Melrose Primary School

Teaching and Learning of Numeracy

Guide for parents

'Big Maths' is a teaching method used at Melrose Primary School to help pupils to become numerate. Problem solving and word problems are more challenging until children can manipulate and understand how numbers work.

This teaching method uses child friendly language to aid understanding and enjoyment. Consequently the children learn terms such as 'Switchers' and 'Learn Its', rather than 'commutative law' and 'number bonds'. Fictional characters are used to help the children manipulate numbers which in turn increases their confidence and success. These 'child friendly' terms are teaching strategies linked to mathematical concepts. The children, over time, will learn the mathematical terms.

As many of these strategies are based on active learning approaches both jotter and workbook work, linked to numeracy, is very limited in the early years. The knowledge, understanding and skills of numeracy the children gain will be increased and evidenced through their ability to apply these skills in other contexts

The basic skills of maths are acquired through a four stage process. '**CLIC**' as it is known in Big Maths, is fundamental to mathematical development because this is the learning sequence through which we all develop numeracy.

The four elements of **CLIC** are:

1. **C**ounting- Learn to count
2. **L**earn Its – Learn to remember totals as facts
3. **I**t's Nothing New – Children are then able to 'swap' the thing realising that the counting fact or 'Learn It' can be applied to any object, amount or unit of measure.
4. **C**alculation – Learn to structure all the previous three phases into a formal calculation.

This guide explains strategies and characters used in 'Big Maths' to support the children's learning.

Learn its: What is a Learn it?

- ✓ Recall of specific number facts – requires NO thinking time
- ✓ A 'Learn it' therefore is a number fact that is learnt so well that it can be recalled instantly
- ✓ 'Switchers' – if they know 3 + 2 then they also know 2 + 3

The 36 Addition 'Learn Its'

+	2	3	4	5	6	7	8	9
2	4							
3	5	6						
4	6	7	8					
5	7	8	9	10				
6	8	9	10	11	12			
7	9	10	11	12	13	14		
8	10	11	12	13	14	15	16	
9	11	12	13	14	15	16	17	18

The 36 Multiplication 'Learn Its'

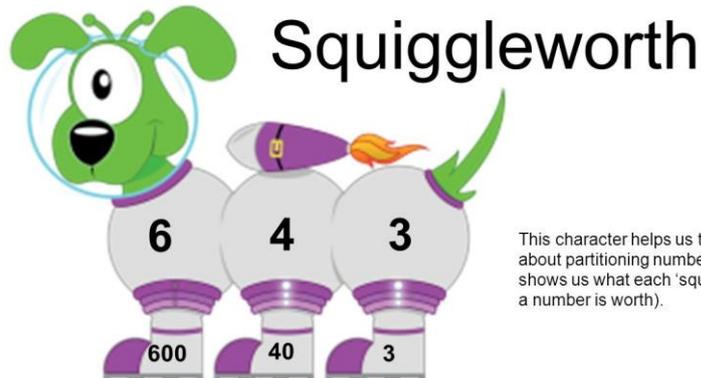| x	2	3	4	5	6	7	8	9
2	4							
3	6	9						
4	8	12	16					
5	10	15	20	25				
6	12	18	24	30	36			
7	14	21	28	35	42	49		
8	16	24	32	40	48	56	64	
9	18	27	36	45	54	63	72	81

Fact Families

When pupils are learning their 'Learn Its' facts they are taught to understand the concept of the 'commutative law' which says that 3 add 4 must be the same as 4 add 3 and so on, in 'Big Maths' this is called a 'switcher', which gives the message to the pupils that they can switch the numbers and end up with the same answer. Pupils then realise that they only need to learn the 'switcher' concept once and then any new single fact they can recall becomes 2 facts. Once this concept has been grasped pupils will then learn about the Fact Family concept. This fact family concept is the ability to derive an inverse fact from a known fact.

