

## Year 3 Maths

How you can help your child's maths learning? One of the most valuable things you can do is talk to your child about their maths learning. Ask them what they have been learning and encourage them to explain. We all use maths in our everyday lives which means that there are plenty of opportunities to help your child with their maths learning by involving them in everyday activities.

1. Count in jumps of the same size such as 1s, 2s, 5s, 10s and so on. Children should count backwards as well as forwards. Physical activities such as skipping and playing catch can be incorporated to encourage motivation.
2. Collect items such as football cards, buttons, straws, milk bottle tops and group them into ones, tens and hundreds.
3. Look for numbers in digits and words in books, on posters, in comics, on buses, cars and road signs and prices and ask children to read them. Children could also photograph them.
4. Talk about the shape of 2D and 3D objects. Try and identify shapes in the world around us.
5. Ask your child to help when you are doing things with money such as paying for items in shops. How much will these items cost? How much change will you receive?
6. Ask them to help when you are measuring items such as weighing ingredients or measuring the length or height of an object. Use metric units of measure.
7. Help them to understand time, read both digital and analogue clocks. Involve them in dates and diaries, knowing the calendar months, days in a year, family celebrations and appointments.
8. Use a magazine or the internet to find out about when a TV programme or film is on and how long it will last.
9. Read bus or train time tables and calendars.
10. Help them to learn their times tables and related division facts.

## Counting

Counting with your child on a daily basis can dramatically support their understanding of the number system and place value. By the end of year 1, most children are expected to count in 3's, 4's, 6's, 8's, 10's and 100's from any given number. E.g. count in 3's starting from 4 (4, 7, 10)

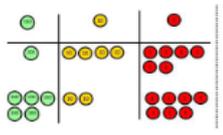
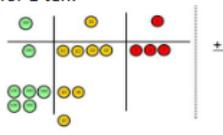
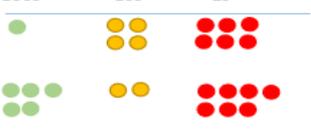
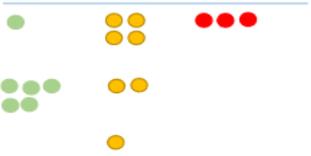
Counting everyday whilst undertaking daily activities at home can help develop your child's fluency of numbers. Remember to not always start at 0 or 1.

## Addition and Subtraction

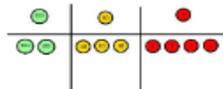
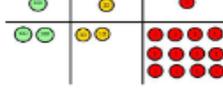
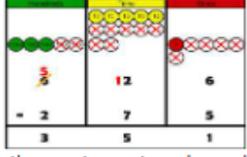
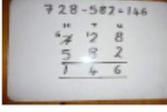
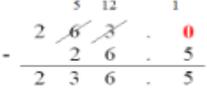
By the end of year 3, most children will be adding and subtracting numbers up to four-digit numbers, continuing to use their knowledge and understanding of number bonds. We use the CPA method of teaching (Concrete, Pictorial, Abstract) which allows the children to develop their proficiency by firstly using equipment to physically calculate before moving on to creating pictures and diagrams and finally calculating using number sentences

Attached are the written methods we use for addition and subtraction. Children can practise these methods at home.

### Addition

Objective	Concrete	Pictorial	Abstract
Column method with regrouping	<p>Make both numbers on a place value grid.</p>  <p>146 + 527</p> <p>Add up the units and exchange 10 ones for 1 ten.</p>  <p>146 + 527</p> <p>As children move on to decimals, money and decimal place value counters can be used to support learning.</p> <p><b>NB</b> By Year 4 children will progress on to adding four digit numbers.</p>	<p>100s    10s    1s</p>  <p>100s    10s    1s</p>  <p>Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.</p> <p><b>NB</b> Addition of money needs to have £ and p added separately.</p>	<p>100 + 40 + 6 500 + 20 + 7 600 + 70 + 3 = 673</p> <p>As the children progress, they will move from the expanded to the compacted method.</p> <p>146 + 527 673</p> <p>1</p> <p>As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here.</p>

