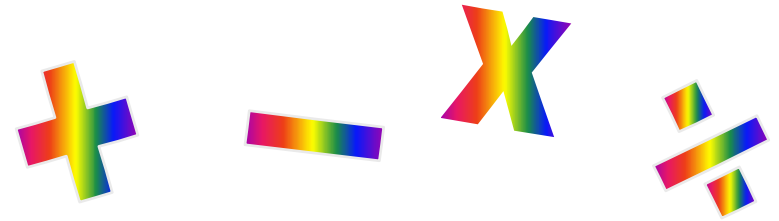**Make maths fun!**

Give your child lots of praise and encouragement!
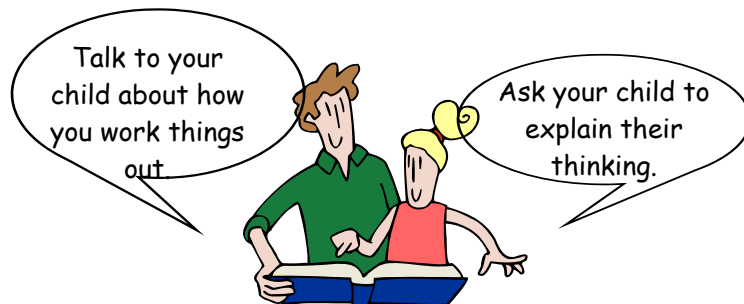
2014

Bayside Senior School

Helping your Child with Maths

CALCULATION

A lot of emphasis in Numeracy teaching is placed on using mental calculations where possible. As children progress through the school and are taught more formal methods, they are still encouraged to think about mental strategies they could use first and only use written methods for calculations they cannot solve in their heads. It is important that children are secure in their number bonds (adding numbers together and subtracting them e.g 10-6=4, 13+7=20) and have a good understanding of place value (tens and units etc).

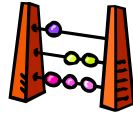Talk to your child about how you work things out

Ask your child to explain their thinking.

SHAPES AND MEASURES

•Hunt for right angles around your home. Can your child spot angles bigger or smaller than a right angle?

•Look for symmetrical objects. Help your child to draw or paint symmetrical pictures/patterns.

•Practise measuring the lengths or heights of objects in metres or centimetres. Help your child to use different rulers and tape measure correctly. Encourage them to estimate before measuring.

•Let your child chelp with cooking at home. Help them to measure ingredients accurately using a weighing scales or measuring jugs. Talk about what each division on the scales stands for.

•Choose some food items in your kitchen. Try to put these objects in order of weight by feel alone. Check by looking at the weight as printed on the packet.

•Practise telling the time with your child. Use both the digital and analogue clock.

•Use a stop watch to time how long it takes to do everyday tasks e.g. how long does it take to get dressed. Encourage your child to estimate first.

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 = □ + □). 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.

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 writing to help me?
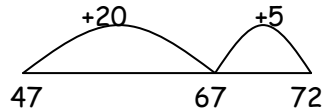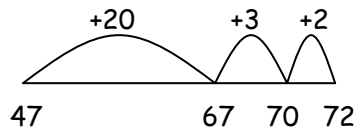
*Do I need to use a written method?

*Should I use a calculator?

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. Calaulations are put into practical contexts so the child sees the relevance of the method they are learning. The methods below are a progression from junior infants to 6th class. When reciting addition tables use **plus/add** rather than __and__.

2+3= At a party, I eat 2 cakes and my friend eats 3. How many cakes did we eat altogether?	Children could draw a picture to help them work out the answer.
7+4= 7 people are on the bus. 4 more get on at the next stop. How many people are on the bus now? ||||||| ||||	Children could use dots or tally marks to represent objects (quicker than drawing a picture)
47+25= My sunflower is 47cm tall. It grows another 25cm. How tall is it now? +20 +5 47 67 72 or +20 +3 +2 47 67 70 72	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.

