



Welcome to our workshop.

My name is Mrs Edwards and I am the Maths lead at our school.

Please get yourselves a refreshment and snack and make yourselves comfortable before we begin.



Maths at Exhall Junior School.



Four maths lessons per week

Each an hour long

Additional fluency practise up to 3 times per week in an afternoon for 30-45 minutes

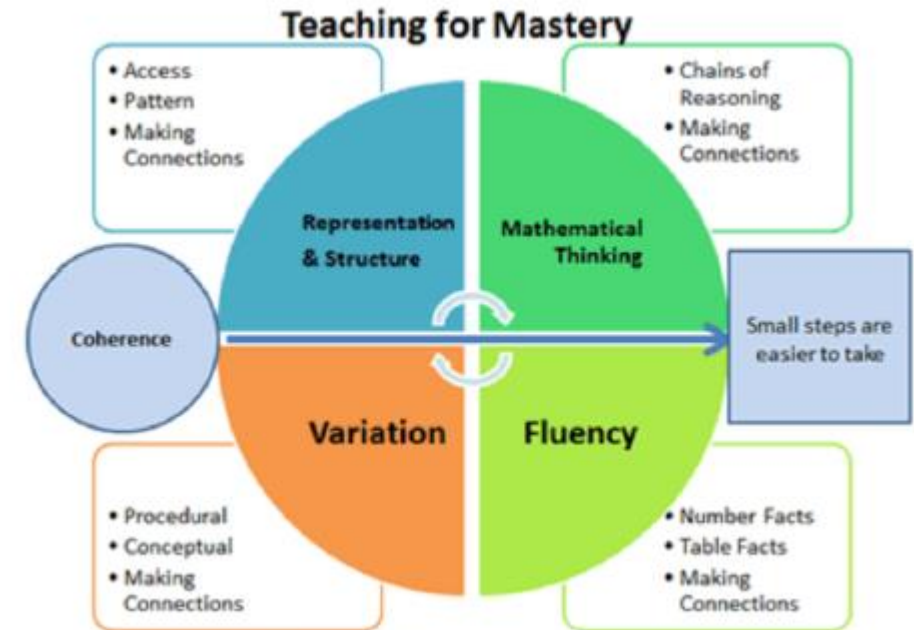
Weekly times tables practise using varied resources, including times table Rockstars

For Upper Key Stage Two (years 5 and 6), weekly arithmetic tests that are supported by daily morning tasks.

Our approach uses 'Teaching for Mastery'

- Achievable for all
- Deep and sustainable learning
- The ability to build on something that has already been sufficiently mastered
- The ability to reason about a concept and make connections
- Fluency (the ability to recall facts quickly and apply them)

With the mastery approach it is inevitable that some pupils will grasp concepts more rapidly than others and will need to be stimulated and challenged to ensure continued progression' (Askew et al, 2015)



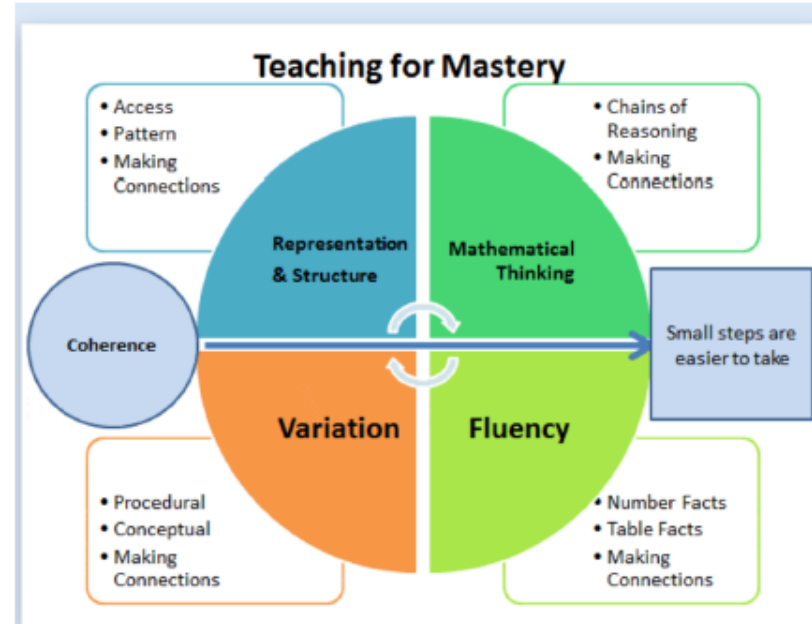
The Five Big Ideas

Representations and structure:

Concrete and pictorial abstract.
Representation expose pupils to the mathematical structure so they truly understand why mathematical algorithms work and can therefore adapt to different scenarios.

