Hadleigh High School Pyramid of Primary Schools.
Bildeston & Whatfield Partnership

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BILDESTON
PRIMARY SCHOOL

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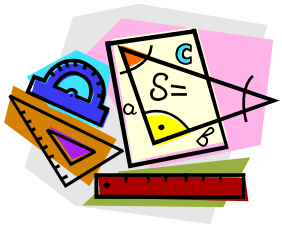


A Guide to Mathematics at Home and School

All About Mathematics at Home and School

Welcome to our guide to Mathematics. It is intended to help you help your child as well as explain some of the approaches and methods we teach in school. Maths, both written and mental, is a subject which has changed considerably over the past decade, so don't be worried if some seems unfamiliar.

We spend a good deal of time working on practical and mental maths, with more formal written methods introduced when the children are ready. You will find a 'rough guide' to the expected progress in methods, but we aim to be flexible in our time scale to suit the learning needs of your child.

We have included some ideas for practical maths at home, which you are already likely to be doing. If you have any ideas you would like to share with other parents please let us know.

Should you need anything in this booklet explained further, please do not hesitate to ask any of the teaching staff. We are always delighted to hear about the maths you are doing at home and happy to help ensure we are supporting your child in the same way.

At Bildeston we use the 'Maths No Problem' scheme based on the Singapore method, which places great emphasis on solving problems and calculations using concrete objects, pictorial representations and abstract representations (numbers and letters in algebra).

There is a helpful set of short parent videos aimed at explaining this on www.mathsnoproblem.co.uk/parent-videos.

Addition

We teach Maths using a lot of practical apparatus in Reception and a range of mental strategies. At Key Stage One a lot of time is spent teaching number bonds to 10 and 20, so that children know that 7 + 3 make 10 and 17 + 3 make 20.

Strategies for teaching mental addition include:

* Putting the largest number first:
  3 + 36 is the same as 36 + 3. Start at 36 and count on in ones
  30 + 60 is the same as 60 + 30. Start at 60 and count on in tens

* Partitioning:
  Group the tens and units together
  14 + 25 = (10 + 4) + (20 + 5)
  (10 + 20) = 30
  (4 + 5) = 9
  30 + 9 = 39

* Adjusting, using near tens:
  17 + 9 = 17 + 10-1 = 26
  26 + 11 = 26 + 10 + 1 = 37

* Doubles or near doubles:
  8 + 8 = 16
  So 8 + 9 = 8 + 8 + 1 = 17

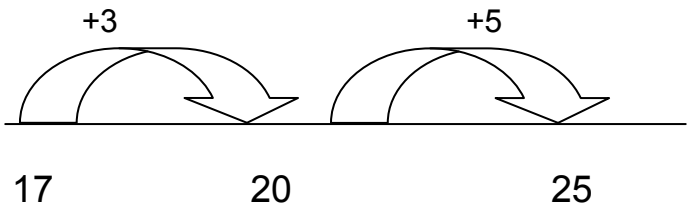
* Bridging through 10, 20 etc.
  8 + 7 = (8 + 2) + 5
  10 + 5 = 15
  15 + 9 = (15 + 5) + 4
  20 + 4 = 24

The children are encouraged to ask the question 'Can I do this in my head?' If not, they are encouraged to do informal jottings. Some of these are shown on the following pages.

One popular method is the use of **a number line**—these support the children's thinking to help with mental addition and **do not** need to be drawn to scale.

Number Lines:

17 + 8 =



If asked to add 36 and 19 he / she may choose one of the following methods:

36 + 19 = 36 + 20 -1

Or = 36 + 10 + 9

Or = 30 + 10 + 6 + 9

Important tip:

Rather than showing your child the method you use, ask them 'Can you explain your method to me?'

Other methods may include:

* Partitioning the number , adding units and then tens together e.g.

36 + 19 =

(6 + 9) + (30 + 10) =
15 + 40 = 55

* This relates to another form which leads onto the expanded column method:

(30 + 6)
(10 + 9)
40 + 15 answer is 40 + 15 = 55

This expanded method then leads on to the 'standard' written form, which you will probably know well.

36
+14
55

Watch out for decimals!

When your child is Introduced to decimals, usually using money, be sure that they 'line up' their decimal points when using the standard written method.

£3.75
£1.45
£5.20

SUM ADDITION ALTOGETHER TOTAL MAKE

PLUS + ADD

Subtraction

In KS1 Children are taught to count back and find the difference using number lines.

