 = 103

Equipment

Key Vocabulary

Hundreds, Tens, Ones/Units, estimate, partition, recombine, difference, decrease, near multiple of 10 and 100, inverse, rounding, column addition, exchange, carry forward

Example of Key Questions

Sophie has five coins in her pocket. How much money might she have?
What is the greatest amount she can have?
What is the least amount she can have?

Year 4

I can use a column method up to 4 digits carrying the tens and hundreds across to the next column

I can still partition if I need extra visual support

When I am secure with column addition, I can begin to add numbers involving decimals.

I must remember that the decimal place never moves.

- I can count on and back, in steps of 4,6,7,8,9,25, 50 and 100.
- I can add the nearest multiple of 10 then adjust e.g. 63+29 is the same as 63+30-1.
- I can count on by partitioning e.g. 72+31 = 72+30+1 = 102+1 = 103

Equipment

Key Vocabulary

Add, addition, more, plus, increase, total, altogether, double, near double, how many more to make...? How much more, boundaries, ones/units, tens, hundreds, thousands, tenths, hundredths, inverse, equals

Example of Key Questions

Complete this diagram so that the three numbers in each row and column add up to 140.

Now create your own diagram with a total of 250.
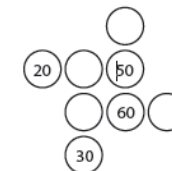
Year 5

I can use a column method for addition, carrying the tens, hundreds and thousands across to the next column – this will increase to adding more than 4-digit numbers

When I am secure with column addition of larger numbers, I can now add numbers involving decimals.

I must remember that the decimal place never moves.

I can begin to calculate addition with missing numbers

Mental Strategies

- I can count forwards and backwards using tenths and hundredths
- I can count forwards and backwards for negative and positive numbers
- I can partition using multiples of 10 e.g. 238+56 = (200+30+8)+(50+6)=

Equipment

Key Vocabulary

Add, addition, more, plus, increase, total, altogether, double, near double, how many more to make...? How much more, boundaries, ones/units, tens, hundreds, thousands, tens of thousands, tenths, hundredths, inverse, equals

Example of Key Questions

Use this number sentence to write down three more pairs of decimal numbers that equal 3:

1·6 + 1·4 = 3

Year 6

When I am secure with column addition of larger numbers, I can now add numbers involving decimals.

I must remember that the decimal place never moves

I can solve word problems using addition to show my understanding at a deeper level

Two numbers have a difference of 2·38. The smaller number is 3·12. What is the bigger number?

Two numbers have a difference of 2·3. They are both less than 10. What could the numbers be?

- I can investigate order of operations using BODMAS e.g. Brackets, Operations, Division, Multiplication, Addition and Subtraction

Equipment

Key Vocabulary

Add, addition, more, plus, increase, total, altogether, double, near double, how many more to make...? How much more, boundaries, ones/units, tens, hundreds, thousands, tens of thousands, millions, tenths, hundredths, thousandths, inverse, equals

Example of Key Questions

A shop sells magazines and comics. Last week Arthur bought a magazine and a comic. He can't remember exactly what he paid, but he thinks he paid £1·76.
Yesterday he bought a magazine and four comics. He paid £4·30.
Do you think he is remembering correctly when he says that he paid £1·76 last week?