Variation

Varying the way a concept is presented to a student and varying practise questions so that mechanical repetition is avoided. Include the use of different methods and misconceptions.



Coherence

Learning is broken down into small learning aim steps. Explicitly connecting new ideas to concepts that have already been understood. Very carefully planning the order of learning to facilitate this.

Mathematical Thinking.

Children work on ideas to develop understanding rather than passively receiving them. Students should be able to reason and discuss. This includes using mathematical terminology.

Fluency

Quick and efficient recall of facts and the ability to use them in different contexts in mathematics

How do we develop mathematical understanding?

Concrete, Pictorial, Abstract (CPA) approach

Exploring concepts - Exploration and unpicking concepts (Practical lessons)

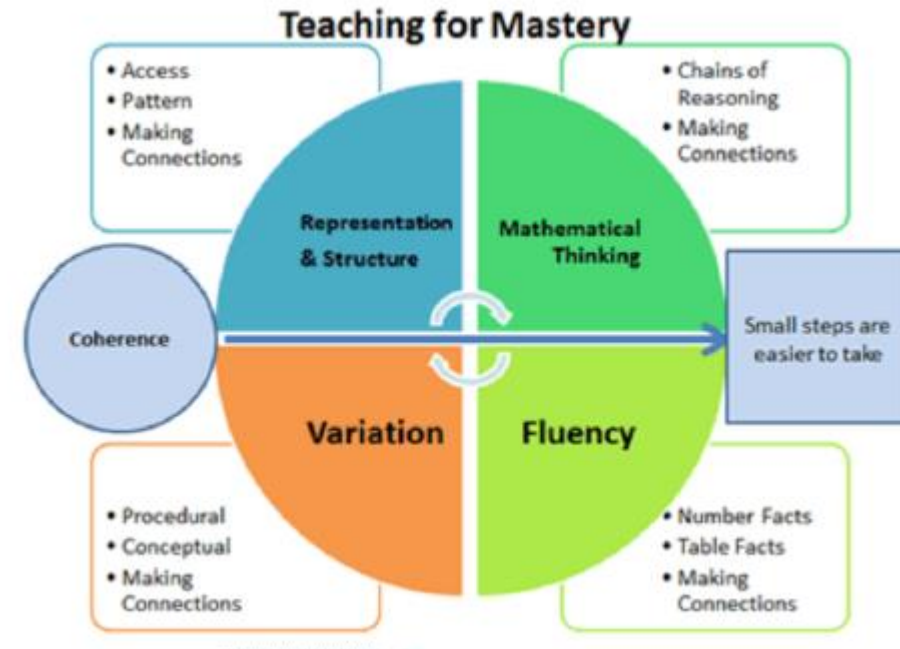
Encouraging children to work systematically

Visualising learning through multiple representations

Mathematical thinking - Questioning both pupils and staff

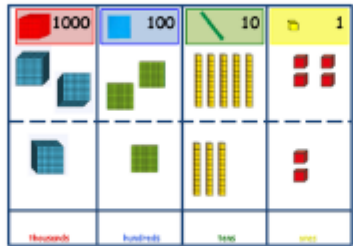
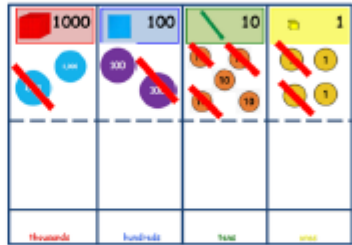
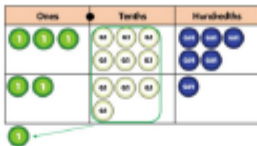
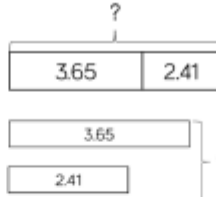