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.

Tables

When learning tables start with the <u>constant</u> followed by the <u>variable</u> .e.g.

$7 \times 1 = 7$

$7 \times 2 = 14$

$7 \times 3 = 21$

$7 \times 4 = 28$

$7 \times 5 = 35$

$7 \times 6 = 42$

$7 \times 7 = 49$

$7 \times 8 = 56$

$7 \times 9 = 63$

$7 \times 10 = 70$

ADDITION
Children are taught to start from the <u>bottom</u>

487+546=
There are 487 boys and 546 girls in a school. How many children are there altogether?

$$\begin{array}{r} 5\ 4\ 6 \\ +\ 4_1\ 8_1\ 7 \\ \hline 1\ 0\ 3\ 3 \end{array}$$

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.

*7 plus 6 =13, put down your 3 and carry your 1. The number must be placed on the bottom line left of the 7. Keep the numbers carried over smaller than the original digit.

* 1 plus 8=9 plus 4=13 put down your 3 and carry your 1

* 1 plus 4=5 plus 5 =10, write down my 10
The children are taught the importance of placing digits with the same value underneath each other in clear columns.

SUBTRACTION

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

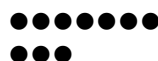|	
5-2= I had five balloons. Two burst. How many did I have left? Take away A teddy bear costs €5 and a doll costs €2. How much more does the bear cost? Find the difference	Drawing a picture helps children to visualise the problem.
7-3= Mum baked 7 biscuits. I ate 3. How many were left? ⊢⊣|||| Take away 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.

6

Division: Children are introduced to different ways of writing division.

$18 \div 6 =$ $32\overline{)487}$ $\frac{4}{2}$

84÷6= I need 6 drawing pins to put up a picture. How many pictures can I put up with 84 pins?	**Short Division:** We say 8 divided by 6=1 remainder 2. The 2 is placed beside the 4. Now we say 24 divided by 6=4
Tina has 473 daffodil bulbs to plant. She must plant the bulbs in 11 different rows. **How many bulbs will be in each row?** $\begin{array}{r} 4\ 3 \\ 11\overline{)4\ 7\ {}^{3}3} \\ \underline{4\ 4} \\ 3\ 3 \\ \underline{3\ 3} \\ 0\ 0 \end{array}$	**Long division method;** Estimate first 437 divided by 11. Round each number to the nearest 10. 470 divided by 10.=47 Divide the first number 4 by 11. It won't go. So now divide the first two numbers 47 by 11. 11x4=44, so therefore there are 4 elevens in 47 and a remainder of 3. Write a samll 3 in beside the next digit. Now we say 33 divided by 11. 11x3==33 so there are 3 elevens in 33. There is no remainder this time.

13

DIVISION

Children are taught to understand division as sharing and grouping.

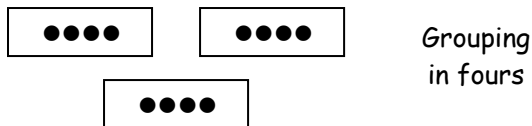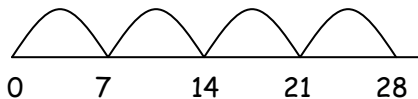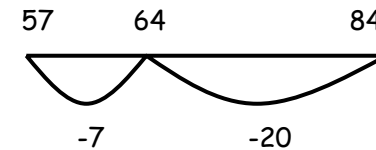|	
6÷2= 6 Easter eggs are shared between 2 children. How many eggs do they get each? Sharing between 2 There are 6 Easter eggs. How many children can have two each? Grouping in twos	More pictures! Drawing often gives children a way into solving the problem.
12÷4= 4 apples are packed in a basket. How 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? 0 7 14 21 28	Repeated subtractiionn method: In this example you makes jumps of 7 backwards until you get to zero. 4 jumps of 7 until you get to zero.

