

Sunnyfields Primary School



Strong Roots, Bright Futures

Calculation Policy

Document History	
Date created:	15 th October 2025
Reviewing officer:	Maths Subject Leader
Review frequency:	Ongoing, update as needed
Review date:	15 th October 2026
Approved by:	Governing Body
Date approved:	14 th November 2025
Signed by Head Teacher, Kimberley Hutton:	
Signed by Chair of Governors, Tom Butterworth:	
Date Signed:	1st December 2025

Contents

Introduction 3

Year 1 4

Year 2 16

Year 3 30

Year 4 45

Year 5 54

Year 6 66

Introduction

This calculations policy takes into account the changes in the curriculum since September 2014. It is intended to be used as a document between teachers and parents, to support the teaching of methods in addition, subtraction, multiplication, division and fractions.

It is set out in year group expectations with the expectation that most pupils will achieve this at broadly the same pace. However, as teachers and parents we know that this is not always the case and children's understanding and readiness will be taken into account.

Parents, we hope you find this document useful. If there are any questions you want to ask, please don't hesitate to contact your child's teacher or myself.

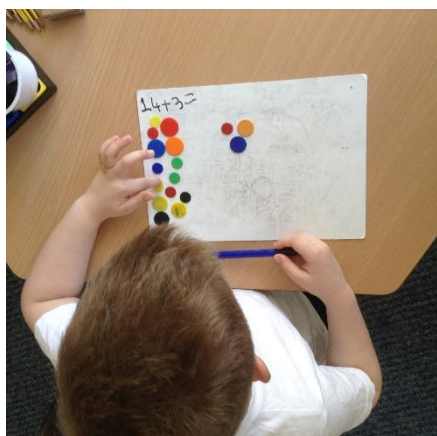
At Sunnyfields Primary School, we expect high standards of presentation across all subjects. The importance of setting work out neatly in Maths is of the uppermost importance. For this reason, we use squared paper and insist on placing one digit per box. Where a decimal is needed, it should be placed in its own square and column.

Year 1

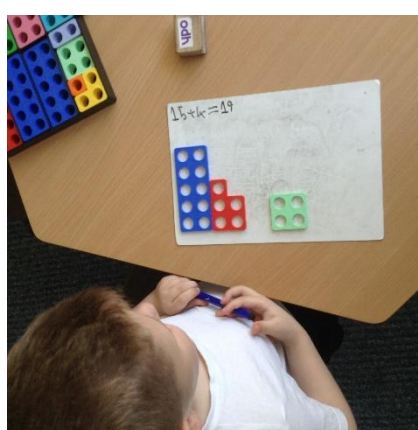
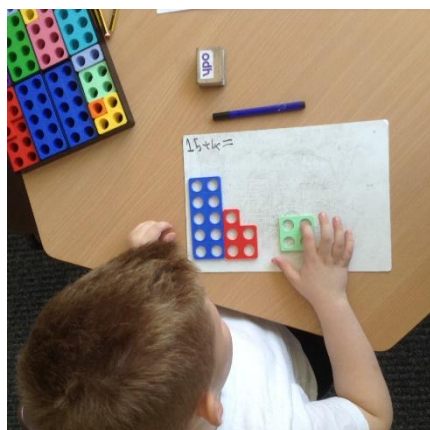
Year 1 Addition

What the National Curriculum says: Add one-digit and two-digit numbers to 20, including zero.

An example using counters:

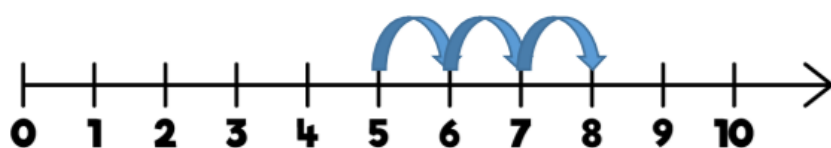


An example using Numicon:

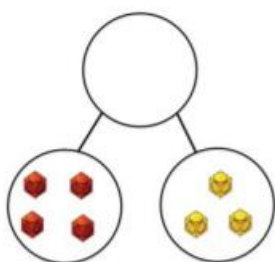


An example using a number line:

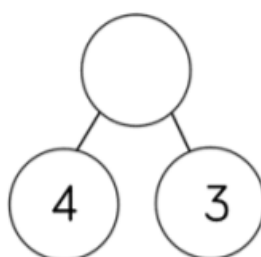
$$5 + 3 = 8$$



An example using a Part-Whole Model:



Pictorial Part-Whole Model

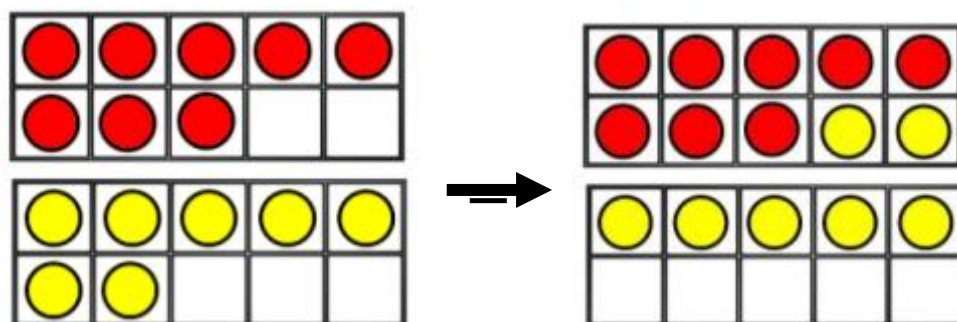


Part-Whole Model

The children need to add the two parts together to get the whole. E.g. $4 + 3 = 7$. They may use counters, Numicon or count on their fingers to calculate the answer.

An example using a tens frame:

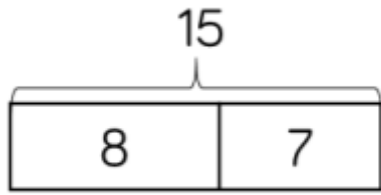
$$8 + 7$$



Steps to success:

1. Make each number on a separate tens frame.
2. Then move part of one number to make 10 on one of the frames.
3. Finally count up the total number. The children should recognise that they can count on from 10 as the first tens frame is full. E.g. 10, 11, 12, 13, 14, 15.

An example using a Bar Model:

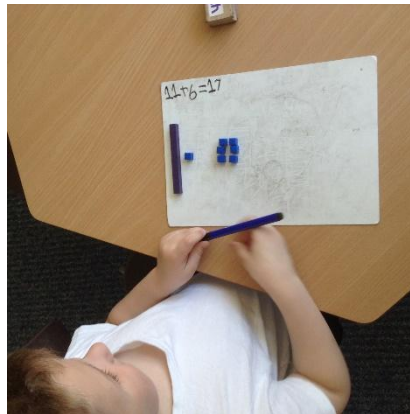
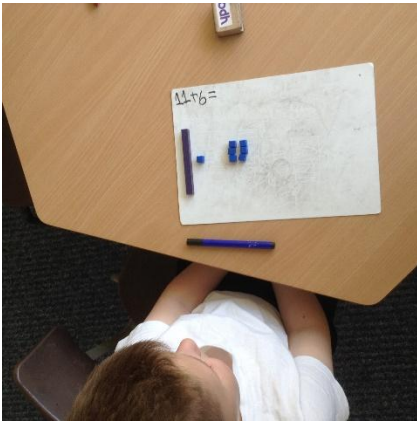


$$8 + 7 = 15$$

The Children can use counters, Numicon or count on their fingers to calculate the answer.

Only when a child is confident in place value and addition we then start to use Base 10. Most children in year 1 will not use Base 10 for addition until they reach year 2.

An example using Base 10:



Steps to success:

1. Count up the ones e.g. 7
2. Then count up the tens e.g. 1.

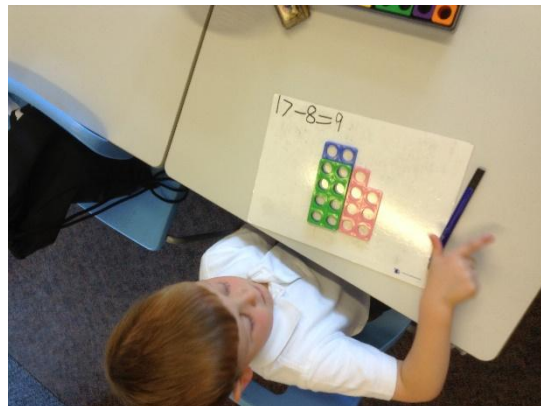
Year 1 Subtraction

What the National Curriculum says: Subtract one-digit and two-digit numbers to 20, including zero.

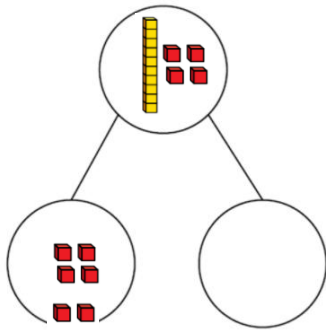
An example using counters:



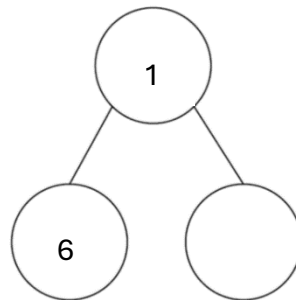
An example using Numicon:



An example using a Part-Whole Model:



Pictorial Part-Whole Model

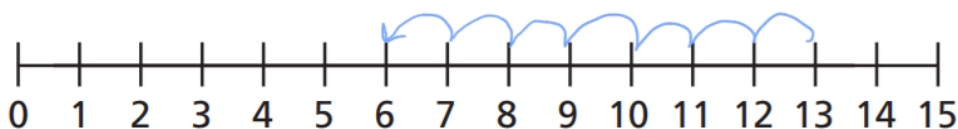


Part-Whole Model

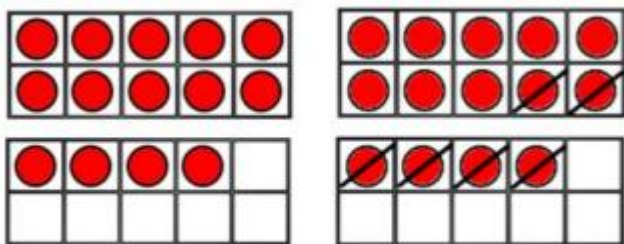
They may use counters, Base 10, Numicon or count on their fingers to calculate the answer.

An example using a number line:

$$13 - 7 =$$



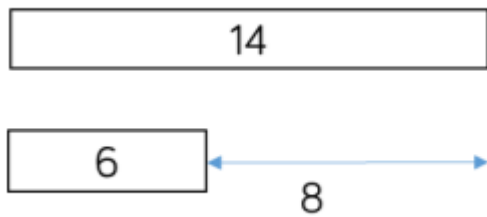
An example using a tens frame:



Steps to success:

1. Draw the largest number into the tens frames e.g. 14
 2. Cross off the amount you are subtracting e.g. 6
 3. Count up the number that is left to calculate your answer.
-

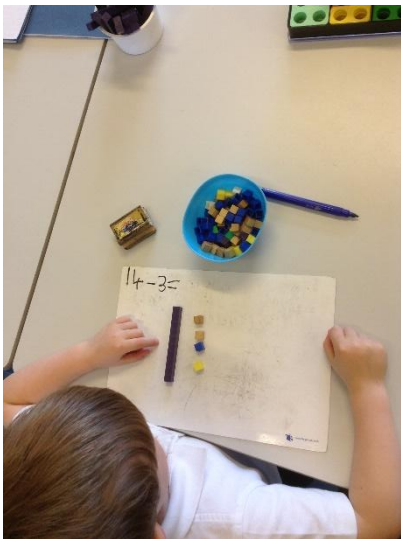
An example using a Bar Model:



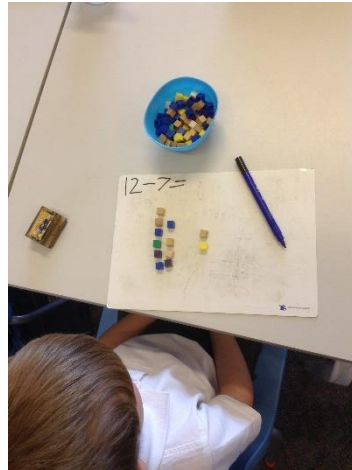
They may use counters, Base 10, Numicon or count on their fingers to calculate the answer.

Only when a child is confident in place value and subtracting we then start to use Base 10. Most children in year 1 will not use Base 10 for subtracting until they reach year 2.

An example using Base 10:



An example using Base 10 (Having to exchange a ten stick for ten ones):



Steps to success:

1. Make the first number in the calculation using Base 10.
2. The children need to take the ones away first ($2-7$). They should realise that you cannot do it so you have to exchange a ten stick for 10 ones.
3. Once this has been done the ones can be take away ($12 - 7$).
4. This will then leave the child with the answer.
5. They then count up the remaining ones to find the answer.

Year 1 Multiplication

What the National Curriculum says: Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. (Twos, fives and tens.)