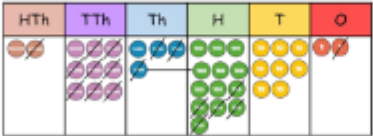


Making connections (discovering patterns)

Procedural and Conceptual Variations



CPA approach



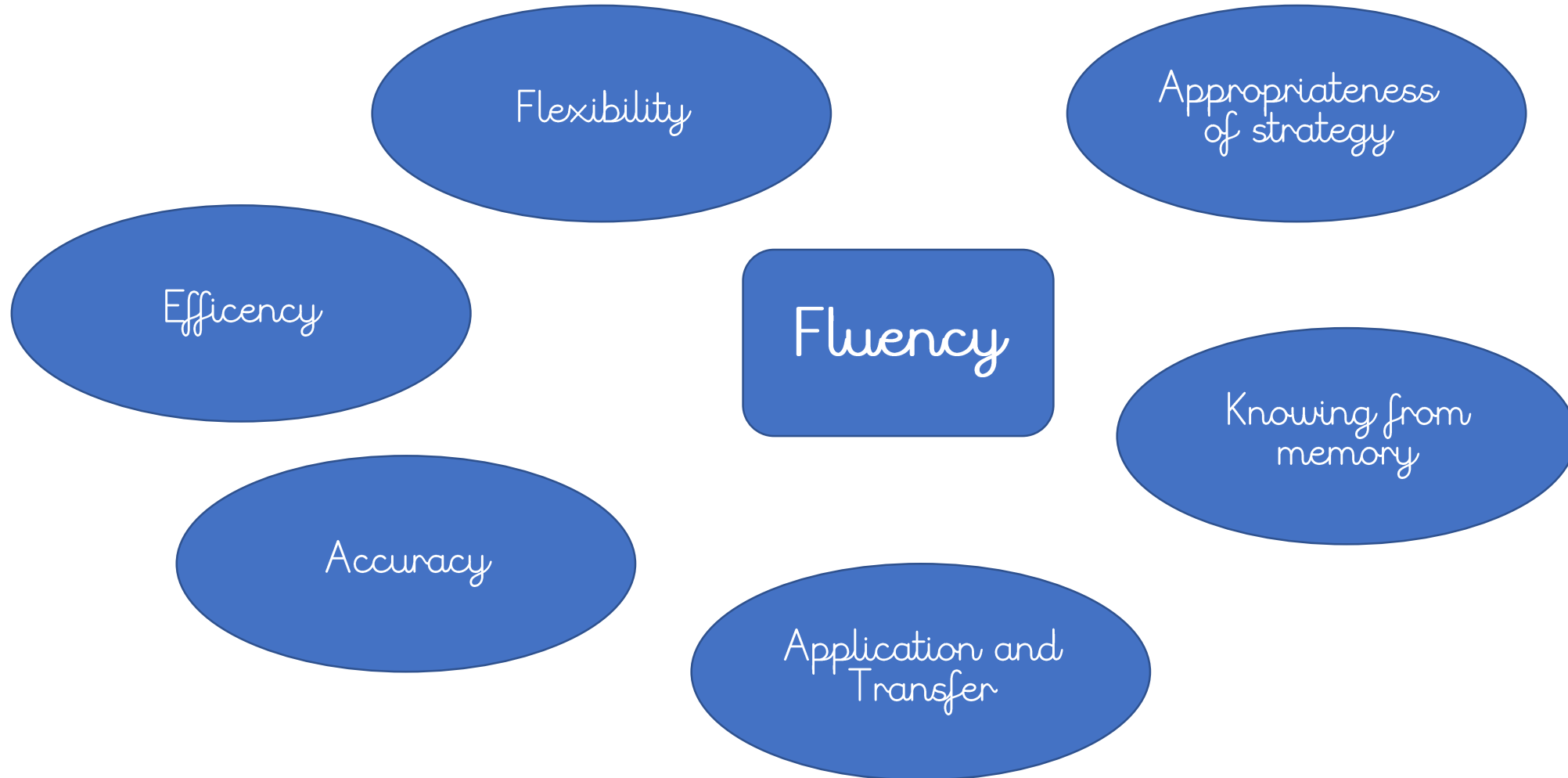
Year 4 Objectives	Concrete	Pictorial	Abstract
To subtract numbers up to 4 digits (without regrouping/exchanging)	 <p>2254 - 1132 =</p>	 <p>2254 - 1132 =</p>	$\begin{array}{r} 6276 \\ - 3153 \\ \hline \end{array}$ <p>Also expose children to part whole model and bar method to show calculation.</p>
Add with up to 3 decimal places.	 <p>Use of place value counters</p>		$\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \\ 1 \end{array}$ 
To subtract several numbers with more than 4 digits using formal written method.			

