

PHJS Maths Curriculum Overview 2022-23

Please note:

- The White Rose document is their sequencing and coverage suggestion.
- The second grid is a working document that will act as a coverage document as well as a Medium-Term Plan.
- Adjustments have and will be made from the White Rose document to suit the needs of each year group, for example the Year 6 curriculum is more circular whereas lower down the school is more blocked to allow for more consolidation. This will also be adjusted based on other factors such as assessment weeks, Christmas and school residentials.
- Another factor affecting recent curriculum development has been Covid and the 'Ready to Progress' document criteria. This will be assessed as the year goes on and adapted along with the needs of the year group.
- Some of the coverage is slightly different across year groups based on Pound Hill Junior School expectations by the end of each phase, for example year 4 will spend more time covering times tables and telling the time and less on decimals, whereas year 5 will spend more time on fractions and less time on telling time. Also, 'Statistics' is covered in Science.
- As year groups plan their weekly lessons this year, they will consider the context and cross curricular links of their learning for a particular strand and add this to the working document
- This will be updated on the school website regularly
- Below the overviews are the Calculation Policy and Language Progression Document. This demonstrates the progression of challenge across the year groups for each strand of the Maths Curriculum.

National Curriculum Coverage Maths	Place value	Addition and Subtraction	Multiplication & Division	Fractions	Decimals & Percentages	Length, Perimeter & Area	Money & Time	Mass & Capacity	Properties of Shape	Statistics	Ratio, Algebra
	Year 3										
Autumn	✓	✓	✓								
Spring			✓	✓		✓	✓	✓			
Summer				✓			✓	✓	✓	✓	
Year 4											
Autumn	✓	✓				✓	✓				
Spring			✓	✓	✓						
Summer							✓	✓	✓	✓	
Year 5											
Autumn	✓	✓	✓			✓					
Spring			✓	✓	✓						
Summer						✓	✓	✓	✓	✓	
Year 6											
Autumn	✓	✓	✓	✓	✓		✓		✓		
Spring			✓		✓	✓		✓	✓		✓
Summer							✓		✓	✓	✓

Year 3 – White Rose Curriculum Suggestion

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	
Autumn term	Number Place value VIEW			Number Addition & subtraction VIEW				Number Multiplication & division VIEW					
Spring term	Number Multiplication & division VIEW			Measurement Money VIEW	Statistics VIEW		Measurement Length & perimeter VIEW		Number Fractions VIEW		Consolidation		
Summer term	Number Fractions VIEW			Measurement Time VIEW			Geometry Properties of shape VIEW		Measurement Mass & capacity VIEW			Consolidation	

Year 3

	1	2	3	4	5	6	7	8	9	10	11	12	13
Autumn	<u>Place Value</u>			<u>Addition and Subtraction</u>						<u>Multiplication & Division</u> Problem Solving			
Spring	<u>Multiplication & Division</u>		<u>Money</u>	<u>Length & Mass</u>			<u>Fractions</u>				<u>Capacity & Volume & Assessment</u>		
Summer	<u>Time</u>			<u>Consolidation</u>		<u>Problem Solving</u>	<u>Shape</u>	<u>Truleigh Hill</u>	<u>Assessment</u>	<u>Shape & Statistics</u>			

Year 4 – White Rose Curriculum Suggestion

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value VIEW				Number Addition & subtraction VIEW			Measurement Length & perimeter VIEW		Number Multiplication & division VIEW		
Spring term	Number Multiplication & division VIEW		Measurement Area VIEW	Number Fractions VIEW			Number Decimals VIEW		Consolidation			
Summer term	Number Decimals VIEW	Measurement Money VIEW	Measurement Time VIEW	Statistics VIEW	Geometry Properties of shape VIEW			Geometry Position & direction VIEW	Consolidation			

Year 4

Unit of time:	1	2	3	4	5	6	7	8	9	10	11	12	13	
Autumn	<u>Place Value</u>			<u>Addition and Subtraction</u>			<u>Place value (1000 more 1000 less)</u>	<u>Money</u>			<u>Assessment</u>	<u>Length, Perimeter & Area</u>		
Spring	<u>Multiplication & Division</u>					<u>Fractions</u>				<u>Decimals & Percentage</u>			<u>Assessment</u>	<u>Angles</u>
Summer	<u>Shape</u> <ul style="list-style-type: none"> • 2D shapes and lines • Lines of symmetry • 2D coordinates • 3D shapes 					<u>Time</u>				<u>Capacity and volume</u>		<u>Mass and statistics</u>	<u>Consolidation/ Assessment</u>	

