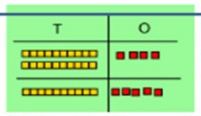
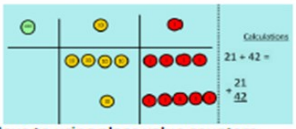
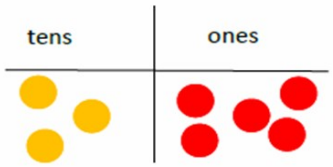
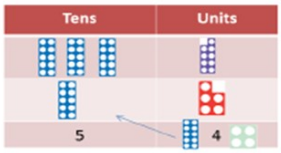
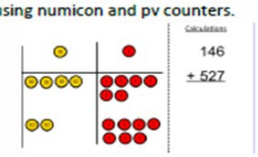
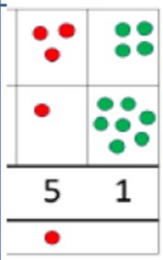
Supporting Maths Mastery Skills

Year 3

This booklet aims to show you, as simply as possible, how to help your child in Maths.

ADDITION

In Year 3, pupils begin to record addition calculations vertically, adding numbers in columns, beginning with the ones and then adding the tens. Children who find this difficult should write T U above each column. Pupils record each digit in an individual square. The children will use and place value counters when they first start to use the column method so they can visually see how the number changes.

Objective & Strategy	Concrete	Pictorial	Abstract
Column Addition—no regrouping (friendly numbers) Add two or three 2 or 3-digit numbers.	 Model using Dienes or numicon Add together the ones first, then the tens.   Move to using place value counters	Children move to drawing the counters using a tens and one frame. 	2 2 3 + 1 1 4 3 3 7 Add the ones first, then the tens, then the hundreds.
Column Addition with regrouping.	 Exchange ten ones for a ten. Model using numicon and pv counters. 	 Children can draw a representation of the grid to further support their understanding, carrying the ten underneath the line	20 + 5 40 + 8 60 + 13 = 73 Start by partitioning the numbers before formal column to show the exchange. 536 + 85 621 1 1

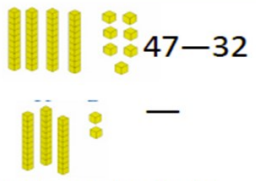
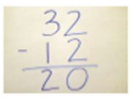
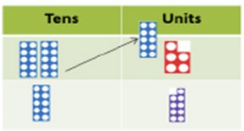
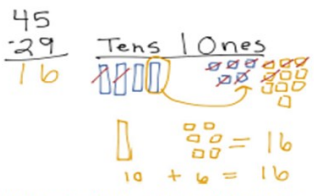
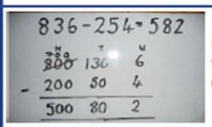
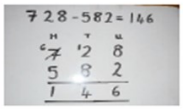
	2	3	6
+	1	1 4	9
	3	8	5

SUBTRACTION

In Year 3, children begin to record subtraction calculations vertically, subtracting numbers in columns, beginning with the ones and then subtracting the tens. Children record each digit in an individual square.

$$\begin{array}{r} {}^{3}\not{2}\,{}^{1}6 \\ -\ 1\ 2\ 7 \\ \hline 1\ 1\ 9 \end{array}$$

At this stage, children can still use equipment to support their calculations. At home you could use buttons, dried pasta shapes or pennies to demonstrate that you can't subtract 7 from 6 and so we 'exchange' from the T column.

