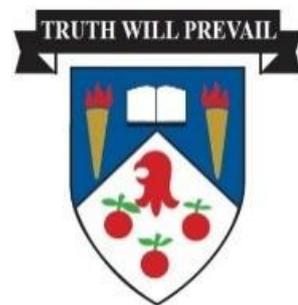


FLORA FIGURES

'A Rainbow of Numeracy Skills'

Information for Parents & Carers

The Flora Stevenson Primary School



WHAT IS FLORA FIGURES?

Flora Figures is a whole school approach to developing mental maths strategies.

WHY FLORA FIGURES?

At The Flora Stevenson Primary School we believe that every child matters and we want every child to achieve, which is why we are committed to improving our attainment in mathematics.

WHY EXCELLENCE IN MATHEMATICS ?

To face the challenges of the 21st Century, each young person needs to have confidence in using mathematical skills, and Scotland needs both specialist mathematicians and a highly numerate population (taken from The Scottish Government's Publication, Building the Curriculum 1)

A recent report from Her Majesty's Inspectorate of Education suggested that effective learning in mathematical abilities has the following characteristics:

- **Good pace and depth of learning**
- **Challenge, enjoyment and positive attitudes**
- **Independent and collaborative learning**
- **Active learning**
- **Confidence and security**

WHY IS MENTAL MATHS IMPORTANT?

“It is vital that children from the earliest stages of mathematical learning develop a sound sense of counting and a clear understanding of how numbers relate to size, quantity and order. A ‘sense of number’, has been defined as ... an intuitive understanding of numbers, their magnitude, relationships, and how they are affected by operations.”

(Taken from the report for the Maths Excellence Group)

Mental agility has been identified as a priority for Scotland, Edinburgh City Council and for our school.

SO WHAT WILL MENTAL MATHS LOOK LIKE AT FLORA’S?

A Rainbow of Numeracy Skills

Flora Figures will focus on daily 10 to 15 minute mental agility activities.

The whole school, including the Nursery, will focus on each aspect at the same time.

Activities will include the use of:

- **digital technology (i-Pad, Interactive White Board etc.)**
- **practical games using dice, cards and other materials**
- **formal written methods**
- **individual, paired and group tasks**

and it will encourage children to explain and share their thought processes and strategies with others to help them understand their learning.

Sequencing and Ordering;

Number Lines;

