All Saints C of E Primary School

Year 5 Addition and Subtraction

By the end of Year Five, children have been taught to:

Objective	Why is it important? Things to watch out for! Taught strategies
Add whole numbers with more than 4 digits using the *compact column addition* method	*Compact column addition*

Th H T U
4 2 5 7
\+ 8 6 2
1 1
5 1 1 9

TTh Th H T U
5 5 3 6 9
\+ 1 8 6 2 4
1 1
7 3 9 9 3

The positioning of where children carry the values over to is very personal. As long as it is positioned where children will remember to add it back in, is all that matters. Some children prefer to carry the value below the line, whereas others prefer to carry it above

.

By this point children are secure with *expanded column* strategies and are able to build on their knowledge of using *compact column addition* with larger values. However, if a child does not show confidence with place value and using this strategy accurately, time will be spent revisiting the *expanded column* strategy. This is to ensure that the child has a secure foundation on which to build their mathematical understanding.

Errors sometimes occur when:

- Children do not carry the value – for example when adding 9+4 they only write the 3 and forget about the 10 of the 13.
- Children forget to add carried values back into the particular column. For example, in the tens column of the example a child may add 6+2 rather than 6+2+1.

Children have very mixed views about this strategy – some children love it and say that it is easier and why didn't we teach it to them in the first place; whereas others do not get on with it at all.
Many would say that the *compact method* is easier. However, if it is taught too soon or the child does not have a sound understanding of place value, children will only be able to add single digit values up to 9 and not develop an understanding of larger values.

subtract whole numbers with more than 4 digits using the *compact column subtraction method*	

Compact column subtraction

363 – 154 =

	H	T	U		H	T	U
	300	~~60~~ 50	13		3	5 ~~6~~	13
-	100	50	4		1	5	4
	200	0	9 = 209		2	0	9

3864-1437=

	Th	H	T	U
	3	8	5 ~~6~~	14
-	1	4	3	7
	2	4	2	7

MORE COMPLEX

2962-1789=

	Th	H	T	U
			15	
	2	8 ~~9~~	5 ~~6~~	12
-	1	7	8	9
	1	1	7	3

2500 – 1479 =

	Th	H	T	U
			9	
	2	4 ~~5~~	10 ~~0~~	10
-	1	4	7	9
	1	0	2	1

In Year 4, children are introduced to compact subtraction and the transition from expanded methods to compact methods are started to be used.
At first, Year 5 children may need time to consolidate this before moving onto using larger values to ensure their understanding of the strategy is secure and their ability to recognise whether an answer is reasonable is sound. There is a lot that can go wrong in subtraction and children often find it a lot more challenging than addition.

Errors sometimes occur when:

- Children calculate 4-3 in the example and not realising that the calculation is actually 3-4. In this instance, the child has made the values work and subtracted the lower number from the higher number and has therefore not understood that actually we cannot subtract 4 from 3 in this situation.
- Children forget to reduce the tens or hundreds value by 10 or 100 after borrowing and therefore would leave 60 as 60 rather than reducing it to 50..
- When children have borrowed from the tens column, they write 10 next to the 3 in the units column making 103 , rather than adding the 10 to the 3 to make 13.

Children have very mixed views about this strategy – some children love it and say that it is easier and why didn't we teach it to them in the first place; whereas others do not get on with it at all.

Children have to go through the process of *expanded column* methods to be able to move onto *compact* methods to ensure that their understanding of place value is secure and that they have the ability to recognise whether an answer would be reasonable or not.

Once children are secure with the strategy they can go on to subtracting with much larger values using these key principles.

Year 5

Add and subtract mentally with increasingly large numbers	Alongside formal calculating strategies, children are taught mental strategies which enable them to calculate more efficiently. Using known number facts, previously taught mental strategies and often just thinking about what they know about the numbers can help them. Knowing which fact to draw upon or which strategy to apply is a real indicator as to how secure children are in their strategies. Number facts and strategies taught in Key Stage One are the foundations which allow older children to be able to calculate efficiently and accurately. For example: Having the knowledge (and just knowing it) that 6+3=9 allows children to apply this knowledge to other situations. This is why knowing number facts and number bonds to10 is so crucial to building mathematically strong foundations.

6+3=9 9-3=6	60+30=90 90=30=60	600+300=900 900=-300=600	6000+3000=9000 9000-3000=6000	0.6+0.3=0.9 0.9-0.3=0.6	0.06+0.03=0.09 0.09 -0.03 =0.06

If a child is still using fingers to count to find the total of 9+4, then his/her mental strategies and number bonds are not secure. More work is needed to help the child develop the fluency in calculating. Using known facts to support is essential, for example by breaking down the calculation to make it easier – 9+1=10+3 . In this instance, the child knows that one more will get him/her to the ten which will make their life easier, so they partition four into 3 and 1 to be able to mentally calculate 9+1=10 add on the 3 to make 13 altogether.

Using what children know about values – Sometimes when asked to calculate children automatically go to the formal strategies they have been taught before stopping and thinking about what they know about the values. When asked to calculate 6012-5999 – if a child starts to set out the calculation in a formal column addition format they may well get the correct answer. However, they will take a lot longer to calculate it. If they stop and think about what they know about the values they will recognise that 5999 is nearly 6000, so mentally they could calculate 6012-6000= 12 and then add one back in because they rounded 5999 to 60000. Calculating mentally is a lot like juggling! We know where the values are, we have the skills and strategies, and we know what we need to do with them we just need to make sure we don't drop (forget) anything! 

Try some of these:

- 127 take away 35…
- Take 80 from 373…
- 6678 subtract 105…
- Subtract 500 from 22525
- 5000 less than 7200

Year 5

Solve addition and subtraction multi step problems, deciding which operations and methods to use and why	Problem solving involves the application of previously taught skills. This relies on many things, such as; the ability to recall key number facts, mathematical vocabulary, concepts, strategies, reasoning and the understanding of the problem. A child also needs the ability to know which aspect of maths they need to apply. A child may be fantastic at finding the answer to addition and subtraction column calculations. However, unless he/she is able to apply this to word problems, he can become extremely frustrated. Understanding what the problem is asking them to do is crucial! When supporting a child there are a few things you can do such as: • Read the problem more than once • Underline the important information • Imagine what is happening in the problem to understand the maths that needs doing • Stop and think about an efficient strategy to use • Work logically and slowly though the problem • Not panic! • Re-read the problem to check the answer is reasonable Examples of problems grapes £2.50 for 1 kg pineapples £1.40 each peaches £1.99 for a box Amir buys 2 pineapples and a box of peaches. How much does he pay? Lara buys half a kilogram of grapes and one pineapple. How much change does she get from £5? A shop sells sun hats. Ryan buys some sunglasses for £4.69 and a sun hat. How much change does he get from £10?

year 5