### Subtraction

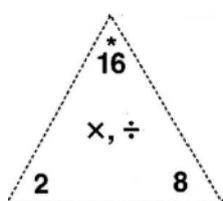
Objective	Concrete	Pictorial	Abstract
Column method with regrouping	<p>Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.</p> <p>Make the larger number with the place value counters</p>  <p>Calculations 234 - 88</p> <p>Start with the ones, can I take away 8 from 4 easily? I need to exchange 1 of my tens for 10 ones.</p>  <p>Calculations 234 - 88</p> <p>Now I can subtract my ones.</p>  <p>Calculations 234 - 88</p>	 <p>Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.</p> <p>When confident, children can find their own way to record the exchange/regrouping.</p> <p>Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.</p> 	 <p>Children can start their formal written method by partitioning the number into clear place value columns.</p>  <p>Moving forward the children use a more compact method.</p> <p>This will lead to an understanding of subtracting any number including decimals.</p> 

## Multiplication and Division

Using knowledge of multiplication calculations, children will begin to use formal written methods to record their work, including the use of arrays. At home, you can support your child by practising reciting multiplication tables.

Children will be encouraged to begin to formally record their work, showing an understanding of multiplication tables to support dividing. They will also use repeated subtraction to divide. At home, encourage your child to use multiplication facts to think about the corresponding division facts.

Practising fact families at home (see the example below) will help children to recall multiplication and division facts.



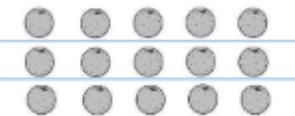
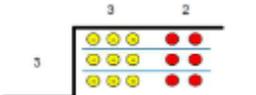
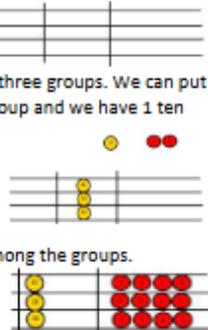
Fact family for  $2 \times 8 = 16$

Below are the methods we use to teach multiplication and Division. Children start using equipment in the concrete phase and as their confidence builds they move from pictorial to abstract. Children can practise these methods at home.

## Multiplication

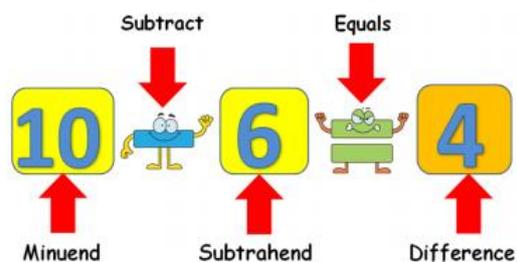
Objective	Concrete	Pictorial	Abstract																														
Grid method	<p>Show the link with arrays to first introduce the grid method.</p> <p>4 rows of 10 4 rows of 3</p> <p>Move on to using Base 10 to move towards a more compact method.</p> <p>4 rows of 13</p> <p>Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.</p> <p>Fill each row with 126.</p> <p>Add up each column, starting with the ones making any exchanges needed.</p> <p><math>4 \times 126 = 504</math></p>	<p>Children can represent the work they have done with place value counters in a way that they understand.</p> <p>They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.</p>	<p>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>30</td> <td>5</td> </tr> <tr> <td>7</td> <td>210</td> <td>35</td> </tr> </table> <p><math>210 + 35 = 245</math></p> <p>Moving forward, multiply by a 2 digit number showing the different rows within the grid method.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>10</td> <td>8</td> </tr> <tr> <td>10</td> <td>100</td> <td>80</td> </tr> <tr> <td>3</td> <td>30</td> <td>24</td> </tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>1000</td> <td>300</td> <td>40</td> <td>2</td> </tr> <tr> <td>10</td> <td>10000</td> <td>3000</td> <td>400</td> <td>20</td> </tr> <tr> <td>8</td> <td>8000</td> <td>2400</td> <td>320</td> <td>16</td> </tr> </table>	x	30	5	7	210	35		10	8	10	100	80	3	30	24	x	1000	300	40	2	10	10000	3000	400	20	8	8000	2400	320	16
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## Division