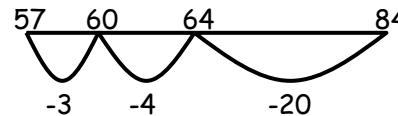---

SUBTRACTION
Start from the bottom

84cm-27cm= I cut 27cm off a ribbon measuring 84cm. How much is left? 57 64 84 -7 -20 or 57 60 64 84 -3 -4 -20	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?

$$
\begin{array}{r}
7\ 2 \\
8\,13\,14 \\
-\ 3\ 7\ 8 \\
\hline
4\ 6\ 6
\end{array}
$$

Children progress onto subtraction using decomposition – where there are fewer units, tens, hundreds etc in the larger number. To do this we use the **decomposition method**.
Starting with the units, 8 from 4 we can't take, so we carry over a ten to make 14 units leaving 2 tens. 8 from 14 equals 6 units. Moving onto the tens column, 7 tens from 2 tens we can'tdo, so we carry over a hundred to make 13tens leaving 7 hundreds. Now 7 from 13 tens equals 6 tens.Write down your 6.
finally in the hundreds column 3 from 7 equals 4 hundreds.

MULTIPLICATION

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

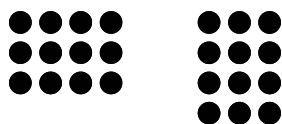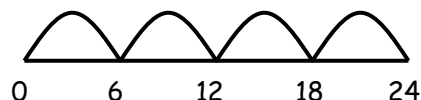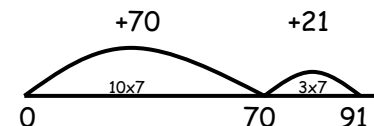|	
2x4= Each child has two eyes. How many eyes do four children have? 2 + 2 + 2 + 2	Again a picture can be useful.
5x3= There are 5 cakes in a pack. How many cakes in 3 packs? ●●●●● ●●●●● ●●●●● 5 + 5 + 5	Dots or tally marks are often drawn in groups. This shows 3 groups of 5.
4x3= A chew costs 4p. How 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? 0 6 12 18 24	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? +70 +21 0 10x7 70 3x7 91	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.

Introduction

In Bayside Senior School, children receive a daily maths lesson. As a basis for planning the staff use the Primary Curriculum which outlines what is expected for children from Junior Infants to Sixth class. www.ncca.ie.

The purpose of this booklet is to outline the various calculation methods that children are taught as they progress through the school, many of which look different to the methods that you may have been taught in your primary school days. As children progress through the school, they are building up a bank of strategies that can be applied when appropriate. Each strategy can be refined or extended to suit the calculation needed. We hope the explanations and examples of strategies will help you to assist your child at home.

We want all children to realise that maths is more than adding, subtracting, multiplying and dividing. We want children to be able to connect maths to their everyday lives.

Included in the booklet are also various ideas and suggestions for maths activities that you can enjoy doing with your child in the world away from school. It is not an exhaustive list and you will doubtless have many more ideas of your own.

Short Multiplication

$$
\begin{array}{cccc}
 & 4 & 2 & 8 \\
\times & {}^{1} & {}^{5} & 7 \\
\hline
2 & 9 & 9 & 6 \\
\end{array}
$$

The children begin to use more standard written methods working vertically. Children are reminded that digits of the same value must be underneath each other.

Starting with the units, 8 x 7 = 56. The 6 goes in the units column and the **5** tens are carried just above the line under the tens.

2 x 7 =14 plus 5 equals 19, put down your 9 and carry your **1**,

4 x 7 =28 plus 1=29.

Write your answer under the line. <u>Carried numbers must be small.</u>

$$
\begin{array}{ccccc}
 & & 4 & 2 & 8 \\
 & {}^{1} & {}^{3} & & \\
\times & {}^{1} & 4 & {}^{5} & 7 \\
\hline
 & 2 & 9 & 9 & 6 \\
1{}_{1} & 7{}_{1} & 1{}_{1} & 2 & 0 \\
\hline
2 & 0 & 2 & 1 & 6 \\
\end{array}
$$

Long multiplication:

Again starting from the bottom.