An example using Numicon:



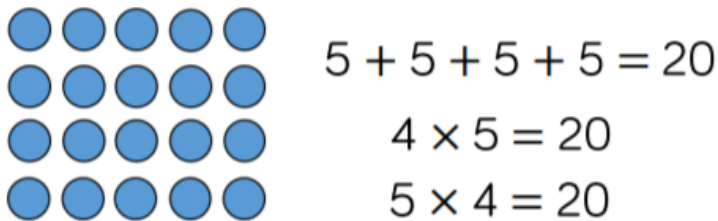
An example using counters:



Steps to success

1. Get 8 groups of 2 objects.
2. Count the objects all together to find the answer. Make sure you move the objects to clearly show you have counted them.

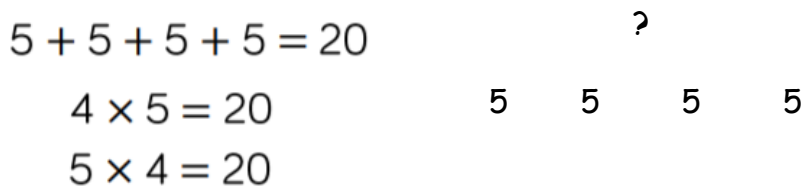
An example using an array



Steps to success

1. Draw a row of 5 circles.
 2. Then draw a further 3 more rows of 5 circles (This represents 4 rows of 5 which is the same as 5×4 and 4×5)
 3. Finally, cross off the circles as you count them up to find the answer.
-

An example using a bar model



1. Draw your bar model making sure the bottom part is split into whatever the number is being multiplied by e.g. 4.
2. Then write in what each part is worth in the bottom bar e.g. 5
3. Finally, add up the parts at the bottom to find what the whole bar is worth. E.g. 20. This will be placed in the top of the bar where the question mark is.

They may use counters, Base 10, Numicon or count on their fingers to help them calculate the answer.

Year 1 Division

What the National Curriculum says: Solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. (twos, fives and tens.)

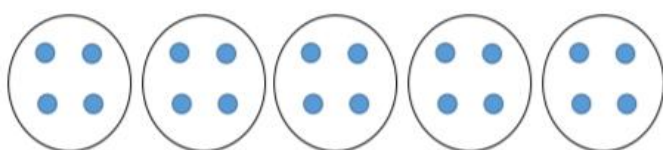
An example using objects



Steps to success

1. Count out the number of objects you are sharing (20)
2. Share them equally into however many groups you're dividing by (2)
3. Count each group to check they are equal.
4. Write down the total of one of groups.

An example using a pictorial method

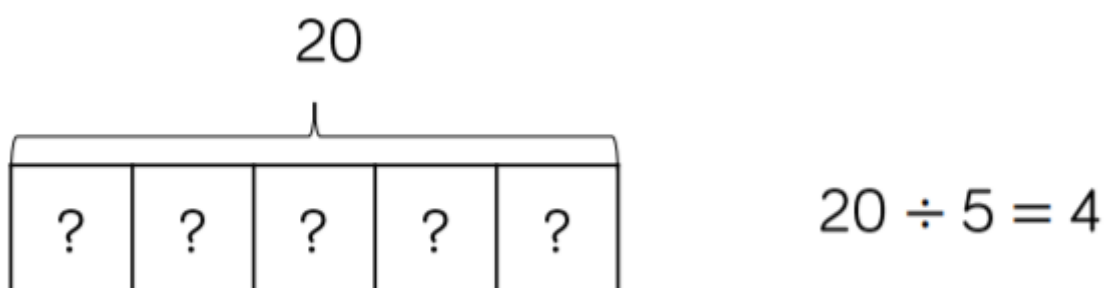


$$20 \div 5 = 4$$

Steps to success

1. Draw the number of circles that you are dividing by. (Make sure these are big enough to share the amount in) In the example this is the number 5.
2. Share the first number (20) equally across the circles by drawing a dot in each circle until you count up to 20.
3. Check that there is the same amount in each circle.
4. Count up one of the groups to get your answer.

An example using a bar model



Steps to success

1. Draw your bar model splitting your bar into the number is it being divided by e.g. 5
2. Then write what the whole bar is worth e.g. 20
3. Then work out what each part of the bar is worth by counting in the number that you are dividing by. This will tell you how much each part is worth. E.g. count in 5's until you get to 20. How many 5s is there in 20? 4. So each part is worth 4.

They may use counters, Base 10, Numicon or count on their fingers to calculate the answer.

Year 1 Fractions

What the National Curriculum says: Recognise, find and name a half as one of two equal parts and a quarter of 4 equal parts of an object, shape or quantity.

An example of finding $\frac{1}{2}$ of a quantity:



Steps to success:

1. Count out the number of objects you are sharing e.g. 8.
2. Share the objects one at a time onto each piece of card until all of them have been placed on a card.
3. Count up how many is in each group. These should be equal e.g. 4 in each group.
4. Therefore $\frac{1}{2}$ of 8 = 4.

Year 2 Addition

What the National Curriculum says: Add numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers and adding three one-digit numbers.

We also remind children that addition of two numbers can be done in any order and subtraction of one number from another cannot.

The Children will need to understand that 10 ones equal to one ten and that they may need to exchange when adding.

An example using Base 10:

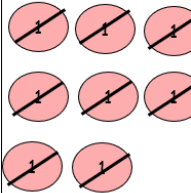
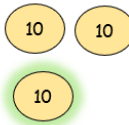
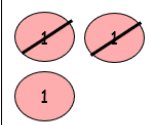


Steps to success:

1. Count up the ones. If there are more than 10 ones the children will need to recognise that they need to swap the 10 ones for 1 ten (See picture 2)
2. The children can then count up how many ones they have in total. E.g. 1
3. Then how many tens they have left e.g. 6 – therefore the answer is 61.

An example drawing tens and ones with a place value chart:

3	8	+	2	3	=	6	1

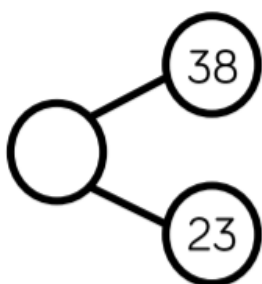
T	O
	
	

Steps to success:

1. Draw out the tens and ones to represent the numbers in the place value chart.
2. Count up the ones e.g. 11. Because we have 11 ones the children will need to exchange 10 of the ones for 1 ten. Once this is done they then count up how many ones are left e.g. 1.
3. Then they count up how many tens there are in total e.g. 6 so the answer is 61.

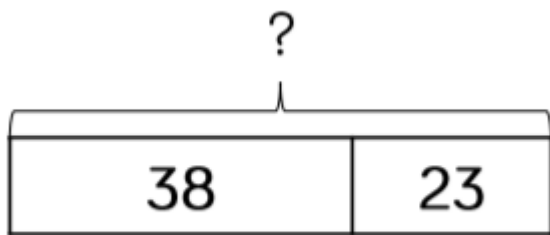
The children will use the same method when adding a two-digit number and ones, a two digit number and tens and three one- digit numbers.

An example using a whole part model



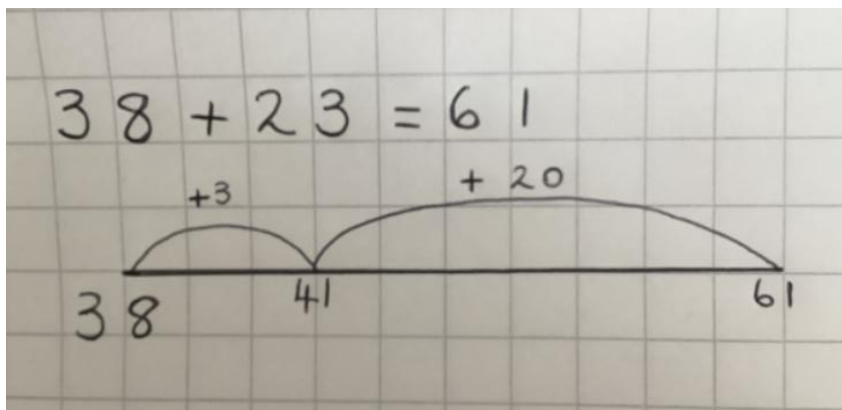
They may use place value counters, Base 10, Numicon, count on their fingers or use their knowledge of place value to calculate the answer. They will need to understand that 10 ones are equal to 1 ten and how to exchange.

An example using a bar model



They may use place value counters, Base 10, Numicon, count on their fingers or use their knowledge of place value to calculate the answer. They will need to understand that 10 ones are equal to 1 ten and how to exchange.

An example using a number line



Step to success:

1. First draw out your number line putting the first number of the calculation at the start.
2. Draw your first jump. This jump will be the ones that are being added from the second number e.g. 3. Add that on to the first number e.g. $38 + 3$. Write what the total is underneath the number line e.g. 41.
3. Then complete the second jump. This jump will be the tens that are being added from the second number. E.g. 20. $41 + 20$. Write the total underneath the number line.

Year 2 Subtraction

What the National Curriculum says: Subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers.

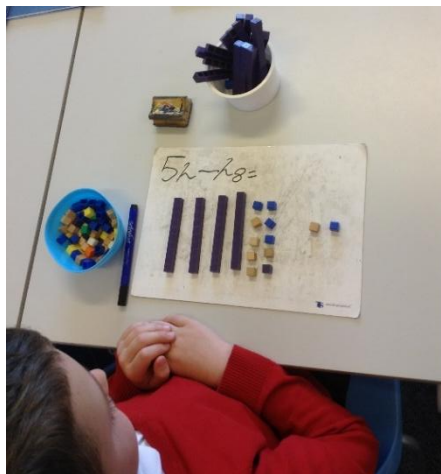
We also remind children that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

The Children will need to understand that 1 ten is equal to ten ones and that they may need to exchange when subtracting.

An example using Base 10 (Without exchanging from the tens):



An example using Base 10 (With exchanging from the tens):



Steps to success:

1. Make the first number in the calculation using Base 10.
2. The children need to take the ones away first (2-8). They should realise that you cannot do it so you have to exchange a ten stick for 10 ones.
3. Once this has been done the ones can be take away (12 - 8).
4. Then take the tens away that you are subtracting (40 - 20)
5. This will then leave the child with the answer. They then count up the tens first e.g. 20.
6. Finally count on from the tens adding on the ones e.g. 21, 22, 23, 24.

An example drawing tens and ones using a place value chart (Without exchanging from the tens):

5	7	-	2	3	=	3	4

T	O
~~10~~ ~~10~~ 10 10 10	~~1~~ ~~1~~ ~~1~~ 1 1 1 1

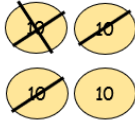
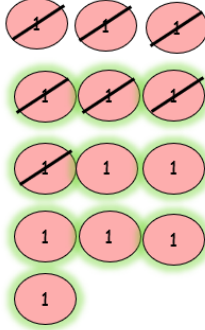
Steps to success:

1. Draw the first number out using tens and ones in the place value chart.
2. Next look at the second number and cross off the ones from the number you have drawn below e.g. 3 (It is very important that you always start with the ones).

3. Continue to look at the second number and cross off the tens from the number you have drawn below e.g. 2.
4. Next count up the ones that are left e.g. 4.
5. Then count up the tens that are left e.g. 3. Therefore the answer is 34.

An example drawing tens and ones using a place value chart (With exchanging from the tens):

4	3	-	2	7	=	1	6

T	O
	

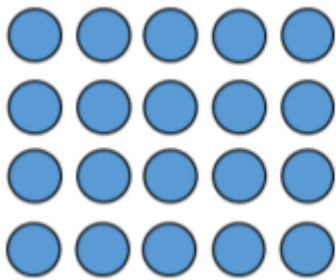
Steps to success:

1. Draw the first number out using tens and ones in the place value chart.
2. Next look at the second numbers ones, the children should recognise that they don't have enough ones to cross them off the number they have drawn. The children will therefore need to exchange one ten for ten ones. (See the 10 with an X crossed out replaced by 10 ones glowing green)
3. Once the children have exchanged the ten for tens ones they can cross off the ones for the number they are taking away e.g. 7.
4. Continue to look at the second number and cross off the tens from the number you have drawn below e.g. 2.
5. Count up how many ones are left. E.g. 6
6. Then count up how many tens are left e.g. 1. Therefore, the answer is 16.

Year 2 Multiplication

What the National Curriculum says: Complete multiplication calculations e.g. $3 \times 5 =$ (for the two, three, five and ten times tables)

An example drawing an array:



$$5 + 5 + 5 + 5 = 20$$

$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

Steps to success

4. Draw a row of 5 circles.
5. Then make sure you draw 3 more rows of 5 circles (This represents 4 rows of 5 which is the same as 4×5 and 5×4)
6. Finally cross off the circles as you count them up.

An example counting on your fingers



Steps to success

1. Put the number on your fingers that you can't count in. (8)
2. Then count in multiples of the other number. (5)
3. Put your fingers down as you count until to have counted all of your fingers to get the answer.

