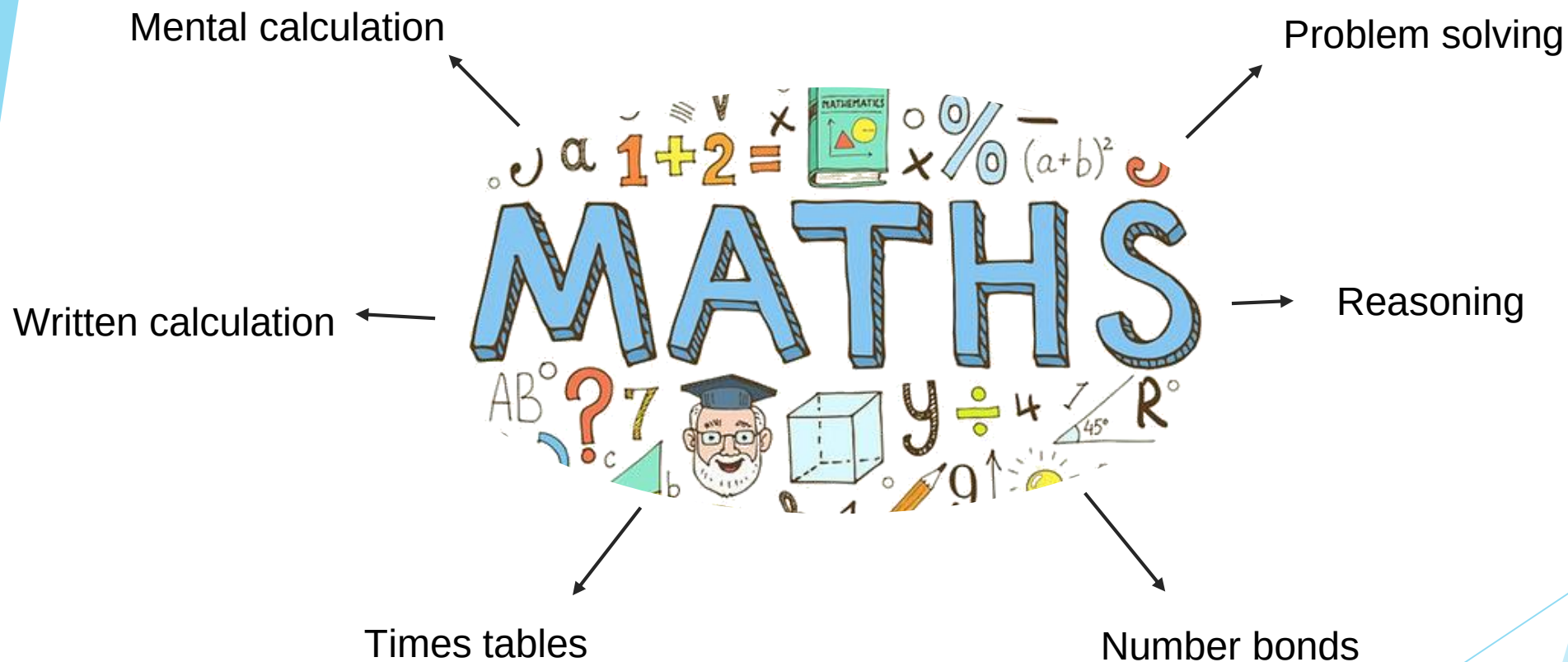


Maths Parent Workshop



Outline of today's session

- Teaching for Mastery
- A typical Hove Junior School lesson
- Share our Calculation Policy and methods
- 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.
- 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 may work with pupils either 1:1 or in a small group before a lesson to ensure that they are ready to take part in the next lesson.

What is Teaching for Mastery?

- Procedures (methods) 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.