Year 4

Year 5

Year 6

Developing mathematical fluency





Why is developing fluency critical for children success in Maths?



Fluency in maths is about developing number sense and being able to choose the most appropriate method for the task at hand; to be able to apply a skill to multiple contexts. The National Curriculum states that pupils should become fluent in the fundamentals of mathematics through varied and frequent practice.

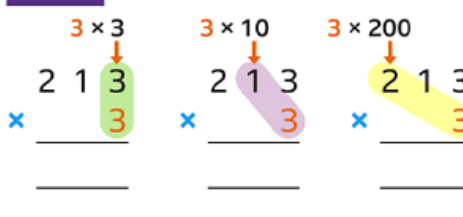
The phrase 'number sense' is often used to mean conceptual fluency - understanding place value and the relationships between operations. Children need to be both procedurally and conceptually fluent - they need to know both how and why.

The quality of the talk is important. It is not simply children sharing how they did a particular calculation, but describing why and how it worked, and how their method is the same or different to those of others.

What are fundamentals skills we want children to achieve during KS2?

- Place value knowledge of numbers up to 10,000,000 and know the value of each digit.
- Add and subtract up to 6 digit number using an efficient strategies (e.g $300,000 + 70,000$)
- To use and apply number fact knowledge to larger numbers or decimal calculations to 20 e.g. $6 + 4 = 10$ so $0.6 + 0.4 = 1$ or $1 - 0.4 = 0.6$
- To be able recall all times tables up to 12×12 and relating division facts in order to maintain fluency to help solve both mental and written problems. ($7 \times 6 = 42$ $6 \times 7 = 42$ $42 \div 7 = 6$ $42 \div 6 = 7$) or 70×90 (using their knowledge of 7×9)
- Knowledge of short & long multiplication alongside short & long division.

213 \times 3



3×3
 3×10
 3×200

213
 $\times 3$

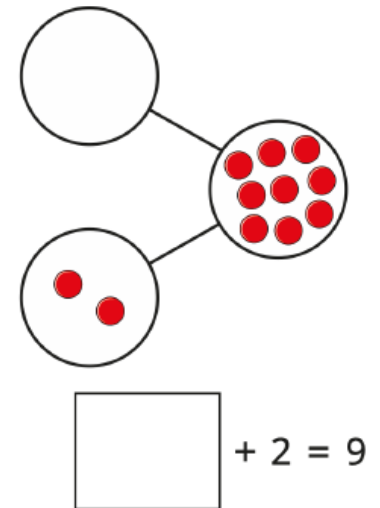
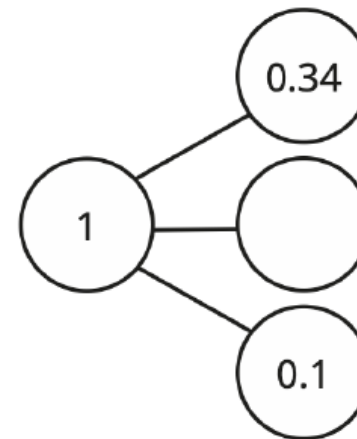
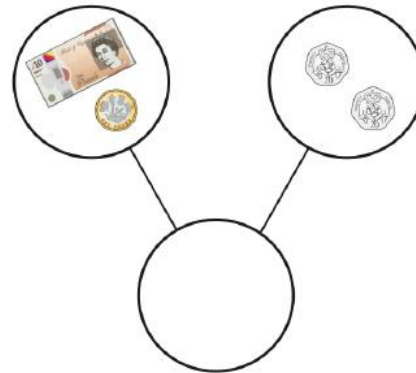
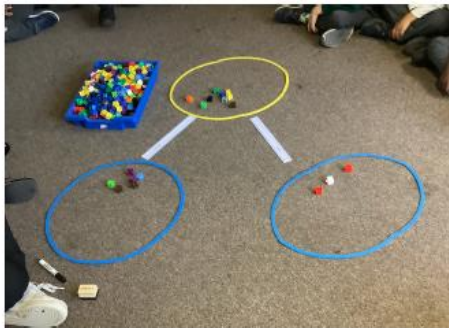
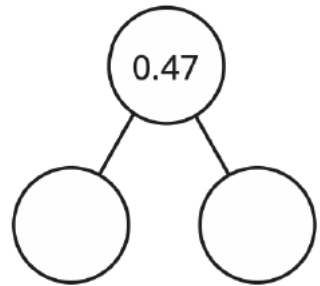
78 \div 3 becomes