Complete the first line of multiplication as above.

When starting the second line of long multiplication firstly put down a zero.

8 x 4 =32 put down my 2 and carry my **3**.

2 x 4 =8 plus **3** =11 put down your 1 and carry your **1**.

4x4=16 plus **1**=17

Now add keeping the numbers in the correct columns.

Copies

Children are taught how to rule thir copies with a margin and to date their work. Sums should be neatly laid out with one figure in each box.

There is a new emphasis in maths on process rather than product. To this end all calculations are seen as important in a sum and are not known as rough work as in the past. All calculations therefore are done on the page neatly with the sum.
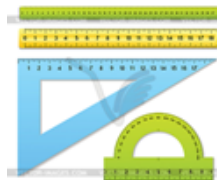
Equipment:

Each child needs to have their **own** maths equipment as listed on their booklist for that year.

Suggested equipment:
Pencil,
eraser,
clear ruler,
parer,
two (small squared) copies
A protractor for 5th and 6th class
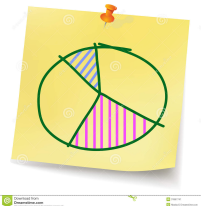A calculator for 4th, 5th and 6th classes.

Maths Problem Solving Strategies

R   Read the problem carefully.

U   Underline the clue words.

M   Make a drawing/graph/pattern
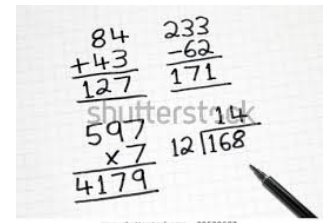
O Operation, which

      will I use?

R Recheck and reflect

S Show all your work

How can you help your child with maths?

-Make sure your child understands mathematical concepts.
-Help them to master the basic maths facts.
-Teach them to write their numbers neatly.
-Provide help immediately when your child needs it.
-Show them how to handle their maths homework.
-Explain how to solve word problems.
-Help your child learn the vocabulary of maths.
-Teach them how to do maths "in their head".
-Make maths part of your child's daily life.

* recipes to practise fractions, litres, kilogrammes and grammes, temperature and cooking time, cost of ingredients.

*catalogues for money activities, addition, percentages, saving, value for money, cheap, expensive.

* travel timetables, travel time, cost of travel, duration of journies.

* money- saving and spending, change, percentages.

*sports scores.

* weather maps, minimum and maximum temperatures.

How the teacher helps your child with maths.

Your child's teacher will support and develop your child's mathematical thinking by:

*__eliciting__ as many solutions as possible from the class.
*
__supporting__ your child's thinking,
*
__extending__, encouraging them to find alternative solution methods.

Between 3rd and 6th class your child will explore mathematical concepts related to the following topics at a class appropriate level:
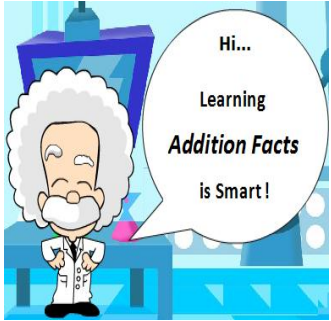
*Numbers, (to a million).

*Algebra

*Shape and space

*Measures

*Data

The Language of Addition

Sum
Add
Addition
Plus
Total
Increase
More
More than
Combined
Altogether
In all

The Language of Subtraction

Subtract
Subtract from
Take away
Minus
Difference
Less
Less than
Decrease
Reduce
Remain
Fewer

The Language of Multiplication

Multiply
Groups of
Product
Times
Part of
Twice
Area

The Language of Division

Divide
Quotient
Divided by
Divided into
Split
Each
Shared
Equal parts
Remainder
Divisor
Dividend
Divisible