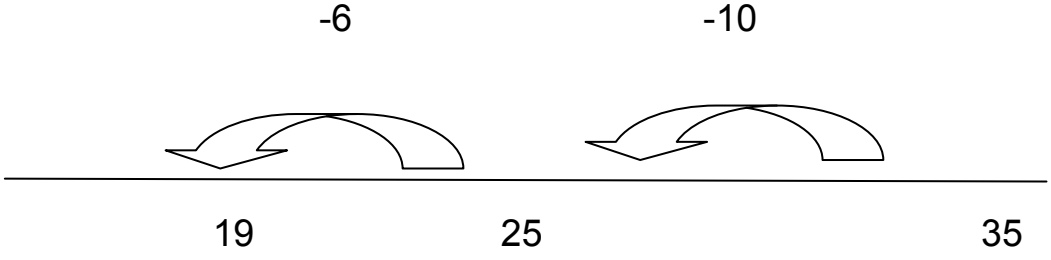
- 'Can you do it in your head?' If not informal jottings such as these will help:

45 - 37 = 8
Solve this by counting on—start at 37, add 3, add 5 (3 + 5) = 8

262 - 95 = 167
Could be done by counting back - subtract 100 then add 5
(95 is 5 less than 100)

- The number line can be used to support either counting on or back.

35 -16 = 19



Now the trickier bit—using 'decomposition' - a formal written method. As adults we were taught a variety of different 'tricks' for subtracting e.g. 'borrowing', 'exchanging', 'carry over', etc. This is how we do it now:

First of all we partition the subtraction equation out:

Example 1: 563 - 241 =

```
  500   60    3
- 200   40    1
  300   20    2      = 322
```

Example 2: 563 - 241 =

```
  500  60 + 3
-200  70 + 8
```

Partition 60 into 50 + 10.
The 10 goes with the 3 to make 13.

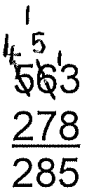
```
  500  60 + 13
-200  70 +  8
```

Partition 500 into 400 + 100.
The 100 goes with the 50 to make 150.

```
  400  150  13
-200   70 + 8
  200   80 + 5  = 285
```

This way of working eventually is shortened to the method you are probably used to:

```
  5 6 3
- 2 7 8   =
```



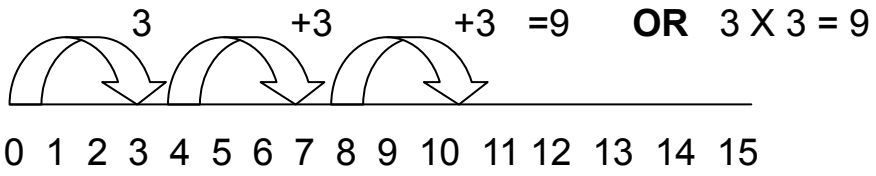
By using this approach we aim for children to understand the structure of numbers as we work with them. This is not attempted until Key Stage Two.

TAKE AWAY DIFFERENCE BETWEEN MINUS

SUBTRACT - FEWER THAN MORE THAN

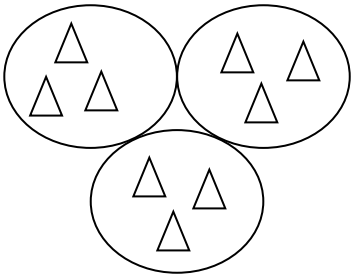
Multiplication

Multiplication is a short cut for repeatedly adding the same number which can be shown clearly using the number line:

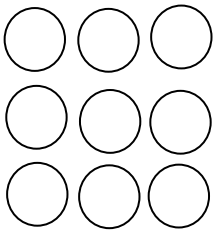


Children begin by making sets of objects and then adding these together in lots of practical work and drawing. Then their drawing becomes more formalised as they set out their drawing in arrays. They also begin to relate the repeated addition sign to the 'x' sign.

Drawing 3 sets of 3



Drawing an array of 3 X 3



Children learn doubles of numbers followed by counting in twos, tens and fives. These are the first 'multiplication' facts that they learn in year 1 (what adults often recognise as 'times tables'). As soon as they are able more multiplication facts are learnt.

Year 2 learn to 'count-on in jumps of 3, 4, 8, 50 and 100 before learning the multiplication table for 3s, 4s and 8s.

Year 3 learn to 'count-on in jumps of 6, 7, 9, 25 and 1000 before learning the multiplication table for 6s, 7s, 9s, 11's and 12s.