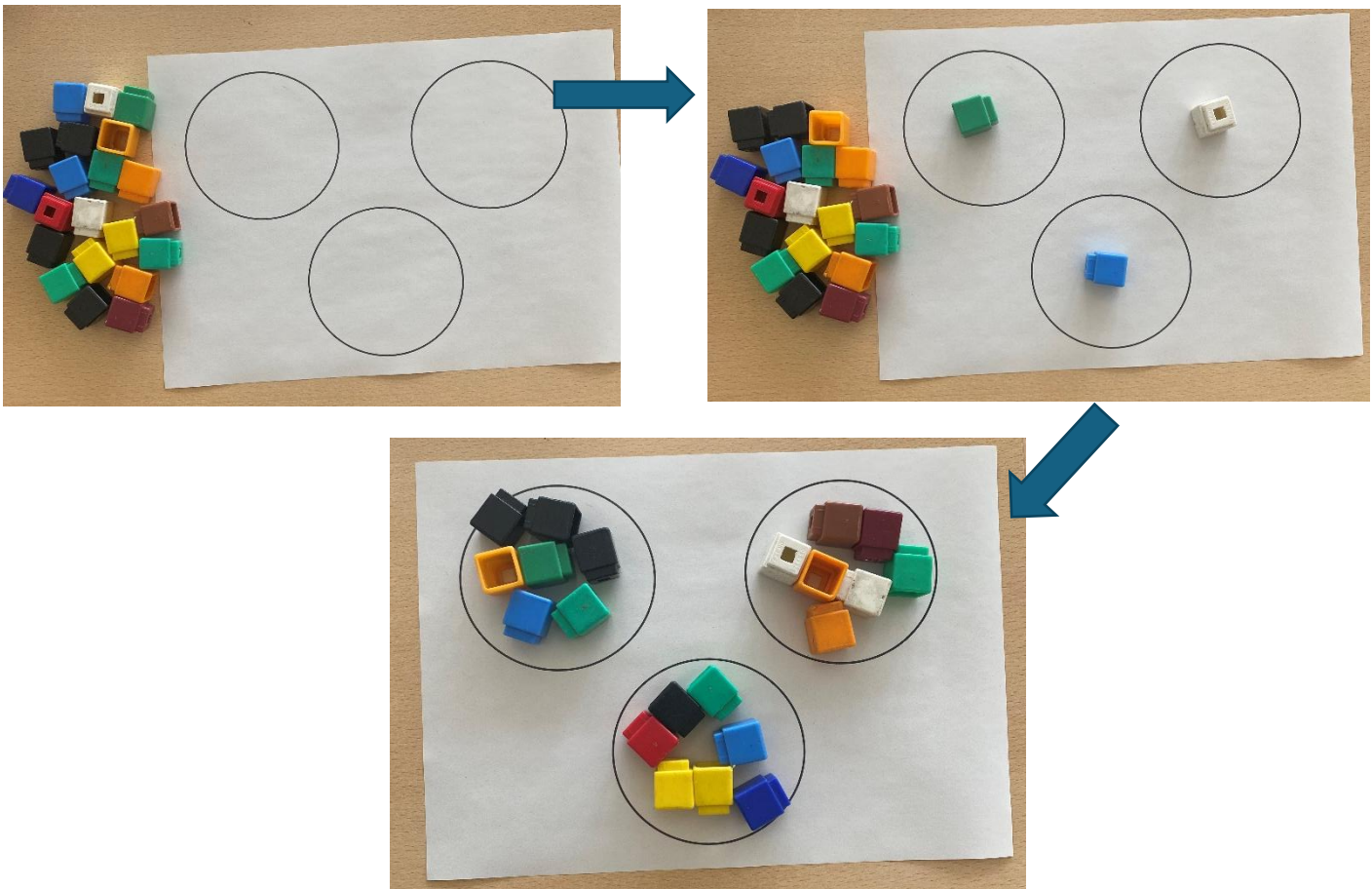
Year 2 Division

What the National Curriculum says: Complete division calculations e.g. $10 \div 2 =$ (for the two, five and ten and three timetables)

We also remind the children that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

An example use concrete objects:

$$21 \div 3 =$$

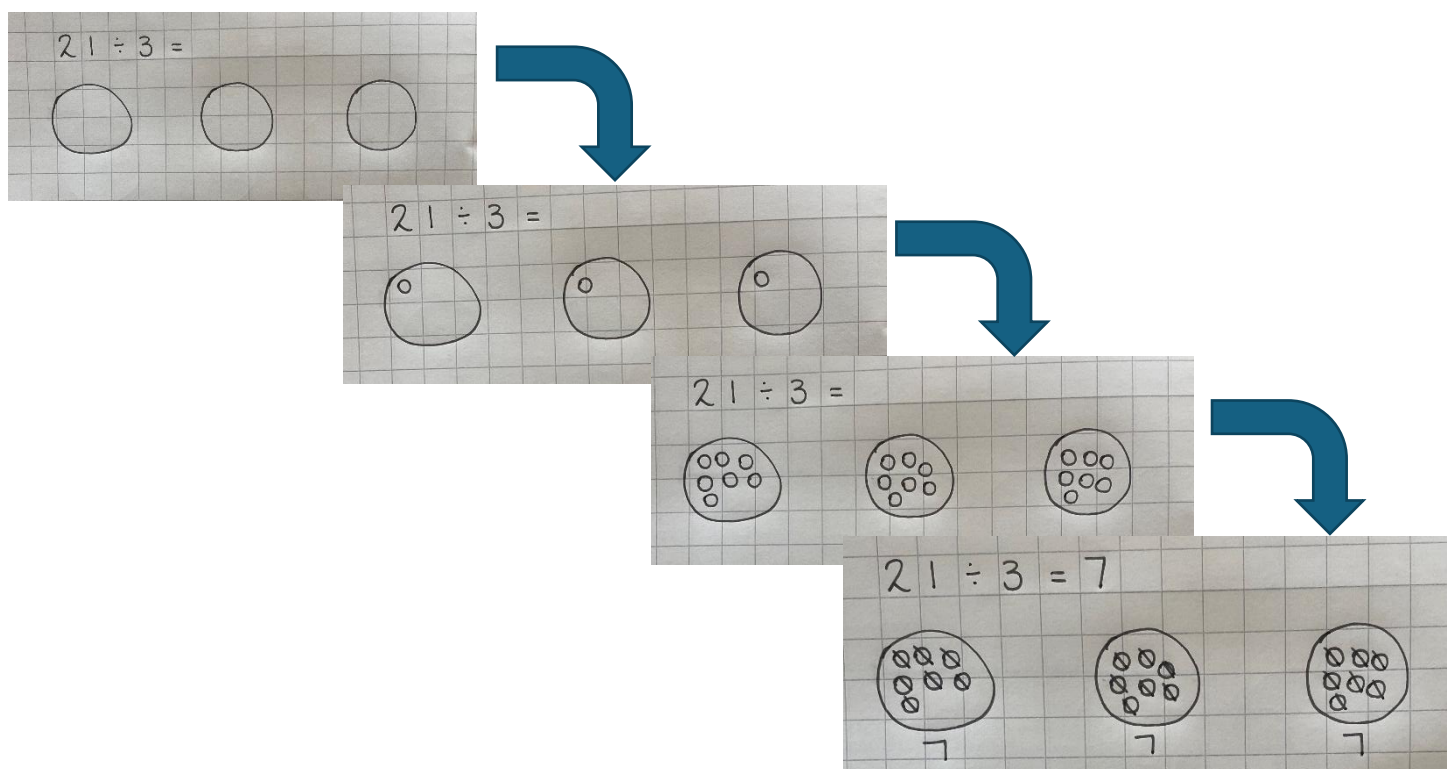


Steps to success

1. Draw the number of circles that you are dividing by to create the groups. (Make sure these are big enough to share the amount in) In the example this is the number 3.
2. Count out 21 cubes/objects as this is the amount you are sharing.
3. Share the first number (21) equally across the circles one at a time in each circle until you count up to 21.
4. Check that there is the same amount in each circle.

5. Count up one of the groups to get your answer.

An example drawing a pictorial method



Steps to success

6. Draw the number of circles that you are dividing by to create the groups. (Make sure these are big enough to share the amount in) In the example this is the number 3.
7. Share the first number (21) equally across the circles by drawing a small circle in each circle until you count up to 21.
8. Check that there is the same amount in each circle and write this underneath each group.
9. Count up one of the groups to get your answer.

An example counting on your fingers using multiplication facts



Steps to success

1. Count up in multiples of the number that are dividing by (5). Use your fingers to show how many multiples you have counted.
2. Count up until you reach the number that you should be sharing (45)
3. Look at how many fingers you are holding up which will tell you the answer (9).

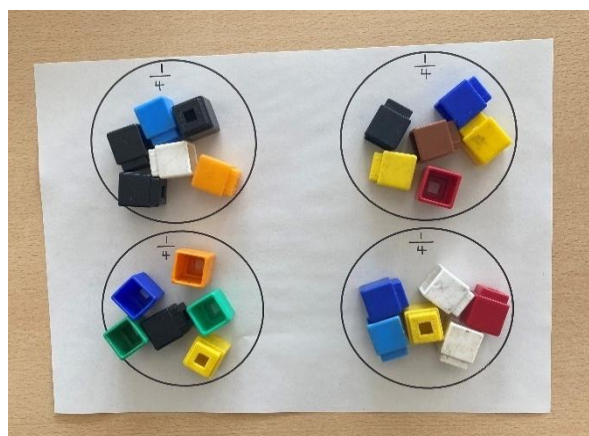
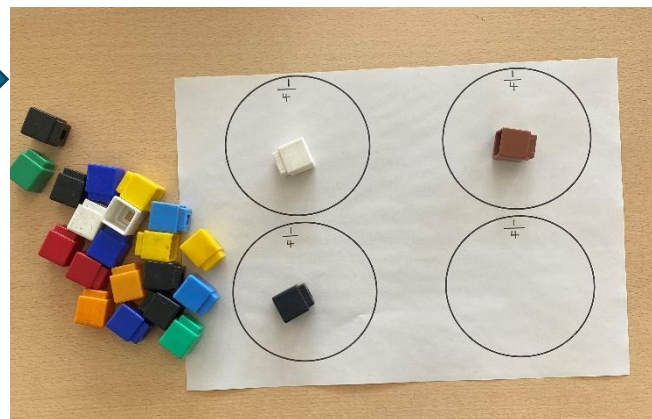
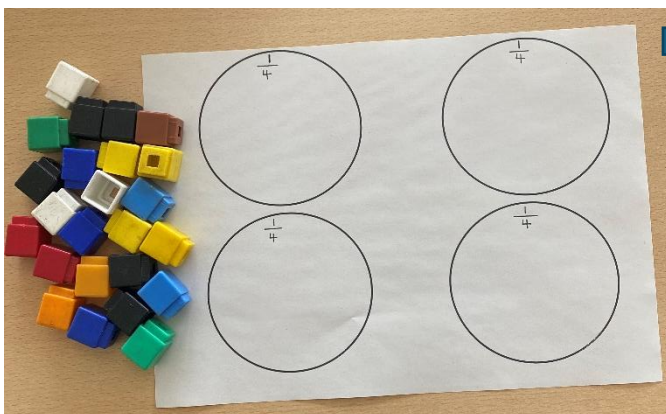
Year 2 Fractions

What the National Curriculum says: Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.

Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

An example of finding a fraction of a quantity using concrete objects:

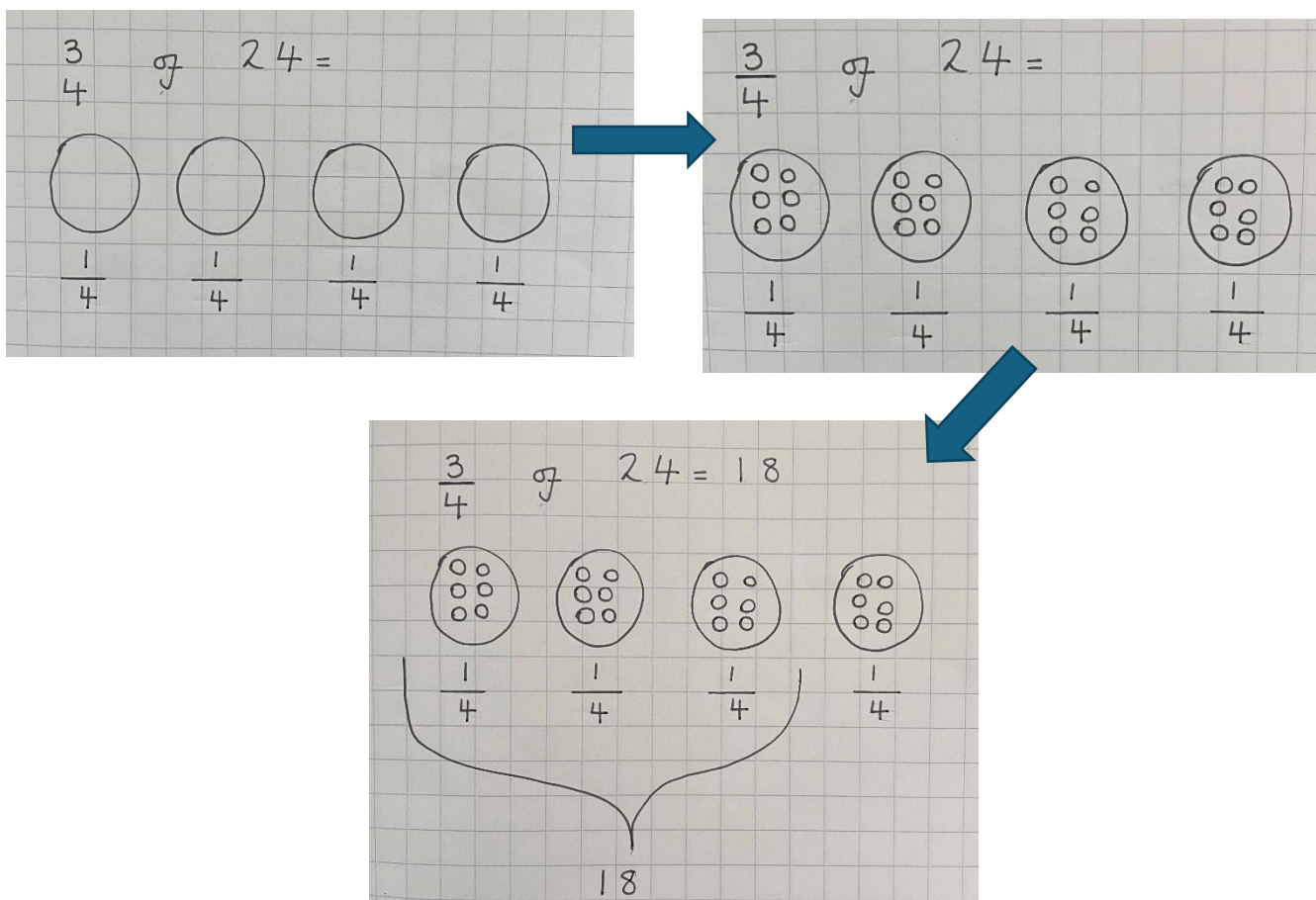
$$\frac{3}{4} \text{ of } 24 =$$



Steps to success:

1. Draw circles to represent the denominator. E.g. 4 and label them with the fraction.
2. Then share the whole amount between the circles equally. E.g. share 24 between the 4 circles.
3. Check each circle to ensure there are equal amounts in each of them. E.g. 6 in each.
4. After that, look at the numerator to work out how many of the circle you need to count up. E.g. 3.
5. Finally, this will give you your answer. E.g. 18.

An example of finding a fraction of a quantity pictorially:



Steps to success:

1. Draw circles to represent the denominator. E.g. 4 and label them with the fraction underneath.
2. Then share the whole amount between the circles equally. E.g. share 24 between the 4 circles.
3. Check each circle to ensure there are equal amounts in each of them. E.g. 6 in each.
4. After that, look at the numerator to work out how many of the circle you need to count up. E.g. 3.
5. Finally, this will give you your answer. E.g. 18.

Year 3 Addition

What the National Curriculum says: Add numbers with up to three digits, using formal written methods.

An example using column method with a place value chart (Where no exchanging is required):

	H	T	O		
	3	3	5		
+	2	5	4		
	5	8	9		

H	T	O
100 100 100	10 10 10	1 1 1 1 1
100 100	10 10 10 10	1 1 1 1

Steps to success:

1. Add together the numbers in the ones column on your place value chart and write the answer in your column method.
2. Add together the numbers in the tens column on your place value chart and write the answer in your column method.
3. Add together the numbers in the hundreds column on your place value chart and write the answer in your column method.

It is important for the children to remember the place value of each of the numbers:

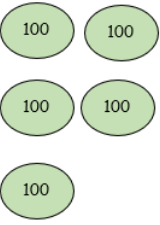
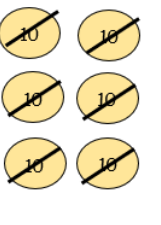
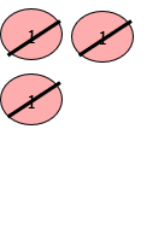
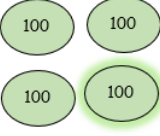
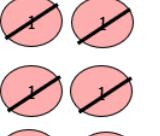
Adding the ones together is $5+4$.

Adding the tens together represents adding $30 + 50$.

Adding the hundreds together represents adding $300 + 200$.

An example using column method and a place value chart (Where exchanging is required):

	H	T	O	
	5	6	3	
+	3	5	8	
	9	2	1	
	~~1~~	~~1~~		

H	T	O
		
		

Steps to success:

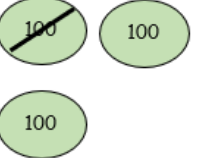
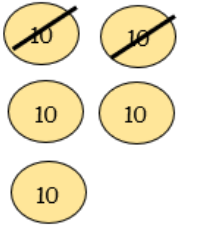
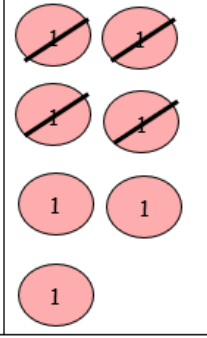
1. Place the counters on the place value chart to represent both numbers.
2. Add together the numbers in the ones column. On their place value chart if there are more than 10 ones they need to cross out 10 ones and place an extra 10s counter in the next column to show the exchange (the green glowing counter)
3. On the column method they need to write how many counters are left in the ones and write the exchange under the ten's column.
4. Then find the total of counters on your place value chart in the tens column. If there are more than 10 you need to cross 10 out and add an extra hundreds counter in the hundreds to show the exchange.
5. On your column method write how many tens there are (in this case 2) so this will be put in the answer box and the exchange below the line. Cross out your exchange from below the tens so that you know you have included this.
6. Add together the numbers in the hundreds column on your place value chart and any that have been exchanged.
7. On your column method write down how many are in the hundreds column in total. Again, cross out any exchanges on your column method to remind yourself that it has been added.

Year 3 Subtraction

What the National Curriculum says: Subtract numbers up to 3 digits, using formal written methods.

An example using the column method and a place value chart (Without exchanging from the tens):

	H	T	O	
	3	5	7	
-	1	2	4	
	2	3	3	

H	T	O
		

Steps to success:

1. The largest number must always be on the top.
2. Draw the counters in the place value chart to represent the first number in the calculation. E.g. 357. This should always be the largest number in the calculation.
3. Starting with the ones column, subtract the bottom digit from the top digit. In your place value chart cross off the number of ones you are taking away from the largest number e.g. 4. Write the total number that is left in the ones column in the answer box.
4. Moving to the tens column, subtract the bottom digit from the top digit. In your place value chart cross off the number of tens you are taking away from the largest number e.g. 2. Write the total number that is left in tens column in the answer box.
5. And finally, in the hundreds column, subtract the bottom digit from the top digit. In your place value chart, cross off the number of hundreds you are taking away from the largest number e.g. 1. Write the total number that is left in hundred column in the answer box.

An example using the column method (With exchanging):

	H	T	O	
	8	12	1	
	~~9~~	~~3~~	5	
-	2	6	8	
	6	6	7	

H	T	O
~~100~~ ~~100~~	~~10~~ ~~10~~	~~1~~ ~~1~~
~~100~~ ~~100~~	~~10~~ ~~10~~	~~1~~ ~~1~~
100 100	~~10~~ ~~10~~	~~1~~ ~~1~~
100 100	~~10~~ 10	~~1~~ ~~1~~
100	10 10	1 1
	10 10	1 1
	10	1

Steps to success:

1. First draw the counters in the place value chart to represent the first number in the calculation. E.g. 935.
2. Subtract 8 from 5 (or $5 - 8$). As this is not possible, we need to exchange one ten from the tens column for 10 ones. On the place value chart one ten has had a cross put over it to show this exchange and has been exchanged with 10 green glowing ones counters in the ones column. On our column method we need to cross out the 3 and change this to a 2 and place a 1 next to the 5 to show this exchange. This number is now 15. ($10 + 5 = 15$).
3. Subtract 8 from $15 = 7$. On the place value chart use one slash to cross out the counters. Count up how many counters are left. Place this total in the ones column in the column method.
4. Subtract 6 from 2 (or $2 - 6$. Remember that this is actually 60 from 20 or $20 - 60$). We can't do this, so we need to exchange from the hundreds column. On the place value chart one hundred has had a cross put over it to show this exchange and has been exchanged for 10 green glowing tens counters in the tens column.
5. Now, we can subtract 6 from 12 (again, remembering that this actually represents 60 from 120). Place the answer in the hundreds column. On the place value chart use one slash to cross out the counters. Count up how many counters are left. Place this total in the tens column in the column method.
6. Now subtract 2 from 8, (remembering this is representing 200 from 800). On the place value chart use one slash to cross out the counters. Count up how

many counters are left. Place this total in the hundreds column in the column method.

Year 3 Multiplication

What the National Curriculum says: Begin to multiply a 2 digit number by a 1 digit number, using formal written methods.

In multiplication, children complete an **intermediate stage** before progressing to a shortened version of multiplication, in order for them to understand the why it is being done in this way.

An example using a place value chart:

H	T	O
		
		
		
		
1	2	8

Steps to success:

1. First you need to draw a place value chart like the example above. They will need to draw the number of rows for the number they are multiply by (in this example 4). When multiplying a 2-digit number by a 1-digit number always draw a hundreds column as often they will need to exchange 10 tens for 1 hundred.
2. Draw in each row the number you are multiplying (in this example 32)
3. Now add up your ones (if there are more than 10 ones you will need to exchange 10 ones for 1 ten). Write the answer in the ones column
4. Then add up the tens column. If there are more than 10 tens you will need to exchange 10 tens for 1 hundred. Now write your answer in the tens column.
5. If there are hundreds in the hundred column write the total in the hundred column.

Intermediate stage:

					H	T	O							
						3	2							
				X			4							
							8		(4 x 2)					
				+	1	2	0		(4 x 30)					
					1	2	8							

Steps to success:

6. First you need to set out the calculation. As we are multiplying by a 2-digit number the children need to recognise what calculations they are doing. E.g. in 4×32 we will calculate 4×2 and then 4×30 . In the intermediate stage these will need writing at the side to show this. Please see the brackets in the example.
7. Multiply the bottom number by the digit in the ones, placing the full answer below the line.
8. Now multiply the bottom number by digit in the tens (in this case 4×30), placing the answer under the previous answer.
9. Add the two together for the final answer.

Short multiplication:

					H	T	O							
						3	2							
				x			4							
					1	2	8							

Steps to success:

1. Multiply the bottom number by the digit in the ones (in this example 4×2).
2. Place the answer in the ones' column.
3. Multiply the bottom number by the digit in the tens (4×3 . However, remember this actually represents 4 times 30).
4. Place the numbers in the correct columns.

Children who are confident with this method can progress on to 'carrying'.

					H	T	O								
						/									
						2									
				x		2	8								
							3								
						8	4								

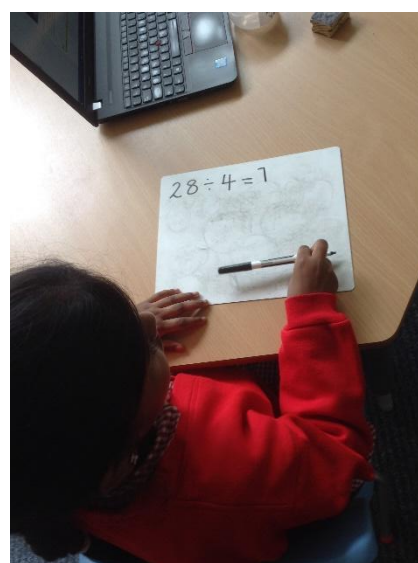
Steps to success:

1. Multiply the bottom number by the digit in the ones (in this example, $3 \times 8 = 24$).
2. As the answer is above 10, place the ones in the ones column (the 4) and 'carry' the 2 (20) above the tens number. (Note: This is different from addition and subtraction where we carry below the line).
3. Multiply the bottom number by the digit in the tens (in this example, 3×2 . However, remember this actually represents 3 times 20).
4. Add the 2 which you carried before, crossing it out when counted.
5. Place the numbers in the correct columns.

Year 3 Division

What the National Curriculum says: Begin to divide a 2-digit number by a 1-digit number. Begin to use a formal written method.

An example counting on your fingers using multiplication facts



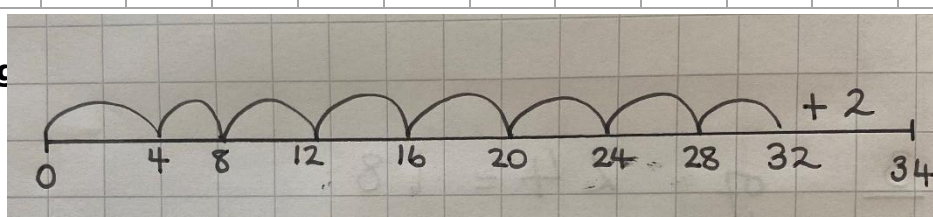
Steps to success

1. Count up in multiples of the number that you should be dividing by (4). Use your fingers to show how many multiples you have counted.
2. Count up until you reach the number that you should be sharing (28)
3. Look at how many fingers you are holding up which will tell you the answer (7).

