# Maths Parent Workshop



# Outline of today's session

- Teaching for Mastery
- A typical Hove Junior School lesson
- Share our Calculation Policy
- How to help your child at home
- Questions & feedback

## What is Teaching for Mastery?

- Maths teaching for mastery rejects the idea that a large proportion of people 'just can't do maths'.
- All pupils are encouraged by the belief that by working hard at maths they can succeed.
- Pupils are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time. This ensures that all can **master** concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind.
- If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson. Teachers will work with pupils either 1:1 or in a small group before the day ends to ensure that they are ready to take part in the next lesson.

## What is Teaching for Mastery?

- Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.
- It is recognised that practice is a vital part of learning, but the practice used is intelligent practice that both reinforces pupils' procedural fluency and develops their conceptual understanding.
- Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained.
- Key facts such as multiplication tables and addition facts within 20 are learnt to automaticity to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.

## National Curriculum 2014

### Aims

The national curriculum for mathematics aims to ensure that all pupils:

• become <u>fluent</u> in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately

• <u>reason</u> mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

• can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

# Working with pupils core competencies

Problem solving is at the heart of mathematics

The focus **is not** on rote procedures, rote memorisation or tedious calculation but on relational understanding.

Pupils are encouraged to solve problems working with their core competencies, in particular:



Visualisation



Make decisions





## **CPA** Approach



1+9:5

2+3:

CONCRETE using physical objects to solve maths problems.

PICTORIAL using drawings to solve maths problems.

ABSTRACT solving maths problems using only numbers. Children (and adults!) can find maths difficult because it is abstract. The CPA approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics.

Pupils are introduced to a new mathematical concept through the use of **concrete** resources.

When they are comfortable solving problems with physical aids, they are given problems with **pictures** – usually pictorial representations of the concrete objects they were using.

Then they are asked to solve problems where they only have the **abstract** i.e. numbers or other symbols.

## Fluency

- Counting
- Number bonds
- Times tables
- Mental methods
- Written methods

The fluency part of our lessons develops pupils *efficiency*, *accuracy* and *flexibility* with number.

## Fluency in Year 3



6 x 10 = 60

## Fluency in Year 6



Annie ate  $\frac{1}{7}$  of a cake.

Four other children shared the remainder equally.

What fraction of the cake did each of the other children get?

## In Focus

A real-life problem that we read through together and have a go at on whiteboards. This requires mathematical thinking and pupils discuss with their learning partners making connections to prior learning.



## Let's Learn

The teacher led part of the lesson.



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### **Guided Practice**

With guidance from the teacher, pupils begin to work through a series of carefully chosen questions.



Pupils may choose to use concrete resources to support their understanding.

### **Independent Work**

Children now complete the independent practice section of the lesson. Having seen how the children have worked and interacted in the In Focus and the Guided Practice, teachers may support individuals or small groups.

Multiply.



## Challenge

Challenge is weaved throughout our lessons. However, there is also usually an additional deepening task towards the end. This is discussed with all pupils to ensure that everyone has the opportunity experience challenge.

Amir has multiplied 47 by 36





Who is correct? What mistake has been made? Here are some digit cards.

1 2 3 6	5	
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 a) Use all the digit cards to make a 3-digit number and a 2-digit number.

Find the product of your numbers.

b) What is the greatest product that can be made?

## **Calculation Policy**

### 'They didn't teach it like that when I was at school.'



Parental impact

Growth mindset

# Formal written method for addition (no renaming)





# Formal written method for addition (with renaming)





# Formal written method for subtraction (no renaming)





# Formal written method for subtraction (with renaming)

My try:



Your try: Th H T O 302 5

## Formal written method for multiplication by onedigit



Your try: Th H T 0 5 2 3 5 X

## Formal written method for multiplication by twodigits



## Formal written method for division

My try:



Your try :



## Formal written method for division

My try:



Your try:



## How to help your child at home

- Number bonds (6 + 4 = 10 so 4 + 6 = 10)
- Counting "What is ten more/ten less?"
- Practising times tables and division facts through flashcards/songs/bingo
- Telling the time (analogue and digital)
- Using real money
- Cooking and using scales/measuring jugs



Times Table Rock Stars is a fun and challenging program designed to help students to master their times tables! It helps children to learn times tables as well as the related division facts in a fun and engaging way. TTRS recommend that pupils play at least three times (a total of three minutes) on the 'Garage' game every day.

## How to help your child at home

#### Parents! 10 Top tips to engage your children with maths

#### Is maths really that important at home?

Parents have a great opportunity to develop their children's maths skills at home by involving them in everyday activities. If your children can help you find the best deal for your car insurance or work out which supermarket deal is cheapest, then it's helping them understand maths in real life. It also helps develop their basic maths and problem solving skills, which are really important in the UK primary curriculum.

Don't underestimate yourself, or the power you have as a parent getting involved in your child's learning. Ofsted have specifically stated that parental engagement raises pupil achievement.

So here are some tips and ideas to show how you can improve your child's KS2 maths skills at home.

Start with a positive mindset

Do you ever hear yourse<sup>1</sup> f saying "I'm really bad at maths"? It's only small, but your children can pick up on negativity towards subjects and, unfortunately, this can be a real barrier to their learning. We advise parents to try using positive language around your children when talking about maths. You may not mean to be negative, but your children may take it to heart. Your positivity may well improve their maths attitude!