Year 5 – White Rose Curriculum Suggestion

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value VIEW		Number Addition & subtraction VIEW		Statistics VIEW		Number Multiplication & division VIEW			Measurement Perimeter & area VIEW		
Spring term	Number Multiplication & division VIEW		Number Fractions VIEW					Number Decimals & percentages VIEW		Consolidation		
Summer term	Consolidation	Number Decimals VIEW		Geometry Properties of shape VIEW		Geometry Position & direction VIEW		Measurement Converting units VIEW		Measurement Volume VIEW		

Year 5

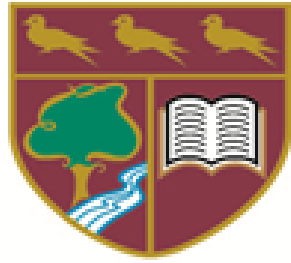
Unit of time:	1	2	3	4	5	6	7	8	9	10	11	12	13
Autumn	<u>Place Value</u>				<u>Addition and Subtraction</u>		<u>Multiplication</u>		<u>Properties of number</u> Factors, Multiples, Square/cube numbers		<u>Assessment</u>	<u>Length & Perimeter</u>	<u>Timetable s</u>
Spring	<u>Division</u>	<u>Fractions</u>					<u>Decimals</u>		<u>Percentage</u>		<u>Assessment</u>	<u>Problem Solving</u>	
Summer	<u>IOW Week – Target Maths puzzles</u>	<u>Measures</u>		<u>Angles & Triangles</u>		<u>Consolidation</u> <u>Negative numbers</u> <u>Statistics</u>		<u>Time</u>	<u>Assessment</u>	<u>Money</u>	<u>Shape</u>		

Year 6 – White Rose Curriculum Suggestion

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value VIEW	Number Addition, subtraction, multiplication & division VIEW					Number Fractions VIEW					Geometry Position & direction VIEW
Spring term	Number Decimals VIEW	Number Percentages VIEW	Number Algebra VIEW	Measurement Converting units VIEW	Measurement Perimeter, area & volume VIEW	Number Ratio VIEW	Consolidation					
Summer term	Statistics VIEW	Geometry Properties of shape VIEW	Consolidation & themed projects VIEW									

Year 6

	1	2	3	4	5	6	7	8	9	10	11	12	13
Autumn	<u>Place Value</u> • Rounding		<u>Addition, Subtraction Multiplication & Division</u> • Mental strategies			<u>Multiples, factors & primes</u>	<u>Angles & Circles</u>	<u>BIDMAS</u>	<u>Money</u>	<u>Fractions & Decimals</u>			<u>Multiplication & Division</u>
Spring	<u>Negative numbers</u>	<u>Hindleap</u>	<u>Long Multiplication & Division</u>	<u>Fractions, Decimals Percentage</u>			<u>Perimeter & Area</u>	<u>2D Shape</u> Circles, triangles	<u>Coordinates</u>	<u>Imperial Measurement</u>	<u>Assessment</u>	<u>Line Graphs</u> <u>Averages</u>	<u>Ratio, Proportion, Scale, Algebra</u>
Summer	<u>Algebra, Time, Sequences</u>	<u>Consolidation & SATS</u> • Triangles, %, Fractions, Volume, Averages, financial graphs, proportions					<u>Milkshake Maths</u>						



**Pound Hill
Junior School**

Calculation Policy

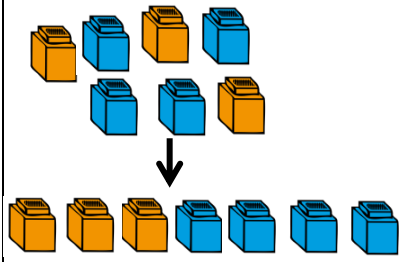
This policy has been designed to model the small steps needed when children are learning the four operations. The policy begins at the initial phase although most children will have secured this understanding in Key Stage 1. The greater depth demonstrates where learning can be made awkward to challenge children to think differently.

Addition

Key Language Sum, total, parts and wholes, plus, add, altogether, more,

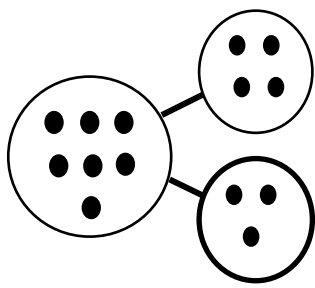
Concrete

Combining two parts to make a whole
(Use a wide range of resource to ensure children understand objects represent an amount)



Pictorial

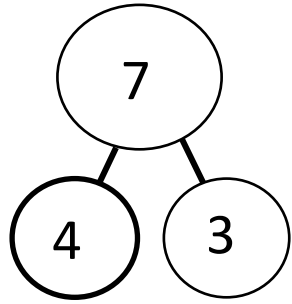
Represent the objects using dots or crosses. They can represent putting the parts together to make a whole in a part part whole diagram.



