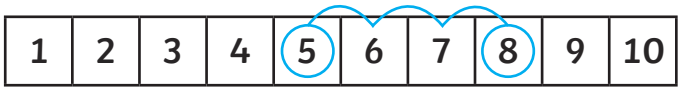
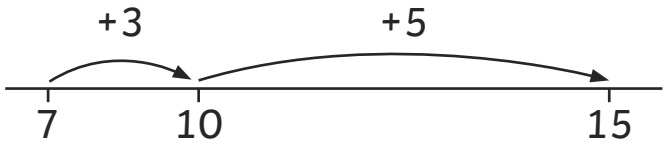
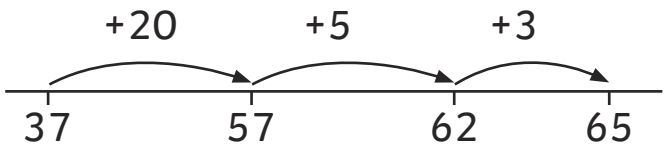
Calculation Methods

Addition

The different stages	Examples
Stage 1 Counting sets of objects	
Stage 2 Combining two sets of objects into one group and counting practically.	For 5 + 3 the children may get 5 objects, and then 3 more and count how many altogether.
Stage 3 Drawing dots - informal jottings. Then counting how many altogether.	3 + 5 = 8 ● ● ● + ● ● ● ● ●
Stage 4 Counting on, on a number line with numbers on it.	5 + 3 = 8 
Stage 5 Steps in addition can be recorded on a number line. The steps often bridge through a multiple of 10. 1) Partition the smaller numbers into tens and ones. 2) Add on the tens. 3) Add on the ones.	7 + 8 = 15  37 + 28 = 65 

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Calculation Methods

Addition

The different stages	Examples
Stage 6 Partitioned numbers are then written under one another.	87 + 28 80 + 7 20 + 8 100 + 15 = 115
Stage 7 Write the numbers in columns Add the tens first.	87 + 28 100 15 115
Adding the units first.	87 + 28 15 100 115
Stage 8 This then becomes the shorter method where numbers get carried into the next column.	87 + 28 115 1 1
Stage 9 Later, mover to adding three two digit numbers, two three digit numbers and numbers with amounts of digits.	249 + 96 345 1 1

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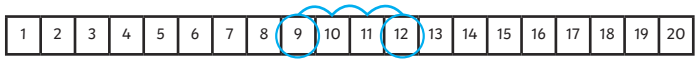
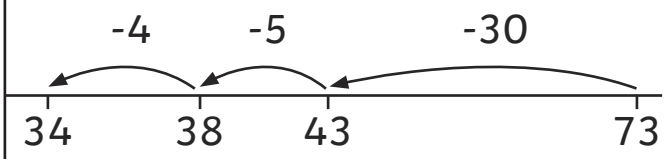
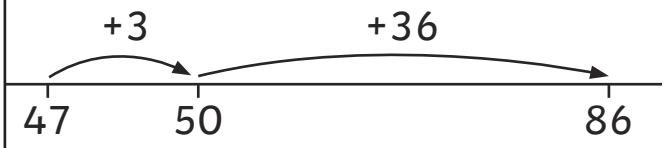
Calculation Methods

Subtraction

The different stages	Examples
Stage 1 Practically get a group of objects together and then take some away.	
Stage 2 Jottings - draw a set of marks, and then cross some out.	12 - 5 = 7 
Stage 3 Count back on a number line with numbers already on it.	12 - 3 = 9 
Stage 4 Using a number line. Work by counting back. Also work out the difference by counting on.	73 - 39 = 34  Work out the difference between 47 and 86 = 39 

