



	Mathematics Policy
<i>Approved : Autumn 19</i>	<i>Review : Autumn 20</i>

St John the Baptist has a clear and comprehensive approach to mathematics, focussing on ensuring progression and continuity across all year groups, using a range of models and images and concrete apparatus leading into the abstract. This is to ensure that pupils develop a clear understanding of the maths that they are using and applying. As a school, we have a broad range of abilities and so work with individual pupils to challenge and develop their mathematical abilities, offering additional support for our less able and for our high achieving pupils. Our curriculum is broken down into smaller steps. We prefer to spend longer periods of time on each concept and try to avoid rushing through concepts too quickly and overloading the pupils.

We aim to teach our children to:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems



- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. This is done at St Johns through maths lessons, fluency sessions, pre and post teaching and through developing cross-curricular links and enabling pupils to use their maths in real life situations e.g. Enterprise project in Years 4, Year 5 and 6.

### Concrete –Pictorial- Abstract

Children build confidence and competency by working through this approach.

Concrete- working with concrete objects in maths

Pictorial- Using visual pictorial representations in maths alongside the concrete to reason and problem solve.

Abstract- Both concrete and pictorial should support children's understanding of abstract methods.



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## Mastery

A mastery approach is used(see Appendix 1)

which has:

- Number at the heart. A great deal of time is spent ensuring children use number confidently.
- Teachers stay in stage and explore depth of understanding

## Mathematical Talk

Talk in maths is used to encourage mathematical thinking and reasoning and to dig deeper into concepts. Children should be able to talk using the correct mathematical vocabulary.

Our calculation policy is based upon the White Rose Calculation Policy(Appendix 6).

## Small steps (varied Fluency)

The objectives from each block are broken down into smaller steps. These need to be taught in the recommended order. Small steps do not necessarily equate to a single lesson. Some small steps may need longer. Some small steps recap learning from previous blocks of work.



### Small step – Reasoning and Problem Solving

It essential that we provide access to reasoning and problem solving so that children can apply their knowledge. Every child needs the support to problem solve and reason. We use a range of open and closed problems. Children work both independently and collaborative to support and challenge each other.

### Mixed Age planning

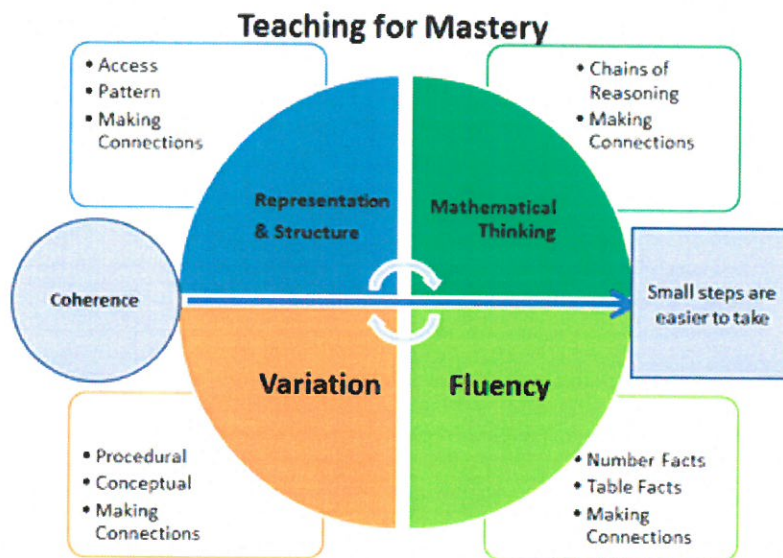
We try to teach similar skills from year groups that can be taught together. Learning can then be differentiated through effective questioning targeted at specific year groups. Where there is year group specific content we sometimes teach in split inputs to classes or in a focus group at another time. We have tried to put together blocks of work that fit well together for example Money with Addition and subtraction (Year 2 and 3). Teachers complete planning for each block of work.

### Assessment

Assessment for learning is used to ensure children have understood each small step. Beginning and end of block assessments are used to check if pupils have understood what is being taught, identify gaps in knowledge and to inform future planning. Puma tests are carried out at the end of each term and shared with the Trust.



## Appendix 1 Teaching for Mastery (NCETM)



### **Coherence**

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

### **Representation and Structure**

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

### **Mathematical Thinking**

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

### **Fluency**

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

### **Variation**

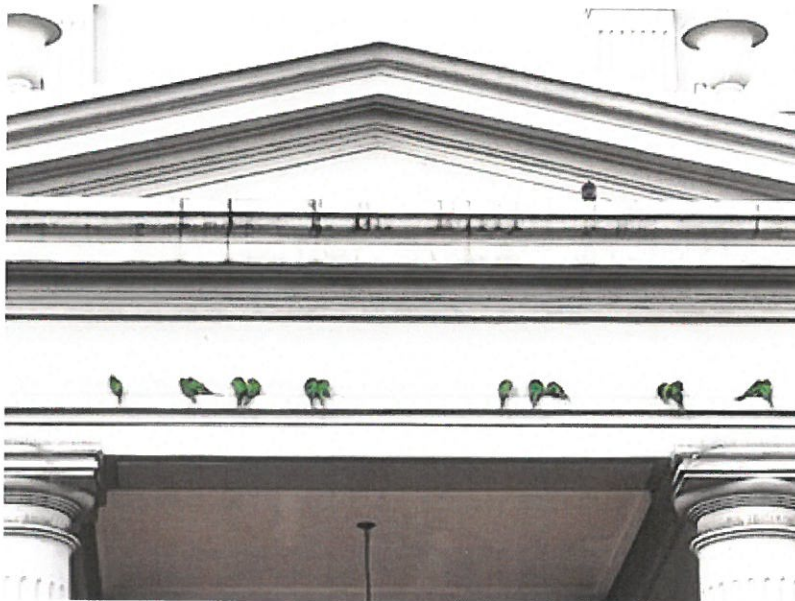
Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.



## Appendix 2

### Early Maths

Subitising is the ability to quickly recognising how many objects are in a group without actually counting them. As adults, most people can subitise up to five objects – this is called **perceptual subitising**. We also subitise larger numbers of objects by ‘seeing’ them in groups of five or less and combining these – this is called **conceptual subitising**. How would you ‘see’ how many parakeets are sitting on this building?