By the end of year 4 children should have rapid mental recall of all the multiplication tables up to 12 x 12, and the corresponding division facts.

Multiplication

As numbers become bigger written methods are introduced to help organise calculations:

- ‘Long multiplication’:

Example 1: 36 x 4 =

```
  36
 X 4
 ---
  24   (6X4)
 120 (30X4)
 ---
 144
```

Here the numbers are partitioned and multiplied separately before being added at the end. This shows the children where the answers are coming from. It can work for 2 digit numbers X single digits and 2 digit numbers X another 2 digit number.

Eventually, when secure with this method, children will progress to the formal multiplication method:

```
   34
 X 28
 ----
  272
 680
 ---
 952
 ---
```

Another method that **might** be taught to children who need it is outlined below:

- <u>The grid method</u>:

Example 1: 29 x 6 = 174

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X	20	9	Total
6	120	54	174

Example 2: 28 x 34 = 840 + 112 = 952

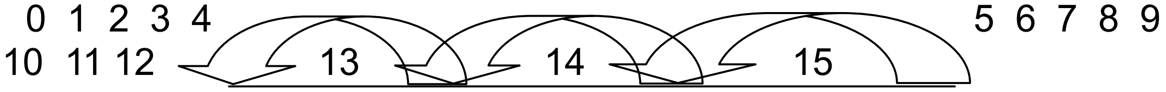
Example 2: 28 x 34 = 840 + 112 = 952

X	20	8	Total
30	600	240	840
4	80	32	112
			952

As you can see this involves splitting or partitioning numbers into units, tens, hundreds and multiplying them separately before adding all of the answers.

Division

Division is actually the same as repeatedly taking away the same number—once again the number line can be used:



How many 5s are there in 15?

- In practical work children organise items into sets and share equally from an early age. They can record this through drawing. In Year 1 children will be shown the division sign ÷. In Year 2 they are halving and solving division sentences with objects including those with remainders. They will learn how to record this 15 ÷ 5 = 3 or 17 ÷ 5 = 3 r 2. In Year 3 they are recalling division facts for 2, 3, 4, 5, 8 & 10 x tables as part of mental methods but they are also beginning to develop reliable written methods for division.

As children become more secure with their multiplication and division facts they are introduced to formal recording, such as the 'bus stop' method.

'Bus stop' method example :

98 ÷ 7 becomes

	1	4
7	9	$^{2}8$

Answer: 14

Long Division by chunking example :

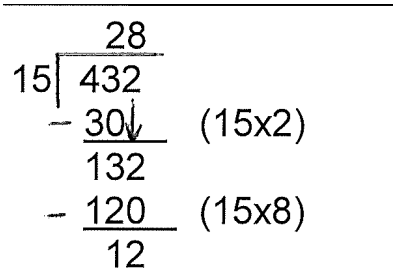
432 ÷ 15 becomes

			2	8	
1	5	4	3	2	
		3	0	0	15×20
		1	3	2	
		1	2	0	15×8
			1	2	

$\frac{\not{12}}{\not{15}} = \frac{4}{5}$

Answer: $28\frac{4}{5}$

Formal long division



So 432 ÷15 = 28 r 12

In Year 4 the children should be dividing 2 and 3 digit numbers using the 'Bus stop' method. In Year 5 they should be dividing 4 digits and using larger 'chunks'. In Year 6 children are using 'Long division' to divide 4 digits by 2 digits.

These approaches to calculations are taught when individual children are ready for them.

SETS OF ***REMAINDER*** ***÷*** ***CHUNKING*** ***FACTOR***

DIVIDE ***SHARE*** ***GROUP***

Including Maths at Home

There are many ways in which you can include Maths at home, many of which you probably already do without thinking about it. However, the more children experience Maths in its practical uses the better, making them confident and the subject more relevant to their every-day lives. So here are some ideas for you to consider:

Shopping

- Look at prices
- Work out change
- Weigh fruit and veg
- Read labels to talk about weight, capacity, shape, colour
- Estimate a final bill
- Calculate the cost of a family trip to the swimming pool or cinema

Time

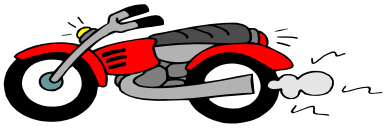
- Identify numbers on the clock
- Calculate how long a journey will take
- Use a TV guide to work out the length of a programme
- Look at posting times on a post box
- Discuss events and times of the day
- Set an alarm clock
- Look at analogue and digital times

- Which journeys take longest?
- Where can you reach from home in ....
  Less than an hour?
  Between 1 and 2 hours?
  More than 2 hours?