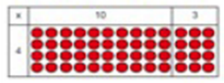
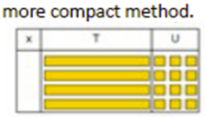
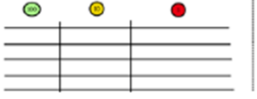
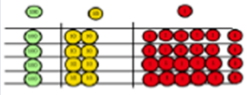
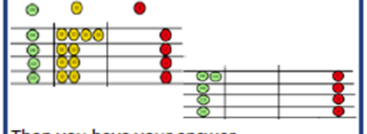
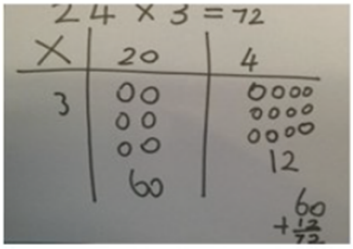
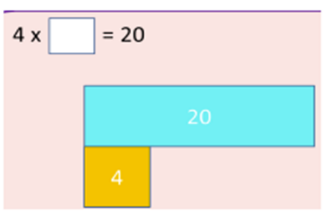
Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping (friendly numbers)	 Use base 10 or Numicon to model	 Darw representations to support understanding	47−24=23 40+7 −20+4 20+3 Intermediate step may be needed to lead to clear subtraction understanding. 
Column subtraction with regrouping	 Begin with base 10 or Numicon. Move to pv counters, modelling the exchange of a ten into tten ones. Use the phrase 'take and make' for exchange.	 Children may draw base ten or PV counters and cross off.	 Begin by partitioning into pv columns  Then move to formal method.

MULTIPLICATION

By the end of Year 3, children are expected to multiply a two digit number by a single digit number using a written calculation. When the result of a multiplication is a two digit number it will be set out as follows:

The 'exchange' number should then be added to the next multiplication result. Then crossed out.

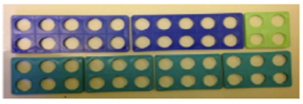
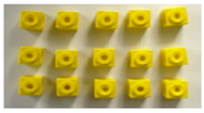
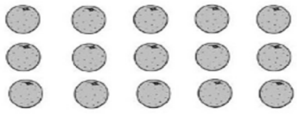
$$\begin{array}{r} 76 \\ \times\ 4 \\ \hline 4 \\ \hline \end{array} \qquad \begin{array}{r} 76 \\ \times\ 4 \\ \hline 304 \\ \hline \end{array}$$

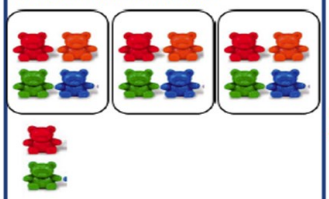
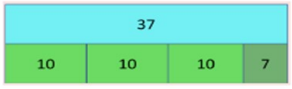
Objective & Strategy	Concrete	Pictorial	Abstract
Grid method	Show the links with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3 Move onto base ten to move towards a more compact method.  4 rows of 13 Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows  Calculations 4 x 126 Fill each row with 126  Calculations 4 x 126 Add up each column, starting with the ones making any exchanges needed  Then you have your answer.	Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.  Bar model are used to explore missing numbers  4 x ☐ = 20 20 4	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. × | 30 | 5 7 | 210 | 35 210 + 35 = 245 Moving forward, multiply by a 2 digit number showing the different rows within the grid method. 10 | 8 10 | 100 | 80 3 | 30 | 24 

DIVISION

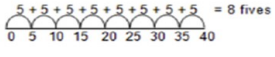
In Year 3, pupils begin to record division of two digit numbers by drawing 'half a goalpost' as shown below:

$$\begin{array}{r|l} 6 & 96 \\ \hline & 3\,8 \end{array} \qquad 1\ 6\ r\ 2$$

Objective & Strategy	Concrete	Pictorial	Abstract
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding.  24 divided into groups of 6 = 4 96 ÷ 3 = 32 	Continue to use bar modelling to aid solving division problems.  20 ÷ 5 = ? 5 x ? = 20	How many groups of 6 in 24? 24 ÷ 6 = 4
Division with arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	Draw an array and use lines to split the array into groups to make multiplication and division sentences 	Find the inverse of multiplication and division sentences by creating eight linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7 28 = 7 x 4 28 = 4 x 7 4 = 28 ÷ 7 7 = 28 ÷ 4

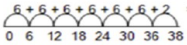
Objective & Strategy	Concrete	Pictorial	Abstract
Division with remainders.	14 ÷ 3 = Divide objects between groups and see how much is left over 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.  Draw dots and group them to divide an amount and clearly show a remainder.  Use bar models to show division with remainders.  	Complete written divisions and show the remainder using r. 