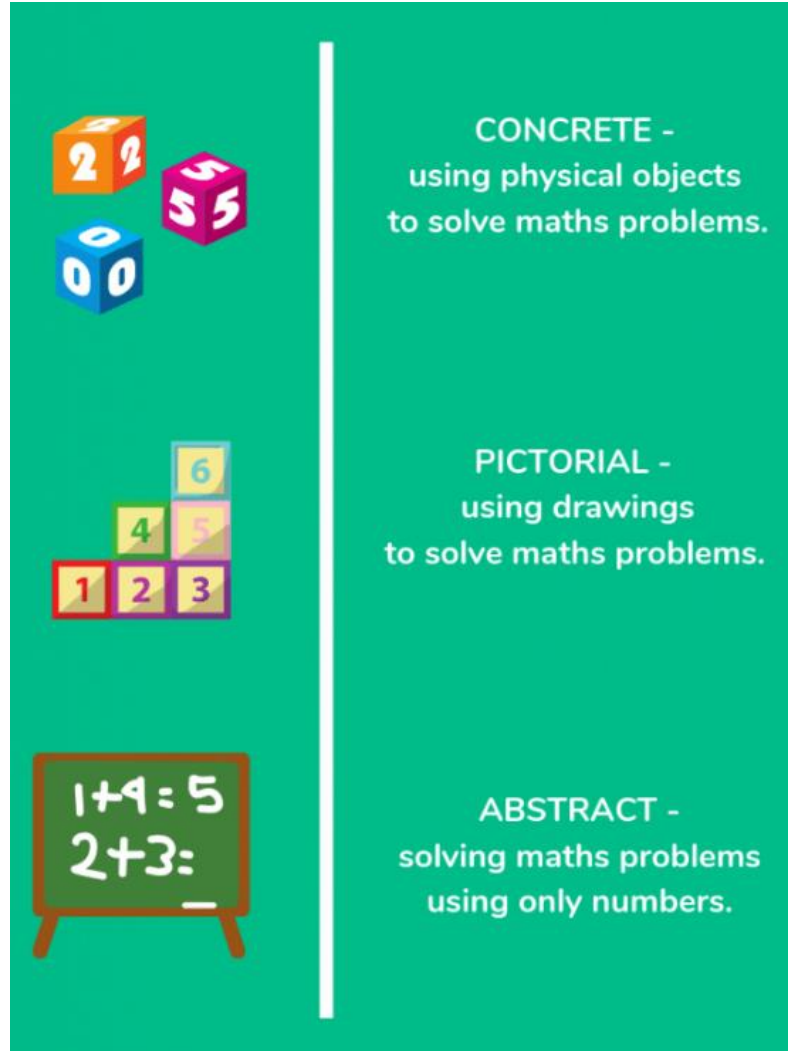
National Curriculum 2014

Aims

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

- become **fluent** 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
- **reason** 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

CPA Approach



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.

A Typical Hove Junior School Lesson

Fluency

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

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

A Typical Hove Junior School Lesson

Fluency in Year 3

IALT tell the time

Arithmetic

1) $43 + 36 =$

4) $177 - 9 =$

2) $143 + 536 =$

5) $3 \times 2 =$

3) $77 - 5 =$

6) $70 \div 10 =$



I am counting in hundreds. Spot my mistake.

... 8 hundred,
9 hundred,
10 hundred



What is his number?



10 more than
my number is equal to
100 less than 320

A Typical Hove Junior School Lesson

Fluency in Year 4

IALT write amounts of money

Arithmetic

1) $456 + 127 =$

4) $8545 - 2132 =$

2) $15.6 + 54.23 =$

5) $323 \times 5 =$

3) $59 - 30 =$

6) $985 \div 5 =$



What are the numbers?



The sum of
my numbers is 15
and their product
is 54



Always, Sometimes or Never? Explain.

**When adding 0 to any
number, the number always
changes.**

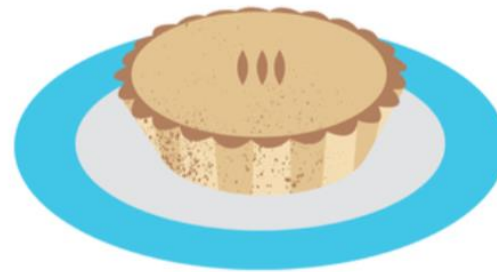
A Typical Hove Junior School Lesson

Explore

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.

Explore

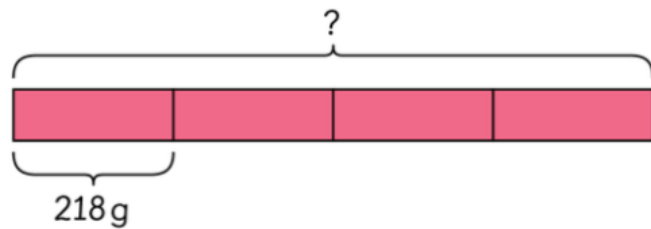
A Scotch pie has a mass of 218 g.
What is the total mass of 4 Scotch pies?