### **What activities could we do to encourage children to subitise?**

- Games that involve hiding a small number of objects in a box or under a cloth, and getting children to take a peek and say how many there are.
- Throwing a number (up to 5) of two-sided beanbags. Children then say what they can see “I can see 2 patterned and 1 plain beanbag – there are 3 beanbags altogether”. A more complex version of this would be to hide some of a known number of beanbags. “I have 3 beanbags. I can see 2, so there must be 1 in the box.”
- Using 5 seeds, plant them in 2 flowerpots, talking about how many seeds are planted in each pot and making a total, for example, “2 seeds are planted in my pot and 3 seeds are planted in your pot. There are 5 seeds altogether”.

(NCETM Magazine sept 2018)



## Appendix 3

### Early Maths

#### Counting principles (Gelman and Gallistel)

##### The one –one principle

This involves children assigning one number name to each object being counted. Children need to count every object only once and to count all of them. Pointing to each object and say the number can help with this.

##### The stable-order principle

Children understand that when counting the numbers have to be said in a certain order. Teachers can encourage children to count aloud to larger numbers which expecting them to count that number immediately.

##### The Cardinal Principle

Children understand that the number name assigned to the final object in that group is the total number of objects in that group. Children who have not grasped this will often recount a group again.

##### The abstraction principle

This needs children to understand that anything can be counted from claps to imaginary things in their heads. This is moving children on from pointing at objects to visualising objects to count.

##### The order-irrelevance principle

This involves children understanding that the order we count a group of objects is irrelevant. There will still be the same number. Children can count objects left to right, right to left, top to bottom, move objects around in a group. If they have to count them all again then they have not fully grasped the principle.



## St. John the Baptist RC Primary School

Appendix 4 – links to long term plans from the White Rose SOL documents.



## Planning for Foundation/ Year 1

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Autumn	<p>Year 1 Number place value (within 10) EYFS – Numbers to 5</p>											
Spring	<p>YEAR 1- Number: Addition and Subtraction ( within 20) EYFS Number bonds to 5 and Addition to 10</p>				<p>Year 1-Number – Addition and subtraction (within 10) EYFS- Sorting into groups EYFS- one more and one less</p>				<p>Geometry Shape As year 1</p>			
	<p>Number: Place Value( within 50) (multiples of 2,5 and 10 included) EYFS: Doubling</p>				<p>Measurement Length and Height</p>				<p>Measurement Weight and Volume</p>			
Summer	<p>Number: Multiplication and division (reinforce multiples of 2, 5 and 10 to be included) EYFS Addition and Subtraction- Count on and back</p>				<p>Number: Fractions EYFS Halving and sharing</p>				<p>Measurement Time</p>			
	<p>Number: Multiplication and division (reinforce multiples of 2, 5 and 10 to be included) EYFS Addition and Subtraction- Count on and back</p>				<p>Geometry Position and direction EYFS- Exploring pattern</p>				<p>Measurement Money</p>			
	<p>Number: place value (within 100) EYFS Numbers to 20</p>				<p>Measurement Length and Height</p>				<p>Measurement Weight and Volume</p>			
	<p>Number: Fractions EYFS Halving and sharing</p>				<p>Geometry Position and direction EYFS- Exploring pattern</p>				<p>Measurement Money</p>			
	<p>Number: Multiplication and division (reinforce multiples of 2, 5 and 10 to be included) EYFS Addition and Subtraction- Count on and back</p>				<p>Number: Fractions EYFS Halving and sharing</p>				<p>Measurement Time</p>			
	<p>Number: Multiplication and division (reinforce multiples of 2, 5 and 10 to be included) EYFS Addition and Subtraction- Count on and back</p>				<p>Geometry Position and direction EYFS- Exploring pattern</p>				<p>Measurement Money</p>			

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
<b>Autumn</b>	Number: Place Value Y2 – Numbers to 100 Y3 – Numbers to 1,000			Number: Addition and Subtraction Year 2- Numbers within 100 (including money) Year 3- Numbers within 1,000 (including money)				Number: Multiplication				
<b>Spring</b>	Number: Division		Statistics		Measurement: Length and Height		Geometry: Year 2: Shape, Position and Direction Year 3: Shape and Perimeter		Number: Year 2: Fractions & Consolidation Year 3: Fractions			
<b>Summer</b>	Measurement: Time		Problem solving and efficient methods				Measurement: Year 2: Mass, Capacity and Temperature Year 3: Mass and Capacity		Consolidation and Investigations			

**Planning for years 4/5 and 6**

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk10	Wk11	Wk12		
Autumn	Number : Place Value		Number: Four operations					Fractions					Measurement and Time- Year 4	Year 5/6 consolidat ion
Spring	Year 4- Multiplication and division Year 5 and 6- Decimals and Percentages		Yr 5 –Decimals Year 6 Number: Algebra		Measurement Perimeter, Area and Volume			Year 4 and Year 5 consolidation Number: Ratio Year 6		Statistics				
Summer	Geometry Property of shape	Geometry Position And Direction		Year 6 SATS	Year 6 SATS		Investigations and consolidations					Year 4 Measurement money		



## St. John the Baptist RC Primary School

Appendix 5- Short term planning ( to be completed for each block of work and put into shared drive).

Maths Mixed Age Years Weekly Plan: **Date**

	Whole class teaching	Guided group and independent paired/indiv practice activities			
Monday					
Tuesday					
Wednesday					
Thursday					

