Maths

Ebchester Church of England Primary School

A guide for parents

Maths at Ebchester

If the word 'maths' brings back memories of page after page of calculations then you possibly feel that maths is hard and boring! More importantly, you may feel confused when you look at your child's maths books which will contain pictures, writing, number lines and jottings.

Certainly younger children, up to Year 3, will record calculations in a variety of ways that do not necessarily look like the kind of maths you remember. This is because written calculations are not the ultimate aim: the aim is for children to do calculations in their heads and, if the numbers are too large, to use a way of writing them down that helps their thinking. As children develop their mathematical understanding through Years 3, 4, 5 and 6 they will be asked if they can complete a calculation in their head. Sometimes this will need to be supported by a drawing, diagram or notes. If they can't do it in their heads they will then look for the most suitable written method or maybe even use a calculator for more complex calculations.

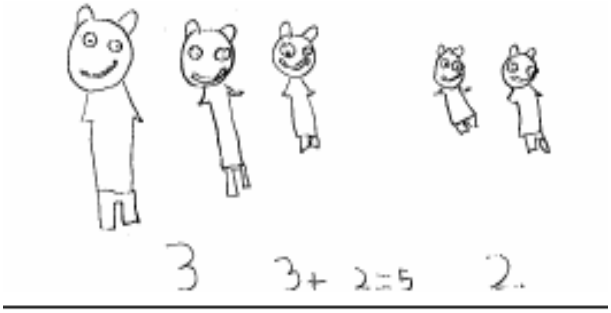
The aim of this booklet is to outline some of the ideas relating to number development used at Ebchester Church of England Primary School. These range from the early counting skills and drawings in the Infants to more formal calculations used by the older children.

We hope that it will allow parents to support their children with their homework by using the same strategies that they are familiar with in school.

Addition

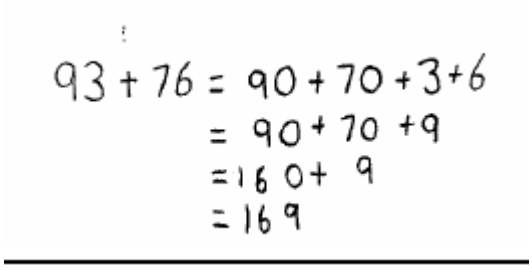
The youngest children in the school will spend a lot of time on practical activities. They will begin to record what they have done with pictures and numbers. These pictures show how they have recorded their work.

For example- Jane has 3 bears. She was given 2 more. How many does she have now?



In years 3 and 4 children continue to record addition horizontally. The example below shows an example of adding 76 and 93. Firstly, the child has partitioned (splits) the numbers 76 and 93 into tens and units (ones). They have then added the tens together and then added on the units to give 169.

For example- In a school there are 76 boys and 93 girls. How many children are there altogether?



Using this method of recording the calculations makes the process of adding the different digits clear to the children. These methods build on the mental methods that have been learnt and should help children to understand what is happening.

For example- The blue team's score of 287 points is increased by 145 points. What is the new score?

Each number has been split into hundreds, tens and units. The hundreds are added together as are the tens and the units. Finally, each of the totals are added to give the final answer.

287 + 145 =

200 + 100 = 300

80 + 40 = 120

7 + 5 = 12

432

The oldest children in the school are able to use this method. The previous work they have completed gives them a solid understanding of the value of each number and what they are doing at each step.

For example- 478 people visited Newcastle on Saturday. 366 people visited on Sunday. How many people visited Newcastle over the full weekend?

4 7 8

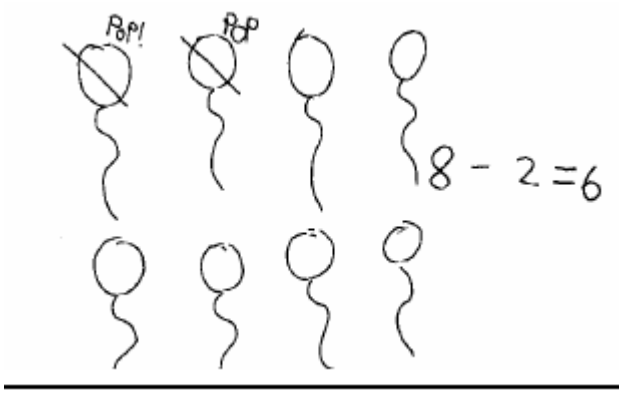
3_1 6_1 6

8 4 4

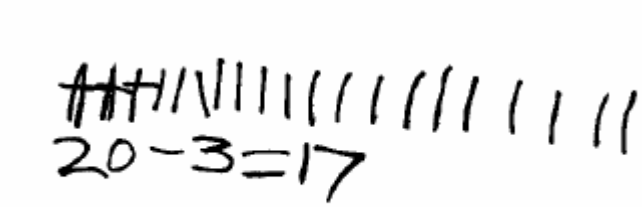
Subtraction

Again, the youngest children will begin to record what they have done with pictures and numbers.