Equivalences

Combining and
Partitioning Numbers
and Place Value

Number

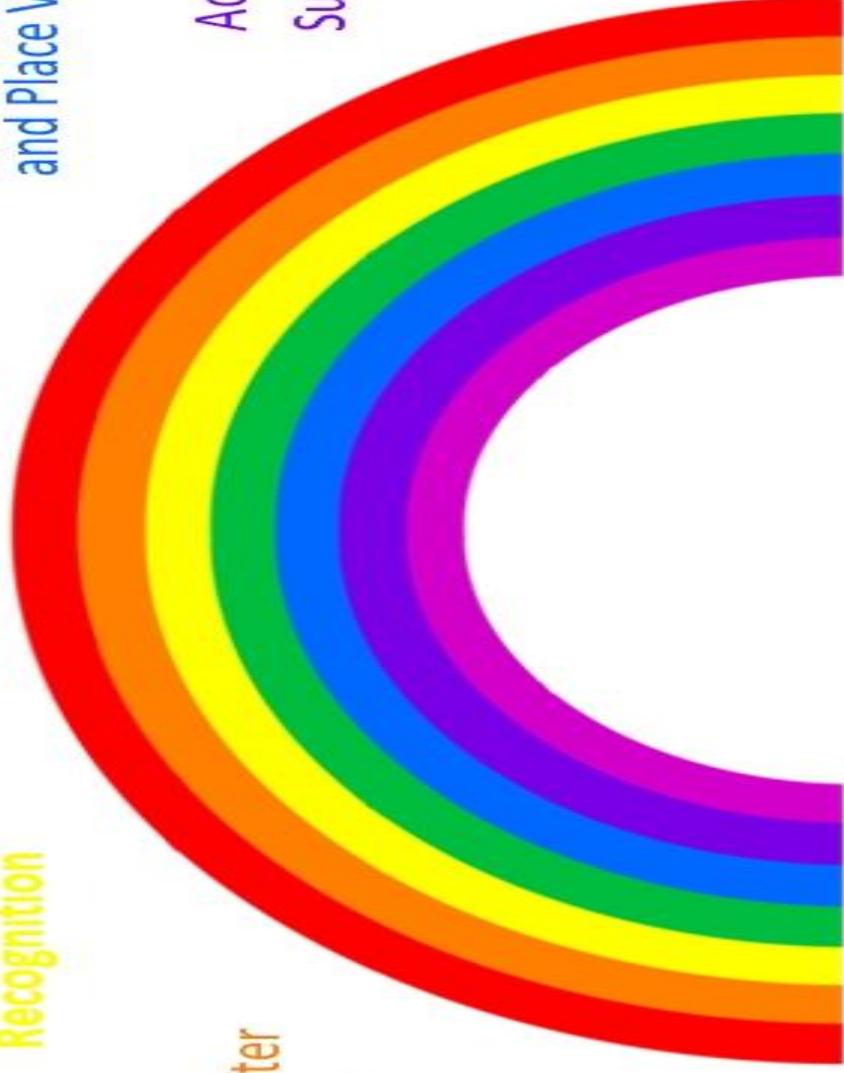
Recognition

Numbers after
and Before

Counting
Forwards and
Backwards

Addition and
Subtraction

Multiplication and Division;
Fractions, Decimal Fractions
and Percentages;
Ratio and Proportion



PARTNERSHIP WITH PARENTS & CARERS

Another key element of this approach is to work in partnership with parents & carers.

We are developing home learning tasks linked to the learning taking place in school.

Home learning should consolidate and/or provide further practice in key numeracy aspects.

Our aim is to make maths home learning more interactive. It should be carried out in short daily bursts with your child, 5 to 10 minutes per day. This should include lots of oral and practical tasks.

The Home Learning Grids give examples of the skills to be covered and some ideas as to possible activities, however children can choose how they want to learn and choose activities that suit their learning style. These could include:

- **simple quick recall**
- **singing songs**
- **making books and posters**
- **discussion about numbers in the environment**
- **playing games on the computer**
- **using apps on an i-Pad or Tablet**

The challenges come with a chilli to indicate how challenging they are. Children can choose a level they feel comfortable with to consolidate learning, or they can challenge themselves and up-level challenges where appropriate.

See appendix for further ideas/websites

COUNTING FORWARDS & BACKWARDS

At Early Level I am learning to:

Count forwards numbers in the range 1 to 20, then 1 to 30, (then 1 to 100); ordinal numbers

Count backwards numbers in the range 1 to 10, then 1 to 20

Count forwards and backwards 1 to 30, then 1 to 100 starting from different numbers

At First level I am learning to:

Count forwards & backwards in 1s, 2s, 10s and 5s within the range 1-100, then 1-1000

Count forwards & backwards in 3s, 4s, 6s within the range 1-100, off the decade number by 10s

Count forwards & backwards by 100s, on and off the decade and then hundreds number, then by halves

At second level I am learning to:

Count forwards & backwards in 7s, 8s, 9s then in multiples off the times tables

Count forwards & backwards in decimal tenths, in multiple tenths then in simple fractional steps

Count forwards & backwards in multiples beyond the times tables then in tenths and hundredths

NUMBER BEFORE & AFTER

At Early Level I am learning to:

Say the number after or before in the range 1 to 10

Say the number after or before in the range 1 to 20

Say the number after or before in the range 1 to 30

At First level I am learning to:

Say the number after, before & between for numbers up to 1000

Say the number 10 after or before a given number

Say the number after or before in the times table (e.g. in the 3 times table, what is the number after 21?)

At second level I am learning to:

Say the number after a given number in any times table to 12 (e.g. what is 6 more than 42?)

Say the number before a given number in any times table to 12 (e.g. what is 6 less than 42?)

Say the number a tenth more/less than (e.g. what is a tenth more than 6.2?)

RECOGNISING NUMBER

At Early Level I am learning to:

Recognise & identify numbers in the range 1-10 (e.g. "Point to the number 2" and ask "What number is this?")

Recognise & identify numbers in the range 1-20 (e.g. "Point to the number 12"/ What number is this?)

Recognise a range of coins, 1p, 2p, 5p, 10p, 20p, 50p, £1
Time recognition – e.g. digital numbers

At First level I am learning to:

Recognise & identify numbers in the range 1 to 100 (e.g. "Point to the number 72" and ask "What number is this?")

Recognise & identify numbers in the range 1-1000 (e.g. "Point to the number 772" and ask "What number is this?")

