

Oak Tree Primary School



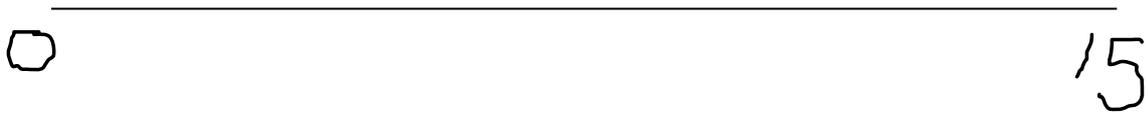
A Guide to Calculations in Year 3

Year 3 Calculation Methods

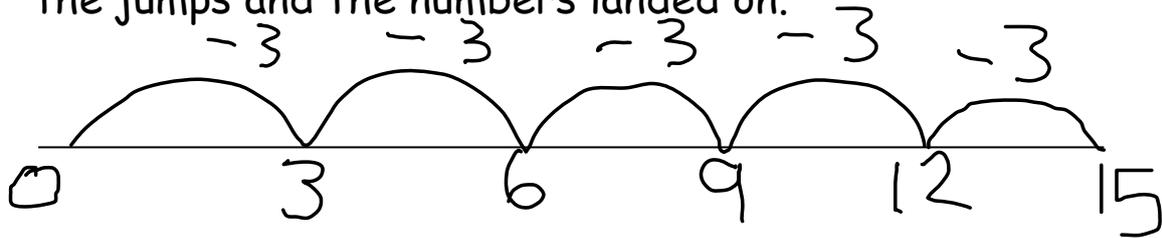
Division - repeated subtraction using a number line

$$15 \div 3 =$$

1. Draw a horizontal line, put zero on the left-hand side and the number you are dividing on the right (this is the first number in the calculation)



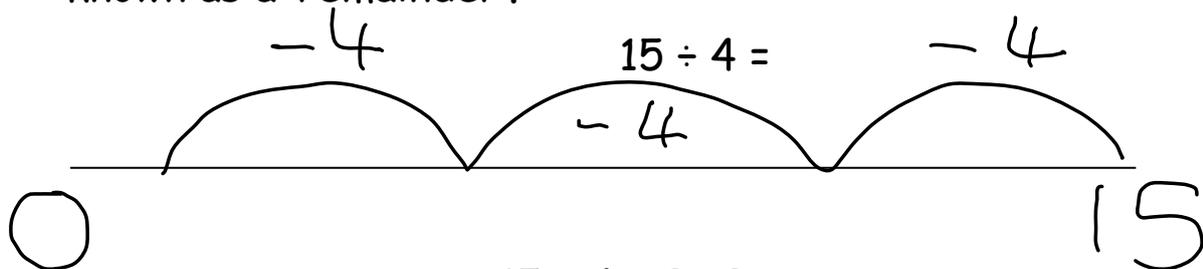
2. Starting on the right-hand side of the number line, subtract in jumps the size of the second number in the calculation. Draw the jumps and the numbers landed on.



3. Once zero has been reached, count the number of jumps. This is then the answer to the starting question.

$$15 \div 3 = 5$$

4. If the final jump cannot be completed, the number left over is known as a 'remainder'.



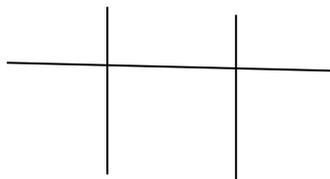
$$15 \div 4 = 3 \text{ r}3$$

Year 3 Calculation Methods

Multiplication - grid method (for $TO \times O$ calculations)

$$18 \times 3 =$$

1. Draw out a grid using 2 vertical lines and 1 horizontal line.



2. Partition the 2 digit number into tens and units/ones, $18 = 10$ and 8 . Place these numbers in the top row of the grid. Place the single digit number on the left-hand side of the grid.

x	10	8
3		

3. Multiply each of the numbers on the top row by the number on the left-hand side. Write the answers in the grid.

x	10	8
3	30	24

4. Add the two answers in the grid together using any method of choice. The answer is the answer to the starting question.

$$30 + 24 = 54$$

$$18 \times 3 = 54$$

Year 3 Calculation Methods

Addition (written) - expanded column method (crossing tens/hundreds barrier)

$$344 + 178 =$$

1. Set out the calculation in columns, ensuring that all hundreds, tens and ones digits are lined up correctly. The use of H T O column headings may be helpful.

$$\begin{array}{r} \text{H T O} \\ 344 \\ + 178 \\ \hline \end{array}$$

2. Add the numbers in each column together, writing the answer underneath, using a new row for the ones, tens and hundreds.