Abstract

Write the abstract number sentence.

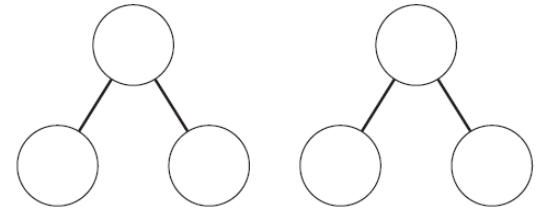
$4 + 3 = 7$
Four is a part, 3 is a part and the whole is 7.



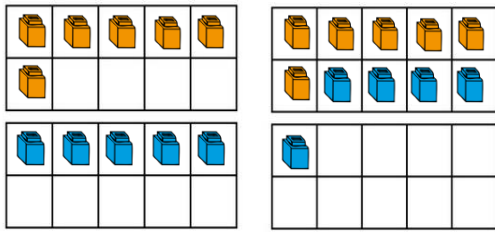
Greater Depth

James wants to partition his number in different ways.

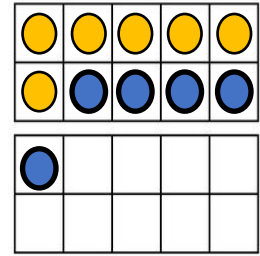
Complete the part-whole models to show two ways he could do this.



Regrouping to make 10; using ten frames and counters/cubes or numicon.



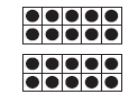
Draw the ten frames and counters.



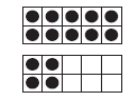
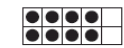
Develop an understanding of equality e.g

$6 + \square = 11$
 $6 + 5 = 5 + \square$
 $6 + 5 = \square + 4$

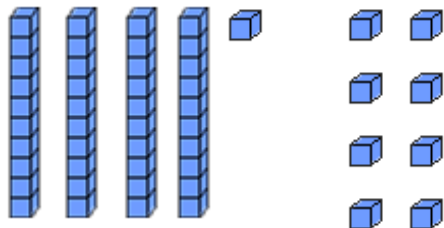
Sam, Jenny and Tom each make a number.



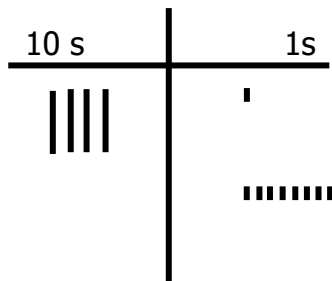
Sam has 6 more than Jenny and 6 less than Tom. Match each number to the correct position.



TO + O using diennes. Children need an understanding of partitioning and place value.
41 + 8



Represent the diennes as lines or a number on a place value grid.
41 + 8



Using part part whole model or partition the numbers mentally

$$1 + 8 = 9$$

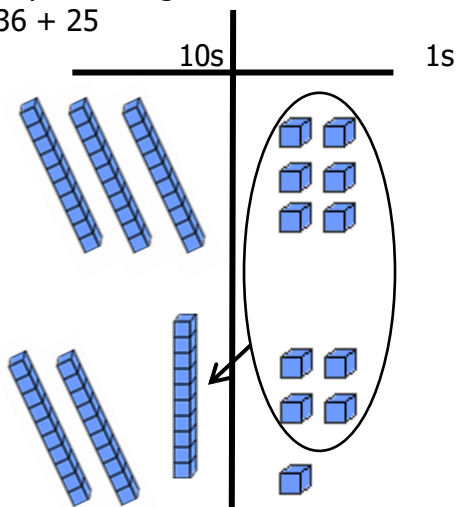
$$40 + 9 = 49$$

Fill in the missing numbers and explain what you notice.

