Calculations Policy

Date: March 2022
Review: March 2024

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Maths- No Problem! EYFS to Year 6

Maths – No Problem! is an evidence – based approach developed in Singapore. It is fully aligned with the 2014 English National Curriculum for Maths.
The Maths – No Problem! Primary Series was assessed by the DfE's expert panel, which judged that it met the core criteria for a high-quality textbook to support teaching for mastery.

By incorporating established learning research into a highly effective approach, Singapore has become a "laboratory of maths teaching". The Primary Maths Series is founded on the international research of Piaget, Dienes, Bruner, Skemp and Vygotsky and has been tested and refined over the last 30 years in Singapore.

Teaching Maths for Mastery

The whole class works through the programme of study at the same pace with ample time on each topic before moving on. Ideas are revisited at higher levels as the curriculum spirals through the years.

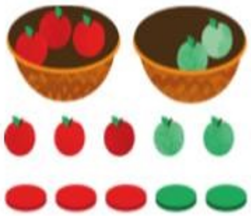
Differentiated activities

Tasks and activities are designed to be easy for children to enter while still containing challenging components. For advanced learners, the textbooks also contain non-routine questions for children to develop their higher-order thinking skills.

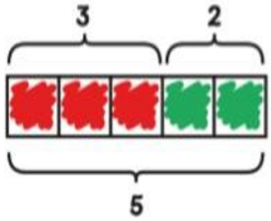
Problem Solving

Lessons and activities are designed to be taught using problem-solving approaches to encourage children's higher-level thinking. The focus is on working with children's core competencies, building on what they know to develop their relational understanding.

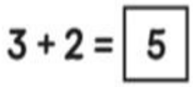
Concrete, Pictorial, Abstract (CPA) approach



Concrete
Concrete is the "doing" stage. This stage brings concepts to life by allowing children to experience and handle physical (concrete) objects. For example, if a problem involves adding pieces of fruit, children can first handle actual fruit.

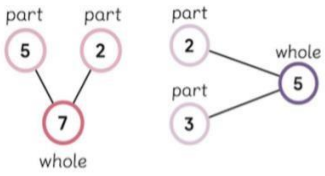


Pictorial Pictorial is the "seeing" stage. Here, the visual representations of concrete objects are used to model problems. This stage encourages children to make a mental connection between the physical object they just handle and the abstract pictures, diagrams or models that represent the objects from the problem.



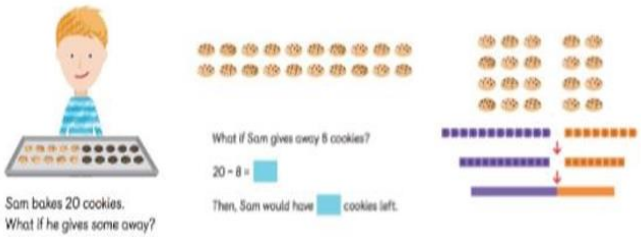
Abstract Abstract is the "symbolic" stage. Children use abstract symbols to model problems and need a solid understanding of the concrete and pictorial stages of the problem. Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols.

Number Bonds: Number bonds show how numbers are split or combined. An essential strategy of Singapore maths, number bonds reflect the 'part – part – whole' relationship of numbers. Number bonds are represented by circles connected by lines.

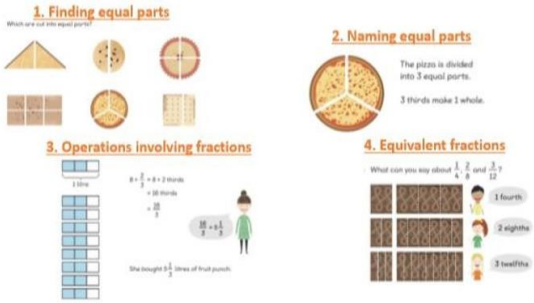


Bar Modelling: Bar modelling is an essential maths mastery strategy.

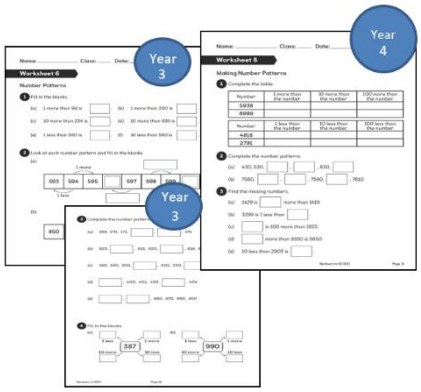
A Singapore-style of maths model, bar modelling, allows children to draw and visualise mathematical concepts to solve problems.



