Parents' Guide to Mathematics at The Bythams Primary School

Year 4

Dear Parents,

This booklet is to help you understand how the main four operations in Maths are taught at Bythams School. Each guide has the main objectives for the year group and how it is taught in the concrete, pictorial and the abstract. The concrete is all about physical things, such as cubes, bead strings and counters which the children manipulate to understand the objectives. The pictorial is when concepts are shown in a pictorial form such as photos, diagrams and number lines. The abstract moves to formal methods and word problems to understand the objectives. All three methods are used in conjunction with one another, not as a progression.
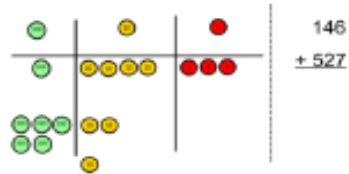
Addition

| Column method-regrouping

Column method-regrouping. (up to 4 digits) | Make both numbers on a place value grid.
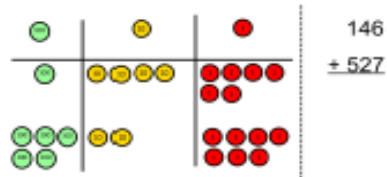
Add up the units and exchange 10 ones for one 10.

Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added.

This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100.

As children move on to decimals, money and decimal place value counters can be used to support learning. | Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.
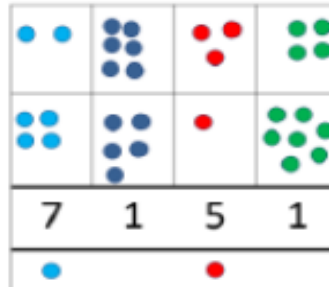
 | Start by partitioning the numbers before moving on to clearly show the exchange below the addition.

$20 + 5$
$40 + 8$
$60 + 13 = 73$

$\begin{array}{r} 536 \\ + 85 \\ \hline 621 \\ 1\ 1 \end{array}$

As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.

$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \\ 1\ 1 \end{array}$

 |

Subtraction

| Column method with regrouping

Column method with regrouping (up to 4 digits) | Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.

Make the larger number with the place value counters

234
- 88
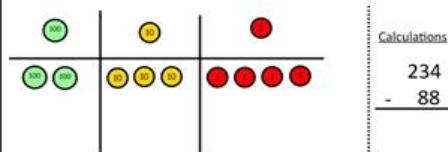
Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.

234
- 88 |
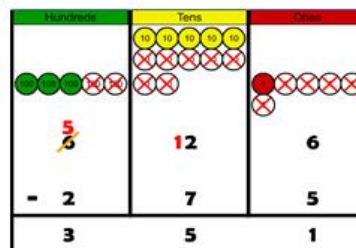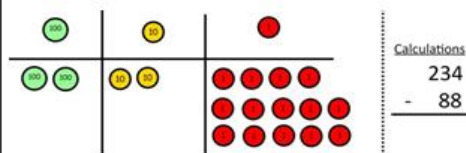
Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.

When confident, children can find their own way to record the exchange/regrouping.

Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup. | 836 - 254 = 582
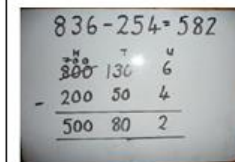
Children can start their formal written method by partitioning the number into clear place value columns.

728 - 582 = 146
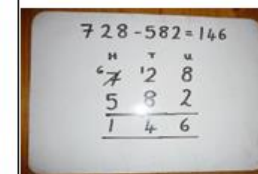
Moving forward the children use a more compact method. |

Now I can subtract my ones.

Calculations
234
- 88
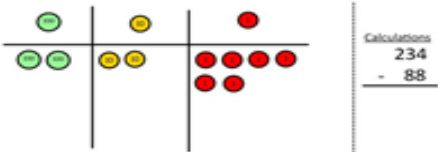
Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.

Calculations
234
- 88
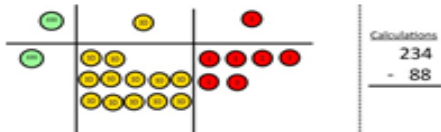
Now I can take away eight tens and complete my subtraction

Calculations
234
- 88
146
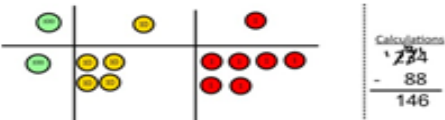
Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.

