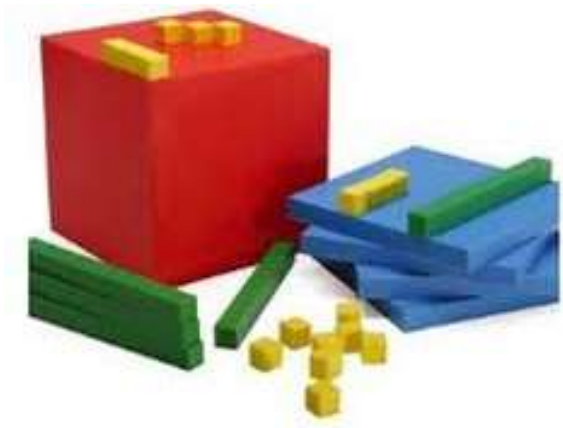




St John's C of E Primary School

Calculation Policy

2024-26



This policy has been designed to teach children through the use of concrete, pictorial and abstract methods. This calculation policy should be used to support children to develop a deep understanding of number and calculation.

Background:

This policy has been developed by Maths Co-ordinators with a specific interest in the use of Singapore methods to develop number awareness and fluency.

The policy only details the strategies; teachers must plan opportunities for pupils to apply these; for example, when solving problems, or where opportunities emerge elsewhere in the curriculum.

Using the concrete-pictorial-abstract approach:

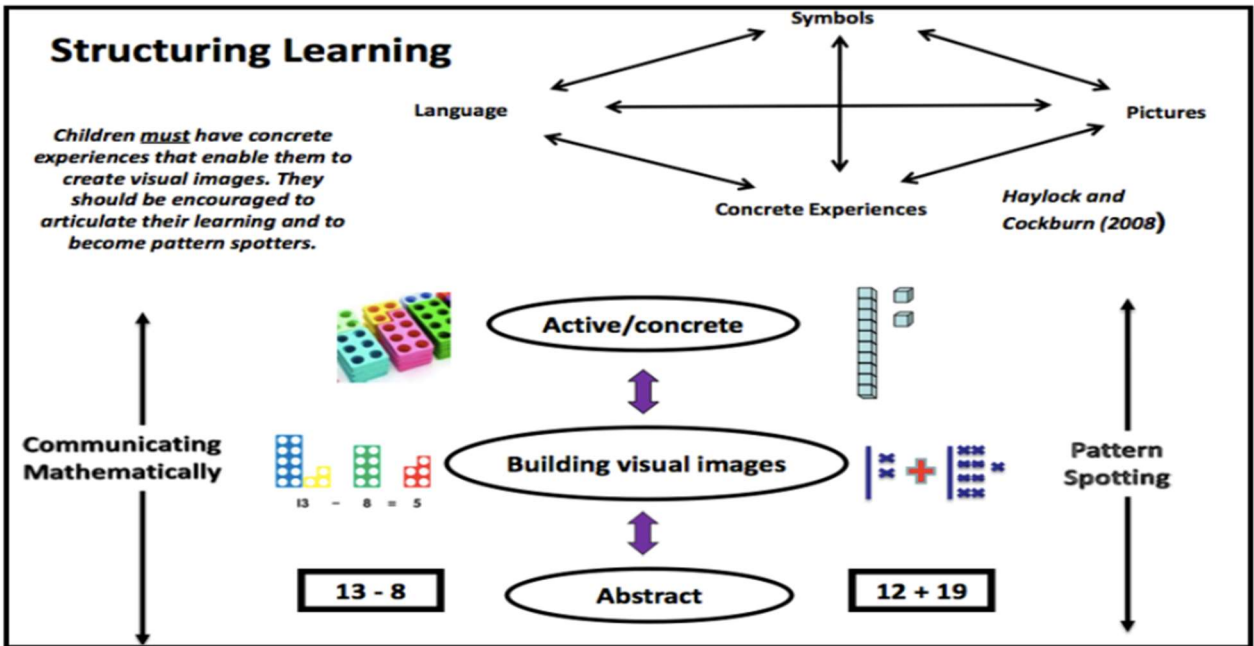
Children develop an understanding of a mathematical concept through the three steps (or representation) of concrete-pictorial-abstract approach. Reinforcement is achieved by going back and forth between these representations.

Concrete representation: The physical stage - a pupil is first introduced to an idea or a skill by acting it out with real objects. This is a 'hands on' component using real objects and it is the foundation for conceptual understanding.

Pictorial representation:

The iconic stage - a pupil has sufficiently understood the hands-on experiences performed and can now relate them to representations, such as a diagram or picture of the problem.

Abstract representation: ^[SEP]The symbolic stage - a pupil is now capable of representing problems by using mathematical notation, for example: $12 \div 2 = 6$.



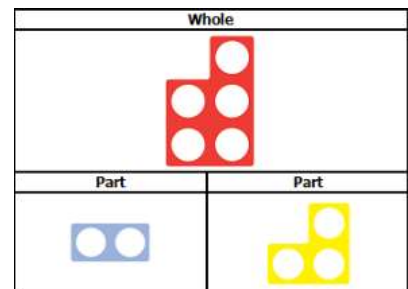
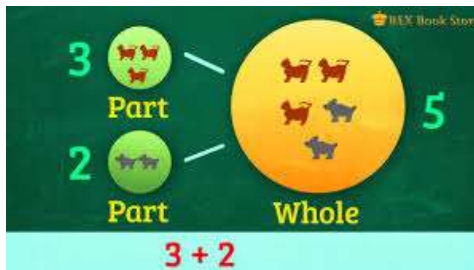
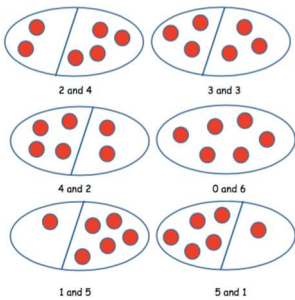
Reception

Addition

Explore part-part-whole relationship

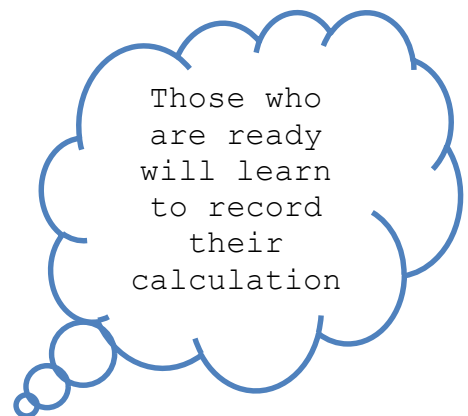
They develop ways of recording calculations using pictures

Making 6



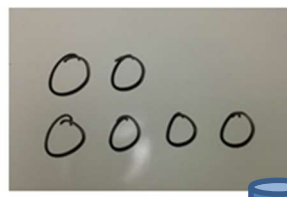
Using the ten frame to support addition of single digits – counting all/combining two groups

	6 + 4 = 10
	4 + 4 = 8
	5 + 2 = 7
	2 + 4 = 6

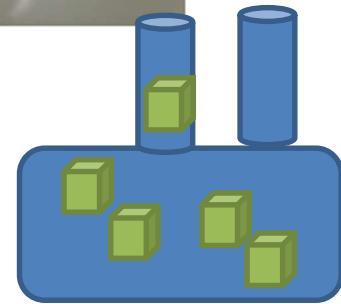


Solving problems using concrete and pictorial images.