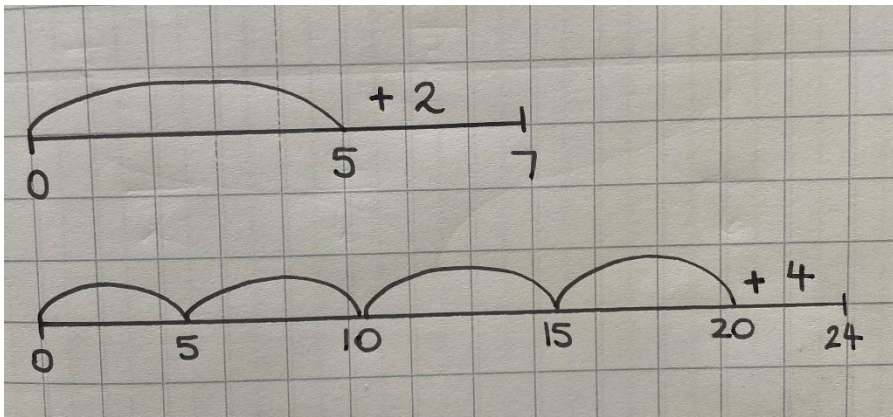
If the child is not confident with their times tables they may use the pictorial method that was shown in the year 2 section until they are confident with their times tables.

An example using a number line when division involves remainders

		3	4	÷	4	=	8	r	2					



An example using a formal written method (Bus Stop Method) with concrete/pictorial representations to support

[illegible]

Steps to success:

1. Draw the 'bus stop' (black lines)
2. Place the number you're dividing by on the left of the bus stop.
3. Place the number you're dividing on the inside of the bus stop.
4. How many times does the number you're dividing by go into the first digit? Use a number line to calculate (see example pictures above). Write it above the line. If there is a remainder, place the value of the remainder next to the next number. The remainder and the next number make the next number to be divided by (24 in the example above).
5. How many times does it go into the second digit? Use a number line to calculate. Write it above the line. If there are any left over then this is a remainder and should be placed above the line after an 'r' to show remainder.

An example using a formal written method (Bus Stop Method)

						1	4	r	1				7	
													1	4
													2	1
													2	8
													3	5
													4	2
													4	9
													5	6
													6	3
													7	0
													7	7
													8	4

Steps to success:

1. Draw the 'bus stop' (black lines)
2. Place the number you're dividing by on the left of the bus stop.
3. Place the number you're dividing on the inside of the bus stop.
4. How many times does the number you're dividing by go into the first digit?
Write it above the line. If there is a remainder, place the value of the remainder

next to the next number. The remainder and the next number make the next number to be divided by (29 in the example above).

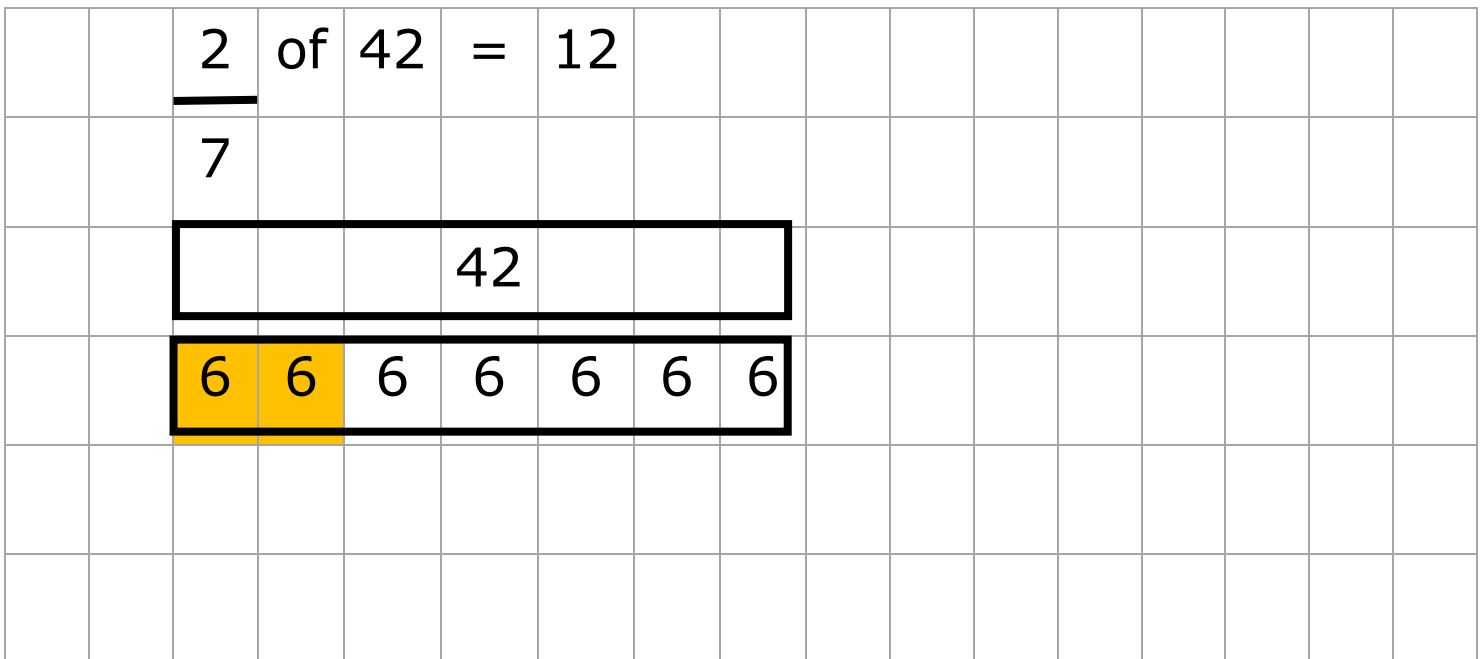
5. How many times does it go into the second digit? Write it above the line. If there are any left over then this is a remainder and should be placed above the line after an 'r' to show remainder.

The children may want to write the times table they will use at the side of the calculation to support them. E.g. in this example they may want to write their 7 times tables down the side (see above)

Year 3 Fractions

What the National Curriculum says: Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.

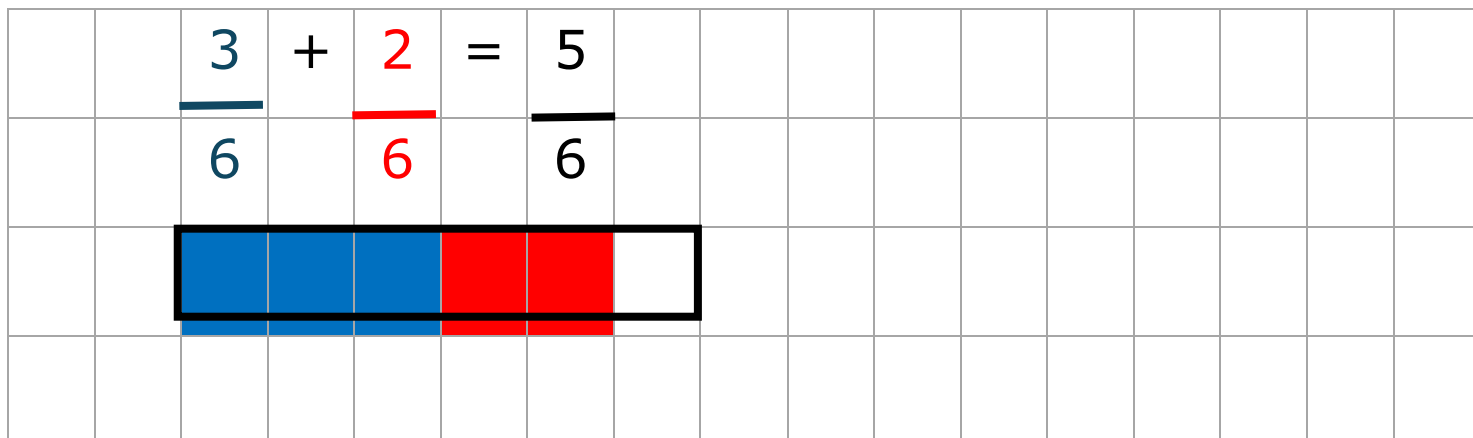
An example of finding a fraction of a quantity:



Steps to success:

1. First, you need to draw a bar model. This can be done by looking at what the denominator is e.g. 7 and drawing two bars on top of each other the length of 7 squares.
2. Split the bottom half into the number of sections shown by the denominator e.g. 7 sections.
3. In the top bar goes the whole number e.g. 42.
4. Then underneath work out how many 7s are in 42 which is 6. Write 6 in each box as $6 \times 7 = 42$.
5. Then shade in how many 7ths are needed e.g. $2/7$ which means you need to work out $6 + 6 = 12$.
6. Therefore the answer will be 12.

An example of adding fractions with the same denominator:



Steps to success:

1. First, draw a picture and split it into the number shown by the denominator e.g. 6.
2. Next, add $3/6$ to the shape by colouring in the number of parts shown by the numerator, e.g. 3.
3. Then add $2/6$ to the picture. E.g. add the numerators $3 + 2 = 5$
4. Therefore the answer will be $5/6$.

When the children are confident with the pictorial representation they will then move onto an abstract method:

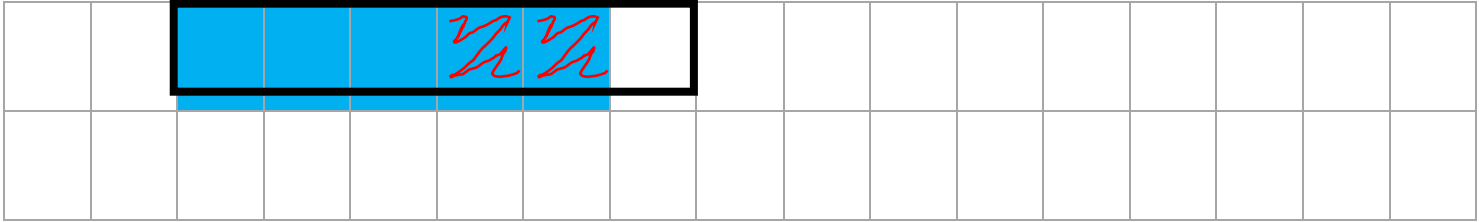
		3	+	2	=	5										
		6		6		6										

Steps to success:

1. First, you need to add the numerators. E.g. $3 + 2 = 5$
2. Therefore the answer will be $5/6$.

An example of subtracting fractions with the same denominator:

		5	-	2	=	3										
		6		6		6										



Steps to success:

1. First, you need to draw a picture to represent $\frac{5}{6}$.
2. Then subtract 2 of the 5 that are shaded. E.g. subtract the numerators $5 - 2 = 3$
2. Therefore the answer will be $\frac{3}{6}$.

When the children are confident with the pictorial representation from Year 3 they will then move onto an abstract method:

Steps to success:

1. First, you need to subtract the numerators. e.g. $5 - 2 = 3$
2. Therefore the answer will be $\frac{3}{6}$.

Year 4 Addition

What the National Curriculum says: Add numbers up to four digits, using formal written methods.

An example using the column method:

				T	H	T	O								
				9	9	8	5								
		+		3	4	9	6								
				1	3,	4	8	1							
					~~1~~	~~1~~	~~1~~								

Steps to success:

1. Add together the numbers in the ones column. If the answer is above 10, exchange the ten ones for one ten, placing a 1 below the line in the tens column.
2. Add together the numbers in the tens column and the number exchanged previously. Cross out the exchange once added so that you know you have added it. Write the total in the box and exchange again if necessary writing the exchange below the line in the next column.
3. Add together the numbers in the hundreds column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box and exchange below the line if necessary.
4. Add together the numbers in the thousands column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box.

Year 4 Subtraction

What the national curriculum says: Subtract numbers up to 4 digits, using formal written methods.

An example using the column method:

				T	H	T	O								
					8	12	1								
				5	~~9~~	~~3~~	5								
			-	3	2	6	8								
				2	6	6	7								

Steps to success:

1. Subtract 8 from 5 (or $5 - 8$). As this is not possible, we need to exchange one 10 from the tens column for ten ones by placing a 1 next to the 5. This number is now 15. ($10 + 5 = 15$). We need to cross out the 3 tens and change it to 2 tens to show that we have exchanged.
2. Subtract 8 from 15 = 7. Place this number in the ones column.
3. Subtract 6 from 2 (or $2 - 6$). Remember that this is actually 60 from 20 or $20 - 60$). We can't do this, so we need to exchange from the hundreds column. Make sure to remember to cross out the hundreds changing them from 9 to 8 and putting your exchange at the side of the 2 tens to make 12.
4. Now, we can subtract 6 from 12 (again, remembering that this actually represents 60 from 120). Place the answer in the hundreds column.
5. Now subtract 2 from 8, (remembering this is representing 200 from 800). Place the answer in the hundreds column.
6. Finally, subtract 3 from 5 (remembering this is representing 3,000 from 5,000). Place the answer in the thousands column.