Fractions: In Singapore, the understanding of fractions is rooted in the (CPA) model, where children use paper squares and strips to learn the link between the concrete and the abstract.



Variations: The questions and examples are carefully varied by expert authors to encourage children to think about the maths. Rather than provide a mechanical repetition, the examples are designed to deepen.



Structure of lessons

In Focus

Includes questions related to various lesson objectives as an introductory activity for pupils.

Let's Learn

Introduces new concepts through CPA approach with the use of engaging pictures and manipulatives. Guided examples are provided for reinforcement.

Guided Practice

Comprises questions for further consolidation and for the immediate evaluation for children's learning.

Mind Workout
Challenging non-routine questions for pupils to apply relevant heuristics and to develop higher-order thinking skills.

Activity Time
Provides pupils with opportunities to work as individuals or in small groups to explore mathematical concepts or to play games.

Maths Journal
Provides children with opportunities to show their understanding of the mathematical concepts learnt.

Self-Check
Allows children to assess their own learning after each chapter.

EYFS Mathematics Policy

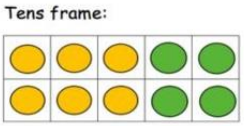
One to One Correspondence: Children first learn to count using one to one correspondence. Children will be encouraged to say a number each time they touch and object.

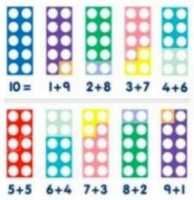
Using Physical Resources: Children begin by practically taking away one or adding one more. They will also be able to use drawings to support them.

Numicon: Children will be able to use Numicon to count, as well as ordering them from smallest to biggest to create their own number line. Children should be able to see which Numicon shape is one more or one less.

Recognising Numerals: Children learn to recognise numerals to 20. They are beginning to match the numeral with the correct corresponding quantity.

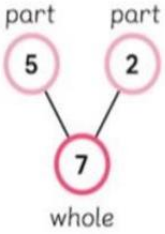
Number Bonds using Tens Frame: Children will be able to use a tens frame to find number bonds to 10.





Number Bonds using Numicon: Children will be able to use Numicon to find number bonds to 10.

Part-Part- Whole Model: Children will use the part-part-whole diagram to add and subtract numbers.



Alongside the part-part-whole diagram, children will use Numicon and practical resources to add and subtract numbers. Children will be confident to say and write calculations using the + and – signs.

Number Lines: Children will be able to use a number line to count as well as using it to take away or add one. This will be for numbers up to 20.

What does the National Curriculum say?

Key stage 1 - Years 1 and 2

- The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the 4 operations, including with practical resources.

- At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities.

- By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value.

- Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower KS2

- The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

- Pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value.

- Pupils are encouraged to draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

- By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work.

- Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling

Upper KS2

- The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

- Pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems.

- Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

- By the end of year 6, pupils should be fluent in written methods for all 4 operations, including long multiplication and division, and in working with fractions, decimals and percentages.

- Pupils should read, spell and pronounce mathematical vocabulary correctly.

Year 1 Mathematics Policy

Place Value – Counting

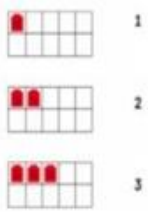
Counting to 10:

We can count on:

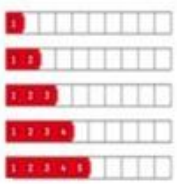
We can count back:

We count with objects:

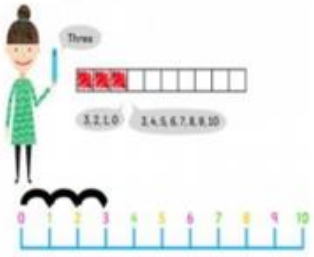
Physical objects



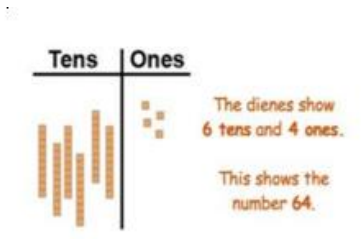
Tens square



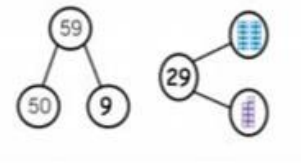
Multilink cubes



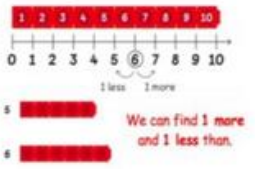
Number lines



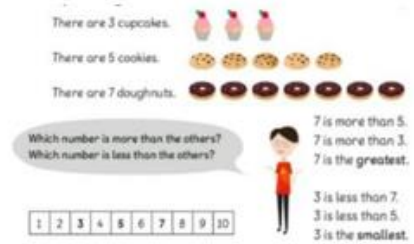
Dienes to represent numbers



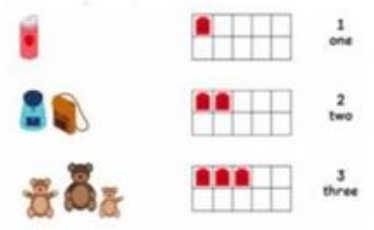
Number bond method



Ordering numbers

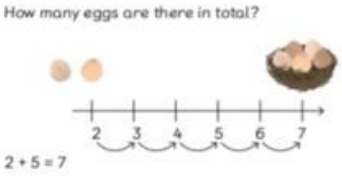


Comparing numbers

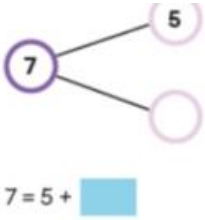


Writing numbers to 10

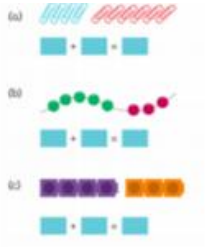
Addition



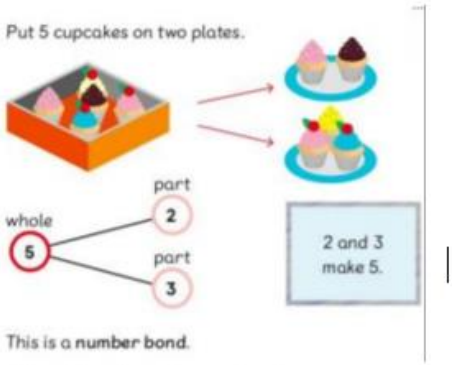
Number line method



Abstract calculations



Pictorial method

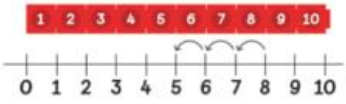


Number bond method

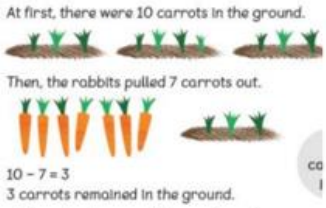
Subtraction

Subtract by crossing out

Subtract by number bonds

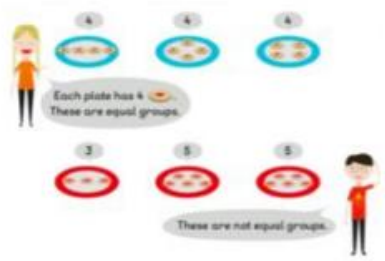


Subtract by counting back

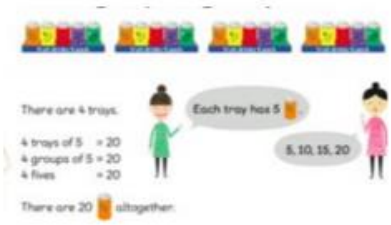


Subtract by writing stories

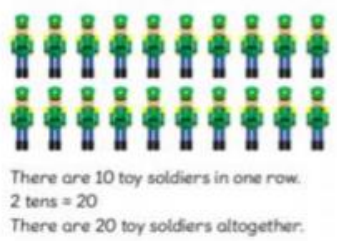
Multiplication



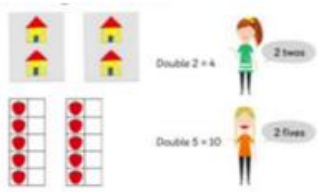
Making equal groups



Adding equal groups

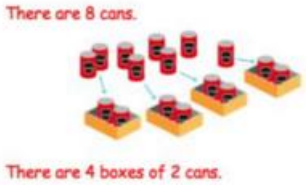


Making equal rows

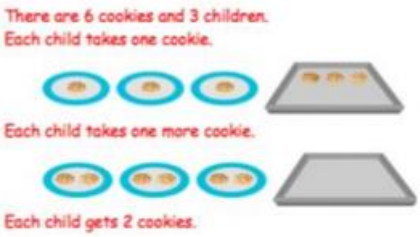


Making Double

Division



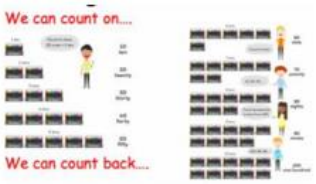
Grouping equally



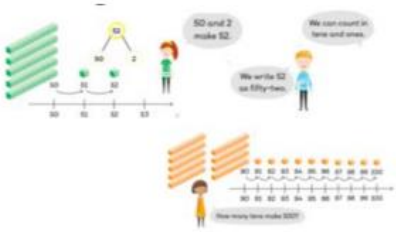