Recognise a range of coins and notes 1p, 2p, 5p, 10p, 20p, 50p, £1, £2, £5, £10, £20
Time recognition – e.g. digital numbers

At second level I am learning to:

Recognise & identify numbers
In the range 1 to 1,000,000

Recognise & identify numbers with a fractional part
Recognise and identify negative numbers

Recognise a range of coins and notes
Time recognition – e.g. digital numbers

SEQUENCING & ORDERING, NUMBER LINES & EQUIVALENCES

At Early Level I am learning to:

Sequence numbers in the range 1 to 10 (e.g. 3, 4, 5, 6) & in the range 1 to 20 (e.g. 9, 10, 11)

Place a number on a number line in the range 0 to 10, then 0 to 20, then 0 to 30

Estimate where a number goes on an empty number line, in the range 0 to 10, then 0 to 20

At First level I am learning to:

Sequence & Order numbers in the range 1 to 100 on and off the decade, then beyond 100 up to 1000 going up in hundreds

Place a number on a number line in the range 1 to 100, then 0 to 1000

Estimate where a number goes on an empty number line in the range 1 to 100, then 0 to 1000

At second level I am learning to:

Sequence numbers in the range 1 to 1,000,000
Order numbers: In the range 1 to 1,000,000

Sequence & order numbers with a decimal part (e.g. 2.4, 2.71, 2.9)
Sequence & order simple fractions

Place a number on a number line in the range 1 to 1000 and beyond, with decimal parts, fractional parts and negative numbers

COMBINING & PARTITIONING NUMBERS, PLACE VALUE

At Early Level I am learning to:

Show numbers 1 to 5 using one hand, show double patterns for 1 to 5 & show doubles plus one patterns (two hands)

Partition numbers (e.g. "Make 6 on your fingers.")
Partition 10 (e.g. 9 fingers up and 1 down shows $9 + 1 = 10$)

Recognise flashed patterns (domino and random) & explore partitions of numbers through dot patterns

At First level I am learning to:

Partition numbers up to 10 into number bonds (e.g. $5 = 1 + 4$), use number bond knowledge to say what number gets us to/from a decade

Split a number containing tens and units in a standard way e.g. 36 is 3 tens and 6 units, in a non-standard way e.g. 36 is 2 tens and 16 units

Demonstrate how the value of a digit depends on where it is placed e.g. the 3 in 236 means 3 tens or 30, split a number into its place value parts e.g. $364 = 300 + 60 + 4$

At second level I am learning to:

Partition 100 (e.g. $23 + ? = 100$) to help with percentage calculations

Demonstrate how the value of a digit depends on where it is placed. Split a number into its place value parts in the range 1 to 1,000,000

Split a decimal number into its place value parts up to 2 decimal places (e.g. 2.5 is 2 and 5 tenths)
Split a decimal up in a non-standard way (e.g. 3.2 can be 2 and 12 tenths)

ADDITION & SUBTRACTION

At Early Level I am learning to:

Count items in one collection establish a collection of a given numerosity (e.g. get me 6 counters from the group)

Count items in two collections, with first collection covered, with second collection covered, with both collections covered

Explore adding using a count-on strategy
Explore doubles and near doubles
Know doubles (1 to 5)

At First level I am learning to:

Add using a count-on strategy
subtract using a count-on or count-back strategy, use doubles and near doubles

Add & subtract numbers to 20 using number bond facts, bridging through ten, doubles and near-doubles, add 3 numbers together

Know and use addition and subtraction family facts, add on & subtract multiples of ten to/ from a 2 digit number

At second level I am learning to:

Add and subtract 2 digit numbers using a variety of strategies. add and subtract multiples of ten and hundreds (e.g. $300 + 520$)

Use a variety of strategies to find a pair of numbers that add to make 100 (e.g. "What goes with 63?")
add and subtract 3 digit numbers using a variety of mental/written strategies

Identify the number partner to go with a decimal tenth to make 1, then a decimal hundredth to make 1
add & subtract decimals and simple fractions

MULTIPLICATION & DIVISION, FRACTIONS, DECIMAL FRACTIONS, PERCENTAGES, RATIO & PROPORTION

At Early Level I am learning to:

Make equal groups (e.g. "Here are 10 counters. Can you put them into twos? How many groups have you made?")

Make equal shares (e.g. "Can you share 10 counters between two people? How many does each person get?")

Share a whole into simple equal parts (e.g. halving)

At First level I am learning to:

Make equal groups, determine the number in an equal share, share a whole into equal parts (e.g. thirds)

Know and use the 2, 10, 5, 3, 4 & 6 times table to solve multiplication and division problems.

