

Avalon School

Parent Maths

workshop

19 October 2016



Aims of this evening:

- To look at how we teach Maths across the school.
- Address some misconceptions
- Find out how parents can support with homework.
- Look at new ways of approaching Maths
- Curriculum 2014



Some parental feedback

- Oh I don't do the maths - I leave it to my wife / husband. I do the English.
- What is wrong with the way we were taught?
- I am scared of doing the wrong thing.
- Some of the methods are ridiculous - take far too long.
- What is the point in chunking? I did it the proper way and I'm fine.
- Is it "on the doorstep? carry? borrow?"



Part 1 – Mental maths

- Difference between pure mental maths and mental maths with jottings.
- Written methods as a fall back?
- Counting on fingers?
- No wrong ways, just more efficient strategies



Try these

- Explain to the person next to you, how you would approach these questions.
- $64 + 77$
- $34 + 98$
- There are some efficient methods available here!



Partitioning

- A very useful method that we use a great deal.
- $64 + 77$
- It does not matter if we start with $4 + 7$ or $60 + 70$, but convention tells us that we should start with the units.
- $4 + 7 = 11$ (write on your board)
- $6 + 7 = 13$ so $60 + 70 = 130$
- Bring it back together with your 11
- 141



Near multiples of 10

- Again, a very useful method that we use a great deal.
- $34 + 98$
- The nearest multiple of 10 is 100, so we add 100 and “pay two back”
- $34 + 100 = 134$
- $134 - 2 = 132$
- Children need to understand place value well



Subtraction

- Demonstrate to a partner how you would subtract these
- $76 - 12$
- $95 - 29$
- There are, like with the addition, some efficient methods.



Partitioning

- $76 - 12$
- We would take away 10, then take away 2.
Some children may do take away 2, take away 10



Near multiples of 10

- $95 - 29$
- We would encourage the children to take away 30 and “pay one back”
- $95 - 30 = 65$
- $65 + 1 = 66$ (because we took 1 too many)



Multiplication and Division

- Tell your partner how you might do these
- 13×6
- $65 \div 8$



Multiplication

- 13×6
- Again, mentally, we use partitioning
- $3 \times 6 = 18$
- $10 \times 6 = 60$
- Total = 78



Division

- $65 \div 8$
- No real trick to this, only knowing tables
- $8 \times ? = \text{close to } 65?$
- I know $8 \times 8 = 64$
- So the answer is 8 r 1



Part 2 – written maths

- Importance of written methods v mental methods
- The dangers of using an “efficient” method too soon.
- Place value and mental methods are key
- Estimating



Why use written maths

- To aid mental calculation by writing down some of the numbers and answers involved
- To make clear a mental procedure for the pupil
- To help communicate methods and solutions
- To provide a record of work to be done
- To aid calculation when the problem is too difficult to be done mentally
- To develop and refine a set of rules for calculations



Would you use mental methods or written methods for these? Discuss with your partner.

$$24 \times 50$$

$$24 \times 4$$

$$24 \times 15$$

$$136 \times 9$$



Would you use mental methods or written methods for these? Discuss with your partner.

$$24 \times 50 = (24 \times 100) \div 2 \quad ? \quad \times 5 \times 10?$$

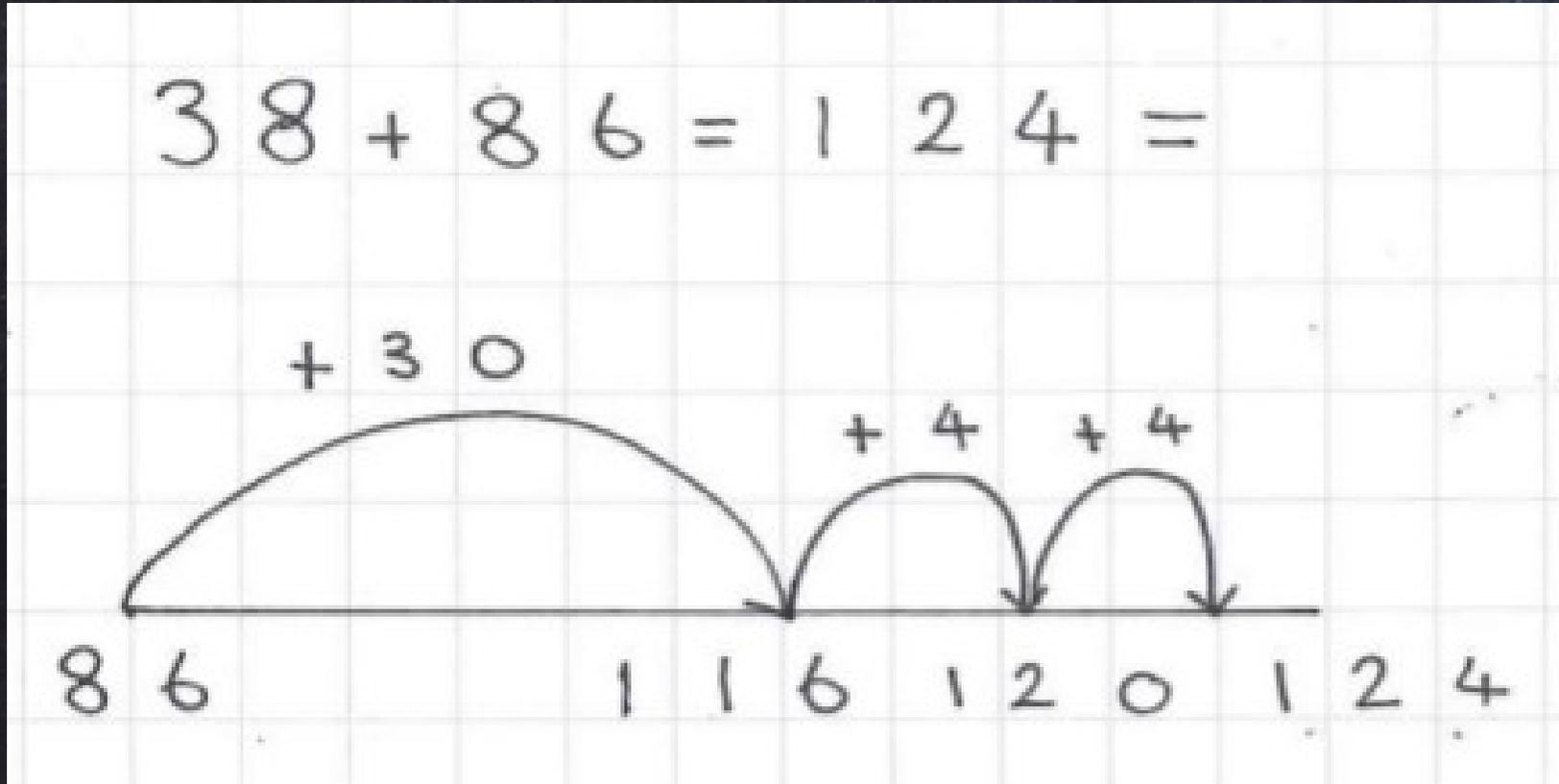
$$24 \times 4 = \text{double and double again?}$$