Maths Mixed Age Years Weekly Plan: **Date**

Friday						
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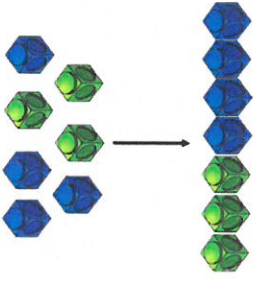
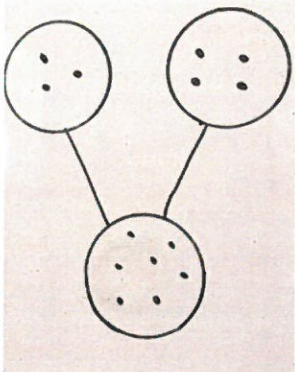
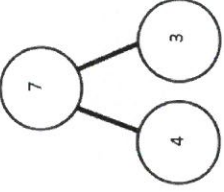
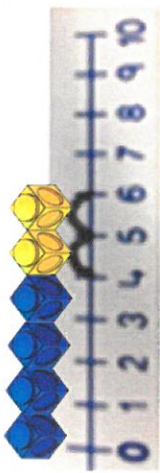
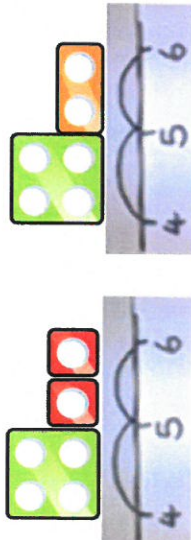
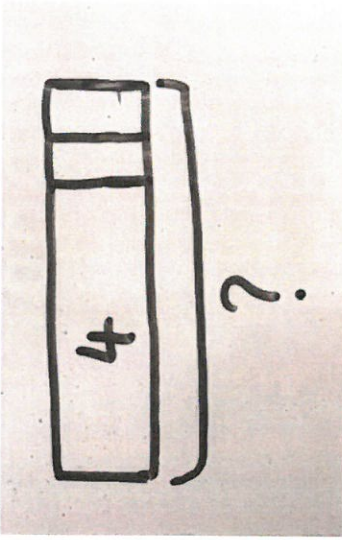
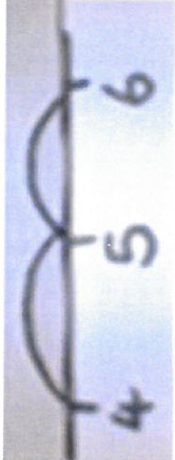
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Appendix 6

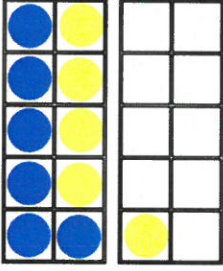
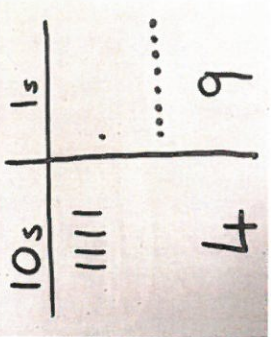
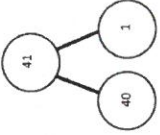

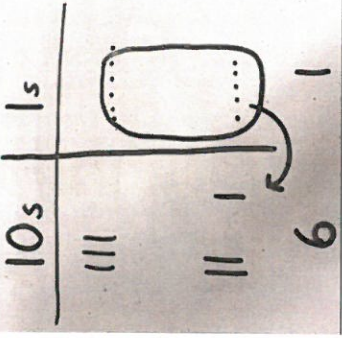

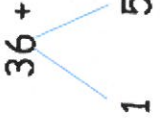
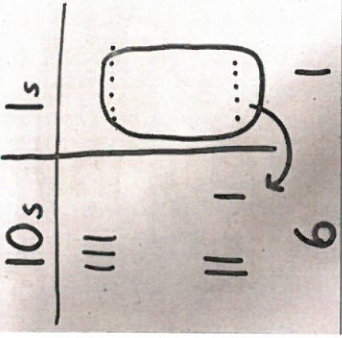
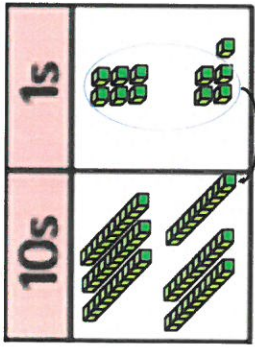
White Rose Calculation Policy

# Calculation policy: Addition

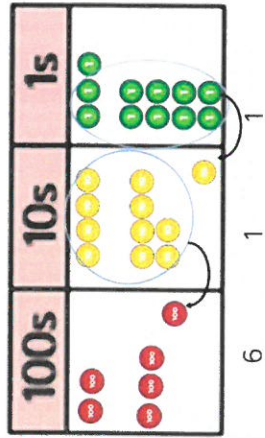
Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).</p> 	<p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p> 	<p><math>4 + 3 = 7</math> Four is a part, 3 is a part and the whole is seven.</p> 
<p>Counting on using number lines using cubes or Numicon.</p>  	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? <math>4 + 2</math></p> 

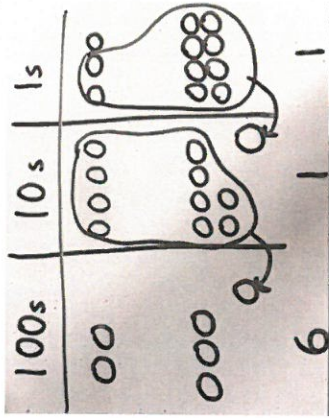


<p>Children to develop an understanding of equality e.g.</p> $6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$	<p>Children to draw the ten frame and counters/cubes.</p> 	<p>Children to represent the base 10 e.g. lines for tens and dot/crosses for ones.</p> 
<p>Children to develop an understanding of partitioning and place value.</p> $41 + 8$  $1 + 8 = 9$ $40 + 9 = 49$ 	<p>Children to represent the base 10 in a place value chart.</p> 	<p>Children to develop understanding of partitioning and place value.</p> $41 + 8$ 
<p>Looking for ways to make 10.</p> $36 + 25 =$  $30 + 20 = 50$ $5 + 5 = 10$ $50 + 10 + 1 = 61$ <p>Formal method:</p> $\begin{array}{r} +25 \\ 36 \\ \hline 61 \\ \hline 1 \end{array}$	<p>Children to represent the base 10 in a place value chart.</p> 	<p>Children to develop understanding of partitioning and place value.</p> $36 + 25$ 

Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.

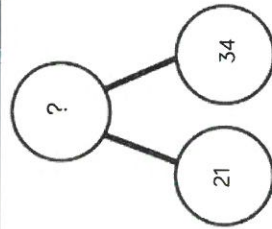


Children to represent the counters in a place value chart, circling when they make an exchange.



$$\begin{array}{r} 243 \\ +368 \\ \hline 611 \\ \hline 11 \end{array}$$

## Conceptual variation; different ways to ask children to solve 21 + 34



?	34
21	

Word problems:

In year 3, there are 21 children and in year 4, there are 34 children. How many children in total?

$21 + 34 = 55$ . Prove it

21

+34

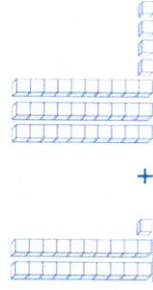
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$21 + 34 =$



$= 21 + 34$

Calculate the sum of twenty-one and thirty-four.