Sara has 2 apples.
 Jon has 5 apples.
 How many apples do they have altogether?
 How many more apples does Jon have than Sara?

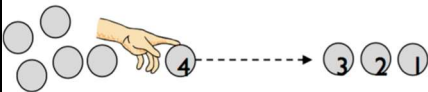


Adding Machine:
 2 tubes that children can drop objects



Subtraction

Taking away after counting out practical equipment. Children would be encouraged to physically remove these using touch counting.



By touch counting and dragging in this way, it allows children to keep track of how many they are removing so they don't have to keep recounting. They will then touch count the amount that are left to find the answer.

Those who are ready may record their own calculations

Using the ten frame to support subtraction by taking away

donut donuts



$$8 - 4 = \underline{\quad}$$

Using a number line for counting back.




Solving problems using concrete and pictorial images.

Multiplication

Children will experience equal groups of objects.

They will work on practical problem solving activities involving

Double 2



boots

$$2 + 2 = 4$$


There are 6 pairs of socks. How many socks are there altogether?

Division

Half is...



10

5

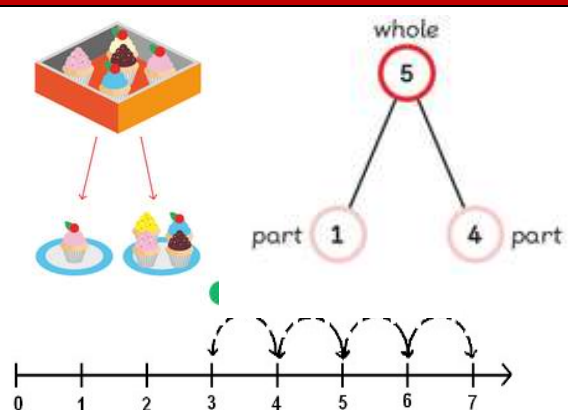
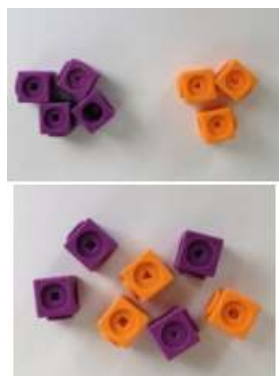
Halving Mat

Year 1

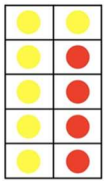
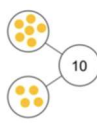
Addition

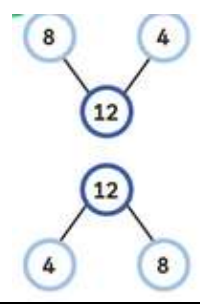
Joining two groups and then recounting all objects using one-to-one Correspondence (lots of practice making 10 and numbers to 10 e.g. $6 + 4 = 10$ or $3 + 5 = 8$)

$$3 + 4 = 7$$



Learn number bonds to 20 and demonstrate related facts
 Teach addition and subtraction alongside each other as pupils need to see the relationship between the facts.


 <p>6 + 4 = 10 4 + 6 = 10 10 - 4 = 6 10 - 6 = 4</p> <p>Tens Frame</p>	 <p>6 + 4 = 10 4 + 6 = 10 10 - 4 = 6 10 - 6 = 4</p> <p>Part Whole Model</p>	<table border="1" data-bbox="1109 145 1284 212"> <tr><td colspan="2">10</td></tr> <tr><td>6</td><td>4</td></tr> </table> <p>6 + 4 = 10 4 + 6 = 10 10 - 4 = 6 10 - 6 = 4</p> <p>Bar Model</p>	10		6	4
10						
6	4					



8 + 4 = 12
 4 + 8 = 12



This is a family of addition and subtraction facts.

12 - 8 = 4
 12 - 4 = 8

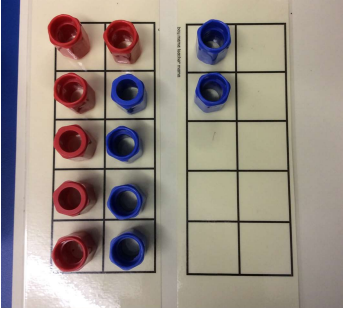
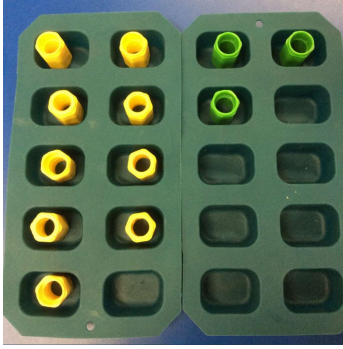


Add and subtract one digit numbers and two digit numbers to 20, including zero

8 + 1 = 9

Bridging 10
 Use ten frames, Singapore bars, egg boxes and number lines to practice.
 Chn should start with the larger number and add the smaller number. What makes ten and what is left.

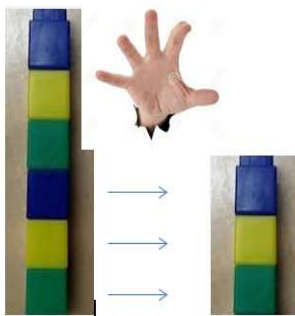



6 + 6 = 12
 Make 9 in one and 3 in the other. Take one from the 3 to make the 9 into a ten.... 10 + 2 = 12

Subtraction

Taking away should begin with **physical objects**: objects, cubes, Dienes etc

6 - 3 = 3



Subtraction by counting back

Let's Learn

Subtract by Counting Back

Count back 3 steps from 15.

Subtract 3 from 15.

$15 - 3 = 12$

There are 12 flowers left.