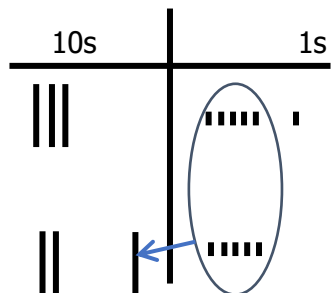
$$23 + \square = 30 \quad 33 - \square = 30$$

$$43 + \square = 50 \quad 53 - 3 = \square$$

TO + TO using diennes. Children continue to develop understanding of partitioning
36 + 25



Represent the diennes as lines of a number on a place value grid.
36 + 25



Learning the strategy of number bonds to support adding and beginning to use a written method.

$$36 + 25 \quad 30 + 20 = 50$$

$$\begin{matrix} \swarrow & \searrow \\ 1 & 5 \end{matrix} \quad 5 + 5 = 10$$

$$50 + 10 + 1 = 61$$

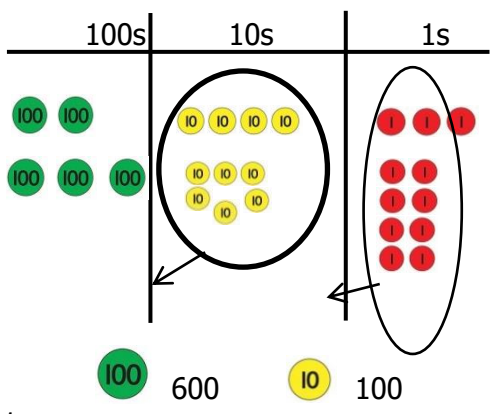
	3	6
+	2	5
	6	1
	±	

Anna buys a teddy and a pencil.



The teddy costs 20p more than the pencil.
How much does she pay altogether.

Use of counters to add HTO + HTO/HTO + TO. Developing understanding that we can exchange 10 ones for 1 tens etc.
 $243 + 368$



1

Represent the counters in a place value chart as counter and then progressing onto numerical values.

100s	10s	1s
200	40	3
+ 300	60	8
500	100	11

$500 + 100 + 11 = 611$

Using a formal written method to add three digit numbers together.

	2	4	3
+	3	6	8
	6	1	1
	±	±	

Here are some addition calculation. Without solving the calculations, decide which ones

- Carry no digits
- Has the largest answer
- Have to carry 2 digits.

791
 $+163$

124
 $+233$

579
 $+221$

Subtraction

Key Language

Take away, less than, the difference, minus, fewer, decrease

Concrete

Pictorial

Abstract

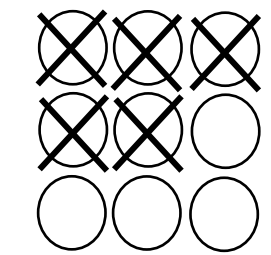
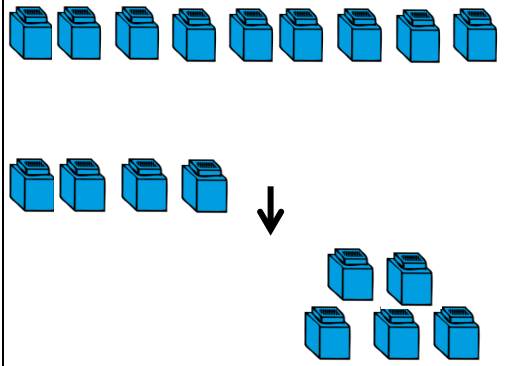
Greater Depth

Physically taking away and removing objects from a whole.
 (Use a wide range of resource to ensure children understand objects represent an amount)

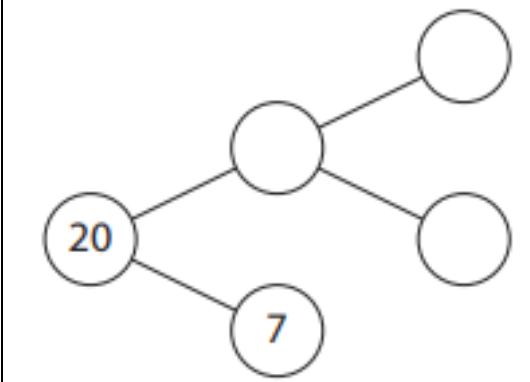
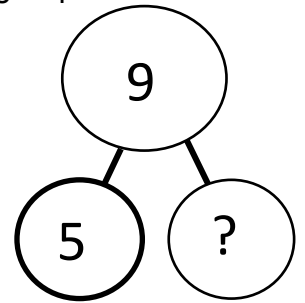
Draw the concrete resources they are using and cross out the correct amount.

Write the abstract number sentence.

Complete:



$9 - 5 = 4$



Create your own diagram.

Counting back on a number line, starting with the biggest number.
 $6 - 2 = 4$

Represent what they see pictorially

Represent the calculation on a number line to show their jumps. This can include a blank number line.