Year 4 Multiplication

What the National Curriculum says: multiply a 3 digit number by a 1 digit number, using formal written methods.

Note: Some children in year 4 may need to go back to the intermediate stage shown in Year 3 before progressing to 3 digits multiplied by 1.

An example using the short multiplication method:

				T	H	T	O								
					4	3	2								
			x				3								
				1	2	9	6								

Steps to success:

1. Multiply the bottom number by the top digit in the ones column (in this example 3×2).
2. Place the answer in the ones' column.
3. Multiply the bottom number by the digit in the tens column (3×3 . However, remember this actually represents 3×30).
4. Place the answer in the tens column.
5. Multiply the bottom number by the digit in the hundreds column (3×4 . However, remember this is actually representing 3×400).
6. Place the answer in the answer box.

				T	H	T	O								
						~~1~~									
					5	2	6								
			x				3								
				1	5	7	8								

Steps to success:

1. Multiply the bottom number by the digit in the ones column (in this example 3 x 6).
2. The answer in this example is 18 therefore 8 needs to be placed in the ones and the ten needs to be placed above the tens column.
3. Multiply the bottom number by the digit in the tens column (3 x 2. However, remember this actually represents 3 x 20).
4. The answer is 6 but then we need to add on the exchange so 6+1 = 7. Remember to cross out the exchange once you have added it. Place the answer in the tens column.
5. Multiply the bottom number by the digit in the hundreds column (3 x 5. However, remember this is actually representing 3 x 500)
6. Place the answer in the answer box.

Year 4 Division

What the National Curriculum says: Divide numbers up to 3 digits by one digit using a formal written method.

An example using the 'Bus Stop' method:

				2	3	1								
			3	6	9	3								

Steps to success:

6. Draw the 'bus stop' (black lines)
7. Place the number you're dividing by on the left of the bus stop.
8. Place the number you're dividing on the inside of the bus stop.
9. How many times does the number you're dividing by go into the first digit?
Write it above the line?
10. How many times does it go into the second digit? Write it above the line.
11. Finally, how many times does it go into the third digit? Write it above the line. #

The children may want to write the times table they will use at the side of the calculation to support them. E.g. in this example they may want to write their 3 times tables down the side.

An example of the 'Bus Stop' method involving remainders:

				4	3	0	r3					
					1							
				4	7	2	3					

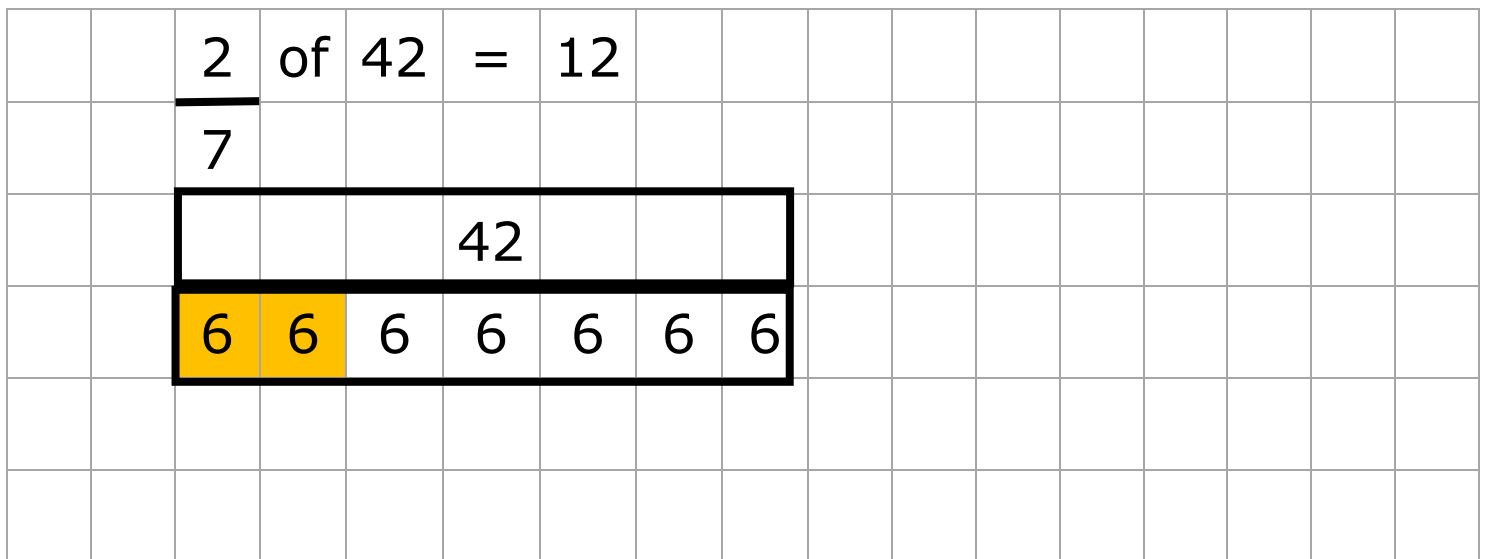
Steps to success:

1. Draw the 'bus stop' (black lines)
2. Place the number you're dividing by on the left of the bus stop.
3. Place the number you're dividing on the inside of the bus stop.
4. How many times does the number you're dividing by go into the first digit? Write it above the line. If there is a remainder, place the value of the remainder next to the next number. The remainder and the next number make the next number to be divided by (12 in the example above).
5. How many times does it go into the second digit? Write it above the line.
6. Repeat the same process with remainders if necessary.
7. If there is a remainder left at the end of the calculation then it should be written as a tiny r with the number next to it (as above).

Year 4 Fractions

What the National Curriculum says: Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. Add and subtract fractions with the same denominator.

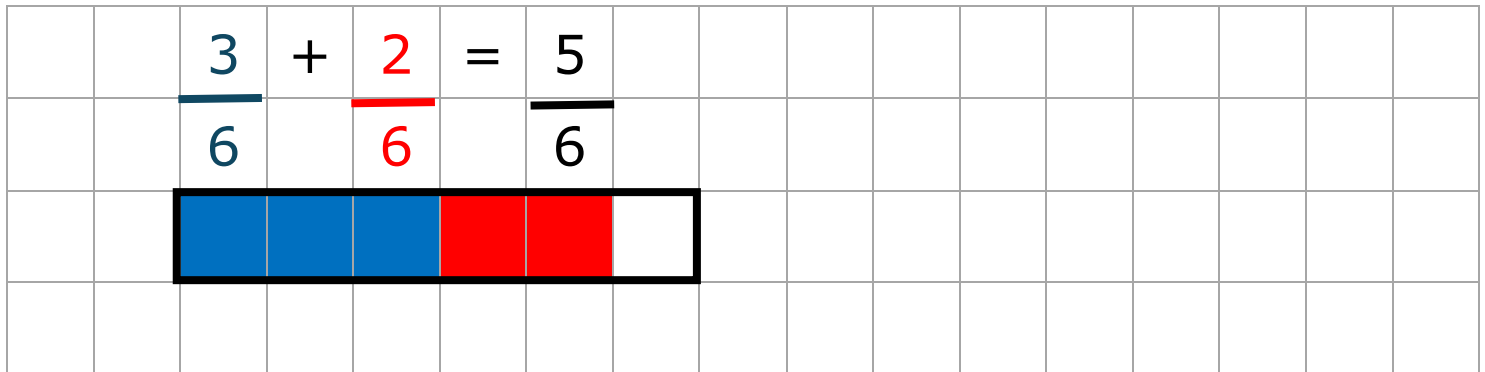
An example of finding a fraction of a quantity:



Steps to success:

7. First, you need to draw a bar model. This can be done by looking at what the denominator is e.g. 7 and drawing two bars on top of each other the length of 7 squares.
8. Split the bottom half into the number of sections shown by the denominator e.g. 7 sections.
9. In the top bar goes the whole number e.g. 42.
10. Then underneath work out how many 7s are in 42 which is 6. Write 6 in each box as $6 \times 7 = 42$.
11. Then shade in how many 7ths are needed e.g. $2/7$ which means you need to work out $6 + 6 = 12$.
12. Therefore the answer will be 12.

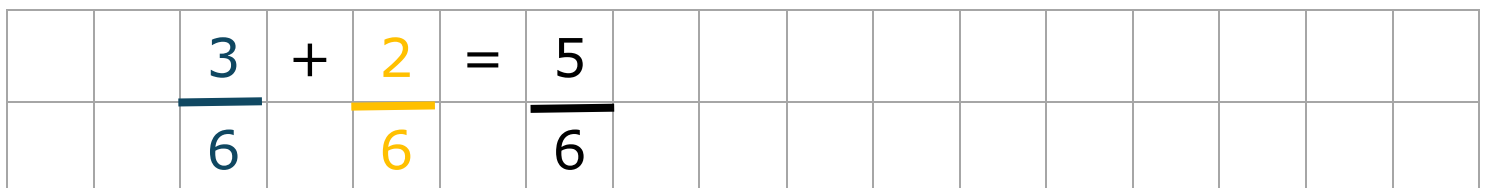
An example of adding fractions with the same denominator:



Steps to success:

5. First, draw a picture and split it into the number shown by the denominator e.g. 6.
6. Next, add 3/6 to the shape by colouring in the number of parts shown by the numerator, e.g. 3.
7. Then add 2/6 to the picture. E.g. add the numerators $3 + 2 = 5$
8. Therefore the answer will be 5/6.

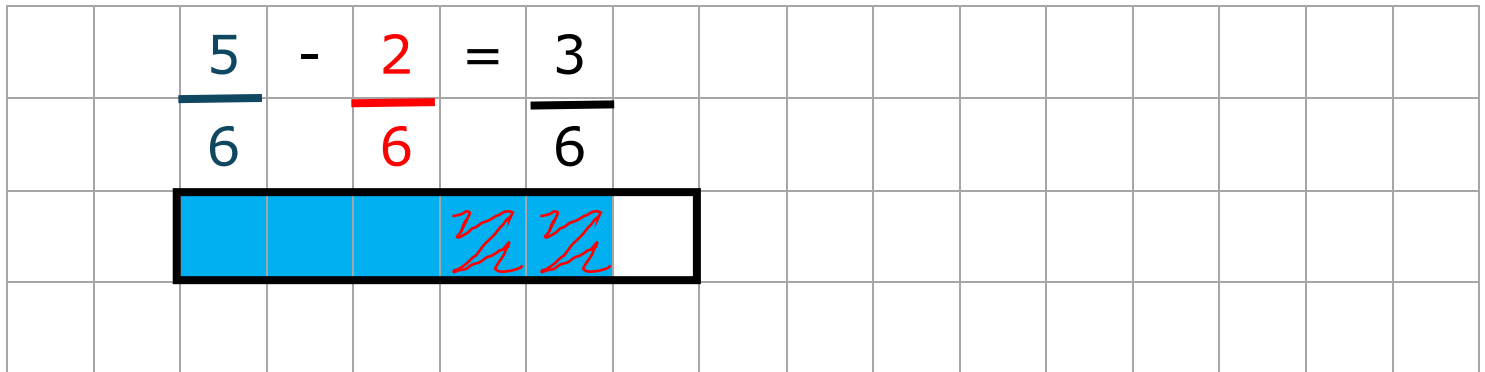
When the children are confident with the pictorial representation they will then move onto an abstract method:



Steps to success:

1. First, you need to add the numerators. E.g. $3 + 2 = 5$
2. Therefore the answer will be 5/6.

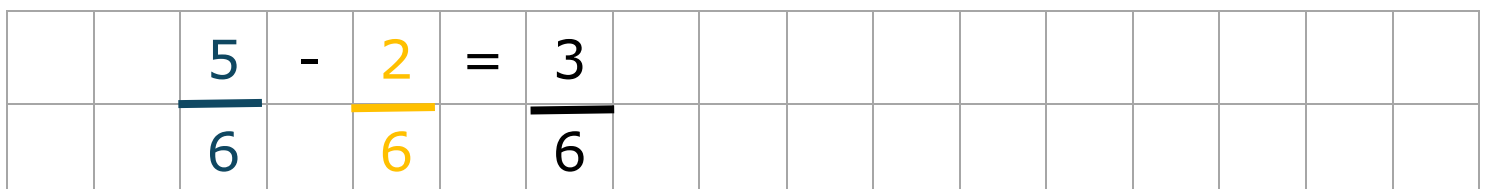
An example of subtracting fractions with the same denominator:



Steps to success:

1. First, you need to draw a picture to represent $5/6$.
2. Then subtract 2 of the 5 that are shaded. E.g. subtract the numerators $5-2 = 3$
2. Therefore the answer will be $3/6$.