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Calculation Methods

Subtraction

The different stages	Examples
Stage 5 Partitioned numbers are written under one another. This is how we start introducing the column subtraction method.	77 - 25 = 70 + 7 -20 + 5 50 + 2 = 52
Stage 6 (Replace with 2 digit numbers) These show the two steps that lead to the shortened version of the column subtraction method. Always start with the units number.	73 - 26 = 70 + 3 -20 + 6 40 + 7 (split 77) 60 13 ~~70~~ + ~~3~~ -20 + 6 40 + 7 6 13 ~~73~~ -26 47
Stage 7 (Replace with 3 digit numbers) These show the two steps that lead lead to the shortened version of the column subtraction method. Always start with the units number.	652 - 475 = 600 + 50 + 2 -400 + 70 +5 500 140 12 ~~600~~ + ~~50~~ + ~~2~~ -400 + 70 +5 100 + 70 + 7 5 14 12 ~~6~~ ~~5~~ ~~2~~ -4 7 5 1 7 7
Stage 8 (Replace with 4 digit numbers including 0)	5000 900 100 ~~6000~~ + ~~000~~ + ~~00~~ + 9 -2000 + 100 +20 + 3 3000 + 800 + 80 + 6 5 9 10 6 0 0 9 -2 1 2 3 3 8 8 6

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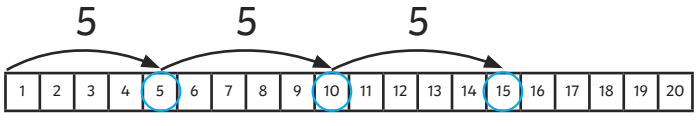
Calculation Methods

Multiplication

Year 2	2 times table 5 times table 10 times table	Within this teach how to know facts i.e. 6 x 3 is 5 x 3 and then 1 x 3 9 x 3 is 10 x 3 and then take away 3
Year 3	3 times table 4 times table 5 times table 5 times table	
Year 4	Derive and recall multiplication facts for all tables up to 10 x 10.	

The different stages	Examples
Stage 1 Counting practically in repeated groups/patterns.	
Stage 2 Grouping	4 x 2 = 8 
Stage 3 Arrays	4 x 2 = 8 or 2 x 4 + 8 
Stage 3 Repeated addition Repeated addition can be shown easily on a number line.	5 x 3 is 5 + 5 + 5 = 15 or 3 lots of 5 

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Calculation Methods

Multiplication

The different stages	Examples
Stage 5 **Partitioning**	14 X 6 = 10 X 6 = 60 4 X 6 = 24 60 + 24 = 84
Stage 6 **The grid method** Place the number with the most digits in the left-hand column so that it is easier to add the answers of each part of the multiplication together.	37 X 8 = x | 8 30 | 240 7 | 56 | 296
Stage 7 **Long multiplication** The next step is to show the method of recording in a column format, but showing the working. This links to the grid method above. Children should describe what they do by saying the actual values of the digits in the column. E.g. The first step in 3 7 x 8 is 'thirty multiplied by eight', not 'three times eight.'	30 + 7 x 8 240 56 296 30 x 8 = 240 8 x 7 = 56 37 x 8 240 56 296 This is the slightly shorter version.
Stage 8 Short multiplication. The next step involves adding 240 and 56 mentally with only the 5 in the 56 recorded.	37 x 8 296 5

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Calculation Methods

Multiplication

The different stages	Examples
Stage 9 Multiplying two, two digit numbers. This follows the same steps as the first grid method but for 2 digit numbers.	47 x 23 x | 20 | 3 | 40 | 800 | 120 | 920 7 | 140 | 21 | 161 1081
Stage 10 The amount of recording is reduced but children still need to follow each step of the grid method.	47 x 23 is approximately 50 X 20 is 1000 47 x 23 140 800 21 120 1081 20 x 7 = 140 20 x 40 = 800 3 x 7 = 120 3 x 40 = 120
The amount of recording is reduced more.	47 x 23 is approximately 50 X 20 is 1000 47 x 23 940 141 1081 47 X 20 47 X 3

