


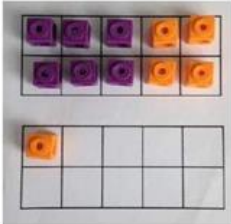


YEAR 1		Calculating strand: ADDITION		15/11/19
Vocabulary		Key Questions		
Addition, add, forwards, put together, more than, total, altogether, distance between, difference between, equals = same as, most, pattern, odd, even, digit, counting on, part, whole		How many altogether? How many more to make...? I add ...more. What is the total? How many more is... than...? How much more is...? One more, two more, ten more... What can you see here? Is this true or false? What is the same? What is different?		
<u>Example Questions</u>				
Basic		Advancing		Deep
<p>Use ...and ... in a number sentence.</p> <p>Illustrate the problem</p> <p>Name the number bonds</p> <p>Memorise the addition facts to ...</p> <p>Match the answers to the number problems</p> <p>Tell a friend how you solved the problem</p>		<p>Compare which method you prefer to use</p> <p>Identify patterns in the number sentences</p> <p>Modify the numbers to change the answer</p> <p>Organise the numbers into a number sentence.</p>		<p>Prove how you know the answer is...</p> <p>Investigate how many different ways you can make ...using addition.</p> <p>Explain you method</p> <p>Create two addition number sentences from the given numbers.</p>
Counting	 <p>Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.</p>  <p>5 6 7 8</p>	<p>Use a number line to count on in ones.</p> 	$5 + 3 = 8$	$5 + 3 + 1 = \square$

Regrouping to make 10

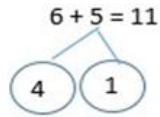


$$6 + 5 = 11$$

Start with the bigger number and use the smaller number to make 10.



$$6 + 5 = 11$$

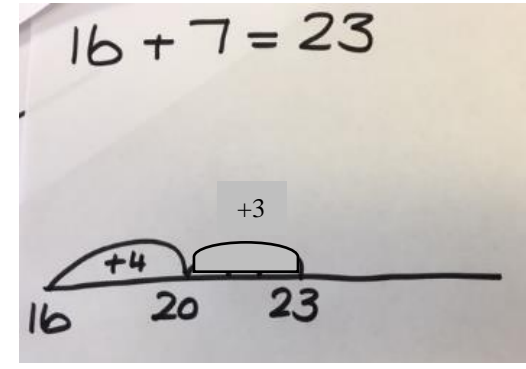
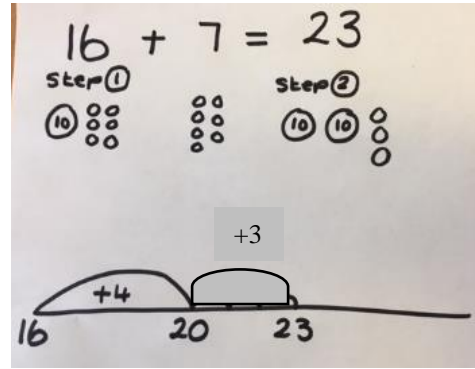
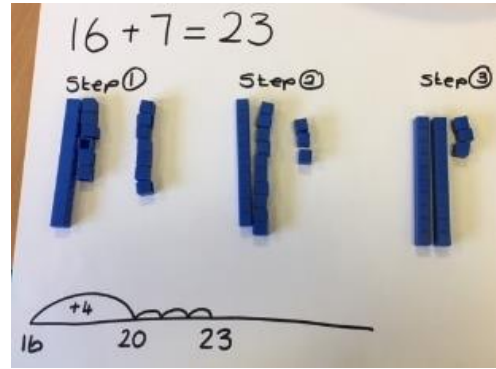


$$6 + 4 = 10$$

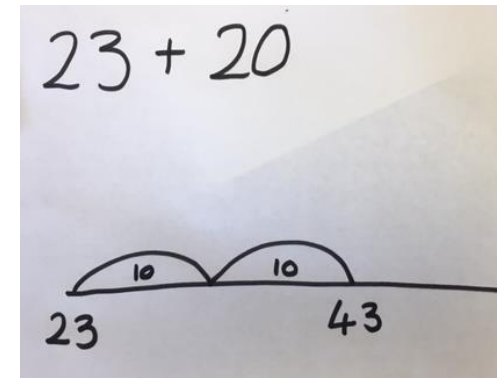
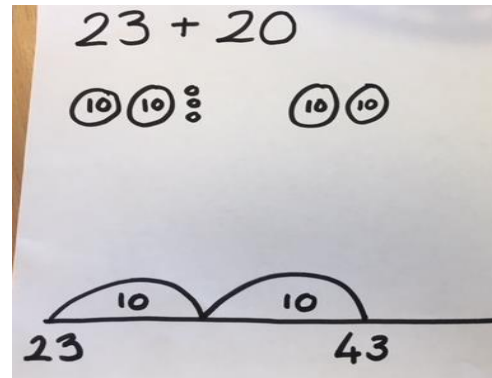
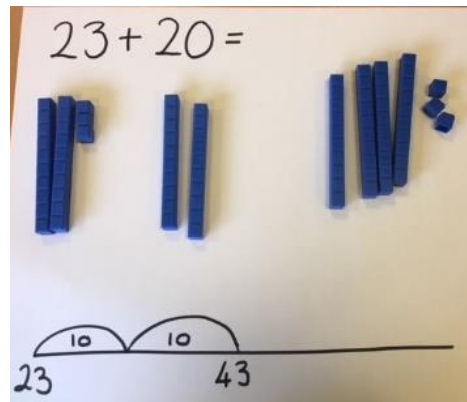
$$10 + 1 = 11$$

