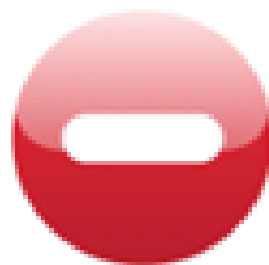




Progression in Calculations

Addition



Progression in addition

<p>EYFS Add 1 digit numbers verbally using objects. Number bonds to 5 (to 10 verbally) Verbally follow a number sentence – how many altogether, combining two groups</p>																																		
<p>Year 1 Add one digit and 2 digit numbers to 20 including zero. Solve one step problems in addition using concrete objects and pictorial representations. Eg, $7 = _ _ _ + 2$ Identify one more</p>	<p>Counting on a number line Part whole models</p>																																	
<p>Year 2 Use concrete objects and pictorial representations before moving onto more formal recording using partitioning method. Addition facts up to 20. Multiples of 10 to 100 facts. Addition of: three one digit numbers a 2-digit number and ones a 2-digit number and tens two 2 digit numbers commutative and inverse relationships. Solve addition problems, using concrete and pictorial representations.</p>	<p>Use of dienes, numicon, place value counters and number lines to support learning.</p> <p>$47 + 25 =$ 1. Biggest number first $47 + 5 = 52$ 2. Add the ones $52 + 20 = 72$ 3. Add the tens</p>																																	
<p>Year 3 Addition to 100 facts. Multiples of 100 that make 1000. Mental addition: 3 digit number and ones 3 digit number and tens 3 digit number and hundreds.</p> <p>Using more formal written methods of addition, add numbers with up to 3 digits. Estimate answer and use inverse to check. Solve more complex problems including missing numbers.</p>	<p>Using concrete/pictorial representations.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px;">Hundreds</th> <th style="padding: 2px;">Tens</th> <th style="padding: 2px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">●●</td> <td style="padding: 2px;">●●</td> <td style="padding: 2px;">●</td> </tr> <tr> <td style="padding: 2px;">●●</td> <td style="padding: 2px;">●●●</td> <td style="padding: 2px;">●●</td> </tr> </tbody> </table> <p>Expanded column addition (partitioning method)</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right; padding-right: 10px;">300</td> <td style="text-align: right; padding-right: 10px;">30</td> <td style="text-align: right; padding-right: 10px;">6</td> <td style="padding-left: 20px;">600</td> <td style="text-align: right; padding-right: 10px;">20</td> <td style="text-align: right;">5</td> </tr> <tr> <td style="text-align: right;">$+$</td> <td style="text-align: right;">200</td> <td style="text-align: right;">20</td> <td style="text-align: right;">$+$</td> <td style="text-align: right;">40</td> <td style="text-align: right;">8</td> </tr> <tr> <td style="text-align: right;">500</td> <td style="text-align: right;">50</td> <td style="text-align: right;">$+ 8 = 558$</td> <td style="text-align: right;">600</td> <td style="text-align: right;">$+ 60$</td> <td style="text-align: right;">$+ 13 = 673$</td> </tr> </table> <p>Compact column addition, without exchanging and then with carrying.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right; padding-right: 10px;">236</td> <td style="text-align: right; padding-right: 10px;">789</td> </tr> <tr> <td style="text-align: right;">$+$</td> <td style="text-align: right;">642</td> </tr> <tr> <td style="text-align: right;">$\underline{299}$</td> <td style="text-align: right;">$\underline{1431}$</td> </tr> </table>	Hundreds	Tens	Ones	●●	●●	●	●●	●●●	●●	300	30	6	600	20	5	$+$	200	20	$+$	40	8	500	50	$+ 8 = 558$	600	$+ 60$	$+ 13 = 673$	236	789	$+$	642	$\underline{299}$	$\underline{1431}$
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<p>Year 4 Use addition facts to 100 and addition facts of multiples to 100. Addition facts for 1 and 10 with decimal numbers to one decimal place. Add and subtract mentally combination of 2 and 3 digit numbers and decimals to one decimal place.</p>																																		

Addition of numbers with up to 4 digits. using formal written method of column addition.
 Addition of decimals with at least one decimal place.
 Estimate and inverse to check calculations.
 Solve more complex two step problems deciding upon operation and method.

Use of concrete apparatus including dienes and place value counters.
 Use of compact column method adding the ones first and carrying underneath the calculation.

$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \\ 111 \end{array}$$

Children use and apply this method to money and measures.

$$£ 2.50 + £ 1.75 = £ 4.25$$

$$\begin{array}{r} £ 2.50 \\ + £ 1.75 \\ \hline £ 4.25 \\ 1 \end{array}$$

Year 5

Recall addition facts for 1 and 10 with decimal numbers to one decimal place.
 Addition number facts for 1 with decimal numbers to two decimal places.
 Add numbers mentally with increasingly large numbers and decimals to at least two decimal places.
 Add whole numbers with more than 4 digits and decimals with two decimal places. – using formal written method (column addition).
 Add several numbers of increasing complexity.
 Use rounding to check answers to calculations and level of accuracy.
 Solve addition multi step problems, deciding which operations and methods to use.

	3	2	4	6	1
+		4	3	5	2
<hr/>					

£	2	3	.	5	9
+	£	7	.	5	5
<hr/>					
£	3	1	.	1	4
	1	1		1	

	1	4	.	7	5
+	1	2	.	8	
<hr/>					
	2	7	.	5	5
		1			

Tenths, hundredths and thousandths should be correctly aligned, with the decimal point aligned vertically. Zero can be used as a place holder to indicate place value.
 Use compact column method to add in contexts of money, measures including decimals with a number of different decimal places.

Year 6

Recall addition facts for 1 with decimal numbers to two decimal places.
 Perform mental calculations, including with mixed operations and large numbers and decimals.
 Add and subtract whole numbers and decimals using formal written methods.
 Use estimation and inverse to check accuracy and determine the level of accuracy.
 Solve multi step problems deciding upon which operation to use.
 Use knowledge of the order of operations to carry out calculations involving the four operations.

Add several numbers of increasing complexity including money measure and decimals with different numbers of decimal places.

	2	3	.	3	6	1
		9	.	0	8	
	5	9	.	7	7	
+		1	.	3		
<hr/>						
	9	3	.	5	1	1
	2	1		2		

Empty decimal places can be filled with zero.