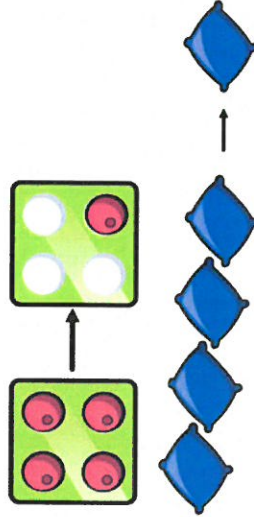
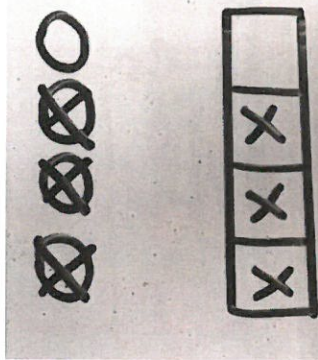
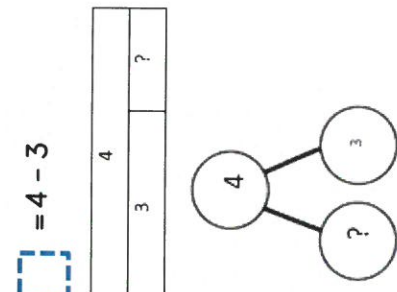
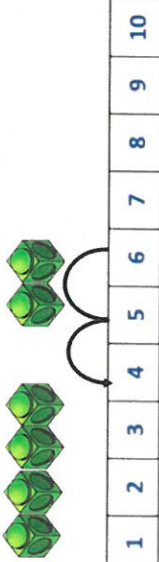
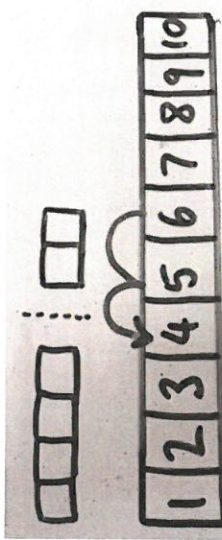
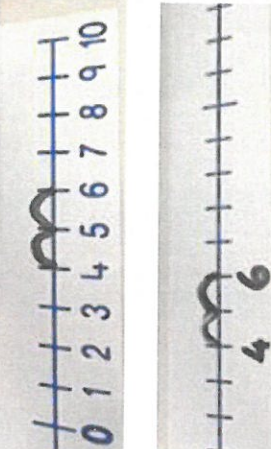


Missing digit problems:

10s	1s
20	1
30	?
?	5

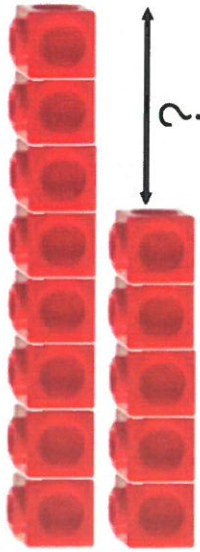
# Calculation policy: Subtraction

Key language: take away, less than, the difference, subtract, minus, fewer, decrease.

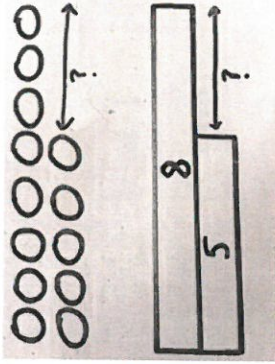
Concrete	Pictorial	Abstract
<p><b>Physically taking away and removing objects from a whole</b> (ten frames, Numicon, cubes and other items such as beanbags could be used).</p> <p><math>4 - 3 = 1</math></p> 	<p>Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.</p> 	<p><math>4 - 3 =</math></p> <p><math>\square = 4 - 3</math></p> 
<p><b>Counting back</b> (using number lines or number tracks) children start with 6 and count back 2.</p> <p><math>6 - 2 = 4</math></p> 	<p>Children to represent what they see pictorially e.g.</p> 	<p>Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line</p> 

**Finding the difference** (using cubes, Numicon or Cuisenaire rods, other objects can also be used).

Calculate the difference between 8 and 5.



Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.



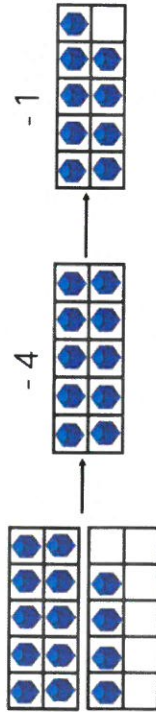
Find the difference between 8 and 5.

8 - 5, the difference is

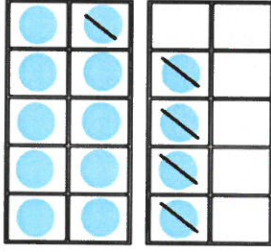
Children to explore why  $9 - 6 = 8 - 5 = 7 - 4$  have the same difference.

**Making 10** using ten frames.

$14 - 5$

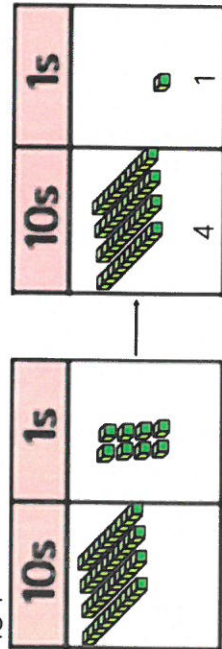


Children to present the ten frame pictorially and discuss what they did to make 10.

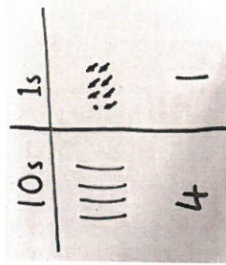


**Column method** using base 10.

48-7



Children to represent the base 10 pictorially.



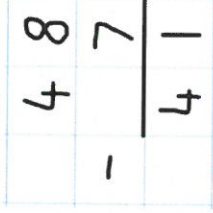
Children to show how they can make 10 by partitioning the subtrahend.

$$14 - 5 = 9$$

$$14 - 4 = 10$$

$$10 - 1 = 9$$

Column method or children could count back 7.