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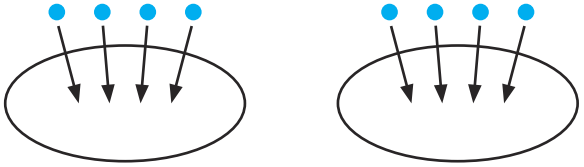
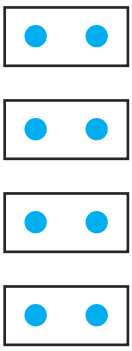
Calculation Methods

Division

Deriving and recalling division facts		
Year 2	**Year 3**	**Year 4**
2 times table 5 times table 10 times table	3 times table 4 times table 6 times table	Derive and recall all division facts for all tables up to 10 x 10.

The different stages	Examples
Stage 1 Children will develop their understanding of division and use jottings to support calculation. **Stage 2** Grouping **Stage 3** Arrays **Stage 4** Repeated addition Repeated addition can be shown easily on a number line.	8÷2 **Sharing equally** 8 sweets shared between 2 people, how many do they each get?  **Grouping or repeated addition** There are 8 sweets, how many people can have 2 sweets each?  **Arrays can also be used.** 

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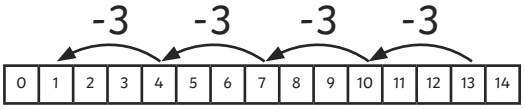
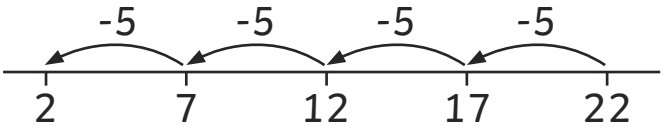
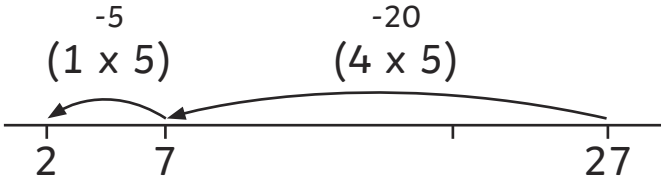
Calculation Methods

Division

The different stages	Examples
Stage 2 Children should also move onto calculations involving remainders through repeated subtraction.	13 ÷ 3 = 4r1 
Stage 3 Children will develop their use of repeated subtraction to be able to subtract multiples of the divisor. Initially this should be multiples of 10, 5, 2 and 1 - numbers with which the children are more familiar.	22 ÷ 5 = 4r2 
Stage 4 Moving onto:	27 ÷ 5 = 5r2 
Stage 5 Tens Ones + Ones The vertical method. (Also known as chunking)	72 ÷ 3 = 3) 72 - 30 (10 x 3) 42 - 30 (10 x 3) 12 - 6 (2 x 3) 6 - 6 (2 x 3) 10 + 2 + 2 + 2 0 = 24

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Calculation Methods

Division

The different stages	Examples
Stage 6 Hundreds Tens Ones + Ones lntroduce subtracting larger multiples of ten. This is called chunking.	289 ÷ 8
Stage 7 Long division. Hundreds Tens Ones + Ones	How many packs of 36 can we make from 828 biscuits? Start by multiplying 36 by multiples of 10 to get an estimate. As 36 x 20 is 720 and 36 x 30 is 1080 so we know it is between 20 and 30 packs. We start by subtracting 720 from 828. 36) 828 - 720 (36 x 20) 108 - 108 (36 x 3) 0 Answer= 23 In effect, the recording above is the long division method, though conventionally the digits of the answer are recorded above the line as shown. 23 36) 828 - 720 108 - 108 0

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Calculation Methods

These are the calculation strategies used by most UK primary schools for maths. They are in stages rather than age groups as children develop mathematically at different ages. To establish which stage your child is working on, you can either ask your child's teacher or simply ask your child to carry out a related activity, for example by adding two numbers together. Just because your child is on a certain stage for one operation does not mean they will be on the same stage for others.

When your child is really confident with a stage then move them forward and start working on the next stage.