Subtracting a digit number from a single digit number and crossing out

Subtract by Crossing Out

1

$7 - 2 = 5$

5 ladybirds are left.

$7 - 2$

Subtracting using the part - part - whole (include problem solving with missing digits).

How many boats are not red?

$7 - 5 = 2$

2 boats are not red.

$? - 5 = 2$

Subtraction

Subtraction by subtracting from 10

Children subtract from 10 and not from ones

$14 - 8 = ?$

Let's Learn

Subtract from 10

$14 - 8 = ?$

Put 10 in a box ↓

$14 - 8 = 6$

Sam has 6 doughnuts left.

$10 - 8 = 2$

$4 + 2 = 6$

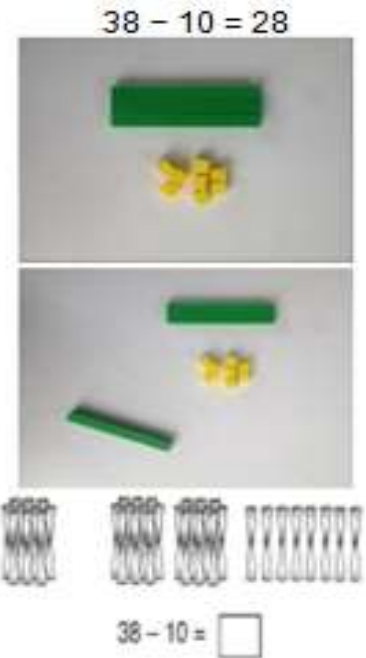
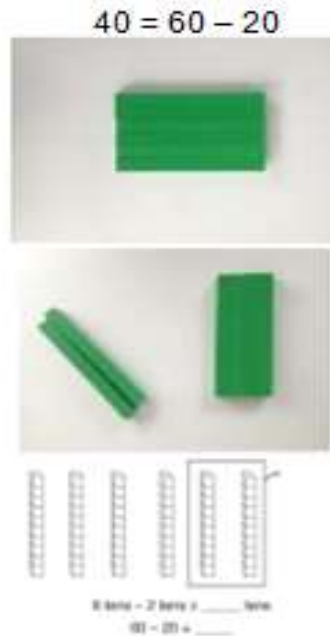
When subtracting using Dienes children should be taught to regroup a ten rod for 10 ones and then subtract from those ones



$$20 - 4 = 16$$

Subtracting multiples of 10

Using the vocabulary of 1 ten, 2 tens etc alongside 10, 20, 30 is very important here as pupils need to understand that it is a 10 not a 1 that is being taken away



Multiplication

Counting in multiples of 2, 5 and 10 from zero

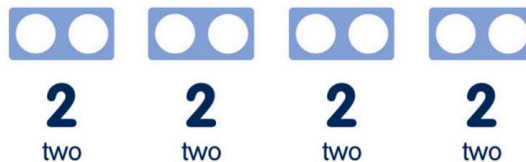
Children should count the number of groups on their fingers as they are skip counting.



$$4 \text{ groups of } 2 = 8$$



$$2 \times 4 = 8$$

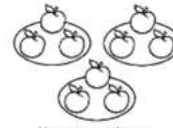
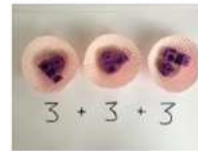


When moving to pictorial/written calculations the vocabulary is important



This image represents two groups of 4 or 4 twice

Solving multiplication problems using repeated addition



How many apples are there altogether?

$$3 + 3 + 3 = 9$$

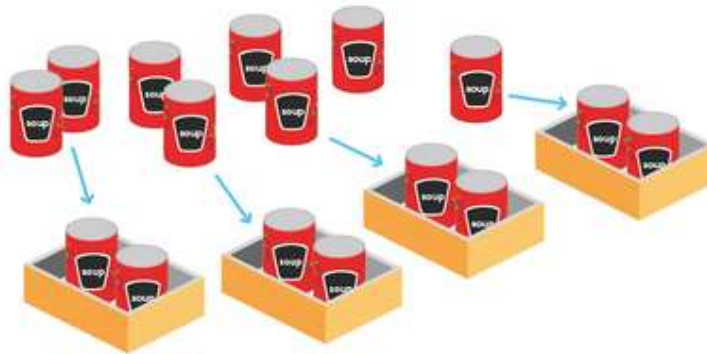
Division

Pupils should be taught to divide through working practically and the sharing should be shown below the whole to familiarise children with the concept of the whole.

The language of whole and part - part should be used.

$$10 \div 2 = 5$$

1 There are 8 cans.



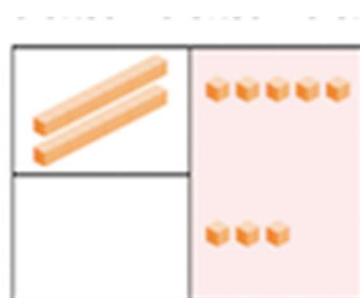
$$8 \div 4 = 2$$

There are 4 boxes of 2 cans.

Year 2

Addition

Using concrete objects and pictorial representations to add a 2 digit number with a 1 digit number.



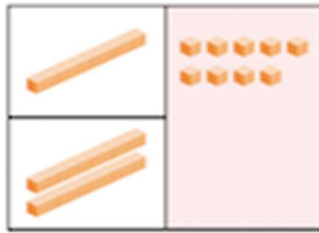
	tens	ones
	2	5
+		3
		8

Using concrete objects and pictorial representations to add a 2 digit

Using concrete materials to add 2-digits:

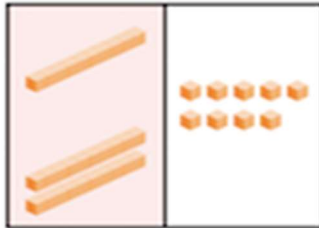
number and 10s number.