$$\begin{array}{r} 26 \\ 3 \overline{) 78} \end{array}$$

Answer: 26

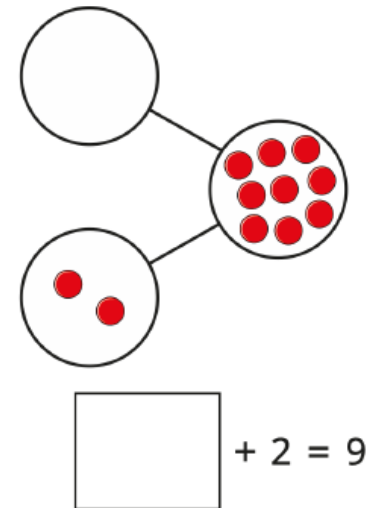
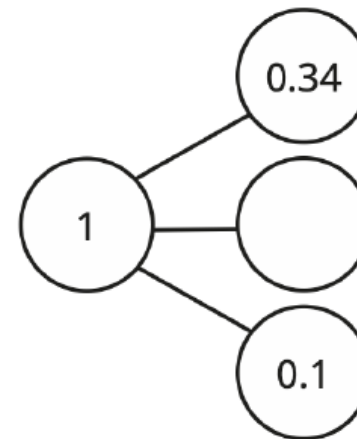
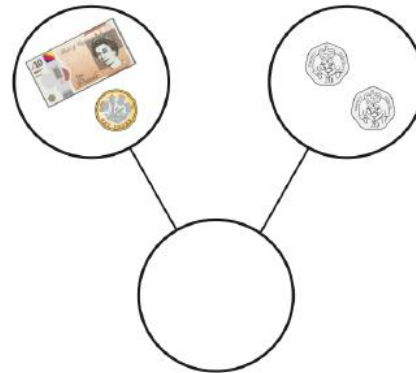
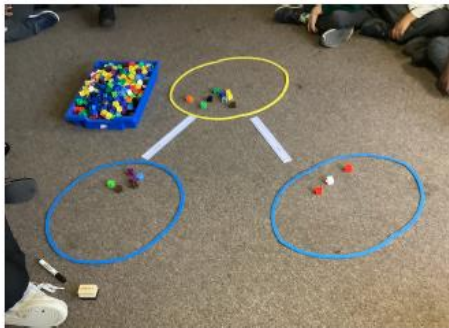
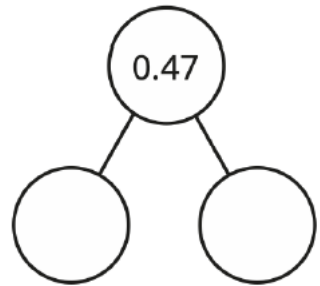
Representation and Structure Part, Part, Whole

This representation can be used for place value,
addition, subtraction, missing number problems



Representation and Structure Bar Modelling

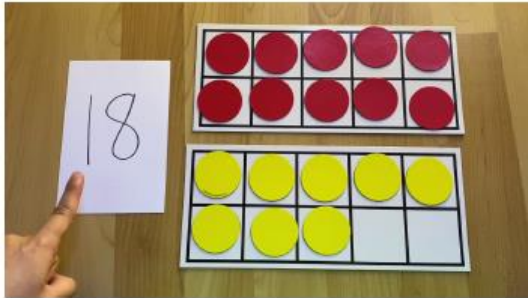
This representation can be used for place value, addition, subtraction, missing number problems, multiplication and division and fractions