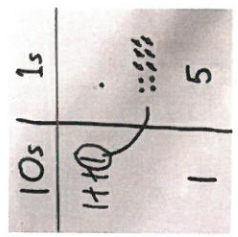
Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because  $41 = 30 + 11$ .

$$\begin{array}{r} 341 \\ - 26 \\ \hline 15 \end{array}$$

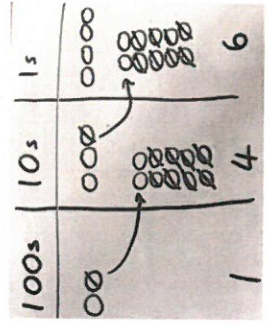
Formal column method. Children must understand what has happened when they have crossed out digits.

$$\begin{array}{r} 234 \\ - 88 \\ \hline 6 \end{array}$$

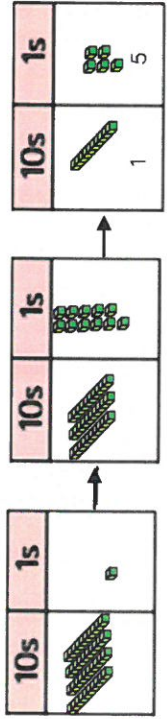
Represent the base 10 pictorially, remembering to show the exchange.



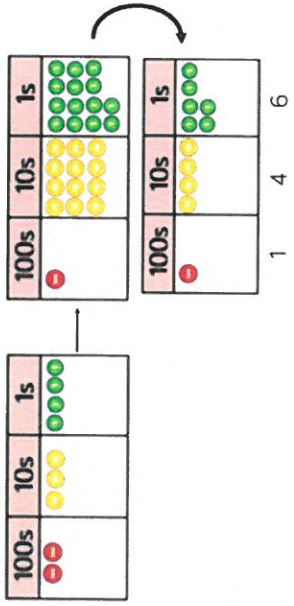
Represent the place value counters pictorially, remembering to show what has been exchanged.



Column method using base 10 and having to exchange.  
41 - 26



Column method using place value counters.  
234 - 88



## Conceptual variation; different ways to ask children to solve 391 - 186

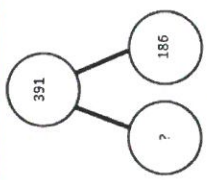
Raj spent £391, Timmy spent £186. How much more did Raj spend?

Missing digit calculations

$$\begin{array}{r} 39\ \square \\ - \square\square\ 6 \\ \hline \square\ 0\ 5 \end{array}$$

$$\begin{array}{r} 391 \\ - 186 \\ \hline \end{array}$$

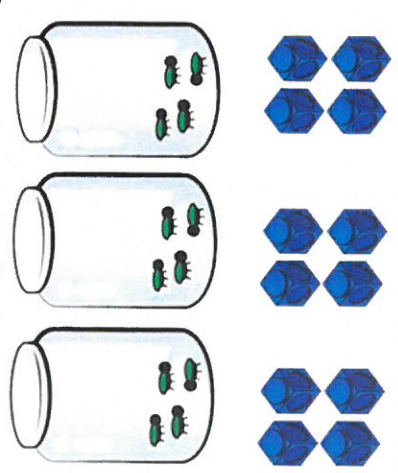
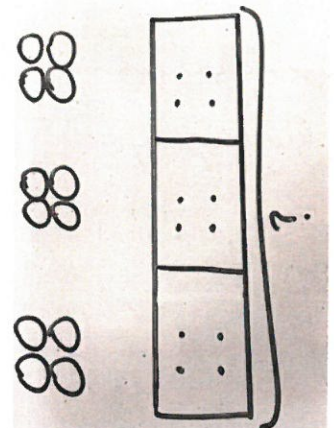
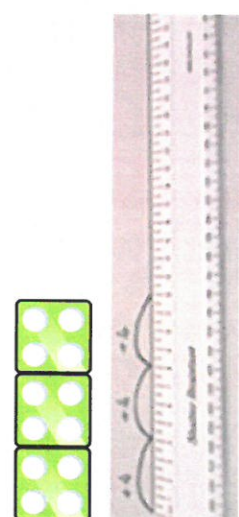
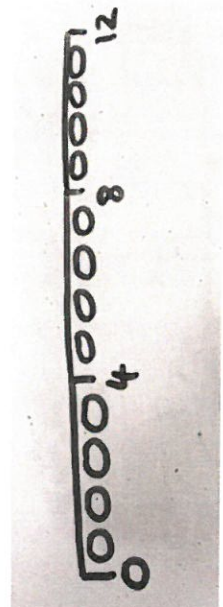

What is 186 less than 391?



391	?
186	?

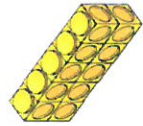
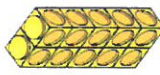
# Calculation policy: Multiplication

Key language: double, times, multiplied by, the product of, groups of, lots of, equal groups.

Concrete	Pictorial	Abstract
<p>Repeated grouping/repeated addition</p> $3 \times 4$ $4 + 4 + 4$ <p>There are 3 equal groups, with 4 in each group.</p> 	<p>Children to represent the practical resources in a picture and use a bar model.</p> 	$3 \times 4 = 12$ $4 + 4 + 4 = 12$
<p>Number lines to show repeated groups-</p> $3 \times 4$  <p>Cuisenaire rods can be used too.</p>	<p>Represent this pictorially alongside a number line e.g.:</p> 	<p>Abstract number line showing three jumps of four.</p> $3 \times 4 = 12$ 

Use arrays to illustrate commutativity counters and other objects can also be used.

$$2 \times 5 = 5 \times 2$$

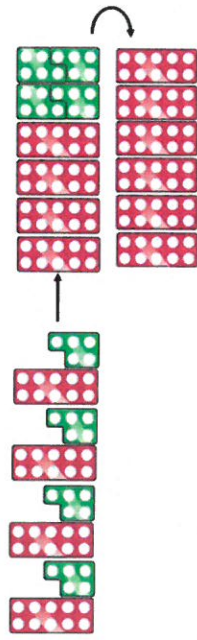


2 lots of 5

5 lots of 2

Partition to multiply using Numicon, base 10 or Cuisenaire rods.