A Typical Hove Junior School Lesson

Let's Learn The teacher led part of the lesson.

$$218 \text{ g} \times 4 = \boxed{} \text{ g}$$



2	1	8	
×		4	
	3	2	→ $8 \times 4 = 32$
	4	0	→ $10 \times 4 = 40$
+	8	0	0
			→ $200 \times 4 = 800$
8	7	2	→ $218 \times 4 = 872$

$$\begin{array}{r} 2 1 8 \\ \times 4 \\ \hline 2 \end{array}$$

8 ones $\times$ 4 = 32 ones
Rename the ones.
32 ones = 3 tens + 2 ones



Start by multiplying the ones.

$$\begin{array}{r} 2 1 8 \\ \times 4 \\ \hline 7 2 \end{array}$$

1 ten $\times$ 4 = 4 tens
Add the tens.
4 tens + 3 tens = 7 tens



Multiply the tens.

$$\begin{array}{r} 2 1 8 \\ \times 4 \\ \hline 8 7 2 \end{array}$$

2 hundreds $\times$ 4 = 8 hundreds
 $218 \times 4 = 872$



Multiply the hundreds.

The total mass of 4 Scotch pies is 872 g.

A Typical Hove Junior School Lesson

Let's Learn

The teacher led part of the lesson.


I Do

	H	T	O
	3	0	2
x			5


You Do

	H	T	O
	2	1	3
x			5

A Typical Hove Junior School Lesson

Guided Practice

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

Guided Practice

1 $246 \times 3 =$

	2	4	6	
x			3	
+				

→ $6 \times 3 =$

→ $40 \times 3 =$

→ $200 \times 3 =$

→ $246 \times 3 =$

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

2 Multiply.

(a) $417 \times 4 =$

	4	1	7	
x			4	

(b) $6 \times 153 =$

	1	5	3	
x			6	

A Typical Hove Junior School Lesson

Independent Work

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

Multiply.

(a) $229 \times 4 = \boxed{}$

$$\begin{array}{r} 229 \\ \times 4 \\ \hline \\ \hline \end{array}$$

(b) $6 \times 307 = \boxed{}$

$$\begin{array}{r} 307 \\ \times 6 \\ \hline \\ \hline \end{array}$$

(c) $8 \times 129 = \boxed{}$

$$\begin{array}{r} 129 \\ \times 8 \\ \hline \\ \hline \end{array}$$

(d) $518 \times 5 = \boxed{}$

$$\begin{array}{r} 518 \\ \times 5 \\ \hline \\ \hline \end{array}$$

A train makes a return journey between Edinburgh and Manchester daily for a week. The return journey covers 562 km. What is the total distance the train covers in a week?

A Typical Hove Junior School Lesson

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.



Here are some digit cards.



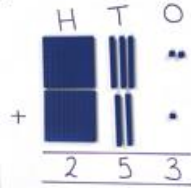
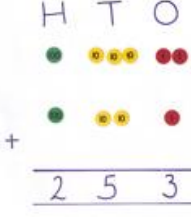
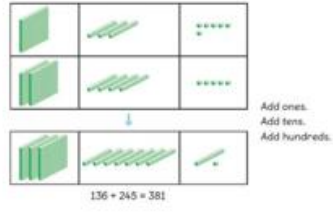
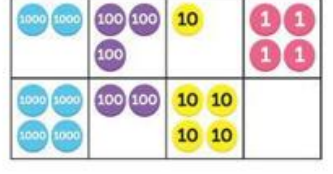
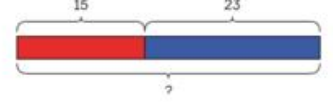
- a) Use all the digit cards to make a 3-digit number and a 2-digit number.

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.’