When the children are confident with the pictorial representation from Year 3 they will then move onto an abstract method:



Steps to success:

1. First, you need to subtract the numerators. e.g. $5-2 = 3$
2. Therefore the answer will be $3/6$.

Year 5 Addition

What the National Curriculum says: Add together more than four digits, using formal written methods.

An example using the column method:

			10Th	T	H	T	O								
			5	9	9	6	3								
	+		4	3	7	3	9								
		1	0	3,	7	0	2								
			~~1~~	~~1~~	~~1~~	~~1~~									

Steps to success:

1. Add together the numbers in the ones column. If the answer is above 10, exchange the ten ones for one ten, placing a 1 below the line in the tens column.
2. Add together the numbers in the tens column and the number exchanged previously. Cross out the exchange once added so that you know you have added it. Write the total in the box and exchange again if necessary writing the exchange below the line in the next column.
3. Add together the numbers in the hundreds column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box and exchange below the line if necessary.
4. Add together the numbers in the thousands column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box and exchange below the line if necessary.
5. Add together the numbers in the ten thousands column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box.

An example of the column method when adding decimals:

				T	O	.	T	H									T = Tenths
																	H = Hundredths
				4	6	.	6	8									
			+	2	6	.	5	9									
				7	3	.	2	7									
				~~1~~	~~1~~		~~1~~										

Year 5 Subtraction

What the National Curriculum says: Subtract numbers more than 4 digits, including decimals, using formal written methods.

An example using the column method:

				T	H	T	O	.	t	h							
					6	14	1		2	1							
				5	~~7~~	~~5~~	2	.	~~3~~	2							
			-	3	6	7	3	.	1	3							
				2	0	7	9	.	1	9							

Steps to success:

1. Subtract 3 from 2 (or 2-3). As this is not possible, we need to exchange one tenth from the tenths column for ten hundredths by placing a 1 next to the 2. This number is now 12. We need to cross out the 3 tenths and change it to 2 tenths to show that we have exchanged.

2. Subtract 3 from 12 = 9. Place this number in the hundredth's column.
3. Now we move onto the tenths column to subtract 1 from 2 (or 2-1). We are able to do this without exchanging. We then place the answer in the tenths column.
4. Then we move onto the ones column to subtract 3 from 2 (or 2-3). As this is not possible, we need to exchange one ten from the tens column for ten ones by placing a 1 next to the 2. This number is now 12. We need to cross out the 5 tens and change it to 4 tens to show that we have exchanged.
5. Subtract 3 from 12 = 9. Place this number in the ones column.
6. After we move onto the tens column to subtract 7 from 4 (4-7). As this is not possible, we need to exchange one hundred from the hundreds column for ten tens by placing a 1 next to the 4. This number is now 14. We need to cross out the 7 hundreds and change it to 6 hundreds to show that we have exchanged.
7. Subtract 7 from 14 = 7. Place this number in the ones column.
8. Now onto the hundred's column. We need to subtract 6 from 6. This is possible therefore we don't need to exchange. Place the answer in the hundred's column.
9. Finally subtract the thousands column. Subtract 3 from 5. The answer needs placing in the thousands column.

Tougher examples...

				T	H	T	O								
					5	~~1~~ 9	1								
				9	~~6~~	~~0~~	2								
			-	5	2	6	8								
				4	3	3	4								

Note: In the above example, you cannot take 8 from 2. So, like before you need to take 10 from the tens column. However, because this has no value, you then have to go to the hundreds column and take from there so that the tens column has value. Now you can take from the 10 column for the ones.

				T	H	T	O							
				5	~~1~~ 9	~~1~~ 9	1							
				~~6~~	~~0~~	~~0~~	1							
			-	1	2	6	5							
				4	7	3	6							

Year 5 Multiplication

What the National Curriculum says:

- Multiply 4 digits by one digit.
- Multiply 2 digits by 2 digits
- Begin to multiply 4 digits by 2 digits, all with formal written methods.

An example using the Intermediate stage:

Children in year 5 revisit in the intermediate stage to understand the methodology.

				T	H	T	O							
						2	2							
			X			2	3							
							6		(3 x 2)					
						6	0		(3 x 20)					
						4	0		(20 x 2)					

				+	4	0	0		(20 x 20)						
					5	0	6								
					1										

Steps to success:

1. Multiply the bottom digit in the ones by the top digit in the ones (3 x 2 in this example), placing the full answer below the line.
2. Multiply the bottom digit in the ones by the top digit in the tens, placing the full answer below the previous answer.
3. Multiply the bottom digit in the tens by the top digit in the ones (20 x 2 in this example), placing the full answer under the previous answer.
4. Multiply the bottom digit in the tens by the top digit in the tens (20 x 20 in this example), placing the full answer under the previous answer.
5. Add all the answers together for the final answer. (**Note:** because we are adding the answers together here, we go back to carrying below the line).

An example using the Short Multiplication method:

				T	H	T	O								
						2	2								
				x		2	3								
						6	6		(3 x 22)						
				+	4	4	0		(20 x 22)						
					5	0	6								
					1										

1. Multiply the bottom digit in the ones by the top digit in the ones (3 x 2 in this example).
2. Multiply the bottom digit in the ones by the top digit in the tens (3 x 2 in this example).
3. Place a 0 (a place holder) in the ones column on the 2nd line.
4. Multiply the bottom digit in the tens by the top digit in the ones.
5. Multiply the bottom digit in the tens by the top digit in the tens.
6. Add both answers together.

				T	H	T	O							
						~~31~~								
						5	6							
			x			3	5							
					2	8	0			(5 x 56)				
			+	1	6	8	0			(30 x 56)				
				1	9	6	0							
					1									

1. Multiply the bottom digit in the ones by the top digit in the ones – carry above the tens number.
2. Multiply the bottom digit in the ones by the top digit in the tens and add anything which has been carried over. (Cross any carrying out once it has been added to avoid any confusion later)
3. Place a 0 (a place holder) in the ones column on the 2nd line.
4. Multiply the bottom digit in the tens by the top digit in the ones – if anything needs to be carried, do so above the tens number.
5. Multiply the bottom digit in the tens by the top digit in the tens – adding any that have been carried over.
6. Add both answers together.

				T	H	T	O							
					~~2~~ 1	~~2~~ 1								
					2	3	4							
			x			3	6							
				1	4	0	4		(6 x 234)					
			+	7	0	2	0		(30 x 234)					
				8	4	2	4							

			10 ^t h	T	H	T	O							
				~~2~~ 1	~~3~~ 1	~~2~~ 1								
				3	3	4	3							
	x					4	7							
				2	3	4	0	1	(7 x 3343)					
	+	1	3	3	7	2	0		(40 x 3343)					
				1	5	7,	1	2	1					
				~~1~~										

Year 5 Division

What the National Curriculum says: Divide numbers up to 4 digits by one digit using a formal written method.

An example using the 'Bus Stop' method:

				2	3	1	2							
			3	6	9	3	6							

Steps to success:

12. Draw the 'bus stop' (black lines)
13. Place the number you're dividing by on the left of the bus stop.
14. Place the number you're dividing on the inside of the bus stop.
15. How many times does the number you're dividing by go into the first digit? Write it above the line.
16. How many times does it go into the second digit? Write it above the line.
17. How many times does it go into the third digit? Write it above the line.
18. Finally, how many times does it go into the fourth digit? Write it above the line.

An example of the 'Bus Stop' method involving remainders:

1 4 3 0 r3

4 5 7 2 3

1 1

Steps to success:

8. Draw the 'bus stop' (black lines)
9. Place the number you're dividing by on the left of the bus stop.
10. Place the number you're dividing on the inside of the bus stop.
11. How many times does the number you're dividing by go into the first digit? Write it above the line. If there is a remainder, place the value of the remainder next to the next number. The remainder and the next number make the next number to be divided by (17 in the example above).
12. How many times does it go into the second digit? Write it above the line.
13. Repeat the same process with remainders if necessary.
14. If there is a remainder left at the end of the calculation then it should be written as a tiny r with the number next to it (as above).

Year 5 Fractions

What the National Curriculum says: Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$].

Add and subtract fractions with the same denominator and denominators that are multiples of the same number.

Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.

An example of adding fractions with different denominators:

		3	+	2	=	1	$\frac{1}{6}$									
		$\frac{3}{6}$		$\frac{2}{3}$												
		3	+	4	=	7	=	1	$\frac{1}{6}$							
		$\frac{3}{6}$		$\frac{4}{6}$		$\frac{7}{6}$										

Steps to success:

1. First, you need to find a common denominator that both fractions can be changed to. e.g. 6.
2. Then you need to change the fractions to an equivalent fraction so they both have the same denominator. e.g. $\frac{2}{3} = \frac{4}{6}$.
3. Now you can add the fractions.
4. If the answer is an improper fraction, it must be changed to a mixed number. If it can be simplified, it must be simplified to its simplest form.

An example of subtracting fractions with different denominators:

		5	-	1	=	8									
		<u>7</u>		<u>3</u>		<u>21</u>									
		15	-	7	=	8									
		<u>21</u>		<u>21</u>		<u>21</u>									

Steps to success:

1. First, you need to find a common denominator that both fractions can be changed to. e.g. 21.
2. Then you need to change each fraction to an equivalent fraction. e.g. $5/7 = 15/21$ and $1/3 = 7/21$.
3. Now you can subtract the fractions.
4. If the answer can be simplified, it must be simplified to its simplest form.

An example of multiplying proper fractions and mixed numbers by whole numbers:

		2	x	4	=	8	=	1	2	=	1	1			
		<u>6</u>				<u>6</u>		<u>6</u>		<u>6</u>		<u>3</u>			

1
2
3
4
5
6

-

1
2
3
4
5
6

-

1
2
3
4
5
6

-

1
2
3
4
5
6

Steps to success:

1. First, you need to draw out 4 lots of $2/6$.
2. Then you need to add up how many shaded parts there are. e.g. 8.
3. Therefore the answer is $8/6$ as each whole shape is split into 6.

4. If the answer is an improper fraction, it must be changed to a mixed number. If it can be simplified, it must be simplified to its simplest form.

Once the children are confident with a pictorial method we will move onto an abstract method:

	1	$\frac{3}{8}$	x	3	=	3	$\frac{9}{8}$	=	4	$\frac{1}{8}$						

Steps to success:

1. First, you need to multiply the whole numbers together. e.g. $1 \times 3 = 3$
2. Then you need to multiply the fraction by the whole number. You will multiply the numerator by the whole number to give you 9 and the denominator stays the same. eg. $\frac{9}{8}$.
3. Therefore the answer is $3 \frac{9}{8}$. However this is an improper fraction and therefore needs changing. It will become $4 \frac{1}{8}$.
4. If it can be simplified, it must be simplified to its simplest form.

Year 6 Addition

What the National Curriculum says: Solve problems involving addition.

This should encompass all over the methods above, and should include:

- Adding more than two numbers together,
- Adding together more than two numbers of different sized digits,
- Adding together more than two decimals,
- Adding together decimals and whole numbers.

An example using the column method:

			10Th	T	H	T	O								
			9	9	7	8	3								
			4	3	7	3	9								
	+		3	4	7	9	2								
		1	7	8,	3	1	4								
		~~1~~		~~2~~	~~2~~	~~1~~									

Steps to success:

1. Add together the numbers in the ones column. If the answer is above 10, exchange the ten ones for one ten, placing a 1 below the line in the tens column.
2. Add together the numbers in the tens column and the number exchanged previously. Cross out the exchange once added so that you know you have added it. Write the total in the box and exchange again if necessary writing the exchange below the line in the next column.
3. Add together the numbers in the hundreds column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box and exchange below the line if necessary.
4. Add together the numbers in the thousands column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box and exchange below the line if necessary.

5. Add together the numbers in the ten thousand column and any that have been exchanged below. Again, cross out any exchanged numbers to remind yourself that it has been added. Write the total in the box.

An example using the column method including decimals:

When adding decimal numbers together, it is essential that all the digits are placed in the correct columns.

			10Th	T	H	T	O	.	T	H				
			5	9	9	6	3	.						
					2	1	8	.						
						2	2	.	4	1				
		+					9	.	0	6				
			6	0	2	1	2	.	4	7				
			~~1~~	~~1~~	~~1~~	~~2~~								

Year 6 Subtraction

What the National Curriculum says: Subtract numbers more than 4 digits, including decimals, using formal written methods.