In practical situations, or pictorially, share a whole into equal parts (e.g. thirds) find a simple unitary fraction of an amount (e.g. $\frac{1}{3}$ of 15) & compare fractions

At second level I am learning to:

Share a whole into equal parts, share a group with a remainder. Know and use the 7, 8 & 9 times table to solve multiplication and division problems

Multiply and divide 2/3 digit numbers by a single digit, explore division with a decimal /fractional answer. Multiply and divide whole numbers and decimals by 10, 100, 1000

Know and use square number facts. Carry out simple percentage calculations. Convert and simplify fractions. Know & use equivalences. Compare & simplify ratios

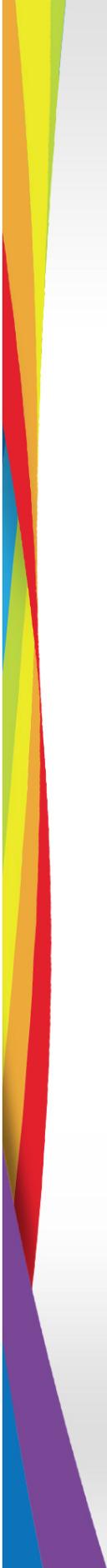
Useful Websites – EarlyLevel

[ict games.com](http://ictgames.com) - flip counter
[top marks.co.uk](http://topmarks.co.uk) - fish alive
[top marks.co.uk](http://topmarks.co.uk) - speckled frogs

[ict games.com](http://ictgames.com) - saucer sorter
[ict games.com](http://ictgames.com) - post letter
[top marks.co.uk](http://topmarks.co.uk) - underwater counting
[top marks.co.uk](http://topmarks.co.uk) - ladybird spots

[ict games.com](http://ictgames.com) - saucer sorter
[top marks.co.uk](http://topmarks.co.uk) - gingerbread men v3
[top marks.co.uk](http://topmarks.co.uk) - ladybird spots
[top marks.co.uk](http://topmarks.co.uk) - counting stick v4
[top marks.co.uk](http://topmarks.co.uk) - higher and lower
[top marks.co.uk](http://topmarks.co.uk) - caterpillar ordering v3

[top marks.co.uk](http://topmarks.co.uk) - gingerbread men v3
[ict games.com](http://ictgames.com) - funny fingers v2



topmarks.co.uk - teddy numbers

topmarks.co.uk - gingerbread men v3

topmarks.co.uk - ladybird-spots

ictgames.com - new duck shoot

iboard.co.uk - adding two dice

sums.co.uk - mathematics

ictgames.com - funny fingers v2

topmarks.co.uk - loop cards v6

topmarks.co.uk - multiplication

topmarks.co.uk - bingo Multiplication v9

sums.co.uk - mathematics

topmarks.co.uk - loop cards v6

General Useful Websites

educationcity.com

sumdog.com

learn.alberta.ca

teachingideas.co.uk - mental starters

mathssticks.com - mental oral starters

Useful Websites – First Level

[ict games.com](http://ictgames.com) - flip counter

[ict games.com](http://ictgames.com) - whack a mole

[hb school.com](http://hbschool.com) - connect the dots

[ict games.com](http://ictgames.com) - fishy 2s

[hb school.com](http://hbschool.com) - connect by 5

[primary games.co.uk](http://primarygames.co.uk) - splats 100

[ict games.com](http://ictgames.com) - saucer sorter

[ict games.com](http://ictgames.com) - post letter

bbc.co.uk - schools - starship maths- the penguin

[ict games.com](http://ictgames.com) - arrow cards

[top marks.co.uk](http://topmarks.co.uk) - higher and lower

[ict games.com](http://ictgames.com) - saucer sorter

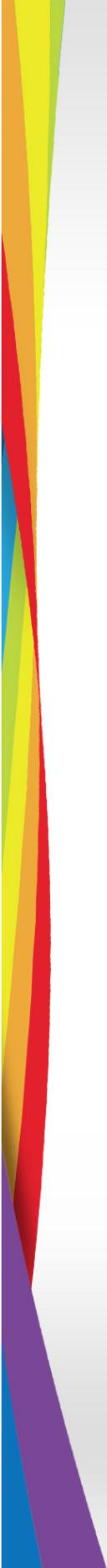
[top marks.co.uk](http://topmarks.co.uk) - counting stick v4

