

Mountfields Lodge
Year 4 Calculation Policy for
Parents
March 2016



Addition: Year 4

Missing number/digit problems:

Mental methods should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving.

Written methods (progressing to 4-digits)

Expanded column addition modelled with place value counters, progressing to calculations with 4-digit numbers.

$$\begin{array}{r} 200 + 40 + 7 \\ 100 + 20 + 5 \\ 300 + 60 + 12 = 372 \end{array}$$

$$\begin{array}{r} 247 \\ +125 \\ \hline 12 \\ 60 \\ 300 \\ \hline 372 \end{array}$$

Compact written method

Extend to numbers with at least four digits.

$$\begin{array}{r} 2634 \\ +4517 \\ \hline 7151 \end{array}$$

Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.

Extend to up to two places of decimals (same number of decimal places) and adding several numbers (with different numbers of digits).

$$\begin{array}{r} 72.8 \\ +54.6 \\ \hline 127.4 \\ 11 \end{array}$$

Subtraction: Year 4

Missing number/digit problems: $456 + \square = 710$; $1\square7 + 6\square = 200$; $60 + 99 + \square = 340$; $200 - 90 - 80 = \square$; $225 - \square = 150$; $\square - 25 = 67$; $3450 - 1000 = \square$; $\square - 2000 = 900$

Mental methods should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving.

Written methods (progressing to 4-digits)

Expanded column subtraction with decomposition, modelled with place value counters/dienes, progressing to calculations with 4-digit numbers.

Use of squared paper to aid lining up of numbers.

$$\begin{array}{r} 200 \overset{20}{\cancel{30}} \overset{1}{\cancel{2}} \\ -100 \overset{10}{\cancel{10}} \overset{4}{\cancel{4}} \\ \hline 100 \overset{10}{\cancel{10}} \overset{8}{\cancel{8}} \end{array}$$

If understanding of the expanded method is secure, children will move on to the formal method of decomposition, which again can be initially modelled with place value counters.

$$\begin{array}{r} 232 \overset{2}{\cancel{3}} \overset{1}{\cancel{2}} \\ -114 \\ \hline 118 \end{array}$$

Multiplication: Year 4

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

$$\square 2 \times 5 = 160$$

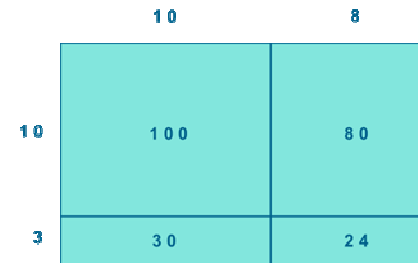
Mental methods

Counting in multiples of 6, 7, 9, 25 and 1000, and steps of 1/100.

Solving practical problems where children need to scale up. Relate to known number facts. (e.g. how tall would a 25cm sunflower be if it grew 6 times taller?)

Written methods (progressing to 3d x 2d)

Children to embed and deepen their understanding of the grid method to multiply up 2d x 2d. Ensure this is still linked back to their understanding of arrays and place value counters.



Year 4 HAP / G&T

$$\begin{array}{r} 18 \\ \times 13 \\ \hline 180 \text{ (} 10 \times 18 \text{)} \\ 30 \text{ (} 10 \times 3 \text{)} \\ \hline 24 \text{ (} 8 \times 3 \text{)} \\ 234 \end{array}$$

Division: Year 4

÷ = signs and missing numbers

Continue using a range of equations as in year 3 but with appropriate numbers.

Sharing, Grouping and using a number line

Children will continue to explore division as sharing and grouping, and to represent calculations on a number line until they have a secure understanding. Children should progress in their use of written division calculations:

- Using tables facts with which they are fluent
- Experiencing a logical progression in the numbers they use, for example:
 1. Dividend just over 10x the divisor, e.g. $84 \div 7$
 2. Dividend just over 10x the divisor when the divisor is a teen number, e.g. $173 \div 15$ (learning sensible strategies for calculations such as $102 \div 17$)
 3. Dividend over 100x the divisor, e.g. $840 \div 7$
 4. Dividend over 20x the divisor, e.g. $168 \div 7$

All of the above stages should include calculations with remainders as well as without.

Remainders should be interpreted according to the context. (i.e. rounded up or down to relate to the answer to the problem)

e.g. $840 \div 7 = 120$

Jottings

$$7 \times 100 = 700$$

$$7 \times 10 = 70$$

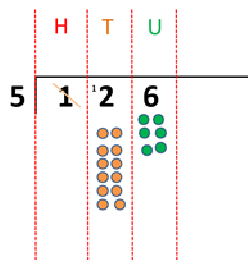
$$7 \times 20 = 140$$



Formal Written Methods

Formal short division should only be introduced once children have a good understanding of division, its links with multiplication and the idea of 'chunking up' to find a target number (see use of number lines above)

Short division to be modelled for understanding using place value counters as shown below. Calculations with 2 and 3-digit dividends. E.g. fig 1

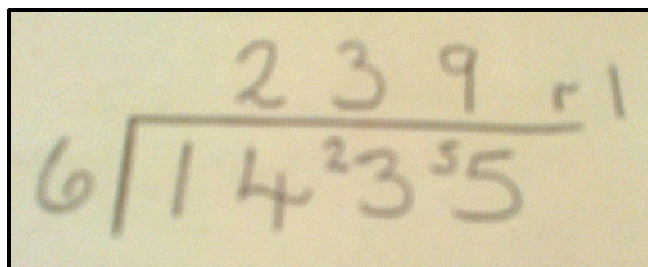


Teach bus stop method to Year 4 HAPs in Summer term

Formal Written Methods

Continued as shown in Year 4, leading to the efficient use of a formal method. The language of grouping to be used (see link from fig. 1 in Year 4)

E.g. $1435 \div 6$



Children begin to practically develop their understanding of how express the remainder as a decimal or a fraction. Ensure practical understanding allows children to work through this (e.g. what could I do with this remaining 1? How could I share this between 6 as well?)