$$24 \times 15 = \times 10, \text{ then halve, add two together? Partitioning?}$$

$$136 \times 9 = (136 \times 10) - 136 \text{ or partitioning?}$$



Written addition - number line



Written addition - expanded

$$\begin{array}{r} 400 \quad 60 \quad 6 \\ + 300 \quad 50 \quad 8 \\ \hline 700 \quad 110 \quad 14 \\ \hline \end{array}$$

Written addition - compacted

$$\begin{array}{r} 38 \\ + 93 \\ \hline 131 \\ \hline 1 \end{array}$$

Written subtraction - expanded

$$47 - 24 = 23$$

$$\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \\ \hline \end{array}$$

Written subtraction - expanded with exchange

$$73 - 48 = 25$$
$$\begin{array}{r} 60 + 1 \\ \cancel{70} + 3 \\ - 40 + 8 \\ \hline 20 + 5 \\ \hline \end{array}$$



Written subtraction – compacted
with exchange

$$\begin{array}{r} 2 \overset{3}{\cancel{4}} 5 6 - \\ 1 3 8 5 \\ \hline 1 0 7 1 \end{array}$$

Written multiplication - grid

x	20	3
4	80	12

= 92

Written short multiplication (expanded)

$$\begin{array}{r} 253 \\ \times \quad 6 \\ \hline 1518 \end{array}$$

Written short multiplication

$$\begin{array}{r} 934 \\ \times 6 \\ \hline 5604 \\ \hline 22 \end{array}$$

Written long multiplication

$$\begin{array}{r} 34 \\ \times 55 \\ \hline 170 \\ 2 \\ 1700 \\ 2 \\ \hline 1870 \end{array}$$

Division with chunking

$$\begin{array}{r} 5 \overline{) 73} \\ - 50 \\ \hline 23 \\ - 20 \\ \hline 3 \end{array} \quad \begin{array}{l} (10 \times 5) \\ (4 \times 5) \end{array}$$

Written short division

$$\begin{array}{r} 153 \\ 6 \overline{) 918} \\ \underline{6} \\ 31 \\ \underline{30} \\ 18 \\ \underline{18} \\ 0 \end{array}$$

Written long division - chunking

$$\underline{196} \div 6 = 32 \text{ r } 4$$

H T U

$$\begin{array}{r} 6 \overline{) 196} \end{array}$$

$$\begin{array}{r} \underline{60} - \end{array} \quad (10 \times 6)$$

1 3 6

$$\begin{array}{r} \underline{60} - \end{array} \quad (10 \times 6)$$

7 6

$$\begin{array}{r} \underline{60} - \end{array} \quad (10 \times 6)$$

1 6

$$\begin{array}{r} \underline{12} - \end{array} \quad (2 \times 6)$$

4



Written long division

$$\begin{array}{r} 117 \text{ r } 17 \\ \hline 36 \overline{) 4229} \\ \underline{- 36} \\ 62 \\ \underline{- 36} \\ 269 \\ \underline{- 252} \\ 17 \end{array}$$

In practice

- SATS papers and Secondary schools are looking for conceptual ability, flexibility and application
- 3 aims of the new curriculum are “fluency” with number, “reasoning mathematically” and “solving problems”.
- Recommendation is that we don’t push children on to next level of a topic, but that we challenge them to use and apply their learning flexibly and creatively.



In practice

- 60% of entrance exam questions require instant recall of multiplication facts in order to solve them quickly enough
- The most effective way to learn tables is to practise them little and often in a variety of ways in order to sustain motivation: board games, Apps, competitions (especially with parents!), songs, posters etc.

