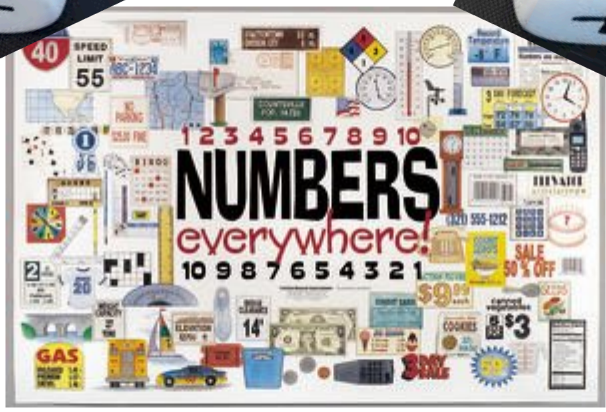
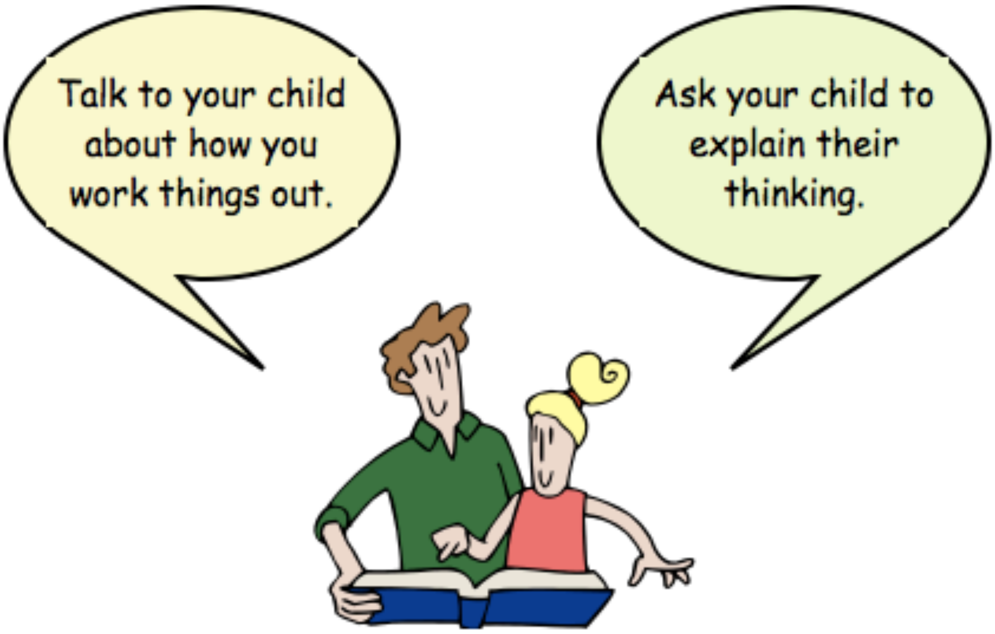


Helping your child with maths

CALCULATION

The maths work your child is doing at school may look very different to the kind of 'sums' you remember. This is because children are encouraged to work mentally, where possible, using personal jottings to help support their thinking. Even when children are taught more formal written methods (from year 3 onwards), they are only encouraged to use these methods for calculations they cannot solve in their heads.

Discussing the efficiency and suitability of different strategies is an important part of maths lessons.