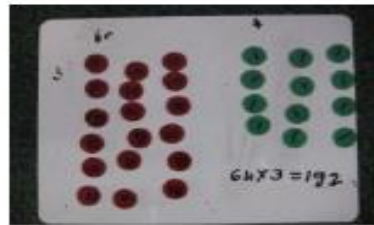This will lead to an understanding of subtracting any number including decimals.

$$\begin{array}{r} \overset{5}{2}\ \overset{12}{\cancel{6}}\ \overset{1}{\cancel{3}}\ .\ 0 \\ -\ \ 2\ \ 6\ .\ 5 \\ \hline 2\ \ 3\ \ 6\ .\ 5 \end{array}$$

Multiplication

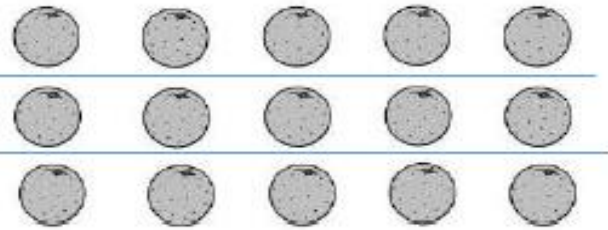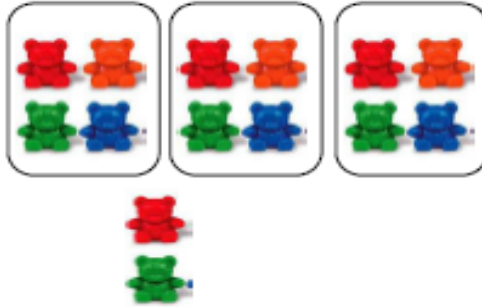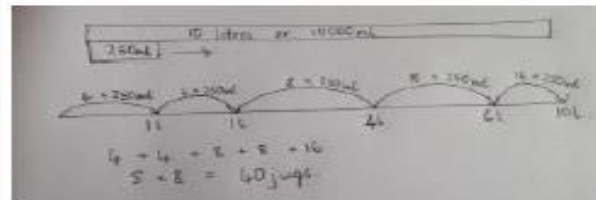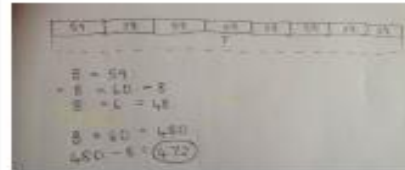| Column multiplication	Children can continue to be supported by place value counters at the stage of multiplication.	Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.	Start with long multiplication, reminding the children about lining up their numbers clearly in columns.
Column multiplication (2 and 3 digit multiplied by 1 digit)	64X3 =192 It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.		If it helps, children can write out what they are solving next to their answer. $\begin{array}{r} 32 \\ \times\ 24 \\ \hline 8 \\ 120 \\ 40 \\ 600 \\ \hline 768 \end{array}$ (4 x 2) (4 x 30) (20 x 2) (20 x 30) This moves to the more compact method. $\begin{array}{r} 1342 \\ \times\quad 18 \\ \hline 13420 \\ +\quad 10736 \\ \hline 24156 \end{array}$ (x10) (x8)

Division

Division within arrays	Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7

Division with a remainder	14 ÷ 3 = Divide objects between groups and see how much is left over	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder. Draw dots and group them to divide an amount and clearly show a remainder. remainder 2	Complete written divisions and show the remainder using r. 29 ÷ 8 = 3 REMAINDER 5 dividend divisor quotient remainder

Short division	Tens Units	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.	Begin with divisions that divide equally with no remainder.

Short division

Short division (up to 3 digits by 1 digit- concrete and pictorial)

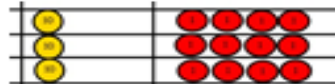**Tens** **Units**

3   2

3

Use place value counters to divide using the bus stop method alongside

Calculations
42 ÷ 3

42 ÷ 3 =
Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.

We exchange this ten for ten ones and then share the ones equally among the groups.

We look how much in 1 group so the answer is 14.

Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.

Encourage them to move towards counting in multiples to divide more efficiently.

Begin with divisions that divide equally with no remainder.

$$2 \ 1 \ 8$$
$$4 \overline{)8 \ 7^{3} \ 2}$$

Move onto divisions with a remainder.

$$8 \ 6 \ r \ 2$$
$$5 \overline{)4 \ 3^{3} \ 2}$$

Finally move into decimal places to divide the total accurately.

$$1 \ 4 \ . \ 6$$
$$3 \ 5 \overline{)5 \ 1^{16} \ 1^{21} \ . \ 0}$$

What you can do at home to help your child make progress

- *discuss how you might work out the cost of a week's food for the family. Encourage your child to estimate the shopping bill by keeping a running total while you shop*

- *try to find examples of numbers that contain fractions or decimals in a daily newspaper, a magazine or on food containers*

- *make a list of calculations where the answer is the same. What is the hardest calculation that can be made?*

- *use pieces of card to make a three dimensional model of a room to a sensible scale*

- *work out how much time, on average, different people spend doing different things*

- *measure ingredients when cooking*

- *take opportunities to discuss weights written on packets of food and what they mean in terms of grams and kilograms*

- *look at maps of different scales of your local area, for example, a road atlas and a web map, and discuss how far it is from your home city, town or village to other nearby places.*