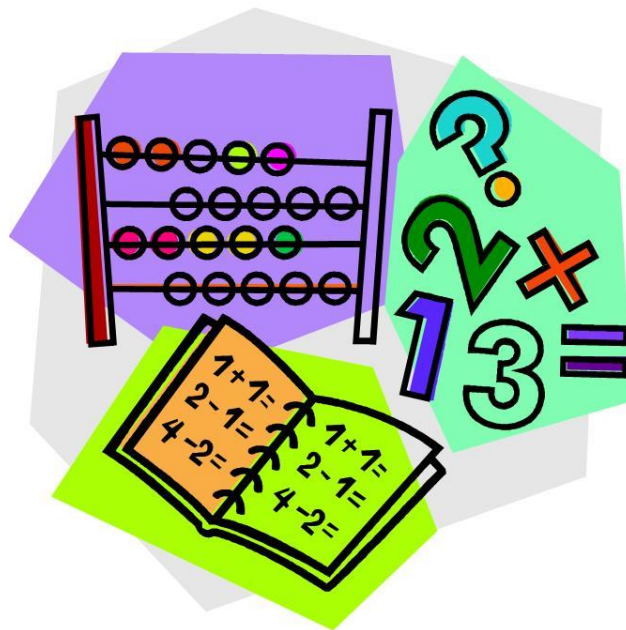


# Struthers Primary School



## Making Sense of Maths A Parent's Guide



Click [here](#) to visit the Numeracy and Mathematics section of our school website for more information about Maths at Struthers.

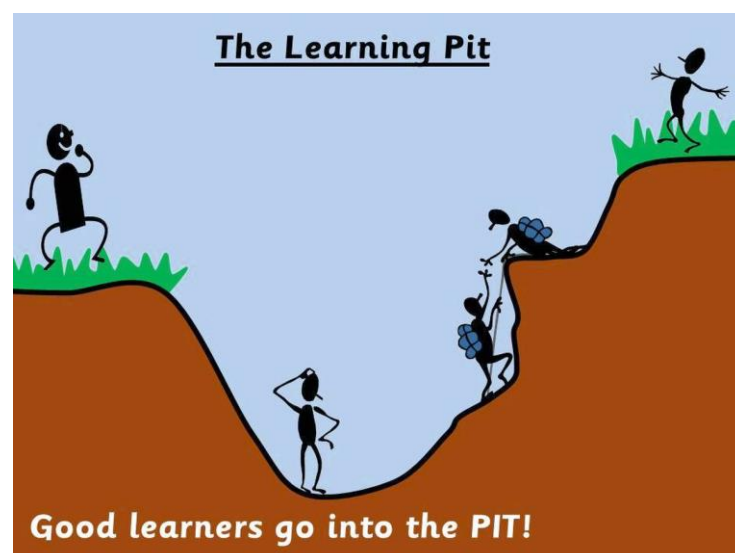
## 'I didn't learn it like that when I was at school'

Many parents find that their children are using methods, strategies and vocabulary, which are very different from those they learned when at school.

This leaflet has been created to help guide parents in how children are taught numeracy and mathematics at Struthers PS and provide you with strategies of how you can help at home.

### Mathematical Mindsets

At Struthers we encourage all learners to have a growth mindset towards maths where they are encouraged to believe that mathematical ability is not inherited or fixed but is developed over time through successful learning. Children with a growth mindset value and learn from mistakes while persevering when they find a task difficult because they know that is how they make progress.



## Mathematics and Numeracy Curriculum

The mathematics experiences and outcomes are set out in the Curriculum for Excellence and are structured within three main organisers, each of which contain a number of subdivisions:

### **Number, money and measure**

- Estimation and rounding
- Number and number processes
- Multiples, factors and primes
- Powers and roots
- Fractions, decimal fractions and percentages
- Money
- Time
- Measurement
- Mathematics - its impact on the world, past, present and future
- Patterns and relationships
- Expressions and equations.

### **Shape, position and Movement**

- Properties of 2D shapes and 3D objects
- Angle, symmetry and transformation.