$$15 + 4 = \square$$

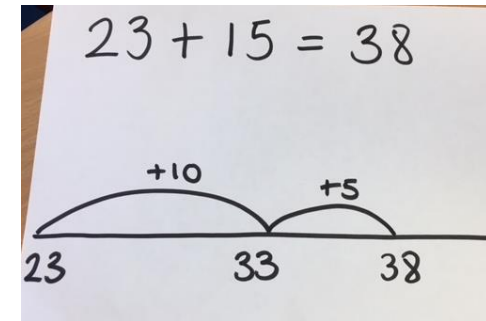
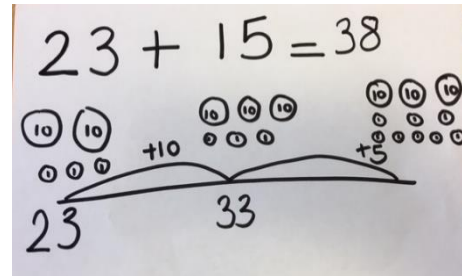
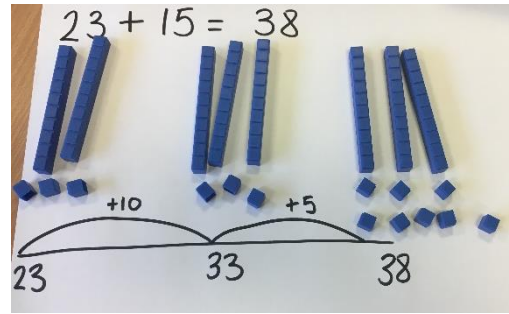
Counting on



Counting on (two digit and tens)



Counting on (two 2-digit numbers)



Addition of two 2-digit numbers should move onto examples with crossing 10 - as shown in the Interim framework 2018/2019

Only move children on to using the column methods once they have become secure in the use of number lines.

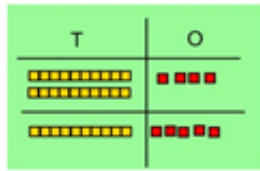
Ensure you follow the CPA approach to support this new strategy.

Use part/whole model to support the variation.

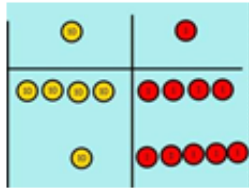
Column method without
regrouping

Add together the ones first, then add the tens. Use the Base 10 blocks first before moving on to place value counters.

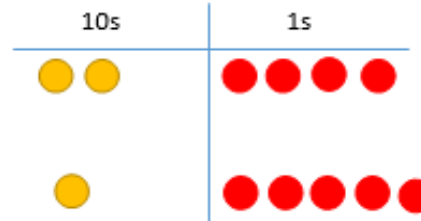
$$24 + 15 =$$



$$44 + 15 =$$

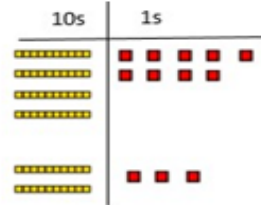


After physically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.



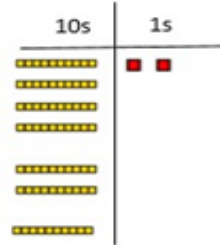
Column method with regrouping

Make both numbers on a place value

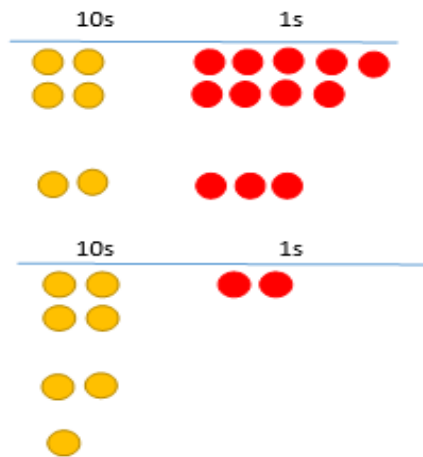


grid.