Addition KS2			
Objective & Strategy	Concrete	Pictorial	Abstract
Column method without regrouping Year 3	Using manipulatives children are to line up according to the place value columns and move the manipulatives into place to solve. Children to start with the ones column. Dienes:  Place value counters: 	The calculations are shown alongside the models (Dienes or place value counters) to show the connection.  136 + 245 = 381 Find the sum of 2314 and 4240.  Pictorial bar models are used to represent word problems. 	Children move on to the formal written method in the expanded form. Add the ones first in preparation for the compact method. $ \begin{array}{r} \text{h} \quad \text{t} \quad \text{o} \\ 6 \quad 9 \quad 2 \\ + 7 \quad 0 \\ \hline 1 \quad 6 \quad 0 \\ + 6 \quad 0 \quad 0 \\ \hline 7 \quad 6 \quad 2 \end{array} $ Children are shown this alongside the compact method before moving to only using the compact method. $ \begin{array}{r} \text{h} \quad \text{t} \quad \text{o} \\ 4 \quad 3 \quad 2 \\ + 5 \quad 2 \quad 1 \\ \hline 9 \quad 5 \quad 3 \end{array} $

Parental impact
Growth mindset

Formal written method for addition (with renaming)

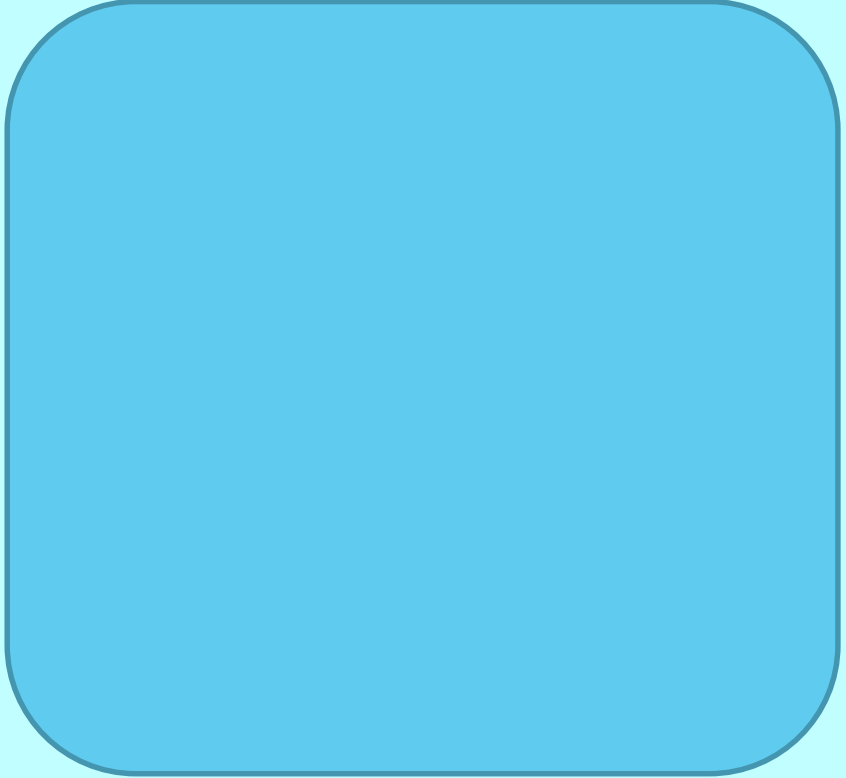
I Do



	H	T	O
	2	7	6
+	1	5	6

You Do





Formal written method for subtraction (with renaming)