[top marks.co.uk](http://topmarks.co.uk) - caterpillar ordering v3

[ict games.com](http://ictgames.com) - counting cars

[ict games.com](http://ictgames.com) - number square

sums.co.uk - mathematics



topmarks.co.uk - ways to make

ictgames.com - save the whale v4

topmarks.co.uk - loop cards v6

iboard.co.uk - pairs to10

topmarks.co.uk - hit the button v11

topmarks.co.uk - place value charts

[bbc.co.uk schools](http://bbc.co.uk/schools) - starship maths - place the penguin

ictgames.com - arrow cards

swfs – building expressions

topmarks.co.uk - hit the button v11

ictgames.com - missing numbers

topmarks.co.uk - loop cards v6

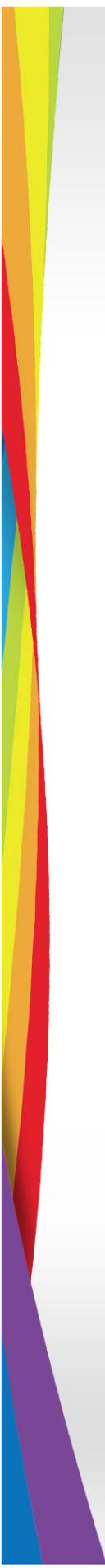
[bbc.co.uk schools](http://bbc.co.uk/schools) - laac - numbers

ictgames.com - catapult counting

ictgames.com - brilliant beadstring with colour

ictgames.com - space jumps

ictgames.com - bridging



topmarks.co.uk - multiplication

topmarks.co.uk - bingo multiplication v9

sums.co.uk - mathematics

topmarks.co.uk - loop cards v6

General Useful Websites

educationcity.com

sumdog.com

learn.alberta.ca

teachingideas.co.uk - mental starters

mathssticks.com - mental oral starters

Useful Websites – Second Level

[ict games.com](http://ictgames.com) - flip counter

[ict games.com](http://ictgames.com) - whack a mole

[bbc.co.uk schools](http://bbc.co.uk/schools) – star ship math place the penguin

[ict games.com](http://ictgames.com) - arrow cards

[top marks.co.uk](http://topmarks.co.uk) - higher and lower

[ict games.com](http://ictgames.com) - saucer sorter

[top marks.co.uk](http://topmarks.co.uk) - counting stick v4

[top marks.co.uk](http://topmarks.co.uk) - loop cards v6

iboard.co.uk - pairs to 10

[top marks.co.uk](http://topmarks.co.uk) - hit the button v11

[top marks.co.uk](http://topmarks.co.uk) - place value charts

[bbc.co.uk schools](http://bbc.co.uk/schools) - star ship - place the penguin

[ict games.com](http://ictgames.com) - arrow cards

[top marks.co.uk](http://topmarks.co.uk) - loop cards v6

[top marks.co.uk](http://topmarks.co.uk) - multiplication

General Useful Websites

educationcity.com

sumdog.com

learn.alberta.ca

teachingideas.co.uk - mental starters

mathssticks.com - mental oral starters

General Useful Apps

Little Digits app
Subitising Flashcards
I see Addition and Subtraction
Mathslide Suite
10 frame fill
10 mins a day times tables
123 counting fun
Battle Times HD
Brain trainer Maths training
Bubble Maths lite
Butterfly Maths
Conundra Maths
Domino Addition
Maths Fight
Number frames
Number Line
Number Pieces
Number swipe

Glossary of Maths Terms

Digit = any of the ten (Hindu-Arabic) numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

Integers = whole numbers (positive and negative)

Positive numbers = numbers above zero

Negative numbers = numbers below zero

Even number = any integer that can be divided by 2 without leaving a remainder

Add number = any integer that cannot be divided by 2 without leaving a remainder

Prime number = a number that can only be divided by 1 and itself

Composite number = any number that is not a prime number

Consecutive numbers = numbers that are next to each other
e.g. 4, 5, 6, 7

Place value = the value of a digit, relating to its position

Square number = a positive number that is a result of multiplying a whole number by itself

Sequence = a list of numbers that follow a particular pattern

Order = place numbers in numerical order (can be ascending, going up, or descending, going down)

Decimal = a number in which any parts less than a whole number are written after the decimal point

Ratio = a comparison of two quantities in a particular order

Percentages = a way of expressing a fraction or decimal as part of a hundred, per cent means in each hundred

Decade number = a multiple of ten

Mental Maths Games

"IF THIS IS THE ANSWER, WHAT IS THE QUESTION?" AGE 5-11

Give child paper or a whiteboard, then say a number. Encourage them to find as many ways to make the number as possible with as many operations. So if you say 20, they could go for an easy $10+10$ or a more difficult 100 divided by 5.