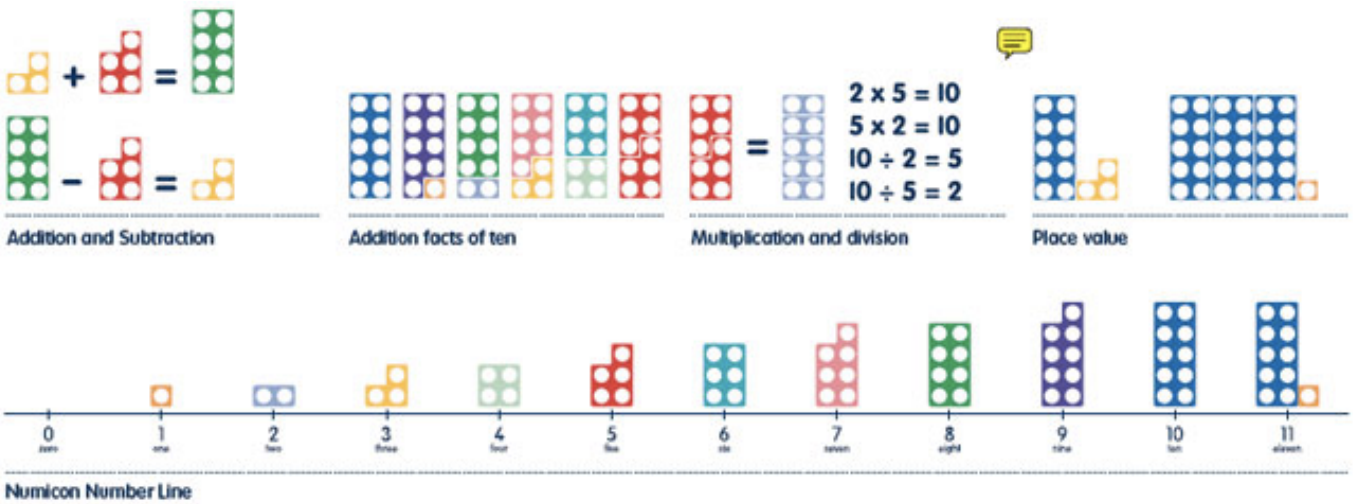


Numicon at Home

We have just started to use Numicon at Pear Tree and we see it as another valuable tool to help your child to grasp numbers.

Numicon is a multi-sensory approach to teaching maths developed by experts in the classroom. It is designed to help children understand connections between numbers.

Through the multi-sensory activities and mathematical language of *Numicon*, your child will develop the understanding and skills that underpin their later understanding of number.



On the Numicon website you will find handy tips, videos and resources to help you support your child's maths at home.

https://global.oup.com/education/content/primary/series/numicon/numicon-at-home/?region=uk#

Vocabulary: A consistent approach

It is vitally important that we are all using the same mathematical vocabulary on a consistent basis. Below is the most common words that we use when we are discussing each calculation.

add
plus
total
sum
more than
increase
altogether
score
double

subtract
minus
half
halve
less than
fewer than
take away
decrease
difference between

multiply
times
product
lots of
groups of
multiplied by
multiple of

divide
halve
share
division
factor
remainder
equal groups of
divided by
divided into
shared equally

Confidence and Positivity is the Key…

It's all about confidence… For children to have a positive mindset towards maths, they need to feel confident about giving it a go. Praising your child for their effort, not their ability, will increase their confidence and make them hungry to learn more.

Positivity is the key… Children who succeed at maths are usually the ones who enjoy it most, so remember – maths is fun, everyone! Yep – just keep telling yourself that, even if that's not the way you remember it from your own childhood. We all know how easily children pick up on the things we say, so it's vital that you don't pass on your dislike or fear of maths by saying things like 'I was never any good at maths' or 'I hated maths at school' etc…

I strongly recommend that you check out this website below for more information regarding this.

http://www.bbc.co.uk/cbeebies/grownups/help-your-child-with-maths

For parents of children in Early Years and Key Stage One the webpage will be extremely useful to you and focuses on supporting your child in lots of practical and engaging ways. It has plenty of information and videos about maths development from 0-6 with fun activities that you can build into everyday life and play.

What to do when faced with a problem?

When faced with a calculation problem, encourage your child to ask...

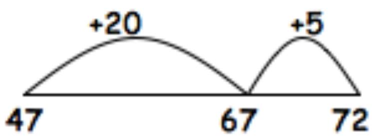
- Can I do this in my head?
- Could I do this in my head using drawings or jottings to help me?
- Do I need to use a written method?
- Should I use a calculator?

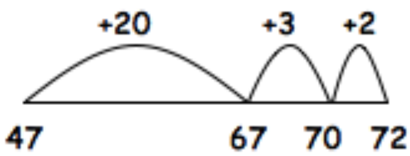
Also help your child to estimate and then check the answer. Encourage them to ask...

Is the answer sensible?

ADDITION

Children are taught to understand addition as combining two sets and counting on.