$6 - 2 = 4$

Miss Froggy can only leap in 2s on a numberline. She started on 20 and leapt back 6 Miss Froggy leaps. Show this on a number line.
 Finish off the number sentence to show Miss Froggy's journey.

Finding the difference using physical objects.

Calculate the difference between 8 and 5.

Draw the object they have used or a bar model to illustrate what needs calculating.

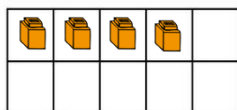
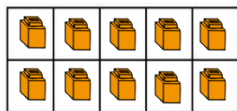
Find the difference between 8 and 5.
 $8 - 5$, the difference is 3

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

Using ten frames and physical objects.

$$14 - 5$$

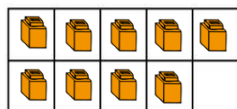
↙ ↘
4 1



-4

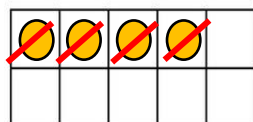
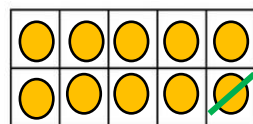


-1



Present the tens frame pictorially.

$$14 - 5$$



Show how to make 10 by partitioning the subtrahend (the part you are taking away)

$$14 - 5 = 9$$



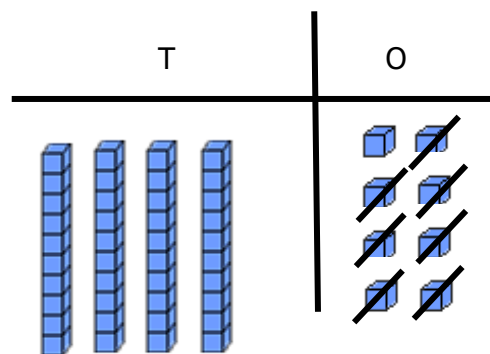
$$14 - 4 = 10$$

$$10 - 1 = 9$$

12 children are on a bus.
8 children get off the bus.
Then 4 more children get off the bus.
How many children were left on the bus?

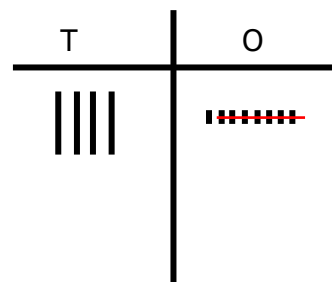


Column method using diennes without exchanging
48-7



Represent the diennes pictorially

$$48 - 7$$



Partition the numbers mentally to subtract.
May introduce the column method without exchanging here.

	4	8
-		7
	4	1

Flo and Jim are answering a problem:

Danny has read 62 pages of the class book, Jack has read 41. How many more pages has Danny read than Jack?
Flo does the calculation $62 + 41$. Jim does the calculation $62 - 41$. Who is correct?

Explain how you know.

Column method using diennes to solve TO – TO with exchanging

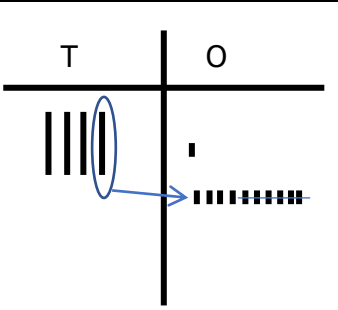
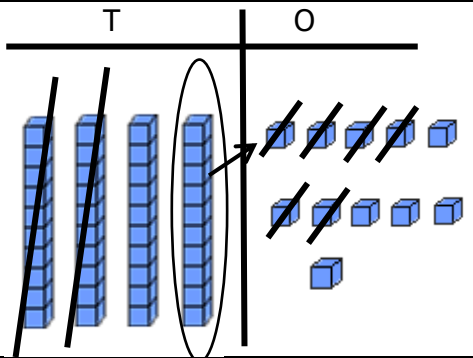
$$41 - 26$$

Represent the resource, remembering to show the exchange.

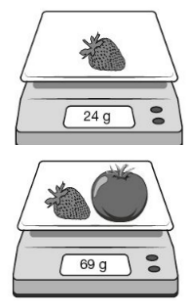
$$41 - 26$$

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

The strawberry weighs 24 grams.



	3	11
-	2	6
	1	5

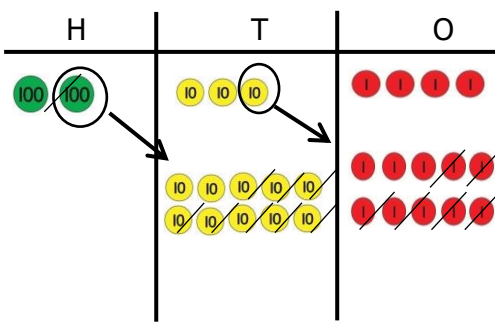


The strawberry and tomato together weigh 69 grams.