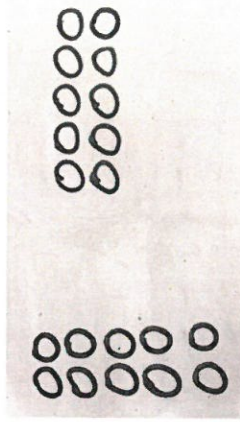
$$4 \times 15$$



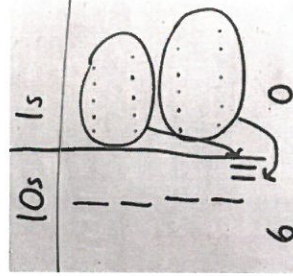
Formal column method with place value counters (base 10 can also be used.)  $3 \times 23$

<b>10s</b>	<b>1s</b>
6	9

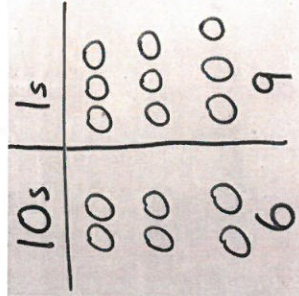
Children to represent the arrays pictorially.



Children to represent the concrete manipulatives pictorially.



Children to represent the counters pictorially.



Children to be able to use an array to write a range of calculations e.g.

$$10 = 2 \times 5$$

$$5 \times 2 = 10$$

$$2 + 2 + 2 + 2 + 2 = 10$$

$$10 = 5 + 5$$

Children to be encouraged to show the steps they have taken.

$$4 \times 15$$

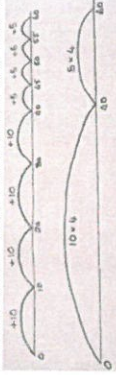
$$10 \ 5$$

$$10 \times 4 = 40$$

$$5 \times 4 = 20$$

$$40 + 20 = 60$$

A number line can also be used



Children to record what it is they are doing to show understanding.

$$3 \times 23$$

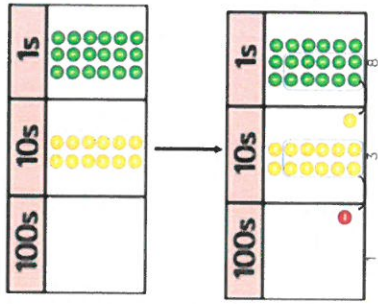
$$3 \times 20 = 60$$

$$3 \times 3 = 9$$

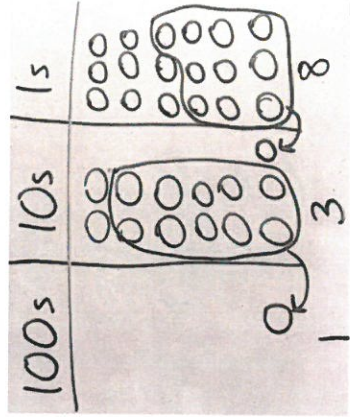
$$60 + 9 = 69$$

$$\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array}$$

Formal column method with place value counters.



Children to represent the counters/base 10, pictorially e.g. the image below.



Formal written method

$$6 \times 23 =$$

$$23$$

$$\begin{array}{r} \times 6 \\ \hline 138 \\ 11 \end{array}$$

When children start to multiply  $3d \times 3d$  and  $4d \times 2d$  etc., they should be confident with the abstract:

To get 744 children have solved  $6 \times 124$ .  
To get 2480 they have solved  $20 \times 124$ .

$$\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \end{array}$$

Answer: 3224

## Conceptual variation; different ways to ask children to solve $6 \times 23$

Mai had to swim 23 lengths, 6 times a week.

How many lengths did she swim in one week?

23	23	23	23	23
----	----	----	----	----

?

Find the product of 6 and 23

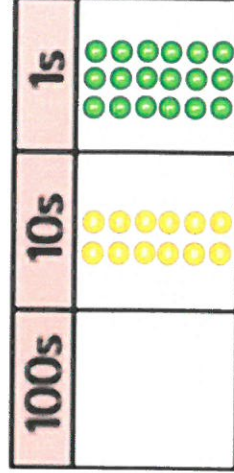
$$6 \times 23 =$$

$$\square = 6 \times 23$$

$$\begin{array}{r} 6 \quad 23 \\ \times 23 \\ \hline \end{array}$$

With the counters, prove that  $6 \times 23 = 138$

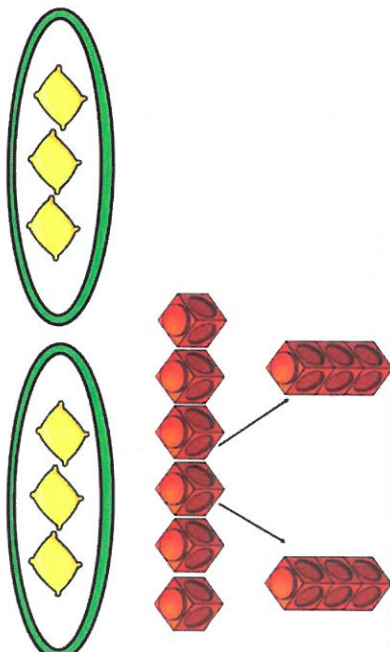
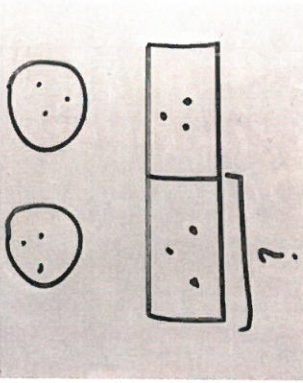
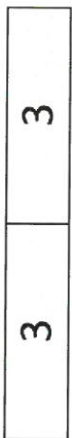
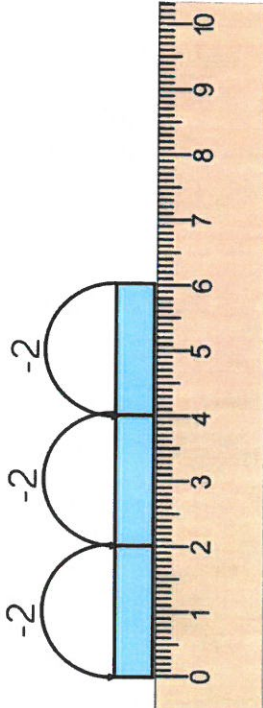
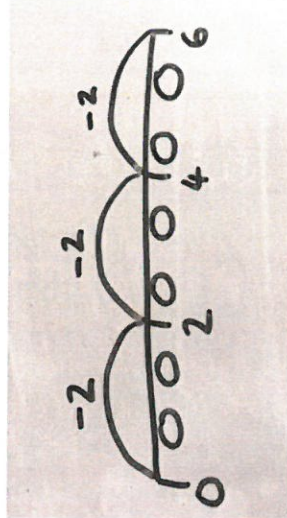
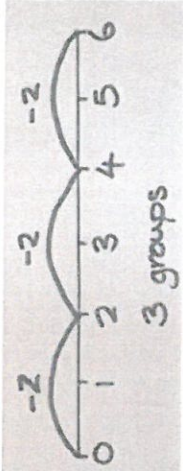
What is the calculation?  
What is the product?