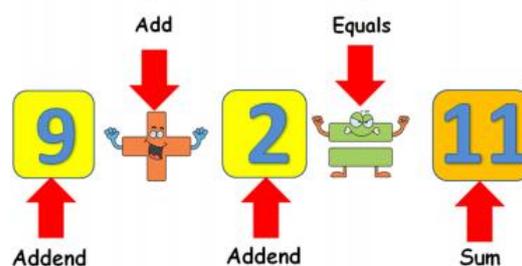
Objective	Concrete	Pictorial	Abstract
Division with arrays	<p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg <math>15 \div 3 = 5</math>   <math>5 \times 3 = 15</math>  <math>15 \div 5 = 3</math>   <math>3 \times 5 = 15</math></p> 	 <p>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p>	<p>Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p><math>5 \times 3 = 15</math>  <math>3 \times 5 = 15</math>  <math>15 \div 5 = 3</math>  <math>15 \div 3 = 5</math></p>
Short division	<p>Use place value counters to divide using the short division method alongside.</p> <p><math>96 \div 3</math></p>  <p><math>42 \div 3</math></p> <p>Start with the biggest place value. We are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over. We exchange this ten for 10 ones and then share the ones equally among the groups. We look at how many are in each group.</p> 	<p>Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</p>  <p>Encourage them to move towards counting in multiples to divide more efficiently.</p>	<p>Begin with divisions that divide equally with no remainder.</p> $\begin{array}{r} 218 \\ 3 \overline{) 872} \end{array}$

## Vocabulary related to the 4 operations

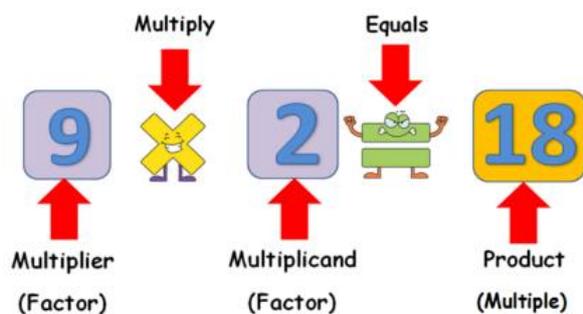
### Parts of a Subtraction Equation



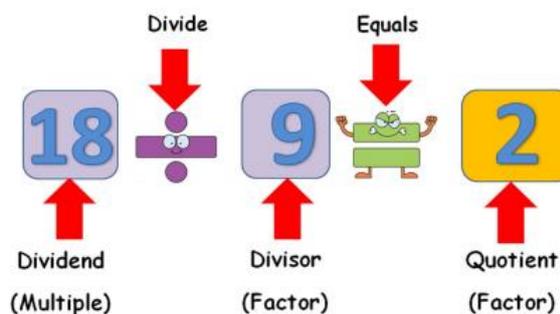
### Parts of an Addition Equation



### Parts of a Multiplication Equation



### Parts of a Division Equation



## New Vocabulary to learn this year

Number and place value	Addition and subtraction	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics
Numbers to one thousand	Column addition and subtraction	Product Multiples of four, eight, fifty and one hundred Scale up	Leap year Twelve-hour/twenty-four-hour clock Roman numerals I to XIII	Greater/less than ninety degrees Orientation (same orientation, different orientation)	Horizontal, vertical, perpendicular and parallel lines	Numerator, denominator Unit fraction, non-unit fraction Compare and order Tenths	Chart, bar chart, frequency table, Carroll diagram, Venn diagram Axis, axes Diagram

### Useful websites and links

<http://www.mathszone.co.uk/>

<http://www.bbc.co.uk/bitesize/ks2/maths>

<https://www.mathsisfun.com>

<http://www.topmarks.co.uk/Interactive.aspx?cat=8>

<http://resources.woodlands-junior.kent.sch.uk/teacher/maths.html>

<http://www.amblesideprimary.com/ambleweb/maths.htm>

<http://games.e4education.co.uk/groupone>