<table>
<tr>
<td>2+3=
At a party, I eat 2 cakes and my friend eats 3.
How many cakes did we eat altogether?
</td>
<td>Children could draw a picture to help them work out the answer.</td>
</tr>
<tr>
<td>7+4=
7 people are on the bus. 4 more get on at the next stop. How many people are on the bus now?
||||||| ||||</td>
<td>Children could use dots or tally marks to represent objects (quicker than drawing a picture)</td>
</tr>
<tr>
<td>47+25=
My sunflower is 47cm tall. It grows another 25cm. How tall is it now?


or

</td>
<td>Drawing an empty number line helps children to record the steps they have taken in a calculation (start on 47, +20, then +5). This is much more efficient than counting on in ones.</td>
</tr>
</table>

ADDITION

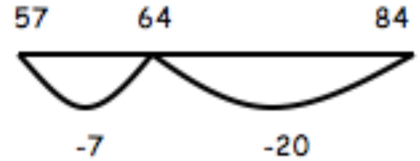
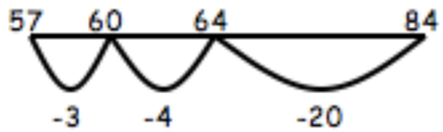
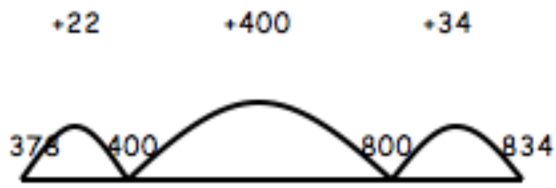
487+546= There are 487 boys and 546 girls in a school. How many children are there altogether? $\begin{array}{r} 500 + 40 + 6 \\ +\ 400 + 80 + 7 \\ \hline 900 + 120 + 13 \end{array} = 1033$	Children will be taught written methods for those calculations they cannot do 'in their heads'. Expanded methods build on mental methods and make the value of the digits clear to children. The language used is very important (6+7, 40+80, 500+400, then 900+120+13 - *add this mentally NOT in columns*).
12 786 + 2 568= 12 786 people visited the museum last year. The numbers increased by 2 568 this year. How many people altogether visited this year? $\begin{array}{r} 12786 \\ +\ 2568 \\ \hline 15354 \\ \hline {\scriptstyle 1\ 1\ 1\ \ } \end{array}$	When children are confident using the expanded method, this can be 'squashed' into the traditional compact method.

SUBTRACTION

Children are taught to understand subtraction as taking away (counting back) and finding the difference (counting up).

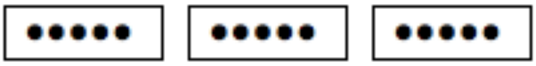
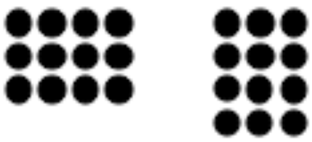
5-2= I had five balloons. Two burst. How many did I have left?  Take away A teddy bear costs £5 and a doll costs £2. How much more does the bear cost?  Find the difference	Drawing a picture helps children to visualise the problem.
7-3= Mum baked 7 biscuits. I ate 3. How many were left?  Take away Lisa has 7 felt tip pens and Tim has 3. How many more does Lisa have? ●●●●●●● ●●● Find the difference	Using dots or tally marks is quicker than drawing a detailed picture.

SUBTRACTION

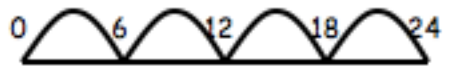
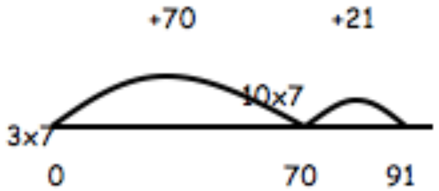
84-27= I cut 27cm off a ribbon measuring 84cm. How much is left?  or 	Children could count back using an empty number line. This is a really good way for them to record the steps they have taken (start on 84, -20, then -7).
834-378= The library owns 834 books. 378 are out on loan. How many are on the shelves?  2 2 (400) 4 0 0 (800) 3 4 (834) 4 5 7 658 -351 307 6 $\cancel{4}$5 13 -3 3 5 3 1 8	Children could count up (from the smallest number to the biggest) using an empty number line. It is easiest to count up to a multiple of 10 or 100 (a friendly number). The steps can also be recorded vertically. This method works really well with any numbers, including decimals! At this point we also introduce the more formal and familiar column methods of subtraction.