# Calculation policy: Division

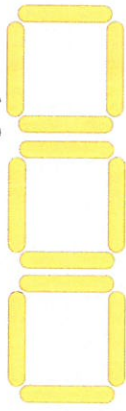
Key language: share, group, divide, divided by, half.

Concrete	Pictorial	Abstract
<p>Sharing using a range of objects.</p> <p><math>6 \div 2</math></p>  <p>The image shows two green ovals, each containing three yellow diamonds. Below them are six red hexagonal objects arranged in a row. Two arrows point from the first and fourth hexagons to two separate stacks of three hexagons each, illustrating the division of the total into two equal groups.</p>	<p>Represent the sharing pictorially.</p>  <p>The image shows two simple faces representing people. Below them is a rectangular box divided into two equal halves. The left half contains three dots, and the right half contains three dots. A question mark is placed below the right half, suggesting a problem to be solved.</p>	<p><math>6 \div 2 = 3</math></p>  <p>A simple rectangular box divided into three equal vertical sections. The number '3' is written in the middle section.</p> <p>Children should also be encouraged to use their 2 times tables facts.</p>
<p>Repeated subtraction using Cuisenaire rods above a ruler.</p> <p><math>6 \div 2</math></p>  <p>The image shows a ruler from 0 to 10. Three blue rods, each representing the number 2, are placed above the ruler. Three black arcs are drawn above the rods, each starting from the left edge of a rod and ending at its right edge, representing the subtraction of 2 from 6. Below the ruler, the text '3 groups of 2' is written.</p>	<p>Children to represent repeated subtraction pictorially.</p>  <p>A number line from 0 to 6. Three black arcs are drawn above the line, each starting from a point and ending at a point 2 units to the left. The arcs are labeled '-2' at their starting points. Below the line, the numbers 0, 2, 4, and 6 are marked. The text '3 groups' is written below the line.</p>	<p>Abstract number line to represent the equal groups that have been subtracted.</p>  <p>A number line from 0 to 6. Three black arcs are drawn above the line, each starting from a point and ending at a point 2 units to the left. The arcs are labeled '-2' at their starting points. Below the line, the numbers 0, 2, 4, and 6 are marked. The text '3 groups' is written below the line.</p>

**2d + 1d with remainders** using lollipop sticks. Cuisenaire rods, above a ruler can also be used.

$13 \div 4$

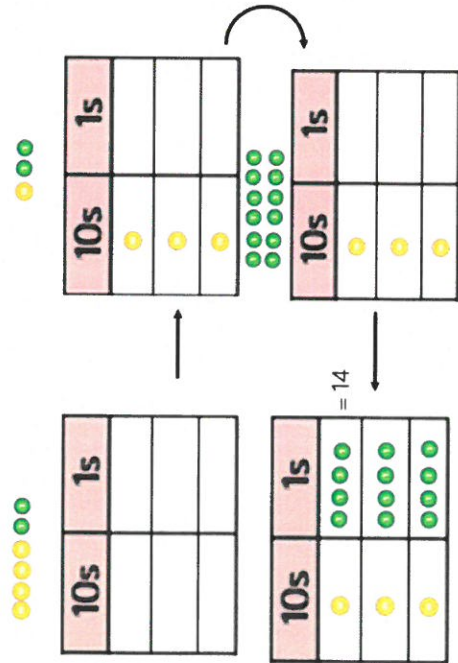
Use of lollipop sticks to form wholes - squares are made because we are dividing by 4.



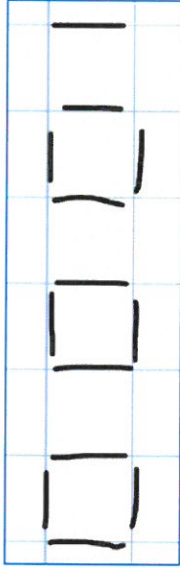
There are 3 whole squares, with 1 left over.

**Sharing using place value counters.**

$42 \div 3 = 14$

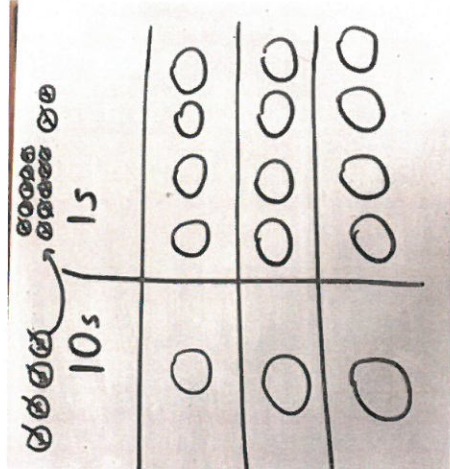


Children to represent the lollipop sticks pictorially.



There are 3 whole squares, with 1 left over.

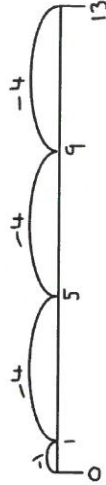
Children to represent the place value counters pictorially.



$13 \div 4 = 3$  remainder 1

Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line.

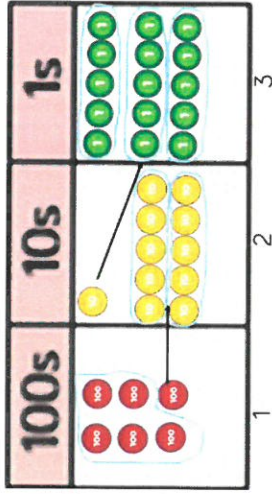
'3 groups of 4, with 1 left over'



Children to be able to make sense of the place value counters and write calculations to show the process.