ALWAYS start with the column on the right. Place value understanding is important here, the middle column should be read as "40 + 70", not "4 + 7".

$$\begin{array}{r} \text{H T O} \\ 344 \\ + 178 \\ \hline 110 \\ 400 \\ \hline \end{array}$$

3. Once the numbers in each column have been added together, the answers should now be added to find the final answer to the starting question.

$$\begin{array}{r} 11 \\ 110 \\ 400 \\ \hline 521 \end{array}$$

4. Once children are secure with this expanded method and place value, they can move to using the compact version of this method. Tens/hundreds are 'carried' below the working.

Year 3 Calculation Methods

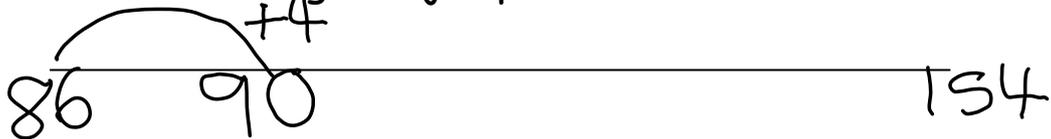
Subtraction - finding the difference by counting up on a number line

$$154 - 86 =$$

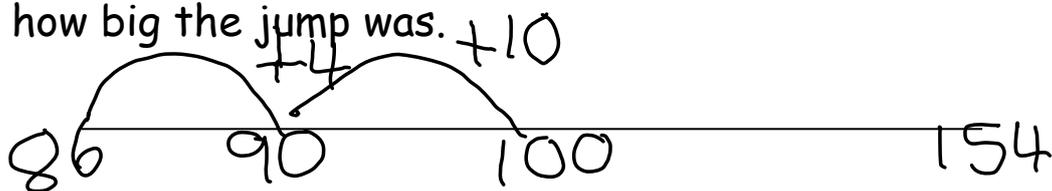
1. Draw a horizontal number line, placing the largest number on the right-hand side and the smallest number on the left hand side.



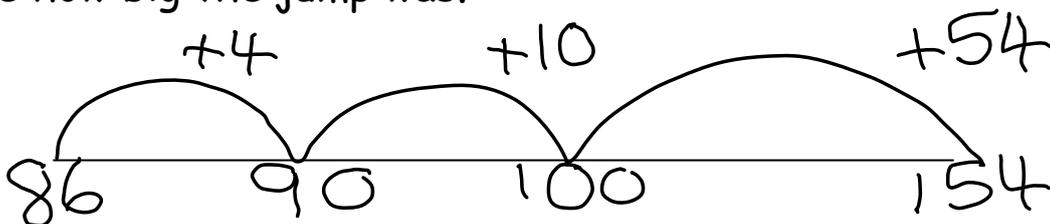
2. Starting with the smallest number, jump to the next multiple of 10 (the next number ending in a zero). Write the number landed on and write how big the jump was.



3. Next, jump to the next hundred and write the number landed on and how big the jump was.



4. Jump to the end number on the number line. Don't forget to write how big the jump was.



5. Finally, add up all the jumps and this will be the answer to the starting calculation.

$$154 - 86 = 68$$

Year 3 Calculation Methods

Subtraction - expanded column method (crossing tens/hundreds barrier)

$$348 - 174 =$$

1. Set out the partitioned calculation in columns, ensuring that the columns are lined up correctly.

$$\begin{array}{r} 300 + 40 + 8 \\ - 100 + 70 + 4 \\ \hline \end{array}$$

2. Subtract the numbers in each column, writing the answer underneath.

ALWAYS start with the column on the right. Place value understanding is important here, the middle column should be read as "40 - 70", not "4 - 7" (which obviously cannot be done). If a subtraction cannot be done, a ten/hundred should be 'taken' from the next column to the left.

$$\begin{array}{r} \overset{200}{300} + \overset{10}{40} + 8 \\ - 100 + 70 + 4 \\ \hline 100 \quad 70 \quad 4 \end{array}$$

3. Once the numbers in each column have been subtracted, the answers should now be added to find the final answer to the starting question.

$$100 + 70 + 4 = 174$$

4. Once children are secure with this expanded method and place value, they can move to using the compact version of this method.