Step 1 Add the ones.



	tens	ones
	1	9
+	2	0
<hr/>		9
<hr/>		

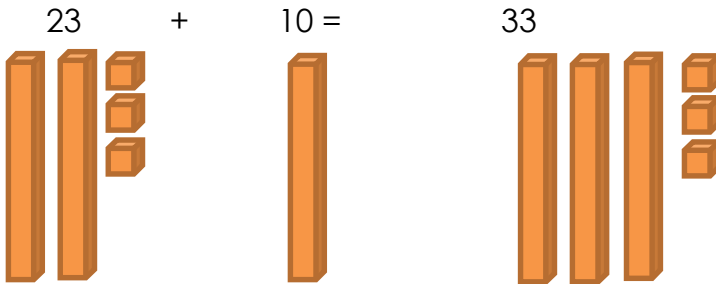
Step 2 Add the tens.
1 ten + 2 tens = 3 tens



	tens	ones
	1	9
+	2	0
<hr/>		9
<hr/>		

$$19 + 20 = 39$$

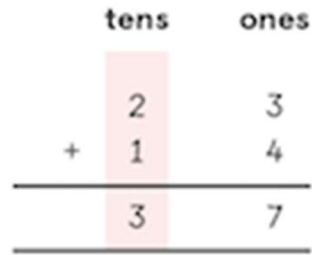
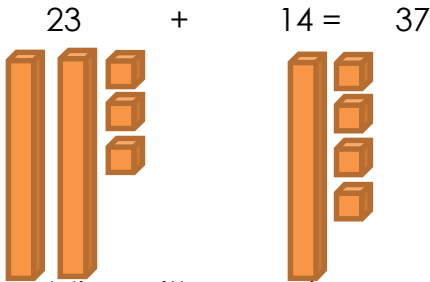
Draw the tens and ones in books:



Addition

Using concrete objects and pictorial representations to add a 2 digit numbers.

Draw the tens and ones in books:



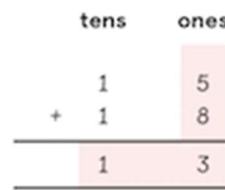
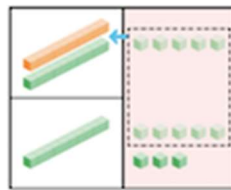
Adding with renaming:

Add 15 and 18.

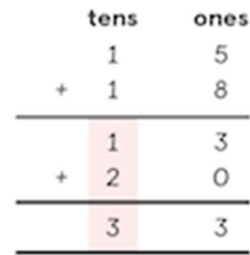
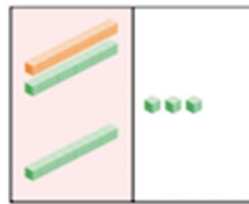
Use to help you add.



Step 1 Add the ones.
 5 ones + 8 ones = 13 ones
 Regroup the ones.
 13 ones = 1 ten and 3 ones



Step 2 Add the tens.
 1 ten + 1 ten + 1 ten = 3 tens



15 + 18 = 33

Using concrete objects and pictorial representations to add a 3 single digit numbers.

7 + 3 + 2 = leads to 10 + 2 =



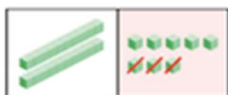
Using column method to add 2-digit numbers.

	Tens	Ones
	2	9
+	1	4
<hr/>		
	4	3
<hr/>		
		✗

Subtraction

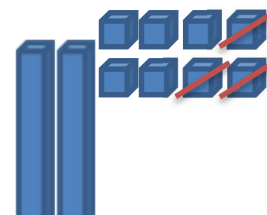
Using concrete objects and pictorial representations to subtract a 1 digit number from 2 digit number.

Step 1 Subtract the ones.
8 ones - 3 ones = 5 ones



tens	ones
2	8
-	3
	5

Concrete to pictorial:
 $28 - 3 = 25$



Step 2 Subtract the tens.

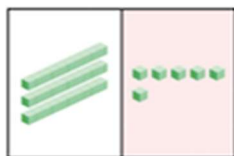


tens	ones
2	8
-	3
2	5

$28 - 3 = 25$

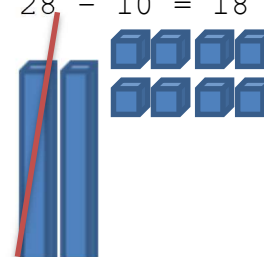
Using concrete objects and pictorial representations to subtract a 10s number from 2-digit number. Then transition to mental techniques of 10 less.

Step 1 Subtract the ones.

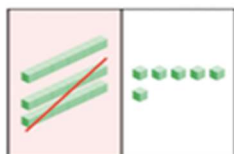


tens	ones
3	6
-	0
	6

Concrete to pictorial:
 $28 - 10 = 18$



Step 2 Subtract the tens.
3 tens - 2 tens = 1 ten



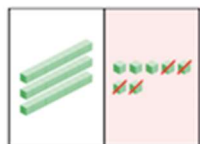
tens	ones
3	6
-	0
1	6

$36 - 20 = 16$

Using concrete objects and pictorial representations to subtract a 2 digit number from 2 digit number.

Subtract 24 from 37.

Step 1 Subtract the ones.
7 ones - 4 ones = 3 ones

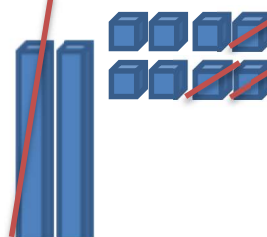


Use to help you subtract.

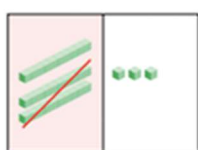


tens	ones
3	7
-	4
	3

Concrete to pictorial:
 $28 - 13 = 15$



Step 2 Subtract the tens.
3 tens - 2 tens = 1 ten



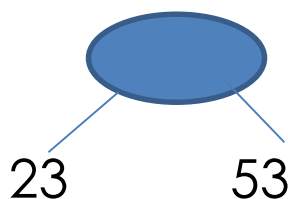
tens	ones
3	7
-	4
1	3

$37 - 24 = 13$

Then move on to use column subtraction to take 1 digit from 2 digits.

Recognise and use the inverse relationship between addition and subtraction

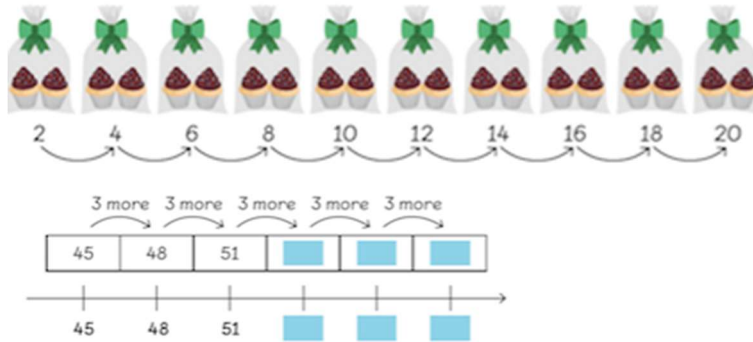
76	
23	53



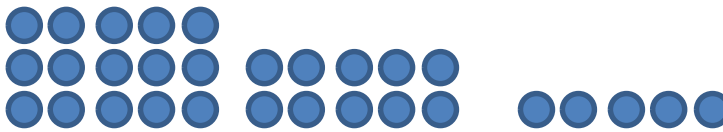
Use bar modeling and part-part-whole to check calculations and solve missing number problems.