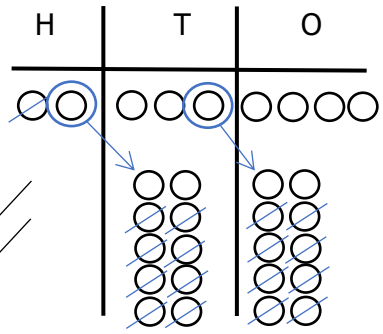
What does the tomato weigh?

Column method using counters to solve HTO-HTO

234 - 188



Represent the resource, remembering to show the exchange.



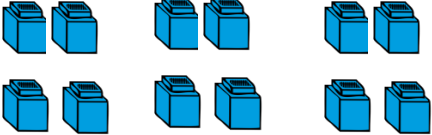
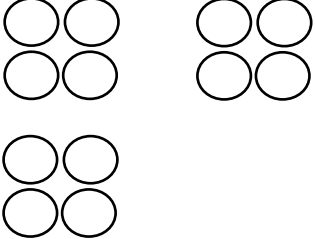

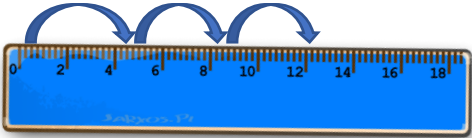
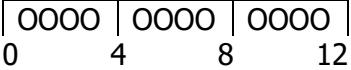
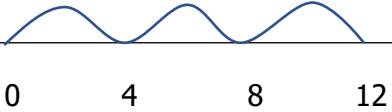

Formal column method. Children must understand what has happened when they have crossed out digits.

	1	2	1	4
-	1	8	8	
	0	4	6	

5003 - 1998

What are the different ways you could do this calculation?

Which is the most efficient and why?

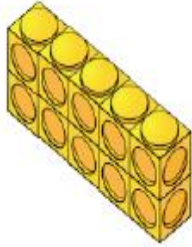
Multiplication			
Key Language	Times, multiplied by, product, groups of, lots of, equal groups.		
Concrete	Pictorial	Abstract	Greater Depth
<p>Repeated addition</p> <p>$4 + 4 + 4$</p> <p>There are 3 equal groups with 4 in each group.</p> 	<p>Represent the practical resource with a picture.</p> 	<p>Abstract</p> <p>$4 + 4 + 4 = 12$</p> <p>$4 + 4 + 4 = 3 \times 4$</p> <p>$3 \times 4 = 12$</p>	<p>Greater Depth</p> <p>Tara has 4 books. Ravi has 3 times as many books as Tara.</p>  <p>How many books do Tara and Ravi have altogether.</p>
<p>Repeated addition</p> <p>Shown on a numberline.</p> 	<p>Pictorially represented on a numberline.</p> <p>3 lots of 4 is 12.</p> 	<p>Show on a blank numberline.</p> <p>$3 \times 4 = 12$</p> 	<p>Amaan solved a multiplication calculation which had 3 equal jumps. He lands on 21. Show his workings.</p> 

Arrays



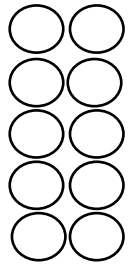
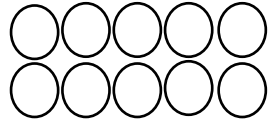
Highlights the commutativity of multiplication.

2 lots of 5



5 lots of 2

Represent the arrays in both directions.



Record a range of calculations from the arrays.

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

$$5 + 5 = 10$$

$$2 + 2 + 2 + 2 + 2 = 5 + 5$$

$$2 \times 5 = 10$$

$$5 \times 2 = 10$$

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

Amy plants 4 rows of carrots.

There are 3 carrots in each row.

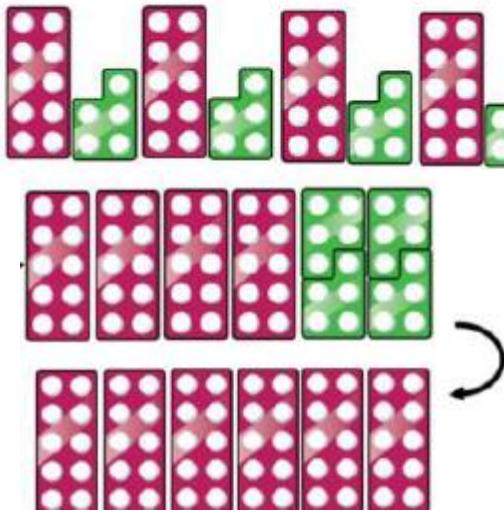
A rabbit eats 2 of the carrots.