FACT FAMILIES

If I know
3 + 7 = 10...
Then I know...
7 + 3 = 10
10 - 7 = 3
10 - 3 = 7

If I know
2 x 4 = 8
Then I know
4 x 2 = 8
8 ÷ 2 = 4
8 ÷ 4 = 2

If I know
3 x 40 = 120
Then I know
40 x 3 = 120
120 ÷ 40 = 3
120 ÷ 3 = 40
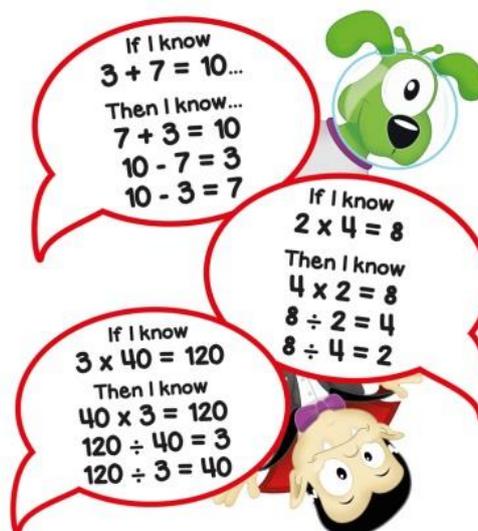
Remember, "Now we know this, we must also know this, this and this!"

Big Maths

Squiggleworth – The Place Value Pet

This character helps us to learn about partitioning numbers (he shows us what each 'squiggle' in a number is worth).

Squiggleworth is used to help pupils have fun when they practise partitioning i.e. 439 = 400 + 30+ 9 in order to have a clear understanding of the value of each digit.

When pupils demonstrate an understanding of the value of digit in a number they can then use the headings of Hundred, Tens and Units etc.:-

Count Fourways

If children learn to count out loud in four particular ways it advances their numeracy skills. Pupils are introduced to the character 'Count Fourways' who helps them to count in these four ways, which are; 1s, 2s, 5s and 25s. Each of these four ways is built upon progressively and in alignment with the children's developing understanding of place value.

Counting in this way leads pupils through a back door to higher levels of understanding about how to use the same number pattern with amounts of 10s, 100s, 1000s, tenths and negative numbers. The same 'four ways' is used to develop understanding of fractions.

The four ways are:
counting in 1s, 5s, 2s and 25s.

Children count in ones and then 10s, 100s, 1000s, 1/10ths, 0.1s, -1s

Children count in 2s and then 20s, 200s, 2000s, 1/5ths, 0.2s, -2s

Children count in 5s and then 50s, 500s, 5000s, 1/2s, 0.5s, -5s

Lastly children count in 25s and then 25s, 250s, 2500s, 1/4s, 0.25s, -25s

PIM – The Friendly Alien

'PIM' stands for the 'principle of irrelevant matter'. Pupils use him to understand the idea that number facts remain the same no matter what you are counting i.e. 3+4=7 is true if you are counting dogs, chocolates, hundreds, thousands, metres, litres etc. In other words '3 things and 4 things *always* equals 7 things'.

Where's Mully?

Mully or 'Mully Multiple' is a character used to play a game called 'Where's Mully?' The objective of the game is to find where Mully is hiding. Mully helps to extend pupil knowledge of multiples and become proficient at division. Children are asked to find Mully by identifying the largest multiple of a given number yet staying in the parameters of a limited maximum number.

Pom's Words

Pom is another friendly alien. Pom has several features which help children learn 4 key mathematical words: multiple, factor, square and prime. Using words such as 'multiple' regularly from an early age ensures that mathematical language becomes part of pupils' normal vocabulary. For example when asking pupils to count in 10s, you might say 'We are going to count in multiples of 10'. This way pupils develop a deeper understanding of the numbers from the very beginning.
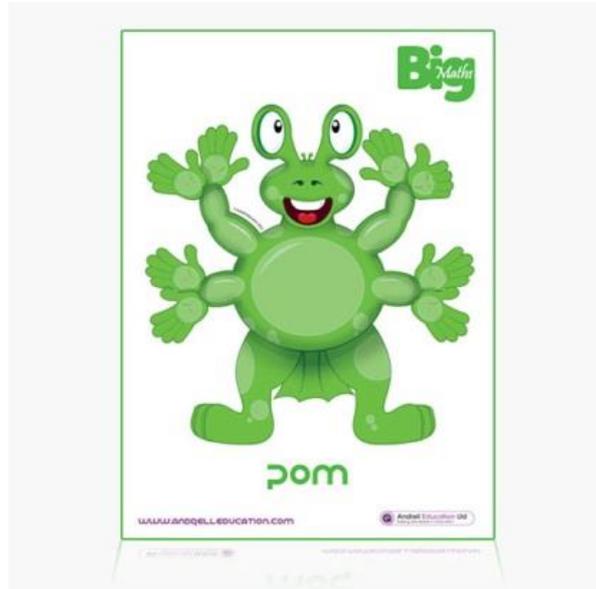
Jigsaw Numbers