Multiplication

Skip counting in multiples of 2, 5 and 10 from 0



Recall and use multiplication facts for the multiplication tables 2, 5 and 10.



$$1 \times 5 = 5$$

$$2 \times 5 = 10$$

$$3 \times 5 = 15$$

I can use multiplication (x) and equal (=) sign when writing out my times tables.

Multiplication is commutative

Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer.

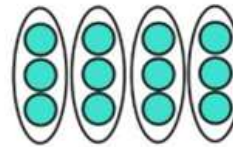
How many dots are there?



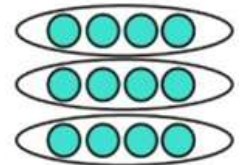
$$2 \times 5 = 10$$



$$5 \times 2 = 10$$



$$12 = 3 \times 4$$



$$12 = 4 \times 3$$

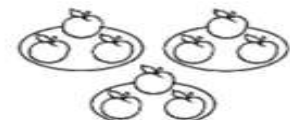
2×5 is equal to 5×2 .

Solve multiplication problems in context using arrays and repeated addition



$$3 \times 5 = \square$$

$$5 \times 3 = \square$$



How many spots are there altogether?

$$3 + 3 + 3 = 9$$

Division

Recall and use division facts for the multiplication tables 2, 5 and 10.

$10 \div 10$	•	•	5
$20 \div 10$	•	•	7
$70 \div 10$	•	•	2
$50 \div 10$	•	•	6
$60 \div 10$	•	•	1
$100 \div 10$	•	•	10

Solve division problems in context using concrete objects by sharing

There are 18 sausages.



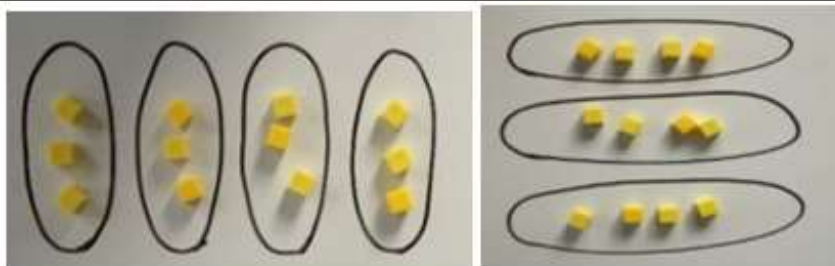
Put 18 sausages equally on 2 plates.



There are 9 sausages on each plate.

$$18 \div 2 = 9$$

Solve division problems in context using arrays



I can solve division as grouping.

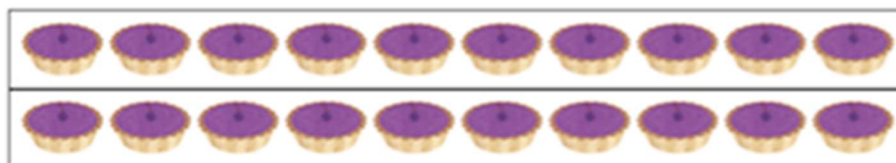
Put 10 buns in groups of 2.
How many plates are there?



I can use the inverse.

This should be taught alongside both multiplication and division.

Make a family of multiplication and division facts.



$$2 \times 10 = 20 \quad \text{—————} \quad 20 \div 10 = \square$$

$$10 \times 2 = 20 \quad \text{—————} \quad 20 \div 2 = \square$$

Year 3

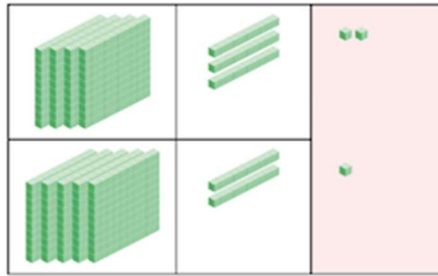
Addition

Add two three digit numbers.

Children need to use equipment first to support their understanding of place value.

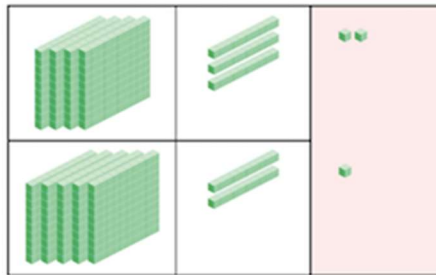
Children to work gradually to three digit + three digit starting without carrying and gradually moving towards carrying.

$$432 + 521 =$$



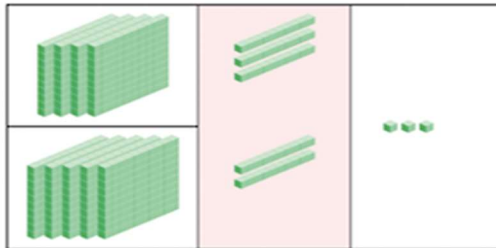
$$\begin{array}{r} 400 + 30 + 2 \\ + \\ \hline \end{array}$$

Step 1 Add the ones.
2 ones + 1 one = 3 ones



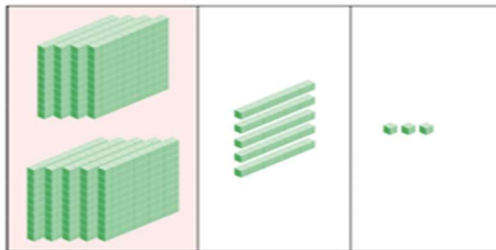
h	t	o
4	3	2
+ 5	2	1
<hr/>		
		3
<hr/>		

Step 2 Add the tens.
3 tens + 2 tens = 5 tens



h	t	o
4	3	2
+ 5	2	1
<hr/>		
	5	3
<hr/>		

Step 3 Add the hundreds.
4 hundreds + 5 hundreds = 9 hundreds



h	t	o
4	3	2
+ 5	2	1
<hr/>		
9	5	3
<hr/>		

$$432 + 521 = 953$$

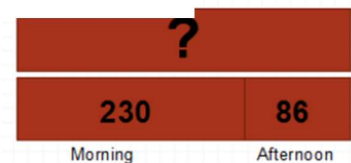
There are 953 flowers altogether.

Using the bar to find missing digits to problem solve.