Representation and Structure

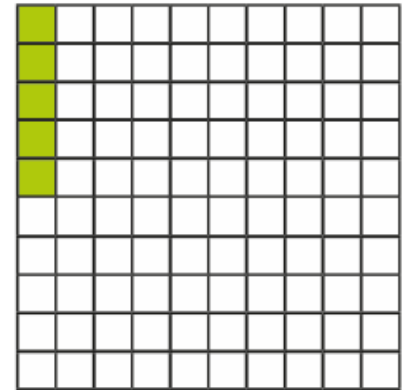
Hundred squares and Tens Frames

This representation can be used for place value, addition, subtraction, missing number problems, multiplication and division and fractions



The hundred square represents 1 whole.

- What fraction of the hundred square is shaded?
- Convert the fraction to a decimal.



$$\frac{5}{100} = 0.05$$

Key Methods for success in KS2

213 × 3

3 × 3
2 1 3
× 3

3 × 10
2 1 3
× 3

3 × 200
2 1 3
× 3

Begin to learning in Y3/4

78 ÷ 3 becomes

$$\begin{array}{r} 26 \\ 3 \overline{) 78} \end{array}$$

Answer: 26

Begin to learning in
Y4/5 in preparation for
Y6

		9	8	
	×	5	4	
	3	9	2	← This is 98 × 4
4	9	0	0	← This is 98 × 50
5	2	9	2	← This is 98 × 54

Begin to learning in Y5
in preparation for Y6

	Th	H	T	O
	2	4	5	7
+	3	9	1	6

	Th	H	T	O
	8	9	3	2
-	4	1	5	7

Begin to learning in Y3/4
They need to be able to do
exchanges / regrouping

Maths with Michael

<https://whiteroseeducation.com/parent-pupil-resources/maths/maths-with-michael#watch>

Has maths changed?

1. Place Value

2. Subtraction

3. Multiplication

4. Division

5. Fractions

6. Algebra

Vid



Has maths changed?

We understand that many parents feel like maths has changed and that it's sometimes difficult to keep up to date with modern teaching methods. Well don't worry, we're here to help.

With over 80% of primary schools and a growing number of secondary schools using our free schemes of learning, supporting resources and assessments, we can help you bridge the gap between school and home.

NEXT →

Why are time tables so important?

Times tables are a crucial maths skill that primary children must learn. Throughout Years 2-6 (and often earlier), children will begin to learn their times tables,

Memorising times tables makes it far quicker and easier for children to work out maths problems in their heads. Moving beyond using their fingers to work out answers, they'll be able to use their knowledge to quickly solve any multiplication questions.

Knowing their times tables isn't just useful for weekly multiplication tests - they also come in handy outside of the classroom! How much would it cost to buy three comics which cost £2 each? Simply calculate 3×2 !



Heatmaps

Class Average per Table
How quickly can the class correctly recall each times table?

Avg	10 ×	2 ×	5 ×	3 ×	4 ×	8 ×	6 ×	7 ×	9 ×	11 ×	12 ×
3.8s	2.1s	3.0s	3.5s	3.7s	4.1s	4.5s	4.3s	5.0s	4.7s	2.9s	4.1s

Class Average per Fact (Heatmap)
How quickly can the class correctly recall each fact up to 12×12?

2-12× 2-20× Y4 Buzzard heatmap as of 22 Dec 2023

Download icon:  