An example using the column method:

				T	H	T	O	.	t	h				
					6	14	1		2	1				
				5	~~7~~	~~5~~	2	.	~~3~~	2				
			-	3	6	7	3	.	1	3				
				2	0	7	9	.	1	9				

Steps to success:

1. Subtract 3 from 2 (or 2-3). As this is not possible, we need to exchange one tenth from the tenths column for ten hundredths by placing a 1 next to the 2. This number is now 12. We need to cross out the 3 tenths and change it to 2 tenths to show that we have exchanged.
2. Subtract 3 from 12 = 9. Place this number in the hundredth's column.
3. Now we move onto the tenths column to subtract 1 from 2 (or 2-1). We are able to do this without exchanging. We then place the answer in the tenths column.
4. Then we move onto the ones column to subtract 3 from 2 (or 2-3). As this is not possible, we need to exchange one ten from the tens column for ten ones by placing a 1 next to the 2. This number is now 12. We need to cross out the 5 tens and change it to 4 tens to show that we have exchanged.
5. Subtract 3 from 12 = 9. Place this number in the ones column.
6. After we move onto the tens column to subtract 7 from 4 (4-7). As this is not possible, we need to exchange one hundred from the hundreds column for ten tens by placing a 1 next to the 4. This number is now 14. We need to cross out the 7 hundreds and change it to 6 hundreds to show that we have exchanged.
7. Subtract 7 from 14 = 7. Place this number in the ones column.
8. Now onto the hundred's column. We need to subtract 6 from 6. This is possible therefore we don't need to exchange. Place the answer in the hundred's column.

9. Finally subtract the thousands column. Subtract 3 from 5. The answer needs placing in the thousands column.

				T	H	T	O								
					5	~~1~~ 9	~~1~~								
				9	~~6~~	~~0~~	2								
			-	5	2	6	8								
				4	3	3	4								

Note: In the above example, you cannot take 8 from 2. So, like before you need to exchange 10 from the tens column. However, because this has no value, you then have to go to the hundreds column and exchange from there so that the tens column has a value. Now you can exchange from the tens column for the ones.

				T	H	T	O								
				5	~~1~~ 9	~~1~~ 9	1								
				~~6~~	~~0~~	~~0~~	1								
			-	1	2	6	5								
				4	7	3	6								

Year 6 Multiplication

What the National Curriculum says: Have a firm understanding of multiplying 4 digits by 2 digits, using formal written methods.

An example using short multiplication:

				T	H	T	O								
						2	2								
				x		2	3								
						6	6			(3 x 22)					
				+	4	4	0			(20 x 22)					
					5	0	6								
					1										

Steps to success:

7. Multiply the bottom digit in the ones by the top digit in the ones (3 x 2 in this example).
8. Multiply the bottom digit in the ones by the top digit in the tens (3 x 2 in this example).
9. Place a 0 (a place holder) in the ones column on the 2nd line.
10. Multiply the bottom digit in the tens by the top digit in the ones.
11. Multiply the bottom digit in the tens by the top digit in the tens.
12. Add both answers together.

Children who are confident with this method can progress on to 'exchanging'.

				T	H	T	O								
						~~3~~									
						5	6								
			X			3	5								
					2	8	0			(5 x 56)					
			+	1	6	8	0			(30 x 56)					
				1	9	6	0								
					~~1~~										

Steps to success

1. Multiply the bottom digit in the ones by the top digit in the ones – carry above the tens number.
2. Multiply the bottom digit in the ones by the top digit in the tens and add anything which has been carried over. (Cross any carrying out once it has been added to avoid any confusion later)
3. Place a 0 (a place holder) in the ones column on the 2nd line.
4. Multiply the bottom digit in the tens by the top digit in the ones – if anything needs to be carried, do so above the tens number.
5. Multiply the bottom digit in the tens by the top digit in the tens – adding any that have been carried over.
6. Add both answers together.

				T	H	T	O							
					~~2~~ 1	~~2~~ 1								
					2	3	4							
			X			3	6							
				1	4	0	4		(6 x 234)					
			+	7	0	2	0		(30 x 234)					
				8	4	2	4							

			10th	T	H	T	O							
				~~2~~ 1	~~3~~ 1	~~2~~ 1								
				3	3	4	3							
	X					4	7							
			2	3	4	0	1		(7 x 3343)					
	+	1	3	3	7	2	0		(40 x 3343)					
			1	5	7,	1	2	1						
				~~1~~										

Year 6 Division

What the National Curriculum says: Divide numbers up to 4 digits by a 2-digit number using a formal written method.

An example using the 'Bus Stop' method:

														1	2		
				0	1	3	5	r4						2	4		
					1	4	6							3	6		
		1	2		1	6	2	4						4	8		
														6	0		
														7	2		

Children may find it useful to write the multiples of 12 at the side of the calculation to help them.

The Children may be asked to write the remainder as a fraction or a decimal.

Using the example above this would mean that the answer would be:

Writing the remainder as a fraction: $135 \text{ r } \frac{4}{12}$ ($\frac{4}{12}$ is equivalent to $\frac{1}{3}$)

Writing the remainder as a decimal: $135.3\dot{3}$ (This is because $\frac{1}{3}$ as a decimal is $0.3\dot{3}$)

*The two examples show the top of the 'bus stop' between two lines on the squared paper. When children draw it in their books it should be completed like the diagram below:

		1	4					8	6	r 2				
	7	9	² 8				5	4	3	³ 2				

An example using long division:

The children will sometimes use long division when dividing by a 2-digit number.

		0	0	7	4	
		2	~~1~~ 9	1		
4	1	~~3~~	~~0~~	3	4	
		-	2	8	7	
			0	1	6	4
			-			
				1	6	4
				0	0	0

41	41	
+ 41	82	
82	123	
	164	
82	205	
+ 41	246	
123	287	
	328	
123	369	
+ 41		
164		
164	246	328
+ 41	+ 41	+ 41
205	287	369
x		
205	287	
+ 41	+ 41	
246	328	
x		

Steps to success:

1. Draw the 'bus stop' (black lines)
2. Place the number you're dividing by on the left of the bus stop.
3. Place the number you're dividing on the inside of the bus stop.
4. At the side calculate the multiples of that number using the column method (see right hand side for example)
5. How many times does the number you're dividing by go into the first digit? Write it above the line. If it goes in 0 times you then look at the first digit along with the second digit.
6. How many times does it go into the first and second digit? e.g. 30. If it is 0 again look at the first, second and third digit together. e.g. 303.
7. When a multiple of 41 can finally fit into the number write it down underneath and take it away. e.g. $303 - 287 = 16$. Above the line you need to write how many times 41 fit into the number e.g. 7.
8. Then you have to drop the next digit along e.g. 4 down to the answer from your subtraction e.g. 16 becomes 164. Work out how many times the number then fits into it. e.g. 4 and write it above. Repeat the process of subtracting the numbers e.g. $164 - 164$. In this example there is no remainders. Please see below for an example with a remainder.

When the children are confident in adding mentally they can then calculate the multiples mentally down the side like the example below.

												4	1
				0	0	7	4					8	2
											1	2	3
		4	1	~~3~~	~~0~~	3	4				1	6	4
				2	8	7					2	0	5
				0	1	6	4				2	4	6
					1	6	4				2	8	7
					0	0	0				3	2	8
											3	6	9

An example using long division with a remainders:

												2	6
				0	0	6	7	r	1	0		5	2
												7	8
		2	6	1	~~7~~	5	2					1	0
				1	5	6						1	3
				0	1	9	2					1	5
					1	8	2					1	8
					0	1	0					2	0

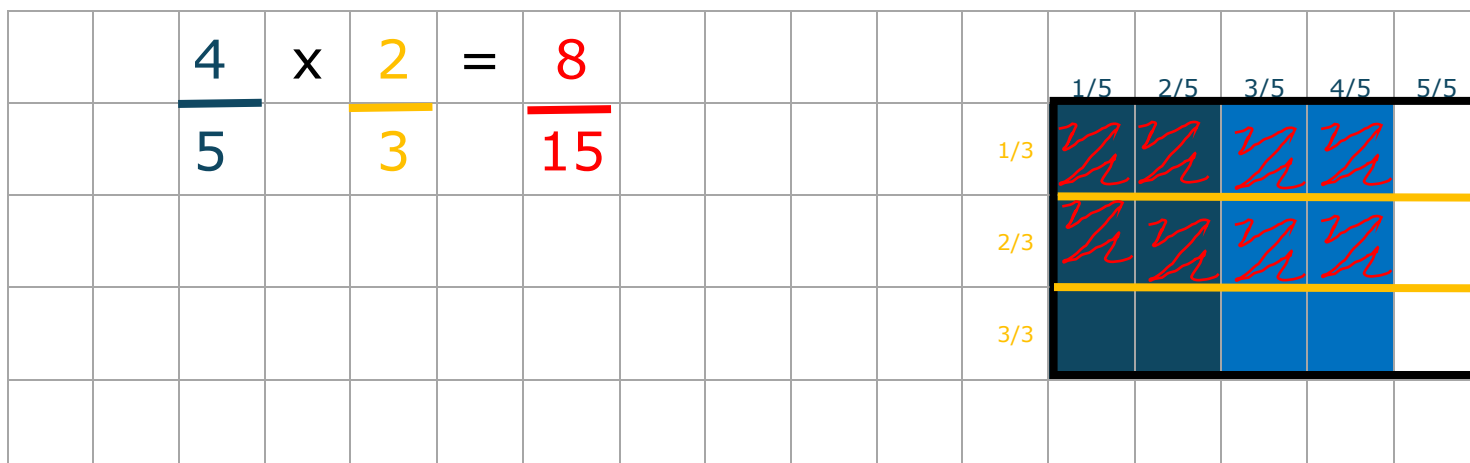
Steps to success:

1. Draw the 'bus stop' (black lines)
2. Place the number you're dividing by on the left of the bus stop.
3. Place the number you're dividing on the inside of the bus stop.
4. At the side count in multiples of that number (see right hand side for example)
5. How many times does the number you're dividing by go into the first digit?
Write it above the line. If it goes in 0 times you then look at the first digit along with the second digit.
6. How many times does it go into the first and second digit? e.g. 17. If it is 0 again look at the first, second and third digit together. e.g. 175.
7. When a multiple of 26 can finally fit into the number, write it down underneath and take it away. e.g. $175 - 156 = 19$. Above the line you need to write how many times 26 fit into the number e.g. 6.

- # Year 6 Fractions

Divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]

An example of multiplying simple pairs of proper fractions:



Steps to success:

1. First, draw a square and split it into the fraction you are dividing and shade in the correct parts e.g. draw $\frac{4}{5}$.
2. Then split the whole square into 3 so that $\frac{4}{5}$ have been split into 3.
3. Count up how many piece the whole is now split into e.g. 15 pieces.
4. Then count how many pieces are shaded in blue out of the $\frac{2}{3}$ e.g. 8. This gives you the fraction $\frac{8}{15}$, which is what $\frac{4}{5} \times \frac{2}{3}$ equals. You must also remember to simply the answer if it can be simplified.

When the children are confident in the pictorial method we will move onto an abstract method.

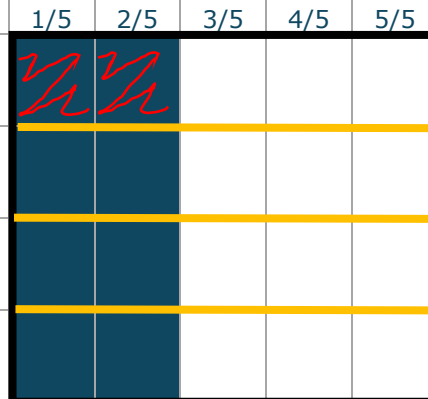
		4	x	2	=	4	x	2	=	8						
		5		3		5	x	3		15						

Steps to success:

1. First multiply the numerators of fractions.
2. Then multiply the denominators of the fractions together.
3. This will give you the final numerator and denominator. You must also remember to simplify the answer if it can be simplified.

An example of dividing proper fractions by whole numbers:

		2	÷	4	=	2	=	1								
		5				20		10								



Steps to success:

1. First, draw a square and split it into the fraction you are dividing. Shade in the correct parts e.g. draw 2/5.
2. Then split the whole square into 4 so that 2/5 have been split into 4.
3. Count up how many piece the whole is now split into e.g. 20 pieces.

4. Then count how many pieces are shaded in 1 of the 4 pieces e.g. 2. This gives you the fraction $\frac{2}{20}$, which is what $\frac{2}{5} \div 4$ equals. You must also remember to simply the answer if it can be simplified e.g. $\frac{2}{20} = \frac{1}{10}$.

When the children are confident in this method we will move onto find an equivalent fraction which can be divided by the whole number e.g.

		$\frac{2}{5}$	$\div$	4	=	$\frac{2}{20}$	=	$\frac{1}{10}$								
		$\frac{2}{5}$				$\frac{2}{20}$		$\frac{1}{10}$								
		$\frac{2}{5}$	=	$\frac{8}{20}$												
		$\frac{2}{5}$		$\frac{8}{20}$												
		$\frac{8}{20}$	$\div$	4	=	$\frac{2}{20}$	=	$\frac{1}{10}$								
		$\frac{8}{20}$				$\frac{2}{20}$		$\frac{1}{10}$								

Steps to success:

1. Find an equivalent fraction which can be divided by 4. (This can be done by multiplying the fraction by the whole number you're dividing it by). e.g. $\frac{2}{5} \times 4 = \frac{8}{20}$
2. Then you can divide the numerator by the divisor. e.g. $\frac{8}{20} \div 4 = \frac{2}{20}$
3. Finally you must simplify the fraction if it can be simplified. e.g. $\frac{2}{20} = \frac{1}{10}$

(See Year 5 for examples of how to add and subtract fractions)