Bar



A man sold 230 balloons at a carnival in the morning. He sold another 86 balloons in the evening. How many balloons did he sell in all?



Subtraction

Subtract up to 3 digits from 3 digits.

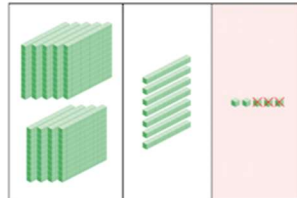
Only when secure with the method should exchanging be introduced.

Very important for children to use dienes along with a place value chart to support.

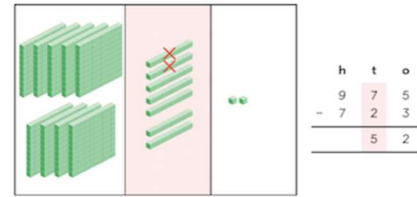
$$\begin{array}{r} 900 + 70 + 5 \\ - 700 + 20 + 3 \\ \hline 200 + 50 + 2 \end{array}$$

Subtract 723 from 975.

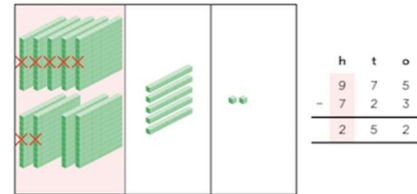
Step 1 Subtract the ones.
5 ones - 3 ones = 2 ones



Step 2 Subtract the tens.
7 tens - 2 tens = 5 tens



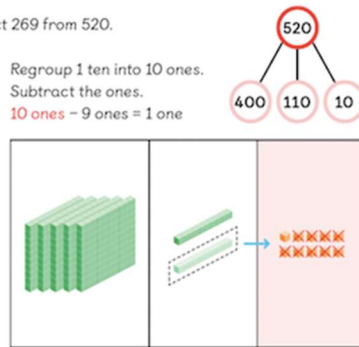
Step 3 Subtract the hundreds.
9 hundreds - 7 hundreds = 2 hundreds



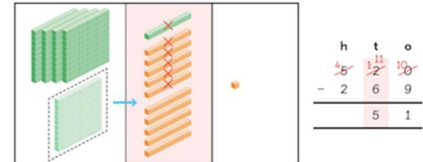
$$975 - 723 = 252$$

Subtract 269 from 520.

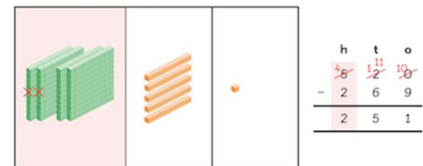
Step 1 Regroup 1 ten into 10 ones.
Subtract the ones.
10 ones - 9 ones = 1 one



Step 2 Regroup 1 hundred into 10 tens.
Subtract the tens.
11 tens - 6 tens = 5 tens



Step 3 Subtract the hundreds.
4 hundreds - 2 hundreds = 2 hundreds



$$520 - 269 = 251$$

Using the bar to find missing digits.

It is important for children to use the bar in this way to encourage the use of it to aid with problem solving.

315	
185	?

$$315 - 185 = ?$$

$$185 + ? = 315$$

?	
185	315

$$185 + 315 = ?$$

$$? - 185 = 315$$

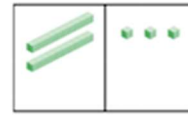
Multiplication

Children should be able to recall the 2, 5, 10, 3, 4 and 8 times tables.

Multiply a two digit number by a one digit.

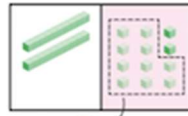
Let's Learn

1 There are 4 groups of 23 fish. How do we multiply 23 by 4?



Step 1 Multiply the ones by 4.

$$\begin{array}{r} \text{t} \quad \text{o} \\ 2 \quad 3 \\ \times \quad 4 \\ \hline 1 \quad 2 \end{array} \quad (3 \times 4)$$



4 ones \times 3 = 12 ones
12 ones = 1 ten 2 ones



Step 2 Multiply the tens by 4.

$$\begin{array}{r} \text{t} \quad \text{o} \\ 2 \quad 3 \\ \times \quad 4 \\ \hline 1 \quad 2 \\ 8 \quad 0 \end{array} \quad \begin{array}{l} (3 \times 4) \\ (20 \times 4) \end{array}$$

2 tens \times 4 = 8 tens



Step 3 Add the products.

$$\begin{array}{r} \text{t} \quad \text{o} \\ 2 \quad 3 \\ \times \quad 4 \\ \hline 1 \quad 2 \\ + 8 \quad 0 \\ \hline 9 \quad 2 \end{array} \quad \begin{array}{l} (3 \times 4) \\ (20 \times 4) \end{array}$$

12 + 80 = 92



$23 \times 4 = 92$

There are 92 fish in 4 tanks.

When \times and \div by 10:

h	t	o	.	th
		8		
	8	0		
	(8 x 10)			
		0	.	8

Using the bar to solve multiplication problems.

4 children go to the cinema. They each pay £15. How much do they spend altogether?

Whole unknown

?			
15	15	15	15

Division

Dividing by grouping understanding

Start with using the real objects-or objects that represent the calculation.

the concept of remainders.

$13 \div 4 = 3 \text{ Remainder } 1$

$7 \div 2 = 3 \text{ R } 1$

Dividing using short division.

Once children are secure with division as grouping and demonstrate this using number lines, arrays etc., **short division** for larger 2-digit numbers should be introduced, initially with carefully selected examples requiring no calculating of remainders at all. Start by introducing the layout of short division by comparing it to an array.

Remind children of correct place value, that 69 is equal to 60 and 9, but in short division, pose:

- How many 3's in 6? = 2, and record it above the **6 tens**.
- How many 3's in 9? = 3, and record it above the **9 ones**.

Once children demonstrate a full understanding of remainders, and also the short division method taught, they can be taught how to use the method when remainders occur within the calculation (e.g. $72 \div 3$), and be taught to 'carry' the remainder onto the next digit.

Using the bar to aid the solving of division problems.

Four children bought a present for £28. They shared the costs equally. How much did each child pay?



$£28 \div 4 = £7$

Year 4

Addition

Adding numbers with up to 4 digits.