If you think of a 2 piece jigsaw with a total on the front acting as a finished picture, then Jigsaw Numbers are the two numbers that total that 'finished picture'. Jigsaw numbers are essentially number bonds, but when the total is not just any number but a special total that has place value significance (such as 10, 100 or 1000). This gives pupils a strategy to help them to quickly calculate mentally the missing piece to 100. This provides the foundations for many other areas of numeracy success.
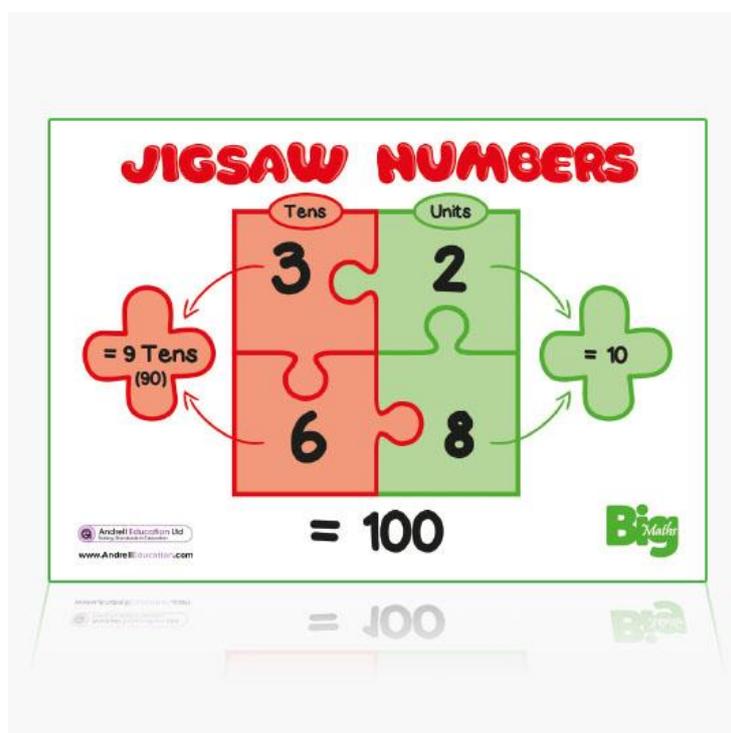
Smile Multiplication

This is a strategy used to help children understand multiplying by multiples of 10. Pupils can use this to multiply 3 x 40 using their knowledge of tables facts (3 x 4 =12) and as they understand that the 'thing' has not changed, it is simply that the thing is 'tens' and so 'it's nothing new' to say that 3 lots of 4 tens are 12 tens (or 120). We call this 'Smile Multiplcation' because of the smiley face that is drawn by pupils when they first start applying the skill of multiplying by multiples of 10.

Smile Multiplication follows 3 simple 'remember to' instructional statements:

✓ Remember to do the tables bit
✓ Remember to count the zeros in the question (giving you the place value of the numbers)
✓ Remember to use the zeros on your answer (as your place holders)

Smile Multiplication – is used for multiplying multiples of 10 e.g. 40 x 6

Smile Multiplication 😊

30 X 80 = 2400

24

· Do the tables bit
· Count the zeros in the question
· Put the zeros on your answer!

Coin Multiplication

A fundamental part of being numerate is the ability to find multiples of numbers quickly and easily, and to understand how and why what you have done works. Coin mulitplicatiopn is a strategy which builds on this to help pupil find more challenging multiples by mathematically manipulating the multiples you already know and understand. The building blocks for coin multiplication come about by taking a given number (usually a 2 digit number) and then finding the 1st, 2nd, 5th, 10th, 20th and 100th mulitples of that number. Pupils are shown how all of these multiples can be found simply by: multiplying by 10, halving and doubling. Pupils are then taught to skilfully add multiples together to find new multiples. The example below shows a full coin card for finding multiples of 32.

COIN MULTIPLICATION
My full Coin Card

x 32	
1	32
2	64
5	160
10	320
20	640
50	1600
100	3200

Andrell Education Ltd
www.AndrellEducation.com

Big