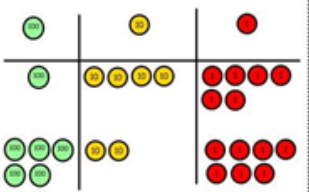
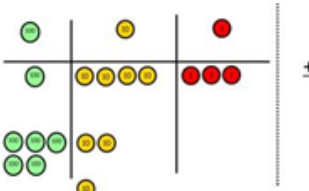
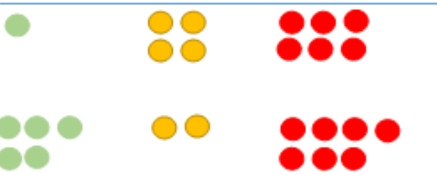
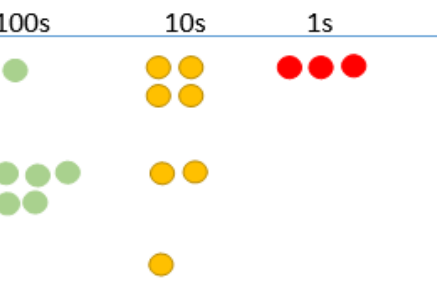
Add up the units and exchange 10 ones for 1 ten.



Using place value counters, children can draw the counters to help them to solve additions.

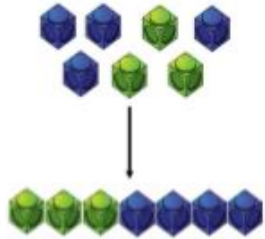
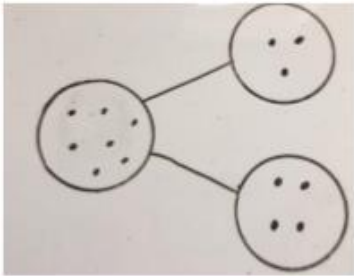
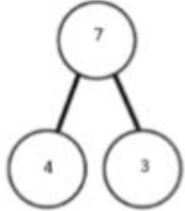

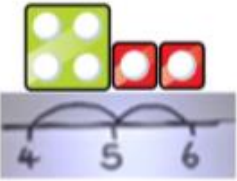
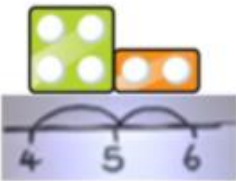
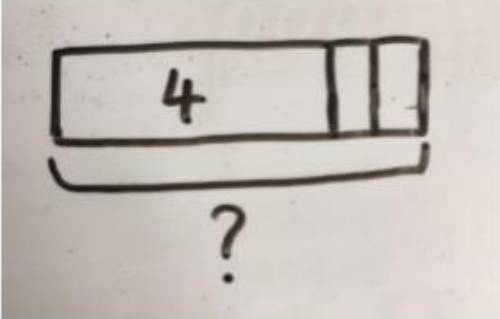



YEARS 3 & 4		Calculating strand: ADDITION		15/11/19
Vocabulary Year 3	Vocabulary Year 4	Key Questions YEAR 3	Key Questions Year 4	
<p>Hundreds, tens, ones, estimate, partition, recombine, difference, decrease, near multiple of 10 and 100, inverse, rounding, column subtraction, part, whole, exchange See also Y1 and Y2</p>	<p>add, addition, sum, more, plus, increase, total, altogether, double, near double, how many more to make..? How much more? ones boundary, tens boundary, hundreds boundary, thousands boundary, tenths boundary, hundredths boundary, inverse, how many more/fewer? Equals sign, is the same as, part, whole,</p>	<p>What do you notice? What patterns can you see? When comparing two methods alongside each other: What's the same? What's different? Look at this number in the formal method; can you see where it is in the expanded method / on the number line?</p>	<p>What do you notice? What's the same? What's different? Can you convince me? How do you know?</p>	
Example Questions Years 3 and 4				
Basic	Advancing		Deep	
<p>Use ...and ... in a number sentence to make a 3 digit number answer Arrange your addition calculation in a different order Use a different addition method to solve the calculation. Describe your method of addition to a partner. Tell a friend how you solved the problem</p>	<p>Organise your calculation as a written method. Explain your method Estimate the answer Compare two written methods and explain which one is your preferred method. Apply your written method to solve.</p>		<p>Prove you are correct Create a word problem Create a help sheet to explain the written method that you have used. Investigate the total journey time/distance.</p>	