For example- There were 8 balloons. Two popped. How many were left?

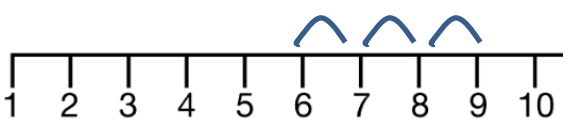


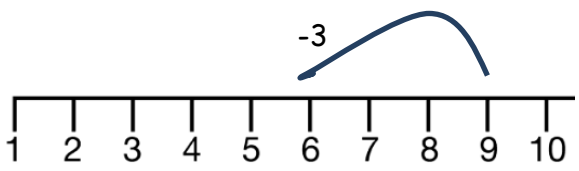
For example- There are 20 children in our class. Three are away today. How many are here?



Number lines are used to support mathematical thinking. Children can begin to use a number line to count back from the larger number using single jumps or larger jumps.

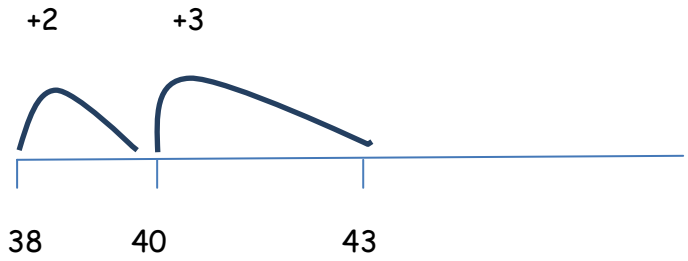
For example - 9 – 3 =





We use blank number lines to find a small difference by counting up from the smaller to the larger number.

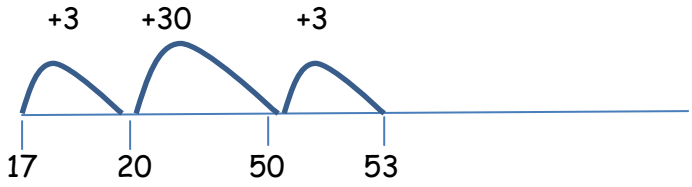
For example- 43 – 38 =



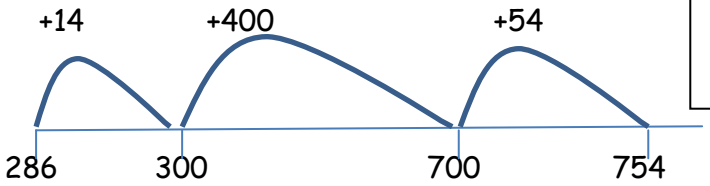
Using knowledge of the relationship between addition and subtraction allows us to count up from the smaller number to the bigger number thus turning a 'subtraction' into an 'addition.'

For example- 53 – 17 =

17 + ? = 53



This method can also be used with larger numbers- 754 – 286 =



Begin with 286, 14 is needed to count onto the next friendly number, 300; then a further 400 to land on 700; and finally another 54. All of the jumps total 468.

We can also calculate the subtraction using the decomposition method. This method involves exchanging an amount from a higher place value and giving it to a lower place value in the top number and re-writing the top number so that its value does not change.

For example- 8436 take away 2138

$8\ 4\ {}^{2}\cancel{3}\ {}^{1}6$

$2\ 1\ 1\ 8$

$3\ 6\ 1\ 8$

As 8 cannot be subtracted from 6, exchange ten from the tens column and add it to 6 and at the same time, reduce the number of tens from 3 to 2. Now subtract 8 from 16 to obtain 8 in the units column.

8253 – 327 =

As 7 cannot be subtracted from 3, exchange ten from the tens column and add it to 3 and at the same time, reduce the number of tens from 5 to 4. Now subtract 7 from 13 to obtain 6 in the units column. Complete the same procedure in the hundreds column.

$^{7}8\ ^{1}2\ ^{4}\cancel{5}\ ^{1}3$

$3\ 2\ 7$

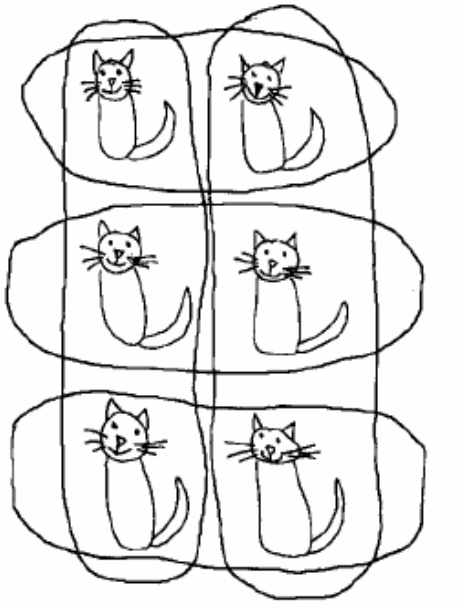
$7\ 9\ 2\ 6$

Multiplication

Children in the Infants will be recording their work using drawings to demonstrate that they've understood what is happening. In this example the pupil has drawn six objects and has been asked to draw rings to show them as 2 lots of 3 or 3 lots of 2.