Again this should start

$$\begin{array}{r} 2314 \\ + 4240 \\ \hline 6554 \end{array}$$

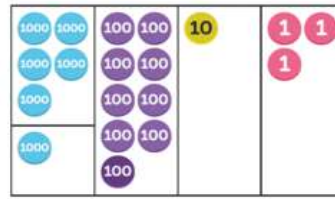
- Step 1 Add the ones.
4 ones + 0 ones = 4 ones
- Step 2 Add the tens.
1 tens + 4 tens = 5 tens
- Step 3 Add the hundreds.
3 hundreds + 2 hundreds = 5 hundreds

p 1

$$\begin{array}{r} 5678 \\ + 1235 \\ \hline \end{array}$$

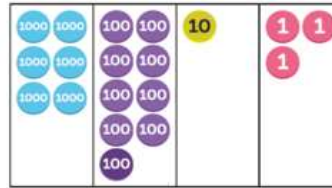
with the children using dienes to support them with lots of discussion about the value of each digit.

Step 2



$$\begin{array}{r} 13 \\ \hline 5678 \\ + 1235 \\ \hline 913 \\ \hline \end{array}$$

Step 3



$$\begin{array}{r} 5678 \\ + 1235 \\ \hline 6913 \\ \hline \end{array}$$

Using the bar to find missing digits.

Alison jogs 6,860 metres and Calvin jogs 5,470 metres. How far do they jog altogether?



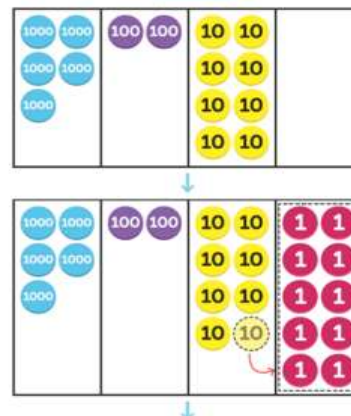
Subtraction

To subtract with numbers up to four digits including exchanging when children are secure.

Again children need to use dienes to support their learning.

$$\begin{array}{r} 3437 \\ - 2016 \\ \hline 1421 \end{array}$$

- Step 1 Subtract the ones.
7 ones - 6 ones = 1 one
- Step 2 Subtract the tens.
3 tens - 1 ten = 2 tens
- Step 3 Subtract the hundreds.
4 hundreds - 0 hundreds = 4 hundreds
- Step 4 Subtract the thousands.
3 thousands - 2 thousands = 1 thousand



There aren't enough ones.

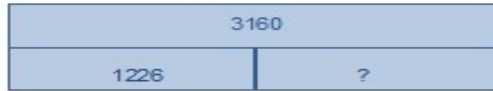


$$\begin{array}{r} 5270 \\ - 3169 \\ \hline \end{array}$$

$$\begin{array}{r}
 2754 \\
 - 1562 \\
 \hline
 1192
 \end{array}$$

Using the bar to find missing digits.

There are 3,160 books in a shop. 1,226 are in English and the rest are in French. How many French books are there?



Multiplication

Children to know all times tables to 12 x 12.

Ladder method to be used with children multiplying both two and three digits by a one digit number.



$$\begin{array}{r}
 473 \\
 \times 2 \\
 \hline
 \end{array}$$

This will only work with

$$\begin{array}{r}
 314 \\
 \times 3 \\
 \hline
 12 \quad (3 \times 4) \\
 30 \quad (3 \times 10) \\
 + 900 \quad (3 \times 300) \\
 \hline
 942
 \end{array}$$

into compact method...

$$\begin{array}{r}
 314 \\
 \times 3 \\
 \hline
 942 \\
 1
 \end{array}$$

Multiplying using the bar.

A computer costs 5 times as much as a television. The television costs £429.

Cost of the computer

How much does the computer cost?



Division

Dividing up to three digit numbers by a one digit number using short division.

Only when the children are secure with dividing a two digit number should they move onto a 3 digit number.



	H	T	U	
	0	2	5	r1
5	1	2	6	
		<div style="display: flex; flex-direction: column; align-items: center;"> ● ● ● ● </div>	<div style="display: flex; flex-direction: column; align-items: center;"> ● ● ● </div>	<div style="display: flex; flex-direction: column; align-items: center;"> ● </div>

$$\begin{array}{r}
 3 \overline{) 367} \\
 \underline{300} \quad 100 \times 3 \\
 67 \\
 \underline{60} \quad 20 \times 3 \\
 7 \\
 \underline{6} \quad 2 \times 3 \\
 1
 \end{array}$$

Dividing using the bar.

Desmond and Melissa collect cards. They have 192 cards in all. Melissa has three times as many cards as Desmond. How many cards does Desmond have?

192			
D = ?	M	M	M

Year 5

Addition

Adding numbers with more than 4 digits including decimals

Using place value charts are key to this as well as place value counters to help with the decimals.

$ \begin{array}{r} \text{£ } 23.59 \\ + \text{£ } 7.55 \\ \hline \text{£ } 31.14 \end{array} $	$ \begin{array}{r} 23481 \\ + 1362 \\ \hline 24843 \end{array} $
$ \begin{array}{r} 19.01 \\ + 3.65 \\ \hline 22.66 \end{array} $	$ \begin{array}{r} 19.01 \\ + 3.65 \\ \hline 22.66 \end{array} $

Using the bar to find missing digits.

This is not a form of getting the correct answer but helping to guide children to the correct operation.

MacDonalds sold £9957.68 worth of hamburgers and £1238.5 worth of chicken nuggets. How much money did they take altogether?

	?	
£957.68		£1238.5

Subtraction

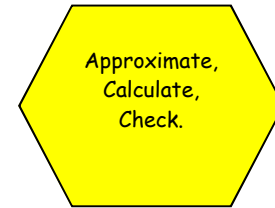
Subtract with at least four digit numbers including two decimal places.

Include money, measures and decimals ensuring that children do this practically before the abstract.

Subtract with decimal values, including mixtures of integers and decimals, aligning the decimal point.

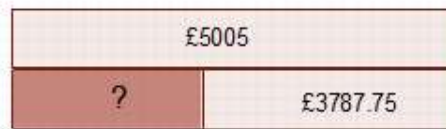
$$\begin{array}{r} 2892.8 \\ - 212.8 \\ \hline 2680.0 \end{array}$$

$$\begin{array}{r} 6796.5 \\ - 372.5 \\ \hline 6424.0 \end{array}$$



Using the bar to find missing digits.

A whole to Lapland costs £5005 for a family of four, the Smith's have only saved £3787.75, how much money do they still need to find?

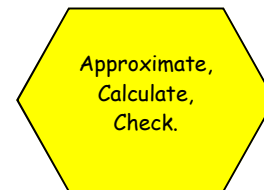


Multiplication

Multiplying up to four digit numbers by two digits using long multiplication.