Objective	Concrete	Pictorial	Abstract
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Column method with regrouping</p>	<p>Make both numbers on a place value grid.</p>  <p style="text-align: right;">146 + 527</p> <p>Add up the units and exchange 10 ones for 1 ten.</p>  <p style="text-align: right;">146 + 527</p> <p>As children move on to decimals, money and decimal place value counters can be used to support learning.</p> <p>NB By Year 4 children will progress on to adding four digit numbers.</p>	<p>100s 10s 1s</p> <hr/>  <p>100s 10s 1s</p> <hr/>  <p>Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.</p> <p>NB Addition of money needs to have £ and p added separately.</p>	$\begin{array}{r} 146 \\ + 527 \\ \hline 673 \\ 1 \end{array}$ <p>As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.</p>

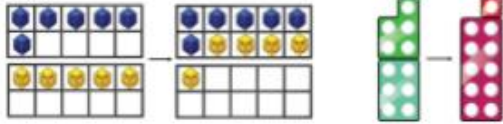
YEARS 5 & 6	Calculating strand: ADDITION		15/11/19
Vocabulary		Key Questions	
tens of thousands boundary, Also see previous years		What do you notice? What's the same? What's different? Can you convince me? How do you know?	
Example Questions			
Basic	Advancing	Deep	
<p>Use column addition to add...</p> <p>List all the different vocabulary for addition</p> <p>Tell me the method you have used to find the total</p> <p>Find the pattern and repeat it.</p>	<p>Predict if $x + y$ would total an odd or an even number.</p> <p>Estimate the answer to ..., work out the answer to check your estimation.</p> <p>Explain your method.</p> <p>Organise your calculation</p>	<p>Create your own word problem.</p> <p>Design your own menu/bedroom purchasing food/objects with a given amount to spend.</p> <p>Investigate distances travelled on a map.</p>	
<p>Consolidate understanding using numbers with more than 4 digit numbers and extend by adding numbers with up to 3 decimal places (including where the decimal numbers have a different number of decimal places)</p>			

ENSURE YOU USE A VARIETY OF APPLICATION METHODS FOR ADDITION

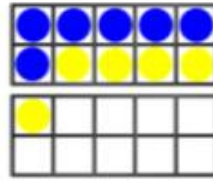
Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).</p> 	<p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p> 	<p>$4 + 3 = 7$ Four is a part, 3 is a part and the whole is seven.</p> 
<p>Counting on using number lines using cubes or Numicon.</p>   	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? $4 + 2$</p> 

Regrouping to make 10; using ten frames and counters/cubes or using Numicon.

6 + 5



Children to draw the ten frame and counters/cubes.



Children to develop an understanding of equality e.g.

$$6 + \square = 11$$

$$6 + 5 = 5 + \square$$

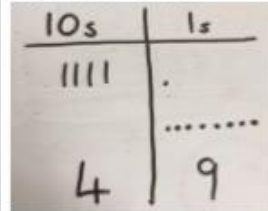
$$6 + 5 = \square + 4$$

TO + 0 using base 10. Continue to develop understanding of partitioning and place value.

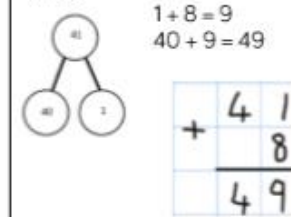
41 + 8



Children to represent the base 10 e.g. lines for tens and dot/crosses for ones.

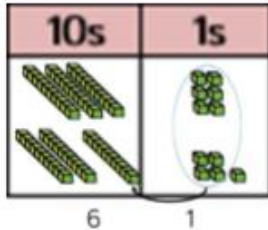


41 + 8

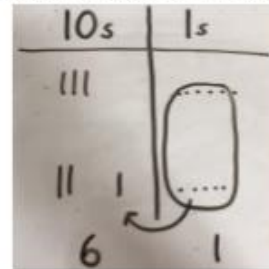


TO + TO using base 10. Continue to develop understanding of partitioning and place value.

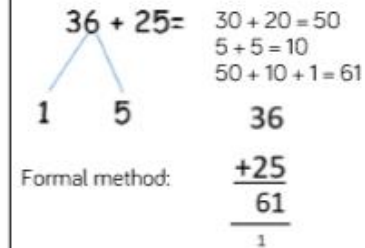
36 + 25



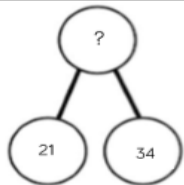
Children to represent the base 10 in a place value chart.



Looking for ways to make 10.



Conceptual variation; different ways to ask children to solve 21 + 34



?	
21	34

Word problems:
In year 3, there are 21 children and in year 4, there are 34 children.
How many children in total?

21 + 34 = 55. Prove it

$$\begin{array}{r} 21 \\ +34 \\ \hline \end{array}$$

21 + 34 =

$$\square = 21 + 34$$

Calculate the sum of twenty-one and thirty-four.



Missing digit problems:

10s	1s
● ● ● ● ●	●
● ● ● ● ●	?
?	5