PROGRESSION IN CALCULATIONS

ADDITION

Mental Skills KS1

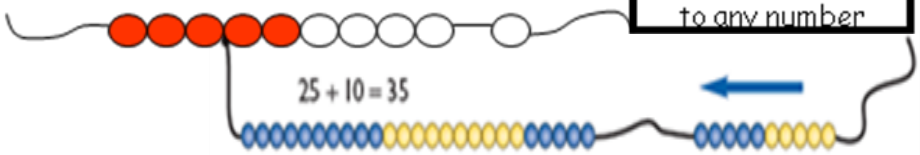
- Count on in ones from any number
- Know number bonds to 10 and 20
- Add multiples of 10 to and from any number
- Partition and recombine numbers
- Bridge through 10

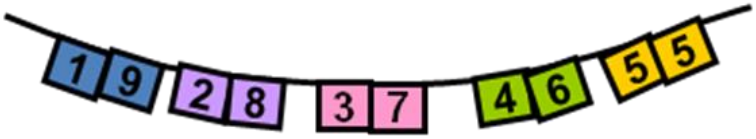
Vocabulary

add and count on
addition plus
more sum total
altogether increase

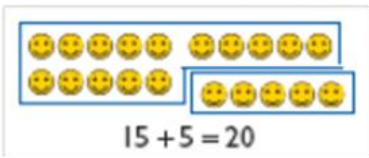
Count in ones and tens

Know which digit changes when adding 1s or 10s to any number

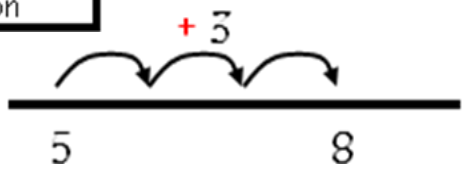




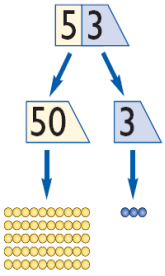
Know by heart all pairs of numbers with a total of 10 and 20



Put the biggest number first and count on

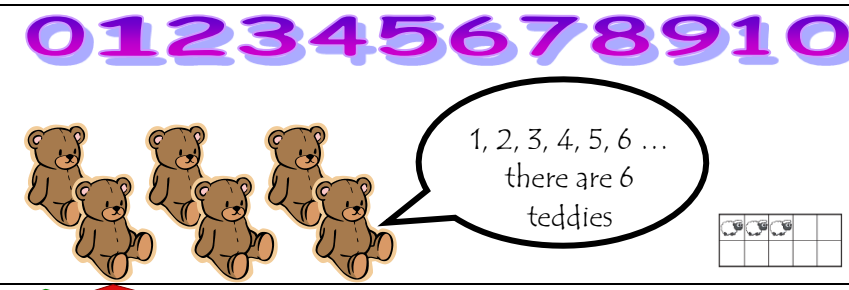
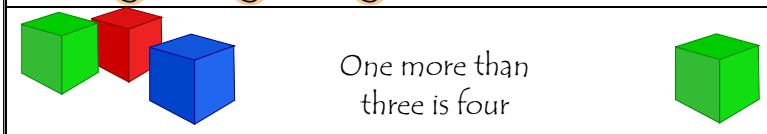
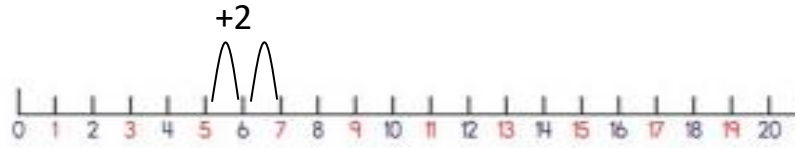
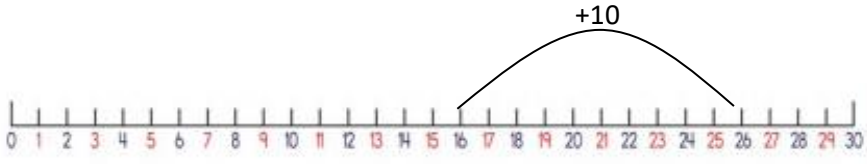


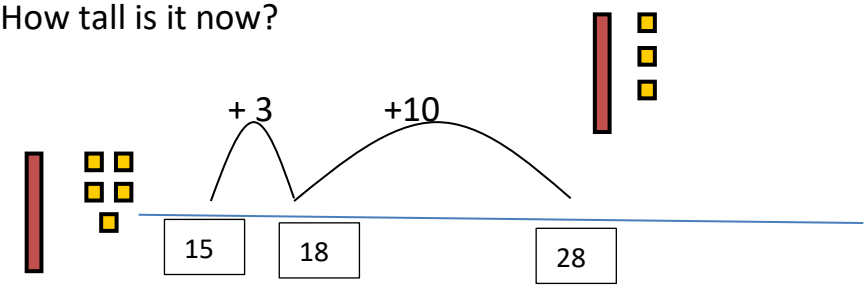
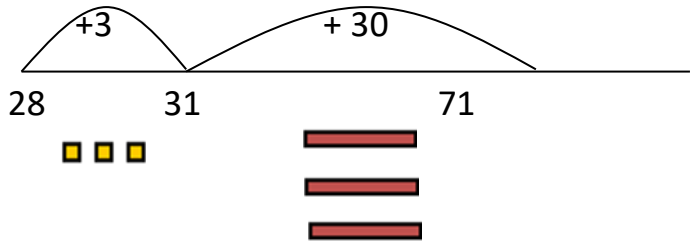
Begin to partition numbers in order to add



ADDITION

Children are taught to understand addition as combining two sets and counting on.