MULTIPLICATION

Children are taught to understand multiplication as repeated addition and scaling. It can also describe an array.

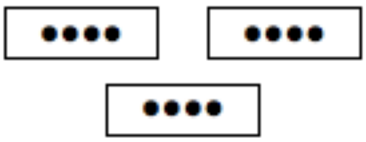
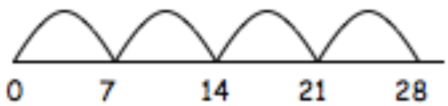
2x4= Each child has two eyes. How many eyes do four children have?  2 + 2 + 2 + 2	Again a picture can be useful.
5x3= There are 5 cakes in a pack. How many cakes in 3 packs?  5 + 5 + 5	Dots or tally marks are often drawn in groups. This shows 3 groups of 5.
4x3= A chew costs 4p. How much do 3 chews cost?  or	Drawing an array (3 rows of 4 or 3 columns of 4) gives children an image of the answer. It also helps develop the understanding that 4x3 is the same as 3x4.

MULTIPLICATION

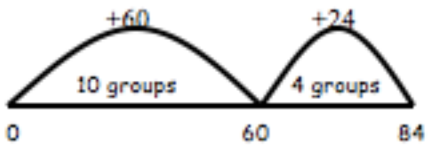
6x4= There are 4 cats. Each cat has 6 kittens. How many kittens are there altogether? 	Children could count on in equal steps, recording each jump on an empty number line. This shows 4 jumps of 6.
13x7= There are 13 biscuits in a packet. How many biscuits in 7 packets? 	When numbers get bigger, it is inefficient to do lots of small jumps. Split 13 into parts (10 and 3). This gives you two jumps (10x7 and 3x7).
6x124= 124 books were sold. Each book cost £6. How much money was taken? 100 20 4 6 | 600 120 24 = 744	This is called the grid method. 124 is split into parts (100, 20 and 4) and each of these is multiplied by 6. The three answers are then added together.
72x34= A cat is 72cm long. A tiger is 34 times longer. How long is the tiger? 70 2 30 2100 60 = 2160 4 | 280 8 = 288 2448	This method also works for 'long multiplication'. Again split up the numbers and multiply each part. Add across the rows, then add those two answers together. **At this point we also introduce the more formal and familiar column methods of short and long multiplication.**

DIVISION

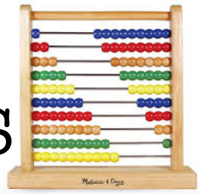
Children are taught to understand division as sharing and grouping.

6÷2= 6 Easter eggs are shared between 2 children. How many eggs do they get each?  Sharing between 2 There are 6 Easter eggs. How many children can have two each?  Grouping in twos	More pictures! Drawing often gives children a way into solving the problem.
12÷4= 4 apples are packed in a basket. How many baskets can you fill with 12 apples?  Grouping in fours	Dots or tally marks can either be shared out one at a time or split up into groups.
28÷7= A chew bar costs 7p. How many can I buy with 28p?  	To work out how many 7's there are in 28, draw jumps of 7 along a number line. This shows you need 4 jumps of 7 to reach 28.