2 x 3 cats = 6 cats or

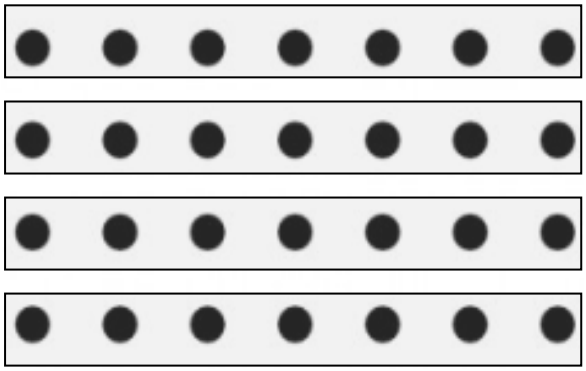
3 x 2 = 6 cats



2 lots of 3 apples make 6 apples

Dot pattern grids help children understand multiplication and division. Seeing numbers set out as rectangular patterns of dots help children to develop an understanding of repeated addition and division as subtraction of groups.

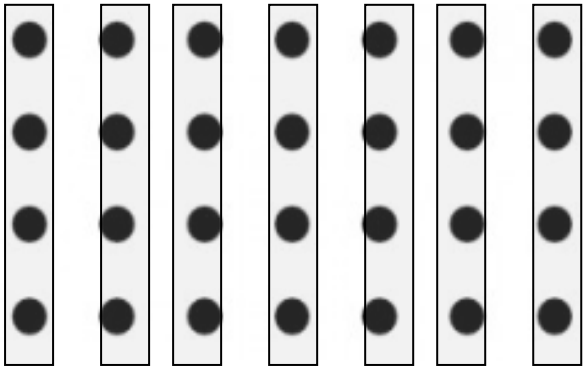
7



4

7 x 4 = 28 or

28 ÷ 4 = 7



4 x 7 = 28 or

28 ÷ 7 = 4

When dealing with larger numbers and calculations that children can't complete in their heads, we introduce expanded methods for multiplying. This method requires numbers to be partitioned (split) into hundreds, tens and units.

For example- How many sweets do I need for 24 party bags if each is to have 6 sweets?

24 x 6 =

20 x 6 =120

4 x 6 = 24

120 + 24 = 144

24 is partitioned into 20 and 4. 20 is multiplied by 6 and 4 is multiplied by 6. The answers to both multiplications are added to give the final answer.

526 x 4 =

500 x 4 = 2000

20 x 4 = 80

6 x 4 = 24

2104

526 is partitioned into 500, 20 and 6. 500 is multiplied by 4 then 20 is multiplied by 4 and 6 is multiplied by 4. The answers to all multiplications are added to give the final answer.

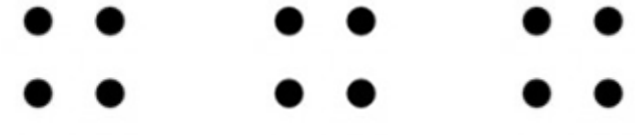
Division

Sharing – sharing is used when finding fractions of quantities e.g. 3/5 of 20

You would share 20 sweets between 5 children and see how many sweets 3 of them had altogether.

Dividing - How many 4s in 12?

12 ÷ 4 = 3



Division is often taught with equipment so that children can see how the numbers are grouped together. Often they are asked to work with blocks, cubes and coins to show how they have solved a problem and to develop their own understanding.

The expanded method for division is sometimes called 'chunking.' Chunking allows us to partition numbers into helpful chunks which can be taken away from the total.

For example- 72 apples are packed into boxes of 6. How many boxes are needed?

72 ÷ 6 =

6 √72

60 (10 x 6)

12

12 (2 x 6)

00

10 + 2 = 12

72 ÷ 6 = 12

Take 6 groups of 10 (60) from the total 72. This leaves 12. Take away 2 groups of 6 which is 12. If we add 10 groups and 2 groups together it gives 12. 72 divided by 6 is 12.

In some cases numbers cannot be divided without leaving remainders.

For example- 127 divided by 9

9 ⟌127

90 (10 x 9)

37

36 (4 x 9)

1

This is the remainder as you cannot make another group of 9. The answer is 14 remainder 1.

As the children progress, they are able to divide larger numbers by two and three digit numbers using the same method.

For example- 656 ÷ 24

24 x 10 = 240

24 x 5 = 120

24 x 2 = 48

Recording these multiplication facts will help with the division.

24 ⟌ 656

240 (10 x 24)

416

240 (10 x 24)

176

120 (5 x 24)

56

48 (2 x 24)

8 (remainder)

More confident workers could subtract 20 groups of 24 (480) from 656.

Many thanks to – QCA for the images used and Leicestershire Primary Maths Team Documents