Example without remainder:
40 ÷ 5
Ask "How many 5s in 40?"



= 8 fives

Example with remainder:
38 ÷ 6



= 6 sixes with a remainder of 2

For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts.

Year 3 I can statements

By the end of year 3 your child should be able to achieve the following I can statements.

Number – Place Value

- I can count in multiples of 4, 8, 50 and 100.
- I can find 10 or 100 more or less than a given number.
- I can compare and order numbers up to 1000.
- I can recognise the place value of each digit in a 3-digit number.
- I can read and write numbers up to 1,000 in numerals and in words.
- I can identify, represent, and estimate numbers using different representations.

Number – Addition and Subtraction

- I can add and subtract numbers mentally, including round numbers to HTU.
- I can add and subtract numbers with up to 3-digits using formal column methods.
- I can estimate the answer to a calculation and use inverse operations to check answers.
- I can solve problems, including missing number problems, using number facts and place value.

Number – Multiplication and Division

- I can recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
- I can write and calculate mathematical statements for multiplication and division for two-digit numbers times a one-digit numbers, using mental methods and progressing to formal written methods.
- I can solve problems, including missing number problems, involving multiplication and division.

Please help your child become familiar with their times tables.

1 x 2 = 2 2 x 2 = 4 3 x 2 = 6 4 x 2 = 8 5 x 2 = 10 6 x 2 = 12 7 x 2 = 14 8 x 2 = 16 9 x 2 = 18 10 x 2 = 20 11 x 2 = 22 12 x 2 = 24	1 x 3 = 3 2 x 3 = 6 3 x 3 = 9 4 x 3 = 12 5 x 3 = 15 6 x 3 = 18 7 x 3 = 21 8 x 3 = 24 9 x 3 = 27 10 x 3 = 30 11 x 3 = 33 12 x 3 = 36	1 x 4 = 4 2 x 4 = 8 3 x 4 = 12 4 x 4 = 16 5 x 4 = 20 6 x 4 = 24 7 x 4 = 28 8 x 4 = 32 9 x 4 = 36 10 x 4 = 40 11 x 4 = 44 12 x 4 = 48

1 x 5 = 5 2 x 5 = 10 3 x 5 = 15 4 x 5 = 20 5 x 5 = 25 6 x 5 = 30 7 x 5 = 35 8 x 5 = 40 9 x 5 = 45 10 x 5 = 50 11 x 5 = 55 12 x 5 = 60	1 x 6 = 6 2 x 6 = 12 3 x 6 = 18 4 x 6 = 24 5 x 6 = 30 6 x 6 = 36 7 x 6 = 42 8 x 6 = 48 9 x 6 = 54 10 x 6 = 60 11 x 6 = 66 12 x 6 = 72	1 x 8 = 8 2 x 8 = 16 3 x 8 = 24 4 x 8 = 32 5 x 8 = 40 6 x 8 = 48 7 x 8 = 56 8 x 8 = 64 9 x 8 = 72 10 x 8 = 80 11 x 8 = 88 12 x 8 = 96

Useful websites to help enhance your child's learning at home:

Number Blocks
BBC iPlayer - Numberblocks

KS2 BBC Bite Size
KS2 Maths - BBC Bitesize

Kids Maths Games
Kids Math Games Online - Free Interactive Learning Activities, Fun Educational Resources

Top Marks Maths
Ordering and Sequencing Numbers Games (topmarks.co.uk)

ICT Maths Games
ictgames || html5 Home Page

Maths Zone
Maths Zone Cool Learning Games – Maths Games and Learning Activties for Fun

Primary Games (some free games)
Primary Games :: Maths Games and Interactive Resources for the Primary Classroom

Times Table Rock Stars
Times Tables Rock Stars – Times Tables Rock Stars (ttrockstars.com)

Apps
One minute white rose maths
Twinkl times tables