	H	T	O
	4	0	0
-	1	2	5



Formal written method for multiplication by one-digit



	H	T	O
	1	6	2
x			5



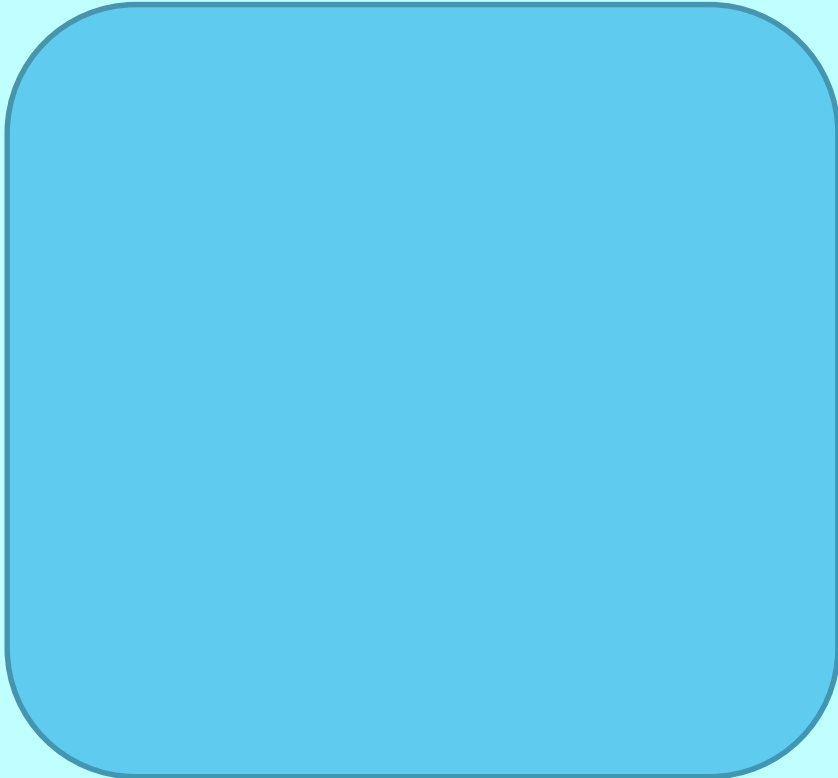
Formal written method for division

I Do



3	7	2	0	

You Do



What is the Multiplication Tables Check (MTC)?

- The MTC was introduced in 2021.
- The MTC determines if Year 4 children can **fluently** and **automatically** recall their multiplication tables.
- It is designed to help schools identify which children require more support to learn their times tables.
- There is no 'pass' rate or threshold which means that children will not be expected to re-sit the check.

What is the Multiplication Tables Check (MTC)?

- Each child will be **randomly assigned** a set of questions
- There will only be **multiplication** questions in the check, not division facts.
- The 6, 7, 8, 9 and 12 times tables are **more likely** to be asked.
- Children will not see their individual results when they complete the check.

What does it look like for pupils?

Question 12 Time Left: 4

$2 \times 12 =$

1	2	3
4	5	6
7	8	9
	0	enter

When and how will the check take place?

- The check **takes place online**. Answers will be entered using a keyboard, by pressing digits using a mouse or using an on-screen number pad.
- Usually, the check will take less than **5 minutes** for each child.
- The children will have **6 seconds** from the time the question appears to input their answer.
- There will be a total of **25 questions** with a **3 second pause** in-between questions.

When and how will the check take place?

- There will be a **3 week window** in **June** for schools to administer the check.
- Children will sit the check on the same day in **small groups** in the Computing Suite in the place of their maths lesson.
- All eligible Year 4 children in England will be required to take the check.
- The pupils will have the opportunity to practice before the check takes place so the format will be familiar to them.

How can you help your child at home?

Times Table Rock Stars website!

Jamming - Pupils chose the table and operation ($\times$ or $\div$ or both) they want to practise. Answer 10, 20 or 30 questions.

Gig - Gig games comprise of 100 questions in 5 minutes. They help the website to work out which times tables pupils need to work on. They are completed once a month.

Garage - Players are given a personalised set of 6 multiplication questions (and their matching division questions) in each round. The questions keep adjusting to provide the best fit for every learner's needs. **This is the best game mode for improving recall.**

How can you help your child at home?

Official MTC:

Question 12 Time Left: 4

$2 \times 12 =$

1	2	3
4	5	6
7	8	9
	0	enter

Times Table Rock Stars
Soundcheck:

Invert

$2 \times 12 =$

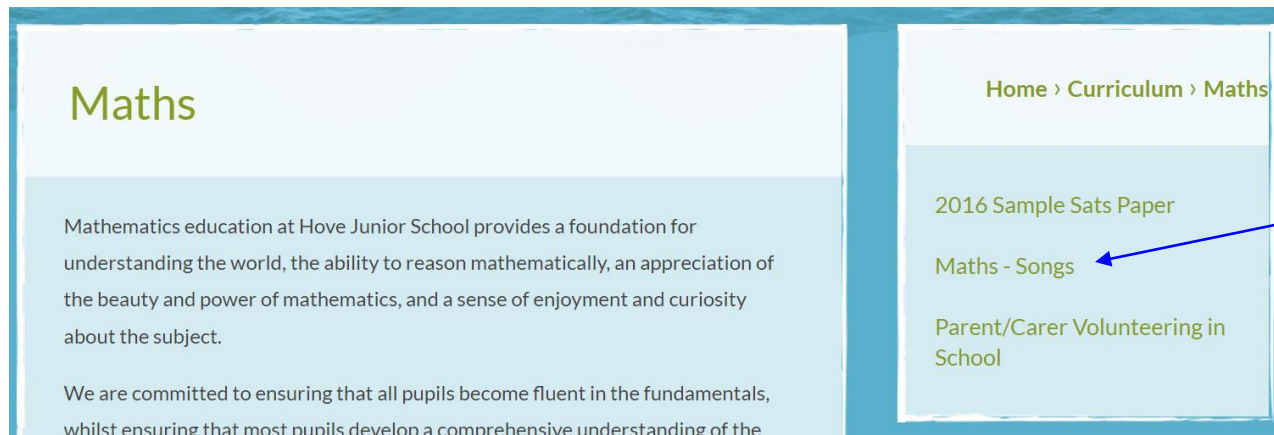
1	2	3
4	5	6
7	8	9
Delete	0	Enter

If your child does not have a login, please ask their class teacher or speak to us after the meeting.

How can you help your child at home?

- Practice times table facts using flashcards.
- Learn and love the times table songs!
- Play Bingo with a chosen tricky times table.

Little and
often!



How can you help your child at home?

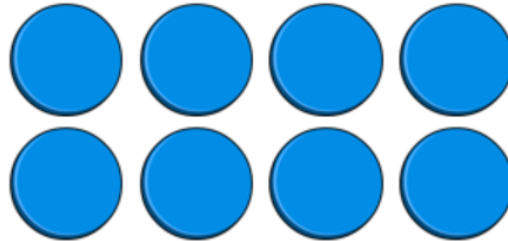
- Chant the times tables everywhere... in the car, walking to school, when counting out objects.
- Talk about multiplication being **commutative** e.g. 5×6 is the same as 6×5 .
- Link times tables to repeated addition.

Little and
often!

Knowing that 2×4 is the same as $2 + 2 + 2 + 2$



$$2 + 2 + 2 + 2 = ?$$



$$2 \times 4 = ?$$

How to help your child at home

Parents! 10 Top tips to engage your children with maths

KS2

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.

1 Start with a positive mindset

Do you ever hear yourself 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

Many games use mathematical and logical skills that your children will need in later life - plus they're fun! Games like jigsaw 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!

3 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!

4 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 $\frac{1}{2}$ or $\frac{1}{4}$. 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.

6 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.

8 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.

9 Play to their love of technology

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 (<http://nrich.maths.org/>) or Transum (<http://www.transum.org/>).

Maths websites

★ Maths Frame

★ Website: <https://mathsframe.co.uk/>

★ Key stages: Key Stage 2

★ Description: A range of games organised by topic. Tablet friendly.

★ Registration: Not required

★ Maths Zone

★ Website: <https://mathszone.co.uk/>

★ Key stages: Early years foundation stage to key stage 2

★ Description: A range of games organised by topic.

★ Registration: Not required

★ ICT Games

★ Website: <https://ictgames.com/>

★ Key stages: Key stage 1 and key stage 2

★ Description: A range of games organised by topic. Tablet friendly.

★ Registration: Not required

★ Oxford Owl

★ Website: <https://home.oxfordowl.co.uk/maths/>

★ Key stages: Key stage 1 and key stage 2

★ Description: Activities and support for learning at home.

★ Registration: Not required

★ Pearson – The Maths Factor

★ Website: <https://www.themathsfactor.com/>

★ Key stages: Key stage 1 and key stage 2

★ Description: Games and daily sessions for parents and students to work through at home.

★ Registration: 21 day free trial then £4.99 after

★ Times Table Rock Stars

★ Website: <https://ttrockstars.com/>

★ Key stages: Key stage 2

★ Description: Times table practice

★ Registration: School login provided by class teacher

★ Top Marks

★ Website: <https://www.topmarks.co.uk/maths-games>

★ 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.

★ Registration: Not required

★ Oak Academy

★ Website: <https://www.thenational.academy/>

★ Key stages: Key stage 1 and key stage 2

★ Description: Video lessons and worksheets created during lockdown to support pupils learning at home

★ Registration: Not required

Where can I find the calculation policy on the school website?

Website spotlight:

Addition with PV counters -

<https://ictgames.com/mobilePage/vertical/index.html>

Subtraction with PV counters -

<https://ictgames.com/mobilePage/verticalSub/index.html>

Any questions?