Oakmeadow Primary school Calculation Policy

Addition

Year 5	Year 6
Basic to subject specific (Beck's Tiers): tens of thousands boundary, Also see previous years **Instructional vocabulary:** tick, shade, grid, missing numbers, what's the difference, the graph shows….how many, write each.., circle the,  **Generalisation** Sometimes, always or never true? The difference between a number and its reverse will be a multiple of 9. What do you notice about the differences between consecutive square numbers? Investigate a – b = (a-1) – (b-1) represented visually. **Some Key Questions** What do you notice? What's the same? What's different? Can you convince me? How do you know?	**Basic to subject specific (Beck's Tiers):** See previous years **Instructional vocabulary:** tick, shade, grid, missing numbers, what's the difference, the graph shows….how many, write each.., circle the, **Generalisations** Order of operations: brackets first, then multiplication and division (left to right) before addition and subtraction (left to right). Children could learn an acrostic such as PEMDAS, or could be encouraged to design their own ways of remembering. Sometimes, always or never true? Subtracting numbers makes them smaller. **Some Key Questions** What do you notice? What's the same? What's different? Can you convince me? How do you know?
NC 2014 Add and subtract whole numbers with more than 4 digits. Add and subtract numbers mentally with increasingly large numbers Use rounding to check answers to calculations Solve addition and subtraction multi-step problems in contexts.	**NC 2014** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. Use estimation to check answers to calculations.
<u>Mental Strategies</u> Children should continue to count regularly, on and back, now including steps of powers of 10. The number line should continue to be used as an important image to support thinking, and the use of informal jottings should be encouraged where appropriate. Children should continue to partition numbers in different ways. They should be encouraged to choose from a range of strategies: • Counting forwards and backwards in tenths and hundredths: 1.7 + 0.55 • Reordering: 4.7 + 5.6 – 0.7, 4.7 – 0.7 + 5.6 = 4 + 5.6 • Partitioning: counting on or back - 540 + 280, 540 + 200 + 80 • Partitioning: bridging through multiples of 10: • Partitioning: compensating: 5.7 + 3.9, 5.7 + 4.0 – 0.1 • Partitioning: using 'near' double: 2.5 + 2.6 is double 2.5 and add 0.1 or double 2.6 and subtract 0.1	**<u>Mental Strategies</u>** Consolidate previous years. Children should experiment with order of operations, investigating the effect of positioning the brackets in different places, e.g. 20 – 5 x 3 = 5; (20 – 5) x 3 = 45 **<u>Written methods</u>** As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places Use the bar model to show the relationship between the part, part, whole. When using the addition bar model: draw the part, then add the other part. Now draw the bar for the whole. By adding the two parts you find the whole.

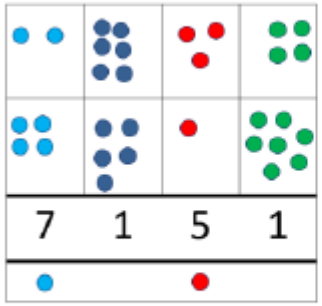
- Partitioning: bridging through 60 to calculate a time interval: It is 11.45. How many hours and minutes is it to 15.20?
- Using known facts and place value to find related facts.

Written methods (progressing to more than 4-digits)

As year 4, progressing when understanding of the expanded method is secure, children will move on to the formal columnar method for whole numbers and decimal numbers as an efficient written algorithm.

Compact written method

Extend to numbers with at least four digits.



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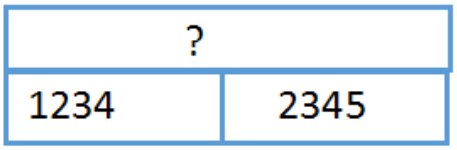
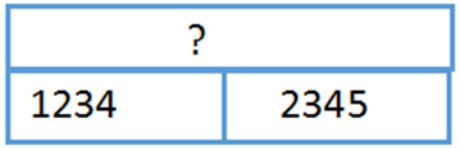
Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.

Use the bar model to show the relationship between the part, part, whole.
When using the addition bar model: draw the part, then add the other part. Now draw the bar for the whole. By adding the two parts you find the whole.





Problem Solving

Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding.

Place value counters can be used alongside the columnar method to develop understanding of addition with decimal numbers. 172.83 + 54.68 227.51 1 1 1	