	10	2	5	3	4	8	6	7	9	11	12
10	10 × 10	10 × 2	10 × 5	10 × 3	10 × 4	10 × 8	10 × 6	10 × 7	10 × 9	10 × 11	10 × 12
2	2 × 10	2 × 2	2 × 5	2 × 3	2 × 4	2 × 8	2 × 6	2 × 7	2 × 9	2 × 11	2 × 12
5	5 × 10	5 × 2	3.30s	5 × 3	5 × 4	5 × 8	5 × 6	5 × 7	5 × 9	5 × 11	5 × 12
3	3 × 10	3 × 2	3 × 5	3 × 3	3 × 4	3 × 8	3 × 6	3 × 7	3 × 9	3 × 11	3 × 12
4	4 × 10	4 × 2	4 × 5	4 × 3	4 × 4	4 × 8	4 × 6	4 × 7	4 × 9	4 × 11	4 × 12
8	8 × 10	8 × 2	8 × 5	8 × 3	8 × 4	8 × 8	8 × 6	8 × 7	8 × 9	8 × 11	8 × 12
6	6 × 10	6 × 2	6 × 5	6 × 3	6 × 4	6 × 8	6 × 6	6 × 7	6 × 9	6 × 11	6 × 12
7	7 × 10	7 × 2	7 × 5	7 × 3	7 × 4	7 × 8	7 × 6	7 × 7	7 × 9	7 × 11	7 × 12
9	9 × 10	9 × 2	9 × 5	9 × 3	9 × 4	9 × 8	9 × 6	9 × 7	9 × 9	9 × 11	9 × 12
11	11 × 10	11 × 2	11 × 5	11 × 3	11 × 4	11 × 8	11 × 6	11 × 7	11 × 9	11 × 11	11 × 12
12	12 × 10	12 × 2	12 × 5	12 × 3	12 × 4	12 × 8	12 × 6	12 × 7	12 × 9	12 × 11	12 × 12

Download invidious
heat maps
for every child

The colours on this page relate to the speed shown in this table:

0 - 1s	1 - 2s	2 - 3s	3 - 4s	4 - 5s	5 - 6s	6 - 7s	7 - 8s	8 - 9s	9 - 10s	> 10s
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What is the MTC?

- The MTC or Multiplication Tables Check is a test that was developed by the DfE to ensure children were leaving Lower Key Stage 2 with a strong and fluent knowledge of times tables up to 12×12 .
- June 2025 - 1 week window to ensure all Year 4 children complete the test.
- Completed on an iPad - secure government website only accessible during the 1 week window.
- 25 random multiplication questions
- Children have 6 seconds to answer each question
- Test time - 2 minutes.

"By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work..." National Curriculum 2014

Why?

- Ensure children had strong and fluent knowledge of times tables up to 12×12 .
- Entering Years 5 and 6 - skills vital for mathematical progress \rightarrow **SATs**
- Rapid recall supports problem solving and fluency:

Two-Step Multiplication Word Problems All Multiplication

8. For a party, 3 boxes of biscuits are purchased. Each box contains 14 packs of biscuits. Each pack contains packets of 22 biscuits. How many biscuits are purchased?



Are the statements true or false?

a) $258 \times 360 = 2,580 \times 36$

b) $134 \times 23 + 12 = (134 + 12) \times 23$

Times tables Top Tips

1. Make It Fun with Games

Incorporate interactive games: Use card games, board games, or apps designed for times tables practice (e.g., *Hit the Button* or *Times Tables Rock Stars*).
DIY flashcards: Create simple flashcards for quick-fire quizzes.
Dice or spinner games: Roll two dice and multiply the numbers, or spin a wheel to practice a specific times table.

2. Use Real-Life Scenarios

Cooking and baking: Double or triple recipes using multiplication.
Shopping: Calculate total costs or work out "3 for the price of 2" deals.
Everyday counting: Count items in arrays (e.g., "How many eggs are in 3 cartons of 12?")

3. Build Confidence Gradually

Start with easier tables: Focus on 2s, 5s, and 10s before moving to trickier ones like 7s and 9s.
Break it down: Practice one table at a time, but revisit older ones for reinforcement.
Use patterns and tricks: Highlight patterns like the 9 times table trick (e.g., digits add up to 9 in multiples of 9: $9 \times 2 = 18$, $1 + 8 = 9$)

4. Use Songs and Rhymes

Find catchy multiplication songs on platforms like YouTube or Spotify to make learning engaging.
Create personalized rhymes or chants to remember tricky times tables.

5. Celebrate Progress and Effort

Set challenges: Track progress on a chart, offering rewards for milestones.
Praise improvement: Focus on effort and celebrate small wins, not just correct answers.
Involve the family: Have a mini-competition or let kids teach you times tables they've mastered.

**With consistent and enjoyable practice,
children can build strong multiplication
skills and gain confidence in math!**



Any questions?