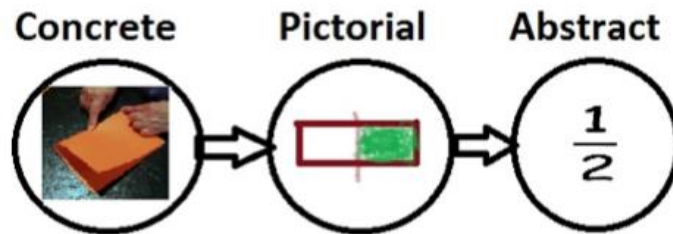
### **Information handling**

- Data and analysis
- Ideas of chance and uncertainty.

Children at Struthers experience success in mathematics while developing the confidence to take risks, ask questions and explore alternative solutions without fear of being wrong. They will solve problems, explain their thinking and present their solutions to others in a variety of ways with an emphasis on collaborative learning.

## Concrete → Pictorial → Abstract

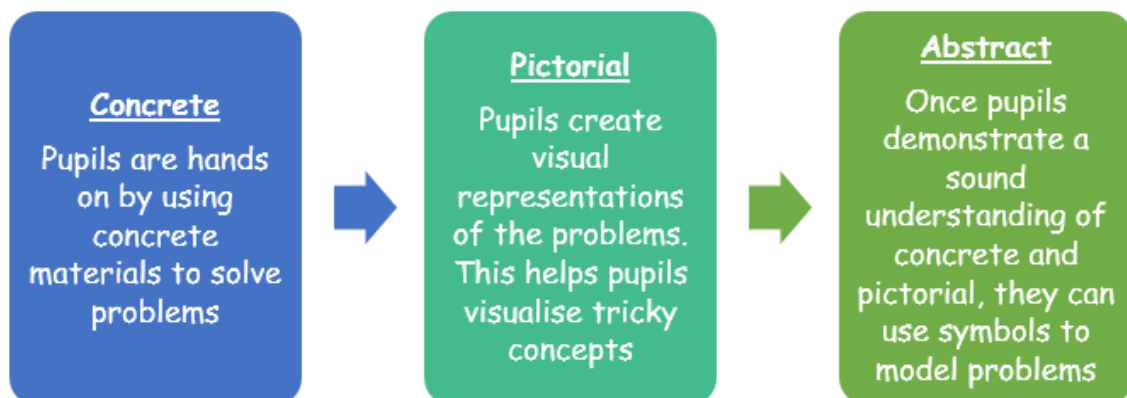
Within Struthers Primary we use CPA as an approach to teaching mathematics.



Pupils begin at the concrete level where they use a number of different manipulatives such as dienes, unifix, numicon, ten frames, straws, dot patterns, counters, shapes, coins and dice to help them grasp a concept and solve problems.

Pupils then progress to the pictorial stage which aids visualisation of problems. The Bar Model is a key strategy used within the pictorial stage along with number lines, hundred squares, diagrams and pictures.

When pupils demonstrate a sound understanding of concepts they are able to move to the abstract stage where numbers and symbols are used to solve problems.



## What does a Maths Lesson consist of?

Primary 1 to 7 follow a consistent structure of a lesson at Struthers.

**Starter Task:** Lessons begin with a starter task so that pupils are engaged as soon as they enter the classroom. This ensures there is no 'dead' time.

**Mental Maths:** Lessons progress to mental maths following the Big Maths and Number Talks programmes which will be discussed in greater detail later in this booklet.

**Sharing Learning Intentions and Success Criteria:** Teachers will discuss with the class what they are learning in the main part of the lesson and what they need to do and show in order to be successful.

**Anchor activity:** The whole class will then take part in an anchor activity to promote enthusiasm for the lesson and allow for self and teacher assessment. This task can vary from an activity on a whiteboard, a problem to solve with a partner or a whole class discussion of a statement.

**Taskboard:** Pupils will then follow a taskboard of set tasks they will carry out. In the upper school, pupils are encouraged to decide themselves which tasks they should complete depending on how they got on with the anchor activity.

