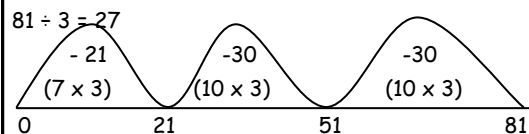


## Division

To divide numbers in maths we can use our fingers to count how many lots of, use equipment like cubes, use a number line, draw objects, the chunking method and short division.

The chunking method on a number line



Draw a blank number line.

Write the number you are dividing on the right hand side of the line (the first number).

The number you are dividing by is the number you are taking away.

Take away a multiple of this number by drawing a backwards jump and write this in the jump, (it is easier to take away a ten multiple of this number).

Continue with multiple jumps of the number you are dividing by until you do single jumps, until you get to zero.

The chunking / repeated subtraction method (long division)

$$\begin{array}{r} 3 \ 66 \\ - 30 \ (10 \times 3) \\ \hline 36 \\ - 30 \ (10 \times 3) \\ \hline 6 \\ - 6 \ (2 \times 3) \\ \hline 0 \ (22 \times 3) \end{array}$$

Answer:  $66 \div 3 = 22$

How many 3's are in 66?

I know that ten 3's are 30, so I subtract 30 from 66. This leaves 36.

I know that ten 3's are 30, so I subtract 30 from 36. This leaves 6.

I know two 3's are 6, so I subtract this. This leaves zero.

Add up the multiples of 3 that have been subtracted from 66, this is the answer, 22.

This method can also be used to divide a hundreds number by a unit number. (3-digit number  $\div$  1-digit number).

## Division

Short division of tens and units by units

$$\begin{array}{r} 27 \\ 3 \overline{)81} \end{array}$$

How many 3's are in 81? First we ask: How many threes divide into 8 tens? The answer is 2 tens with 2 units remaining. Write the 2 tens remaining with the 1 unit to be divided. We now ask: What is 21 divided by three? which gives the answer 7.

## Vocabulary

Add: altogether, more, plus, make, sum, total

Subtract: take away, minus, how many are left?

Multiply: lots of, groups of, times, multiple of, repeated addition, array, multiplication

Divide: share equally, group in, divided by, divided into

$$1 + 3 = 4 \quad 10 - 7 = 3 \quad 2 \times 5 = 10 \quad 12 \div 4 = 3$$

These are known as a number sentences or calculations, (not sums).

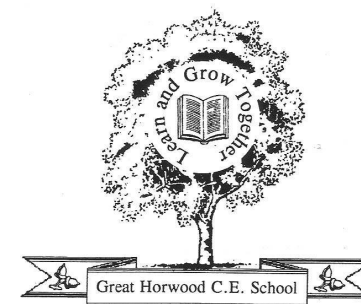
Product: the answer when multiplying two numbers.

Divisor: the number you are dividing by.

Quotient: the answer when you are working out the answer to a division calculation.

Remainder: what is left over and cannot be divided by the number you are dividing by.

## Great Horwood C.E. Combined School



## Mathematics Calculation Methods

Years: Three / Four

(These methods are taught when children are able to carry out the Year One / Two methods).

# Addition

When we add numbers together in maths we can use our fingers and hold numbers in our head, use equipment like cubes, use a number line, partitioning into tens and units and the column method.

## The expanded column method

$$\begin{array}{r} 47 \\ + 76 \\ \hline 13 \\ \hline 110 \\ \hline 123 \end{array}$$

Write the numbers being added together underneath each other with the tens in line and the units in line.

Draw a line underneath the numbers.

Add together the units and write the total under the line.

Add together the tens and write under the units total.

Draw line under these numbers.

Add together the tens and units totals and write the final total under the line.

## The column method

This is the column method that parents are more familiar with.

Write the numbers being added together underneath each other with the tens in line and the units in line.

Draw two lines underneath the numbers.

Add the units together, write the units total in the units column under the first line and carry any tens underneath the second line.

Add the tens together, including any tens carried from the units total, write the tens total in between the two lines.

$$\begin{array}{r} 47 \\ + 76 \\ \hline 123 \\ \hline 11 \end{array}$$

Of course this method can be used with hundreds, thousands and decimal numbers.

# Subtraction

When we subtract numbers in maths we can use our fingers and hold numbers in our head, use equipment like cubes, use a number line (counting back and counting on), partitioning into tens and units and the column method.

## The expanded column method

$$\begin{array}{r} 60 \quad 14 \\ 70 + 4 \\ - 20 + 7 \\ \hline 40 + 7 \end{array}$$

Write the number being subtracted underneath the number being subtracted from, with the numbers partitioned into tens and units.

Carry out the unit subtraction. If the units being subtracted is larger then the units being subtracted from then you take one of then tens from the top tens number and put it in the units column., adjusting the tens column with ten less in the top number.

Subtract the bottom tens number from the top tens numbers and write the answer in the tens column.

The answer is the tens and units under the line added together.

## The column method

$$\begin{array}{r} 61 \\ 74 \\ - 27 \\ \hline 47 \end{array}$$

Write the number being subtracted underneath the number being subtracted from.

Carry out the unit subtraction. If the units being subtracted is larger then the units being subtracted from then you take one of then tens from the top tens number and put it in the units column.

Subtract the bottom tens number from the top tens numbers and write the answer in the tens column.

Of course this method can be used with hundreds, thousands and decimal numbers.

# Multiplication

To multiply numbers in maths we can use our fingers to count in lots of, use equipment like cubes, use a number line, draw objects into an array, use informal jottings or the grid method.

## The informal loop method

This method only works when multiplying a two-digit number by a one-digit number.

$$\begin{array}{r} 12 \\ 13 \times 4 = 52 \\ 40 \end{array} \quad \begin{array}{r} 3 \times 4 = 12 \\ 10 \times 4 = 40 \\ 40 + 12 = 52 \end{array}$$

Multiply the units together and write the total in a loop above the calculation.

Multiply the tens by the units and write the total in a loop below the calculation.

Add together the numbers in the loops, this is the answer.

## The grid method

This method works for any multiplication and when children are confident using it, it a reliable method.

$$\begin{array}{r} 20 \quad 4 \\ 2 \quad 40 \quad 8 \end{array} = 48$$

Partition each of the numbers in the multiplication into tens and units.

Write the first number of the multiplication, partitioned into tens and units into the top row of the grid.

Write the second number of the multiplication into the 1st left hand column of the grid.

Multiply the tens in the top row with the units in the 1st column, write the answer in the box where the tens and units meet.

Multiply the units in the top row with the units in the left hand column, write the answer in the box where the units meet the units

Add together the totals in the second row.

This is the answer.