#### 2 Play maths games together

<sup>7</sup> Many games use mathematical and logical skills that your children will need in later life - plus they're fun!. Games like igsaw puzzles help children to develop logical & spatial awareness skills. Board games with dice develop children's counting skills. Other games that may help develop your child's maths skills are darts, scrabble, and chess. Get playing!

#### Learn their maths methods

You can also support your child's learning by getting to grips with the maths they learn, like the grid method and bar modelling. Sometimes parents try to help by teaching their children methods they learned in school. This can confuse children. Try instead to learn the method that your child uses by asking to see the school's Calculation Policy (usually on the school website), speaking to their teacher, or Googling it. This ensures continuity between school and home learning for your child and genuinely improves their learning!

#### Practise reading the time

As we move into digital, many children are growing up not reading analogue clocks. Make sure your child practises reading analogue clocks in everyday life, as this is part of the maths curriculum. It's as simple as reading the clock you may walk past on the side of a building, otherwise how will they ever be able to read the iconic Big Ben?

#### 5 Use fractions in daily life

Fractions can be simple for you to practise with your child. Simple common fractions can be reinforced at home even if you're not too confident with fractions. Stick to fractions you know such as ½ or ¼. See a window split into four coloured panels? Ask your child "what fraction of the window is coloured in blue?" You don't have to use rounded shapes such as cakes and pizzas to practise fractions, just make sure the separate parts of the shape are all the same size.

#### Times tables: Practice Practice Practice!

As everybody knows, it's essential for children to learn their times tables in order to access harder maths questions. This is an easy thing for parents to practise with their children - sneak it in when they're bored! Make car journeys go by faster, or distract them on the bus by asking times tables questions. Challenge them to say their times tables backwards if they get bored of reciting them.

#### 7 Involve them with problem solving

The KS2 maths curriculum requires pupils to be able to problem solve in maths. As parents, you can help your children practice these skills every day. You can ask your child to tell you which is the best deal at the supermarket or how much their pair of trousers are worth when there is a 30% sale on in a clothes store, or which internet provider has the best deal when you need to switch.

#### Use open questions

Sometimes it's just plain hard not to work out the correct answer for your child's homework without simply giving it to them. Unfortunately, just giving children the answer to their homework means don't learn to work the answer out for themselves. This means they'll get stuck without you. Next time your child needs help with their homework, try asking prompting questions such as:

"Why did you write that down?" "How did you get that answer?" "What method did you use?"

This will help your child fully understand the maths methods they're using and reinforce independent learning

#### Play to their love of technology

<sup>7</sup> There's no substitute for personal support with your child's maths, but when you're busy - or even just for a change giving children short bursts of online practice can be really helpful.

We're spoiled for choice with maths apps on the market and most really engage children. There's definitely no need to spend lots of money. Many are free or economically priced. If you want to know where to start, two of our favourites are Mr Thorne's Maths and DoodleMaths. But there are plenty more!

#### 10 If they need a challenge...

Maths can be very boring for children when they're just repeatedly practising what they already know. If you find that your child needs to challenge themselves more, or gets bored easily. Explore websites such as NRICH (<u>http://nrich.maths.org</u>/).

# How to help your child at home

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Maths websites

☆	Mains websites
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2	Maths Frame
ŵ	Website: <u>https://mathsframe.co.uk/</u>
☆	Key stages: Key Stage 2
*	Description: A range of games organised by topic. Tablet triendly.
÷	Registration: Not required
Â	Matha Tana
\$	Mains zone Wabsita: https://mathemana.ao.uk/
2	Key stages: Early years foundation stage to key stage 2
÷	Description: A range of games organised by topic
Å	Registration: Not required
*	
춫	Nrich
$\frac{1}{2}$	Website: https://nrich.maths.org/
☆	Key stages: Early years foundation stage to key stage 4
\$	Description: A range of activities and articles aimed at students, parents and guardians, and
2	teachers, categorised into age groups.
å	Registration: Not required
☆	
*	Oxford Owl
÷	Website: https://home.oxfordowl.co.uk/maths/
ŵ	Key stages: Key stage 1 and key stage 2
含	Description: Activities and support for learning at home.
춫	Registration: Not required
*	Denven The Mathe Fusies
ŵ	rearson – The Maths Factor
*	Key stages Key stage 1 and key stage 2
2	<b>Description:</b> Games and daily sessions for parents and students to work through at home
ž	Registration: 21 day free trial then £4.99 after
¢	Registration. 21 day nee that then \$4.77 and
*	Times Table Rock Stars
☆	Website: https://ttrockstars.com/
ŵ	Key stages: Key stage 1 and key stage 2
*	Description: A range of interactive maths games categorised by age group, suitable for
2	parents and students to work through.
ž	Registration: Not required
¢	
*	Top Marks
÷	Website: https://www.topmarks.co.uk/maths-games
ŵ	Key stages: Early years foundation stage to key stage 3
\$	Description: A range of interactive maths games categorised by age group, suitable for
*	parents and students to work through.
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ž	White Rose Maths
☆	Website: https://whiterosemaths.com/parent-resources
*	Key stages: Key stage 1 and key stage 2
*	Description: Activities and resources to support, categorised by age group.
**	Registration: Not required
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## Any questions?

Before you leave, could you take two minutes to fill in a feedback form. This informs our planning of future workshops/sessions.