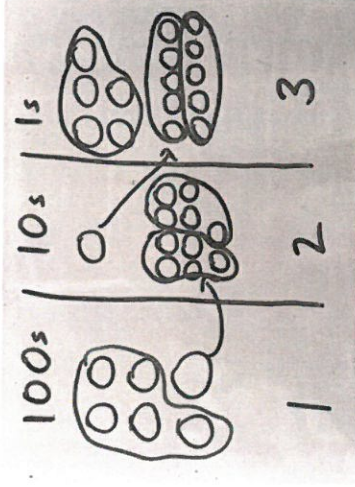
$42 \div 3$   
 $42 = 30 + 12$   
 $30 \div 3 = 10$   
 $12 \div 3 = 4$   
 $10 + 4 = 14$

Short division using place value counters to group.  
 $615 \div 5$



1. Make 615 with place value counters.
2. How many groups of 5 hundreds can you make with 6 hundred counters?
3. Exchange 1 hundred for 10 tens.
4. How many groups of 5 tens can you make with 11 ten counters?
5. Exchange 1 ten for 10 ones.
6. How many groups of 5 ones can you make with 15 ones?

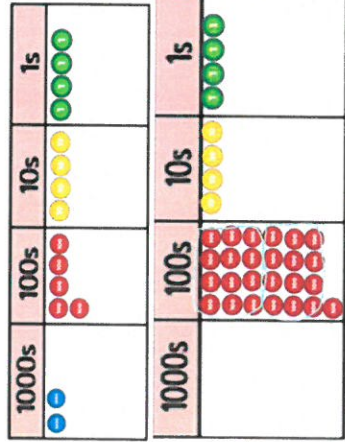
Represent the place value counters pictorially.



Children to do the calculation using the short division scaffold.

$$\begin{array}{r} 123 \\ 5 \overline{)615} \end{array}$$




Long division using place value counters  
 $2544 \div 12$



We can't group 2 thousands into groups of 12 so will exchange them.




We can group 24 hundreds into groups of 12 which leaves with 1 hundred.

$$\begin{array}{r} 212 \\ 12 \overline{)2544} \\ \underline{24} \phantom{00} \\ 14 \phantom{00} \\ \underline{12} \phantom{00} \\ 24 \phantom{00} \\ \underline{24} \phantom{00} \\ 0 \phantom{00} \end{array}$$

1000s	100s	10s	1s
			

After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.

$$\begin{array}{r} 0.2.1 \\ 12 \overline{) 2544} \\ \underline{24} \\ 14 \\ \underline{12} \\ 2 \end{array}$$

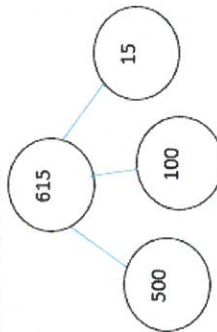
1000s	100s	10s	1s
			

After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 groups of 12, which leaves no remainder.

$$\begin{array}{r} 0.2.1.2 \\ 12 \overline{) 2544} \\ \underline{24} \\ 14 \\ \underline{12} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

## Conceptual variation; different ways to ask children to solve $615 \div 5$

Using the part-whole model below, how can you divide 615 by 5 without using short division?



I have £615 and share it equally between 5 bank accounts. How much will be in each account?




615 pupils need to be put into 5 groups. How many will be in each group?

$$5 \overline{) 615}$$

$$615 \div 5 =$$

$$\square \div 5 = 615 \div 5$$

What is the calculation?  
What is the answer?

100s	10s	1s
		

# Calculation policy: Guidance

	EYFS/Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	<p>Combining two parts to make a whole: part whole model.</p> <p>Starting at the bigger number and counting on- using cubes.</p> <p>Regrouping to make 10 using ten frame.</p>	<p>Adding three single digits.</p> <p>Use of base 10 to combine two numbers.</p>	<p>Column method- regrouping.</p> <p>Using place value counters (up to 3 digits).</p>	<p>Column method- regrouping.</p> <p>(up to 4 digits)</p>	<p>Column method- regrouping.</p> <p>Use of place value counters for adding decimals.</p>	<p>Column method- regrouping.</p> <p>Abstract methods.</p> <p>Place value counters to be used for adding decimal numbers.</p>
Subtraction	<p>Taking away ones</p> <p>Counting back</p> <p>Find the difference</p> <p>Part whole model</p> <p>Make 10 using the ten frame</p>	<p>Counting back</p> <p>Find the difference</p> <p>Part whole model</p> <p>Make 10</p> <p>Use of base 10</p>	<p>Column method with regrouping.</p> <p>(up to 3 digits using place value counters)</p>	<p>Column method with regrouping.</p> <p>(up to 4 digits)</p>	<p>Column method with regrouping.</p> <p>Abstract for whole numbers.</p> <p>Start with place value counters for decimals- with the same amount of decimal places.</p>	<p>Column method with regrouping.</p> <p>Abstract methods.</p> <p>Place value counters for decimals- with different amounts of decimal places.</p>

<p><b>Multiplication</b></p>	<p>Recognising and making equal groups. Doubling Counting in multiples Use cubes, Numicon and other objects in the classroom</p>	<p>Arrays- showing commutative multiplication</p>	<p>Arrays <math>2d \times 1d</math> using base 10</p>	<p>Column multiplication- introduced with place value counters. (2 and 3 digit multiplied by 1 digit)</p>	<p>Column multiplication Abstract only but might need a repeat of year 4 first (up to 4 digit numbers multiplied by 1 or 2 digits)</p>	<p>Column multiplication Abstract methods (multi-digit up to 4 digits by a 2 digit number)</p>
	<p>Sharing objects into groups Division as grouping e.g. I have 12 sweets and put them in groups of 3, how many groups? Use cubes and draw round 3 cubes at a time.</p>	<p>Division as grouping Division within arrays- linking to multiplication Repeated subtraction</p>	<p>Division with a remainder- using lollipop sticks, times tables facts and repeated subtraction. <math>2d</math> divided by <math>1d</math> using base 10 or place value counters</p>	<p>Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)</p>	<p>Short division (up to 4 digits by a 1 digit number including remainders)</p>	<p>Short division Long division with place value counters (up to 4 digits by a 2 digit number) Children should exchange into the tenths and hundredths column too</p>
<p><b>Division</b></p>						