How many carrots are left?

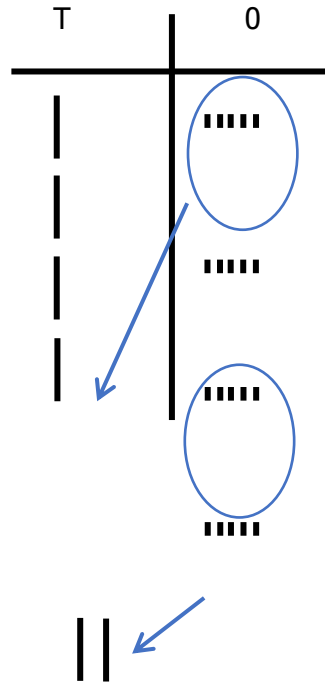
Partitioning

Use numicon to represent the number and rearrange

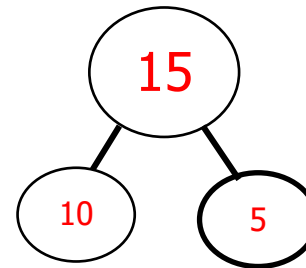
4×15



Represent the numicon as tens and ones pictorially.



Partition the larger number and multiply the parts.



$10 \times 4 = 40$

$5 \times 4 = 20$

$40 + 20 = 60$

Jack is making cards.

One sheet of paper makes 15 cards.

Jack uses 5 sheets of paper.

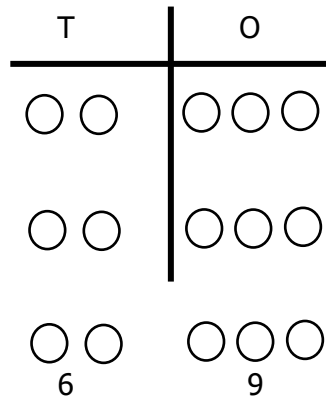
How many cards does he make?

Formal column method with counters

$$23 \times 3 = 69$$

T	O
10 10	1 1 1
10 10	1 1 1
10 10	1 1 1
60	9

Represent the counters pictorially.

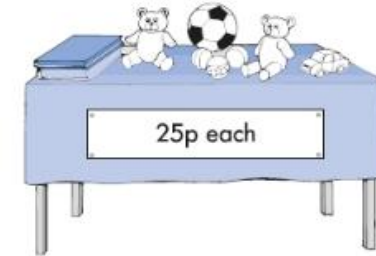


Record each step of the multiplication.

	2	3	
x		3	
		9	(3 x 3)
	6	0	(20 x 3)
	6	9	

Each toy cost 25p.

Jack buys 6 toys.



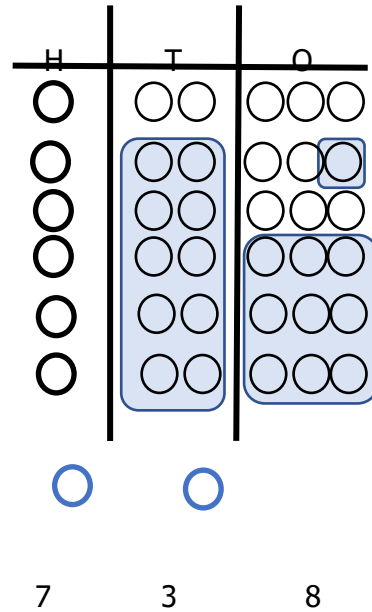
How much change does he get from £2.00

Formal column method with counters

$$6 \times 123 = 738$$

H	T	O
100	10 10	1 1 1
100	10 10	1 1 1
100	10 10	1 1 1
100	10 10	1 1 1
100	10 10	1 1 1
100	10	
700	30	8

Represent the counters pictorially.



Use a formal written method. Children must be confident with the value of each digit when multiplying.

	1	2	3
X			6
	7	3	8
	1	1	


There are 28 pupils in a class.

The teacher has 8 litres of orange juice.

She pours 225 millilitres of orange juice for every pupil

How much orange juice is left over?