This can be differentiated, by giving them fractions, decimals or more obscure numbers.

DOG – ADDITION SKILLS & MULTIPLICATION - AGE 7-11

Best played 2 v 2 to encourage co-operation and joint decision making. The players have one standard die and they roll to decide who goes first. Players then roll the dice as many times as they like and keep a running total BUT if they throw a number 1 they lose their current score and record zero (which can be easily turned in to a dog's face). This is called getting the DOG. Players can hold their current score by passing on the die to their opponents.

An advanced version can be played with two dice and the two dice are then multiplied.

This is a great activity for quick addition and also introduces children to probability i.e. "When is it a good time to hold your score and pass the dice on?"

Players can have 5 turns each or continue for a certain duration.

PING PONG – AGE 5-11

This game is ideal for mental /oral sessions practising number bonds.

Start off saying 'ping' and the children reply with 'pong'. Repeat/reverse, and then convert to numbers, i.e. say '2' and they reply '8' if doing number bonds to 10.

RING IT – AGE 5-11

Write down a selection of numbers, which could be the answers to a particular topic you are studying or are trying to reinforce, e.g. adding two digit numbers. e.g. 25, 28, 84, 39, 14, 19

Now, ask a question, e.g. “ what is double 9 +1?” making sure that the answer is one of the numbers written down (e.g. 19). The child should work out the answer to the question as quickly as possible and draw a ring around the correct answer. This could be used with fractions etc.

TELL ME ABOUT A NUMBER - AGE 5-11

Write a number, it can be any number depending on the level the child is working at. Ask them to tell you about the number e.g. if the number was 12, they could tell me that $6 \times 2 = 12$ or it has 1 ten and 2 ones etc...continue until they have run out of ideas.

MY NUMBER, YOUR NUMBER - AGE 5-11

Child sits facing you, start counting in ones, taking it in turns. Great to improve listening skills and co-operation / peer support. This can be used with any numbers, e.g. counting in twos, tens, etc.

DIGIT CARD GAMES – AGE 7-11

You need 4 sets of 0-9 digit cards, a sand timer or stopwatch and paper. Mix all 40 digit cards into one pack, give them a good shuffle and place the pack face-down between the two players. The first player takes the top two cards off the pack and places them face-up on the table. These cards form a two-digit ‘Target Number’, the first card is the ‘tens’ and the second card is the ‘units’ or ‘ones’. Now five more cards are dealt in a face-up row beneath the ‘Target Number’. The dealer now turns over the sand-timer and each player has two minutes to try to create a number that is as close to the ‘Target Number’ as possible. The players can use any mathematical operations, and as many of the cards as they need.

To simplify the game: the child may...

- use any of the face-up digits as many times as they wish
- pair the digits to make larger numbers, so 5, 2 can become 52 and 25 as well as 7 and 3

To make the game more challenging: the child must use...

- each digit only once
- all of the digits!
- only specific operations, such as subtraction and multiplication

MULTIPLYING UP – AGE 7-11

Show the child the following numbers and ask them to: *“Find the best whole number which you can multiply each of these numbers by to make a product that’s as close as possible to 100”*.



The child talks through their thinking to arrive at an estimate for each of the numbers. Then, using paper, they test their estimation.

If the initial numbers are chosen with care, this will result in some very useful discussion...for the number 22, for example, the children may note that it is fairly close to 20 so multiplying it by 5 will produce a number that is close to 100 – but what if it were multiplied by 4... would this be closer?

Extension - give the child a calculator and encourage them to find a new set of solutions, this time using decimals...Clearly, you don't need to stick to 100 as the target; with different starting numbers you could challenge the children to 'get as close as they can' to 1 000, 10 000, 2014... or even 1.

Quotes from Parents/Carers attending our
Flora Figures events.

I think Flora Figures is a brilliant idea; my daughter is full of enthusiasm for maths.

This is long overdue, thank you for redressing the balance.

I really like the emphasis on understanding, not repetition.

This is great! The kids are clearly really engaged with it, which is wonderful to see.

Excellent, great to see maths being made more fun and logical.

Thank you for taking the time today, it was really useful and informative and has helped me know how to better support learning at home.

A great approach which keeps the children interested.