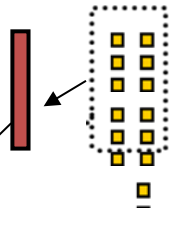
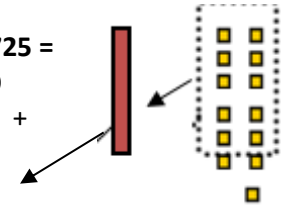
<table>
<tr><td rowspan="3">Year R (ARE)</td><td> 
</td><td>Children need to recognise numbers 0-20 and count reliably up to 20 everyday objects.</td></tr>
<tr><td> 
</td><td>Children need to identify 1 more than a number.</td></tr>
<tr><td>At a party I eat 2 cakes and my friend eats 3.
How many cakes did we eat altogether?
  </td><td>Children start by counting objects but then could draw a picture to help them work out the answer.</td></tr>
<tr><td rowspan="2">Year 1 (ARE)</td><td>4 + 3 =
4 people are on the bus. 3 more get on at the next stop. How many people are on the bus now?
  </td><td>Children will begin to use the + and = signs independently and may use dots to represent objects (quicker than drawing a picture).</td></tr>
<tr><td>5 + 2 =
5 people are on the bus. 2 more get on at the next stop. How many are on the bus now?
 
</td><td>Children can use a numbered numberline to count on and will begin to realise it is more efficient to start with the biggest number.</td></tr>
<tr><td>Year 2 (ARE)</td><td>16 + 10=
I have 16p and my mum gives me 10p more. How much money do I have?
 
</td><td>As children become more confident with adding ten to a number, they can begin to do this on a numberline.</td></tr>
</table>

Year 2 (ARE)	15 + 13 = My sunflower is 15cm tall. It grows another 13cm. How tall is it now?  	The use of partitioning, place value apparatus and a unstructured number line all support children when adding 2 digit numbers.
Year 2 (GD)	28 + 33 = My sunflower is 28cm tall. It grows another 33cm. How tall is it now?  	Drawing an unstructured numberline helps children to record the steps in a calculation. Place value apparatus may still be used to support this method. This method will continue to be used with larger numbers while place value understanding is secured.

Mental Skills KS2

- Place Value: count on in tens, hundreds, thousands etc. *(appropriate to year group, moving onto larger numbers and decimals)*
- Place value: adding multiples of 10, 100, 1000 e.g 60 + 50 *(use knowledge of 6 + 5)*
- Partition: count on in tens and ones and recombine; count on in hundreds, thousands etc. *(use larger numbers in higher year groups)*
- Partition: count on in hours or minutes bridging through 60 *(model on empty numberline)*
- Adjustment: e.g 9 is nearly 10 so add on 10 then adjust 25 + 9 = 35 – 1 *(use larger numbers and decimals in higher year groups)*
- Near doubles: 23 + 24 = 46 + 1 = 47 *(widen use of place value, including decimals in higher year groups)*

Year 3	546 + 487 = There are 487 boys and 546 girls in a school. How many children are there altogether? HTO 546 + 487 13 (6 + 7) 120 (40 + 80) 900 (500 + 400) 1033	The expanded method enables children to see what happens to numbers in the standard written method. Place value apparatus will continue to be used. Children will begin to use this in Year 2. This will be used in year 3 to move children into using formal column addition.

Year 3 (ARE)	546 + 487 = HTO 546 + 487 1033 1 1 	When children understand using the expanded method, this can be 'squashed' into the traditional compact method. Place value equipment will be used initially to allow children to see that 13 ones can also be 1 ten and 3 ones.
Year 4 ARE)	Year 4: **2468 + 725 =** Th H T O 2 4 6 8 + 7 2 5 3 1 9 3 1 1 	In year 4 pupils will move onto 4 digit column addition. Place value equipment will be used as needed.
Year 5 & 6 (ARE)	**3.475 + 5.86 =** O . $\frac{1}{10}$ $\frac{1}{100}$ $\frac{1}{1000}$ 3 . 4 7 5 + 5 . 8 6 9 . 3 3 5 1 1 **3,405,629 + 435,256 =** 3,405,629 + 435,256 3,840,885 1 1	In Year 5 and 6 children will use the compact method for addition and will apply it to larger numbers and decimal numbers, including numbers with different numbers of digits. It is critical that they use their place value knowledge to line up the digits accurately.