DIVISION

84÷6= I need 6 drawing pins to put up a picture. How many pictures can I put up with 84 pins? 	It would take a long time to jump in sixes to 84 so children can jump on in bigger 'chunks'. A jump of 10 groups of 6 takes you to 60. Then you need another 4 groups of 6 to reach 84. Altogether, that is 14 sixes.
192÷8= 8 pencils fit in each packet. If you have 192 pencils, how many packets can be filled? 192 = **160 + 32** 20 groups + 4 groups = 24	It is helpful to split 192 into sensible 'chunks' before dividing. As you are dividing by 8, the 'chunks' chosen must also be multiples of 8. Divide each 'chunk' (how many groups of 8?) and then add the answers together.
184÷7= I need 184 chairs for a concert. I arrange them in rows of 7. How many rows do I need? 184 - 140 **20 groups** 44 - 42 **6 groups** 2 = 26 r2 $\begin{array}{r} 97 \\ 3\overline{)29^{2}1} \end{array}$ (short divison)	This method is known as chunking. In this example, you are taking away chunks of 7. First subtract 140 (20 groups of 7) and you are left with 44. Then subtract 42 (6 groups of 7), to leave 2. Altogether, that is 26 sevens with a remainder of 2. Alongside the chunking method we also teach the more formal short division method.

PRACTISING NUMBER FACTS



- Find out which number facts your child is learning at school (addition facts to 10, times tables, doubles etc). Try to practise for a few minutes each day using a range of vocabulary.
- Have a 'fact of the day'. Pin this fact up around the house. Practise reading it in a quiet, loud, squeaky voice. Ask your child over the day if they can recall the fact.
- Play 'ping pong' to practise complements with your child. You say a number. They reply with how much more is needed to make 10. You can also play this game with numbers totalling 20, 100 or 1000. Encourage your child to answer quickly, without counting or using fingers.
- Throw 2 dice. Ask your child to find the total of the numbers (+), the difference between them (-) or the product (x). Can they do this without counting?
- Use a set of playing cards (no pictures). Turn over two cards and ask your child to add or multiply the numbers. If they answer correctly, they keep the cards. How many cards can they collect in 2 minutes?
- Play Bingo. Each player chooses five answers (e.g. numbers to 10 to practise simple addition, multiples of 5 to practise the five times tables). Ask a question and if a player has the answer, they can cross it off. The winner is the first player to cross off all their answers.
- Give your child an answer. Ask them to write as many addition sentences as they can with this answer (e.g. 10 = o + o). Try with multiplication or subtraction.
- Give your child a number fact (e.g. 5+3=8). Ask them what else they can find out from this fact (e.g. 3+5=8, 8-5=3, 8-3=5, 50+30=80, 500+300=800, 5+4=9, 15+3=18). Add to the list over the next few days. Try starting with a x fact as well.

REAL LIFE PROBLEMS

- Go shopping with your child to buy two or three items. Ask them to work out the total amount spent and how much change you will get.
- Buy some items with a percentage extra free. Help your child to calculate how much of the product is free.
- Plan an outing during the holidays. Ask your child to think about what time you will need to set off and how much money you will need to take.
- Use a TV guide. Ask your child to work out the length of their favourite programmes. Can they calculate how long they spend watching TV each day / each week?
- Use a bus or train timetable. Ask your child to work out how long a journey between two places should take? Go on the journey. Do you arrive earlier or later than expected? How much earlier/later?
- Help your child to scale a recipe up or down to feed the right amount of people.
- Work together to plan a party or meal on a budget.

These are just a few ideas to give you a starting point. Try to involve your child in as many problem-solving activities as possible. The more 'real' a problem is, the more motivated they will be when trying to solve it.

COUNTING IDEAS

- Practise chanting the number names. Encourage your child to join in with you. When they are confident, try starting from different numbers - 4, 5, 6 . . .
- Sing number rhymes together - there are lots of commercial tapes and CD's available.
- Give your child the opportunity to count a range of interesting objects (coins, pasta shapes, buttons etc.). Encourage them to touch and move each object as they count.
- Count things you cannot touch or see (more difficult!!). Try lights on the ceiling, window panes, jumps, claps or oranges in a bag.
- Play games that involve counting (e.g. snakes and ladders, dice games, games that involve collecting objects).
- Look for numerals in the environment. You can spot numerals at home, in the street or when out shopping.
- Cut out numerals from newspapers, magazines or birthday cards. Then help your child to put the numbers in orders.
- Make mistakes when chanting, counting or ordering numbers. Can your child spot what you have done wrong?
- Choose a number of the week e.g. 5. Practise counting to 5 and on from 5. Count out groups of 5 objects (5 dolls, 5 bricks, 5 pens). See how many places you can spot the numeral 5.