Learn times tables (vital to all area of maths and really help the children with their confidence)

Counting

- Animals in a field
- Pages in a storybook-
  -where did you start?
  -where did we end?
  -how many have we read?
- Particular vehicles on a journey e.g. Eddie Stobart lorries, motor-bikes, etc.
- Count in 10s, 20s, 100s, etc. How far can they get?!
- Tidy a cupboard and count the contents, e.g. tins, shoes.



Beat the Clock

Time your child as they do one of the following:

- Count back from 100 in tens
- Count back from 75 in fives
- Starting at six, count up in tens to 206
- Starting at 39, count up in twenties to 239
- Starting at 67, count up in thirties to 367

Record their times and see if they can beat them!

Numbers all around ...

- Add the digits to find biggest, smallest and total.
- Share out sweets in groups to help with times tables.
- Using telephone numbers work out the value of each digit.
- Use a round cake to work out fractions.

Pizza Problems

Your pizza costs £3.60. Cut it into six equal slices.

How much does each slice cost?
How much do two slices cost?
How much does half of the whole pizza cost?
What if your pizza is cut into four equal slices (quarters)?

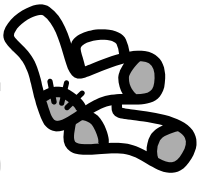
How much does one slice cost now?
How much does half cost now?
Is it the same, more or less than above?

Number Games

Limitless games give practice in counting, tactics, reasoning, sequencing, etc. Here are just a few ideas:

- Skipping—every skip count, 2,3,4, etc.
- Hop Scotch
- Snakes and ladders
- Dominoes
- Card games
- Yahtzee
- Darts
- Dot to Dot puzzles
- Sudoku
- Cribbage

Sorting and Matching

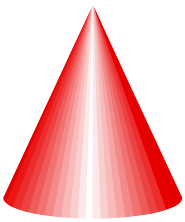


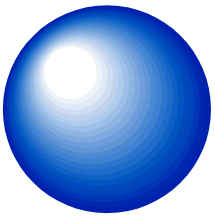
Set the table, sorting the cutlery.
Sort clothes for washing—size, colour.
Match pairs of socks, gloves, shoes.
Sort groceries.

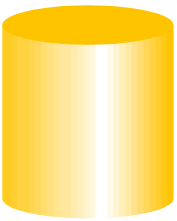
Reasoning

- Lay the table for four people. How many knifes, forks and spoons will I need altogether?
- Plan a TV viewing session, 'How long will the programme last?'

Shapes





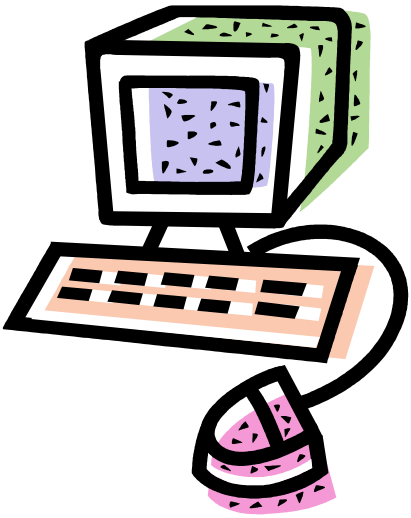


Talk about shapes, encourage children to identify shapes around them - packaging, railings, pavements, etc.

Computer Games

The computer can provide great opportunities to practise Maths, but remember that **talking about and explaining ideas is what is most important.**

Some websites are recommended on the following pages.



Useful websites

www.counton.org

www.bbc.co.uk/schools

http://resources.woodlands-junior.kent.sch.uk/maths/

http://www.topmarks.co.uk/Interactive.aspx?cat=20

http://www.primaryinteractive.co.uk/maths.htm

http://www.crickweb.co.uk/ks2numeracy.html

http://www.bbc.co.uk/bitesize/ks2/maths/

http://mathsframe.co.uk/

http://www.mad4maths.com/kids/

Www.ictgames.com

In addition: At Bildeston every child has their own mathletics account where teachers set targeted challenges for your child. Log onto *www.**mathletics**.co.uk for exciting chances to play against classmates, or even children across the world!*

Enjoy exploring Maths!