KS 2 Maths Information Meeting

THE APPROACH TO TEACHING CALCULATION METHODS

Everyone can

- https://vimeo.com/173324233

Have a go, do it your way!

- 25x19
- 5% of 86
- 248-99
- 103-98
- ½ of 378
- 1+2+3+4+5+6+7+8+9+10+11=

Key features of the strategy for mathematics in KS2

- Development of mental calculation
- Promoting fluency with numbers
- Ability to transfer number skills and knowledge (2+5 = 7, what else do I know? 20+50)
- Learn shortcuts (4x £4.99)
- Learn formal written methods
- Use / select effective calculation strategies

The progression for teaching and learning in addition

1. Mental methods are very important e.g. number bonds to 10, 20, 50, 100, 1000. Quick recall of facts
2. An empty number line can be used for larger numbers.
3. Adding the partitioned numbers together, splitting the number using knowledge of place value.
4. Column addition Simpler numbers then leading to answers that involve carrying digits.

The progression for teaching and learning in subtraction

1. Mental methods continue to used e.g. rapid recall of number bonds to 10, 20, 50, 100, 1000. Find small differences by counting up e.g. 82 – 79 = 3
2. The use of the empty number line
3. Simple column subtraction (without decomposition)
4. Column subtraction involving decomposition – exchange not borrow

Why mental methods first?

- 56+ 29 or 56
  +29

How would you use a mental method to calculate 56+29 ?

Mental Fluency in Mathematics- Herts for Learning video

- https://www.hertsforlearning.co.uk/news/mental-fluency-mathematics

Why not a written method for this?

For a calculation of this size, a formal method is not the most efficient

Children cease to "say" the numbers, seeing only digits in columns e.g. "6 add 9" instead of "56 add 29"

But some children like the formal method and choose to use it!

The ugly ones!!

2000
- 102
_____

This is most sensibly done by counting back or subtraction, not by decomposition or a formal written method

What about this one ?

- 342-197

- Back to video 3mins

Using and applying mathematical facts and knowledge

- 25 x 8 or 25
  x 8

- Children relying on written procedures forget how much they can do mentally.
- 25x8 is double 25x4
- 25 x 4 = 100 is a great fact to just learn and know

The calculating repertoire

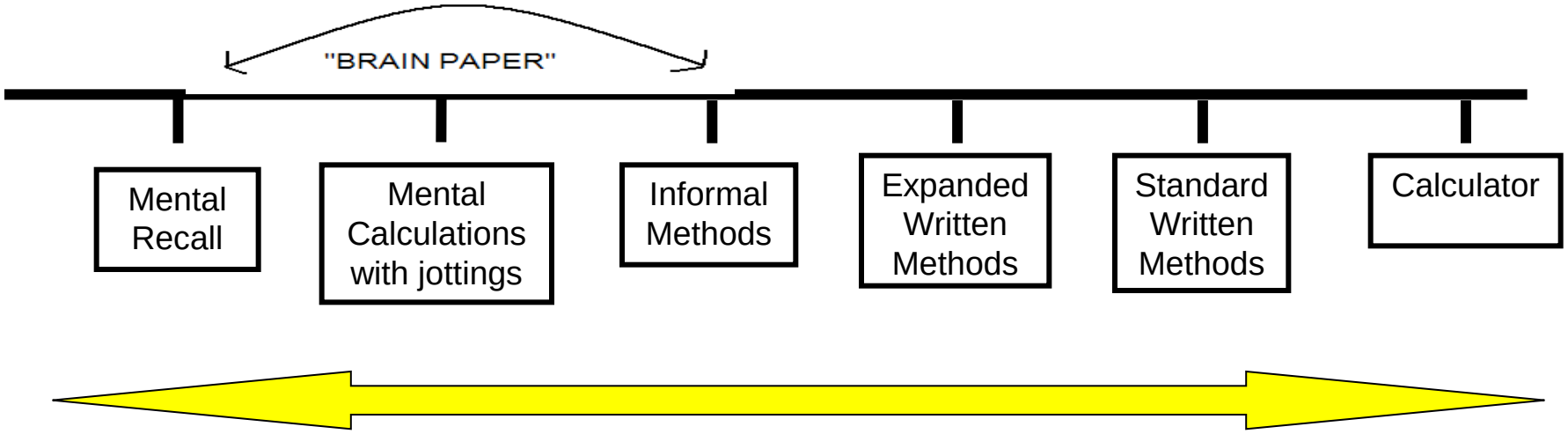
"Brain paper":

- Mental recall of number facts
- Mental methods of calculation

Real paper

- Jottings to record mental calculations
- Informal written methods
- Standard written methods

The calculating continuum



The calculating repertoire

- Children constantly move up and down the continuum
- Learning a new method of calculating does not mean other ways are no longer relevant
- Children should always be looking for calculations they can do wholly or partly mentally

Times tables

- Recall of learned facts
- Application of learned facts e.g. commutative law e.g. 4x5 = 5x4, using the inverse
- Using one fact to generate another e.g. if you know the 2 times table use it to generate the 4 times table
- Times tables crop up everywhere – fractions, %, division,

Multiplication mental methods

There are a huge range of mental methods which will make multiplication easier as the children travel through the junior classes

1. Learning of times tables (up to 12 times) and being able to use this knowledge.

2. Knowing doubles of 1 and 2 digit numbers.

3. Understanding the effect of multiplying by 10, 100 and 1000.

4. Making use of closely related facts e.g. 13 x 11 is the same as (13 x 10) + (13 x 1)

5. Place value to partition larger numbers e.g. 23 x 4 = is the same as (20 x 4) + (3 x 4)

The progression for teaching and learning in multiplication

1. The use of arrays and repeated addition on a number line

2. The grid method including multiplication of decimals

3. Short multiplication – formal written method

Division mental methods

The main thing which will make division easier as the children travel through the junior classes is knowledge of their times tables.

1. Knowing halves of 1 and 2 digit numbers – understanding the difficulty when faced with an odd number.

2. Understanding the effect of dividing by 10, 100 and 1000.

3. Using and applying multiplication facts e.g. if I know 3 x 7 = 21 then I also know that 21 divided by 7 = 3

The progression for teaching and learning in division

1. Sharing items between groups

2. Repeated subtraction some of these sums will obviously have remainders as well

3. Division making use of known facts

4. Bus stop method