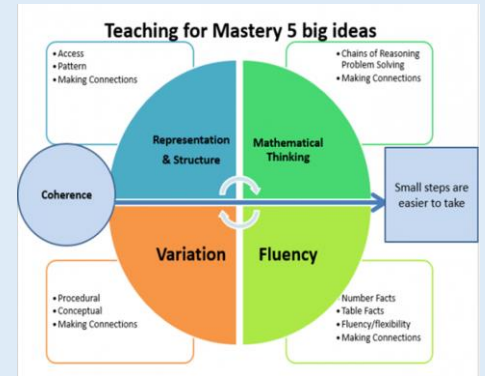


Teaching for Mastery in Maths and Progression in Calculation Strategies for Parents and Carers

Wednesday 20th November 2019

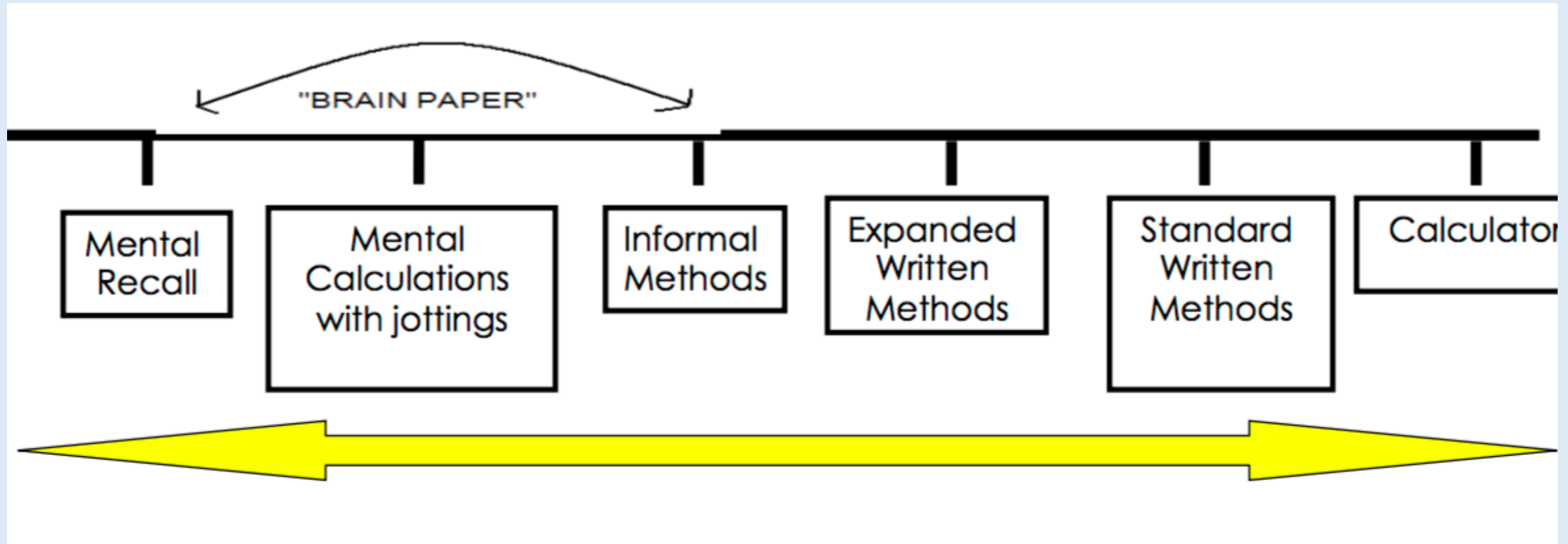


Teaching for Mastery



- All can succeed
- Whole class is taught together
- Individual learning needs addressed through scaffolding, skilful questioning and rapid intervention
- High quality feedback and addressing of misconceptions through marking and teacher interaction
- Mathematical processes are emphasised and broken down to build conceptual understanding in small steps to lead to most efficient methods
- Precise mathematical language
- Deep and sustainable learning
- Lots of time spent on key concepts
- Lots of practise inside and outside of the daily maths lesson to develop fluency and consolidate their learning

Progression in Calculation



Addition

Try these – how does the strategy you use change according to the numbers in the calculation?