**Finisher Tasks:** When pupils have completed the set tasks, they are able to select from a range of activities to consolidate their learning or practise core skills such as number bonds or times table facts. These activities are games based and cooperative.

## Mental Maths

Every maths lesson begins with mental maths at Struthers PS. All stages use Big Maths and Number Talks which are progressive schemes of work that build on core mental maths skills from primary 1 to primary 7.

### Big Maths

Big Maths begins with a CLIC session which consists of 4 parts: Counting, Learn Its, It's Nothing New and Calculation. Below is an example of a second level CLIC taskboard which would take pupils approximately 10 minutes to work through on their whiteboards.

<p>L.I. to continue patterns of multiples <u>Write the next 3 numbers in each pattern</u></p> <p>45 40 35 30    _ _ _ 116 120 124    _ _ _ 9 16 25 36    _ _ _</p>	<p>L.I. to identify the factors of numbers <u>Write down the factors of...</u></p> <p>20</p>
<p>I - L.I. to add tenths</p> <p>1. <math>0.5 + 0.4 =</math> 2. <math>0.2 + 0.3 =</math> 3. <math>0.6 + 0.1 =</math> 4. <math>0.4 + 0.2 =</math> 5. <math>0.3 + 0.6 =</math></p> <p><u>Challenge</u></p> <p>6. <math>0.7 + 0.3 =</math> 7. <math>0.6 + 0.4 =</math> 8. <math>0.9 + 0.3 =</math> 9. <math>0.8 + 0.5 =</math> 10. <math>0.6 + 0.9 =</math></p>	<p>L.I. to <math>\div</math> by 100 <u>Calculations</u></p> <p>1. <math>6500 \div 100 =</math> 2. <math>4600 \div 100 =</math> 3. <math>7300 \div 100 =</math> 4. <math>6700 \div 100 =</math> 5. <math>4500 \div 100 =</math></p> <p><u>Challenge</u></p> <p>6. <math>4560 \div 100 =</math> 7. <math>6570 \div 100 =</math> 8. <math>3280 \div 100 =</math> 9. <math>2345 \div 100 =</math> 10. <math>6415 \div 100 =</math></p>

### Counting

Children will count forwards and backwards in all kinds of steps depending on their level e.g. in 1s, 2s, 3s, 6s or even 25s!

## Learn Its

'Learn Its' are addition facts and times tables facts. There are 72 Learn Its in total; 36 addition Learn Its and 36 multiplication Learn Its. **These are facts that children need to learn off by heart**, so when they are asked 'What is  $6+4$ ?' they are able to give the answer as quickly as they would be able to tell you their name. As soon as they know  $3 \times 5 = 15$  they also know  $5 \times 3 = 15$  (This is known as a 'Switcher').

### 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

### 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

## It's Nothing New

This is the most important aspect of CLIC. It is the way children become successful and properly numerate. The idea that 5-things and 3-things are always 8-things is a fundamental concept. Once children understand this concept, we can change the 'thing' to other units, e.g. 'tens', so that 5 tens + 3 tens = 8 tens. Children begin to learn the concept by counting random units e.g. bananas, aliens, cats etc. It then becomes much easier to use standard units of measure such as ml, m, cm, kg, whilst understanding the underlying number concepts.

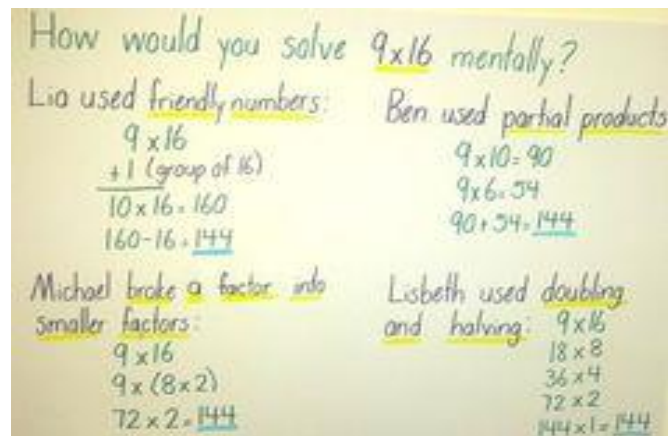
## Calculation

This aspect of CLIC is when the teacher will focus on developing the children's understanding of addition, subtraction, multiplication and division. Big Maths maps out which steps children should do in a clear order and helps teachers to identify where to go back to if a child needs extra support.