Division			
Key Language	Share, group, divide		
Concrete	Pictorial	Abstract	Greater Depth
Repeated subtraction	Represent the subtraction pictorially.	Use an abstract numberline to represent equal groups are being subtracted.	Miss Smith needs 30 apples for her class. There are 5 apples in each bag. How many bags of apples does Miss Smith need altogether?
Sharing using a range of objects $6 \div 2$	Represent the sharing pictorially.	Use times table facts to support. If I know $2 \times 3 = 6$ then I know $6 \div 2 = 3$.	How many ways could you share 20 sweets between friends so everyone gets an equal amount?
Sharing using place value counters. $42 \div 3$	Represent the counters pictorially.	Partition the number into two parts linked to the divisible number.	A group of friends earn £80 by washing cars. They share the money equally. They get £16 each. How many friends are in the group?
Using resources to represent remainders. Use of lollipop sticks to form wholes – 4 sides as we are dividing by 4 $13 \div 4$ There are 3 whole squares, with 1 left over.	Represent the sticks pictorially. There are 3 whole squares, with 1 left over.	Use times table facts to support. If I know $4 \times 3 = 12$ then I know 13 is made up of 3 groups of 4, with 1 left over.	Jack wants to buy a bike that cost £107. He saves £10 each Saturday. How many Saturdays will it take him to save enough to buy the bike? 

Short division using place value counters

$615 \div 5$

Make the value with counters. Ask how many 5 hundreds's go into 600 hundred, 50s in 10 and 5s in 5.

Represent the counters pictorially.

Use the short division written method

	1	2	3
5	6	11	15

In this tower, two numbers are multiplied to give the number above.

12	
4	3

Write the missing numbers in the tower below to make it correct.

75	24	
		4

Long division using place value counters

$2544 \div 12$

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

		2	1	2
1	2	2	5	4
		2	4	
		1	4	
		1	2	
			2	4
			2	4
				0

Year 6 are calculating three thousand, six hundred and thirty three divided by twelve.

Whitney says that she knows there will be a remainder without calculating.

Is she correct? Explain your answer.

Pound Hill Junior School Language Progression

	KS1 Assumption	Year 3	Year 4	Year 5	Year 6
Number & Place Value	Two/three digit	Digit/Number Equivalent Round Compose/Decompose Partition	10 times the size of Next/previous multiple of 10/100	Multiple of 10 Tenth/hundredth Decimal places Next/previous multiple of 0.1	Powers of 10 Thousandth Decimal fraction
Number Facts	Number bonds Double/Halve Less/more than Odd/ Even Operation/ Calculation	Mental/Written Equal Number Sentence Sequence	Known facts Derived facts Further/Nearer ___/___er/___est Linear number sequence	Prime Number Square Number Cube Number	
Addition & Subtraction	Add Total Takeaway	Sum Bridge Column	Difference		
Multiplication & Division	Times Share Array	Product Groups Multiples	Remainders Scaling Factors/Multiples	Corresponding facts Common Factors/ Multiples	Relative size Proportion Ratio Formulae
Fractions	Fraction (Equal) parts Whole	Denominator Numerator Unit/non-unit fraction Split	Improper fractions Mixed numbers	Integer Decimal equivalent Percentage	Express
Geometry	Draw Points	Parallel/Perpendicular Angle Coordinates Reflection Translation 2D/3D shape Horizontal/ Vertical	Quadrant Regular Polygon Equal Perimeter Symmetry/Line of symmetry Acute/Obtuse	Orientation Area Rectilinear	Compose/Decompose Dimensions Radius Diameter Circumference

Statistics		Bar Charts Pictograms Table Record Quantity	Line Graph Discrete/Continuous Data	Mean Average	
Measurement		Length Mass Capacity	Scale Analogue/Digital Area/Perimeter	Metric/Imperial	
Language	Answer Correct	Inverse Adapt/Change Create Explain Solve Check/Reflect	Adapt Reason Estimate	Prove	

Types of language in Maths

1. The breadth of synonyms linked to one of the four calculation types (take instead of subtract, product instead of answer, altogether rather than add)
2. An understanding of superlatives (biggest, largest, tallest, smallest)
3. Words that can have different meanings outside of a mathematical context (round, product, factor, prime)
4. Terms other than superlatives that suggest comparison (between, more/less than, each, share, in order, sorting, put in the correct place)
5. Their understanding of the difference between the right answer and the wrong answer (best estimate, explain why Jack is not correct, write the correct symbol in each box, circle the improper fraction that is equivalent)
6. Verbs implying mathematical meaning (remaining, left, combine, collect, spend)
7. Compression of vocabulary through nominalisation and noun phrases – prime number, improper fraction, roman numeral, perpendicular and parallel lines, 3D shape
8. Abstract nouns – circumference, multiplication, area, perimeter