$$8+4$$

$$18+6$$

$$34 + 23$$

$$47 + 76$$

$$264 + 124$$

$$356 + 287$$

$$1,587 + 475$$

$$1,243 + 1,189$$

$$3.6 + 10.32$$

$$3.005 + 6.12$$

$$89,994 + 7,643$$

Subtraction

Try these – how does the strategy you use change according to the numbers in the calculation?

$$15 - 6$$

$$42 - 25$$

$$89 - 57$$

$$754 - 286$$

$$534 - 387$$

$$609 - 243$$

$$6,467 - 2,684$$

$$3,002 - 2,997$$

$$10.3 - 2.06$$

$$125.48 - 72.3$$

$$122,456 - 11,999$$

Multiplication

Try these – how does the strategy you use change according to the numbers in the calculation?

$$5 \times 3$$

$$38 \times 5$$

$$6 \times 14$$

$$346 \times 9$$

$$4.9 \times 3$$

$$71 \times 46$$

$$612 \times 24$$

$$3.2 \times 5$$

$$15 \times 6.1$$

$$162 \times 2.5$$

$$6574 \times 31$$

Division

Try these – how does the strategy you use change according to the numbers in the calculation?

$$12 \div 3$$

$$13 \div 4$$

$$72 \div 3$$

$$64 \div 4$$

$$75 \div 5$$

$$196 \div 6$$

$$972 \div 36$$

$$1,320 \div 12$$

$$725 \div 29$$

$$1118 \div 43$$

$$432 \div 15$$

Context

- Joe has 5 marbles. Jane has 6 marbles more than Joe. How many marbles does Jane have?
- Jane has 8 marbles. Joe has 5 marbles. How many marbles more than Joe does Jane have?
- Same words, different context.

What are bar models?

Representations to reveal structure

- Laura had £240. She spent $\frac{5}{8}$ of it. How much money did she have left?
- Overall percent correct:

Singapore	78% - (Eastern approach to Maths)
USA	25% - (Western approach to Maths)

Calculation is just one aspect of what makes a good mathematician. It is important that children are fluent calculators but it is also important that they are able to reason and problem solve.

What are bar models?

Representations to reveal structure

- Laura had £240. She spent $\frac{5}{8}$ of it. How much money did she have left?



What are bar models?

Representations to reveal structure

- Laura had £240. She spends £150, how much does she have left?



Reasoning and Problem Solving

Gold

smallest \longrightarrow largest

largest

Can you put all of the fractions into the grid so that every row and column is in **ascending** order (from smallest to biggest)?

$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{12}$	$\frac{17}{24}$	$\frac{5}{16}$
$\frac{3}{4}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{23}{48}$	$\frac{2}{3}$
$\frac{7}{16}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{11}{12}$	$\frac{13}{24}$
$\frac{5}{6}$	$\frac{1}{16}$	$\frac{19}{24}$	$\frac{7}{8}$	$\frac{1}{6}$
$\frac{1}{3}$	$\frac{13}{16}$	$\frac{1}{8}$	$\frac{1}{12}$	$\frac{7}{12}$

What can you do at home?

- Model the use of **empty number lines**: jumping forwards and backwards
- 0-99 grid: 1 more/less & 10 more/less
- Using number facts: doubles & near doubles/
- Rehearse number bonds to 10/20/50/100...
- Encourage the most efficient choice of strategy
- Consolidation of place value understanding: How do you know 65 is larger than 56?
- Use songs and actions - Mathematics Timestables Toons
- Count in multiples before using the times table facts 0, 3, 6, 9, 12
- Learn tables in sequence and then out of sequence
- Learn division facts as well as multiplication facts
- Practise, practise, practise – daily maths moments?
- Encourage practical activities to encourage use and application of times tables i.e. setting the table, pairs of socks, shoes, packets of biscuits etc.
- Number cards (a deck of cards/dominos are handy) – practise finding the inverse, unknown number i.e. $3 + ? = 4$ etc.

Resources for support at home

- <http://www.bishopperrin.richmond.sch.uk/Parent-Meetings-and-Information>
- Links to YouTube videos showing progression in calculation for each operation
- Mathletics maths dictionary – all children have a username and password for home access
- BP Calculation Policy outlines which strategies are taught and when (on school website: Maths-Calculation)
- Your child's class teacher – if you're not sure, please ask
- <https://mathsframe.co.uk/en/resources/resource/477/Multiplication-Tables-Check>