## Number Talks

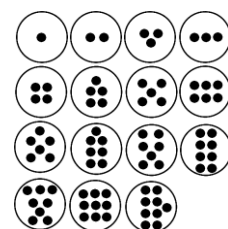
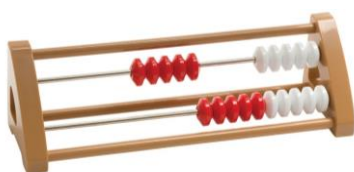
Number Talks are short, daily exercises aimed at building number sense. Pupils are encouraged to solve problems in more than one way after being taught a number different strategies for Addition, Subtraction, Multiplication and Division.

During a Number Talks session, pupils are given a problem and are asked to solve it using as many of the taught strategies as possible. Pupils are then asked to share their solutions with their class and listen to others' solutions to find the most efficient method to solve a problem. Below is an example children sharing different Number Talks strategies to solve a calculation.



From the early stages, number talks is delivered using the concrete materials of Rekenreks and ten frames and the pictorial representation of dot images. As pupils progress and begin to learn the Number Talks strategies, whiteboards are used to record workings and approaches are shared on the class interactive whiteboard.

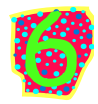
Click here to visit our [Numeracy and Mathematics](#) section of our school website for more information on P1-3 and P4-7 number talks strategies.





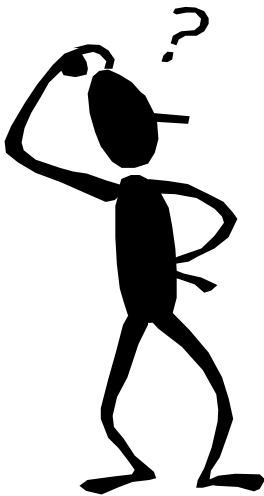
## COUNTING IDEAS

- ❖ 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.



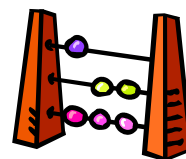
## REAL LIFE PROBLEMS

- \* 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.

## 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.  $10 = \square + \square$ ). 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.

# SHAPES AND MEASURES



- ✧ Choose a shape of the week e.g. cylinder. Look for this shape in the environment (tins, candles etc). Ask your child to describe the shape to you (2 circular faces, 2 curved edges ..)
- ✧ Play 'guess my shape'. You think of a shape. Your child asks questions to try to identify it but you can only answer 'yes' or 'no' (e.g. Does it have more than 4 corners? Does it have any curved sides?)
- ✧ Hunt for right angles around your home. Can your child also spot angles bigger or smaller than a right angle?
- ✧ Look for symmetrical objects. Help your child to draw or paint symmetrical pictures / patterns?
- ✧ Make a model using boxes/containers of different shapes and sizes. Ask your child to describe their model.
- ✧ Practise measuring the lengths or heights of objects (in metres or cm). Help your child to use different rulers and tape measures correctly. Encourage them to estimate before measuring.
- ✧ Let your child help with cooking at home. Help them to measure ingredients accurately using weighing scales or measuring jugs. Talk about what each division on the scale stands for.
- ✧ Choose some food items out of the cupboard. Try to put the objects in order of weight, by feel alone. Check by looking at the amounts on the packets.
- ✧ Practise telling the time with your child. Use both digital and analogue clocks. Ask your child to be a 'timekeeper' (e.g. tell me when it is half past four because then we are going swimming).
- ✧ Use a stop clock 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.