Children need to be taught to approximate first, e.g. for 72×38 , they will use rounding: 72×38 is approximately $70 \times 40 = 2800$, and use the approximation to check the reasonableness of their answer.

$$\begin{array}{r} 56 \\ \times 27 \\ \hline 392 \\ 1120 \\ \hline 1512 \end{array} \quad \begin{array}{l} (56 \times 7) \\ (56 \times 20) \end{array}$$



- Explain that first we are multiplying the top number by 7 starting with the units. (any carrying needs to be done underneath the numbers).
- Now explain that we need to put a 0 underneath—explain that this is because we are multiplying the number by 20.. (2 tens) which is the same as multiplying 10 and 2.
- Now add the 2 numbers together to give you the answer.
- This will need lots of modeling to show the children.

$$\begin{array}{r} 3652 \\ \times 8 \\ \hline 29216 \end{array}$$

$$\begin{array}{r} 1234 \\ \times 16 \\ \hline 7404 \\ 12340 \\ \hline 19744 \end{array} \quad \begin{array}{l} (1234 \times 6) \\ (1234 \times 10) \end{array}$$

Pictorial representation first, then bar modelling:

Using the bar to support multiplication.

The cost to run a sports centre is £4375 a week, how much would it cost to run for 16 weeks?



£4375
a week

Division

Diving with up to four digit numbers by one digit including numbers where remainders are left.

$$\begin{array}{r} 0663r5 \\ 8 \overline{) 5350^2 9} \end{array}$$

Short division with remainders: Now that pupils are introduced to examples that give rise to remainder answers, division needs to have a real life problem solving context, where **pupils consider the meaning of the remainder and how to express it**, i.e. as a fraction, a decimal, or as a rounded number or value, depending upon the context of the problem.

$$\begin{array}{r} 0663r5 \\ 8 \overline{) 5350^2 9} \quad 8 \\ \hline 0663.625 \\ 8 \overline{) 5350^2 9.000} \end{array}$$

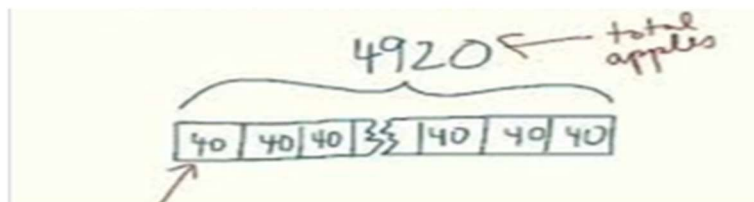
Fraction remainder is the remainder divided by the divisor:
 $(5 \div 8 = 5/8)$

Use with **money and measure** as the context.

Using the bar to support division problems.

Bar Model to support understanding of problem solving:

Frank has 4920 apples. He needs to put them into baskets of 40. How many baskets does he need?



Adding several numbers with up to three decimal places.

$$\begin{array}{r}
 233.61 \\
 90.80 \\
 597.70 \\
 + 13.00 \\
 \hline
 935.11 \\
 \text{2 1 2}
 \end{array}$$

Adding several numbers with different numbers of decimal places (including money and measures):

- Tenths, hundredths and thousandths should be correctly aligned, with the decimal point lined up vertically including in the answer row.

Empty decimal places should be filled with zero to show

Adding using the bar.

Jack went on holiday. His flight cost £70.50, the hotel £1295 and spending money £427.89. How much did Jack spend on his holiday?

?		
£70.50	£427.89	£1295

Subtraction

Subtracting with increasingly large and more complex numbers and decimal values.

$$\begin{array}{r}
 480699 \\
 - 89949 \\
 \hline
 60750
 \end{array}$$

Very important to use in a range of contexts- measures and money.

$$\begin{array}{r}
 4806.99 \text{ kg} \\
 - 360.80 \text{ kg} \\
 \hline
 693.39 \text{ kg}
 \end{array}$$

Teachers use discretion to decide when it is better to use mental

Using the bar for subtraction.

Chloe wants to buy a new car for £6450. She has £4885.87 in her savings account. Her Dad gives her £150 for her birthday. How much more money does she need to save?

£6450		
£4885.87	£150	?

Multiplication

Short and long multiplication with up to two decimal places.

$$\begin{array}{r}
 3.19 \\
 \times 8 \\
 \hline
 25.52 \\
 \text{1 7}
 \end{array}$$

Approximate,
Calculate,
Check.

Using the bar to help with multiplication

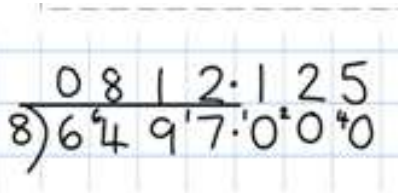
If 5 friends went on holiday and each paid £579.75 what was the total cost of the holiday?

Cost of the holiday



Division

Divide at least 4 digits by both single-digit and 2-digit numbers (including decimal numbers and quantities)

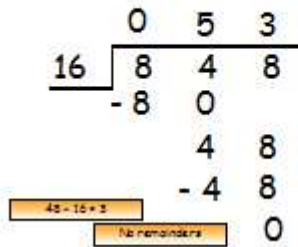


Short division with remainders: Pupils should continue to use this method, but with numbers to at least 4 digits, and understand how to express remainders as fractions, decimals, whole number remainders, or rounded numbers. Real life problem solving contexts need to be the starting point, where pupils have to consider the most appropriate way to express the remainder, such as remainders in fractions and decimals.

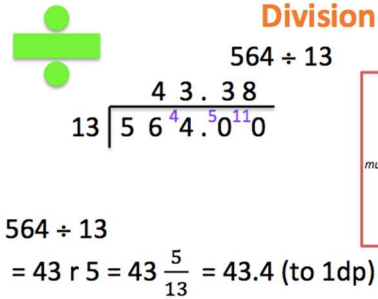
Long division this is for when dividing by two digit numbers.

POST SATS method.

Try this equation: $848 \div 16 =$
Approximation $800 \div 16 =$ **50**



Start with the largest place holder in this case it will be the hundreds column.
3 - 16 not possible. So put a 0 above the hundreds column.
Carry the 8 digit over to the Tens column!
 $64 \div 16 =$
 $16 \times 5 = 80$
 $64 - 80 = 4$



1	13
2	26
4	52
5	65
8	104
10	130
20	260

Using known multiplication facts

Using the bar to help divide.

Paul and David hire a car together at a cost of £297.50. Paul pays 6 times more than David. How much does David pay?