Sharing equally

Year 2 Mathematics Policy

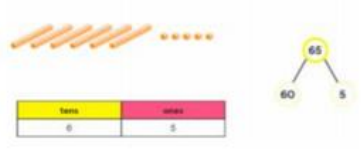
Place Value



Counting in tens to 100



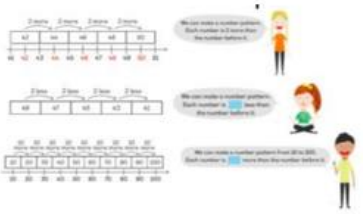
Counting in tens and ones



Represent two-digit numbers

Make numbers using different number bonds

Comparing numbers

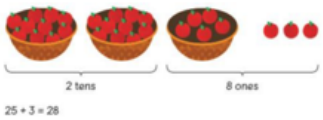


Extend number patterns

Find the missing numbers in patterns

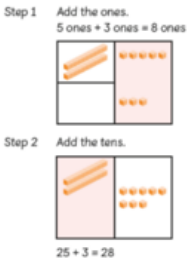
Addition

Number line method



Pictorial method

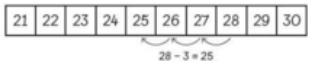
Partitioning method



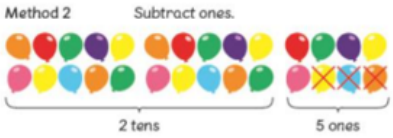
Deines method

Column method

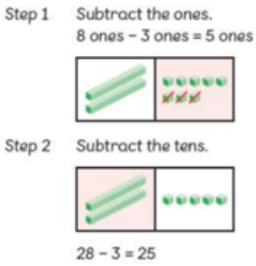
Subtraction



Number line method



Pictorial method



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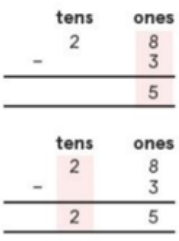
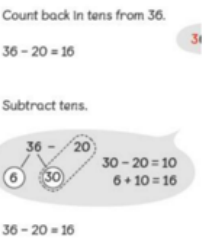


Column method

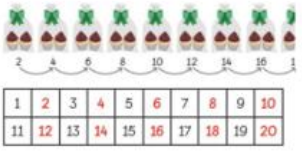


Partioning method

Multiplication

3 + 3 + 3 + 3 = 12
4 threes = 12
4 groups of 3 = 12
4 × 3 = 12

Repeated addition



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Pictorial to abstract

Grouping method

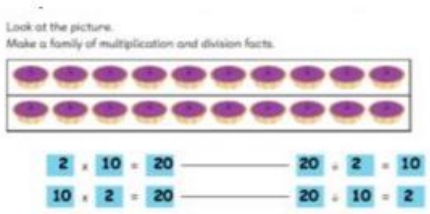
Multiply.

(a) 2 × 5 = ☐
3 × 5 = ☐

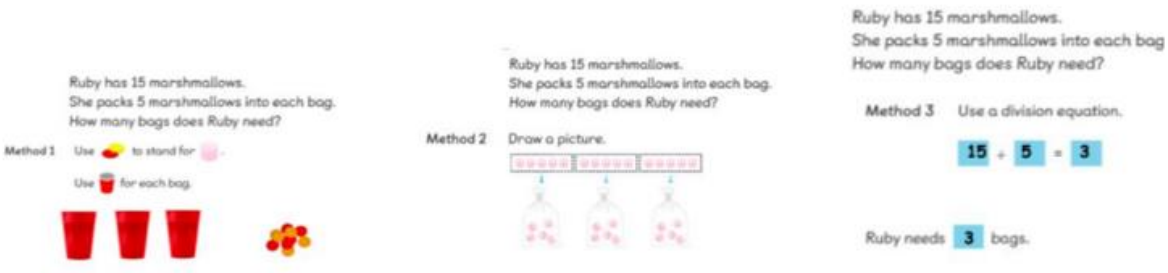
(b) 4 × 5 = ☐
5 × 5 = ☐

Abstract method

Division



Make a family of multiplication and division facts

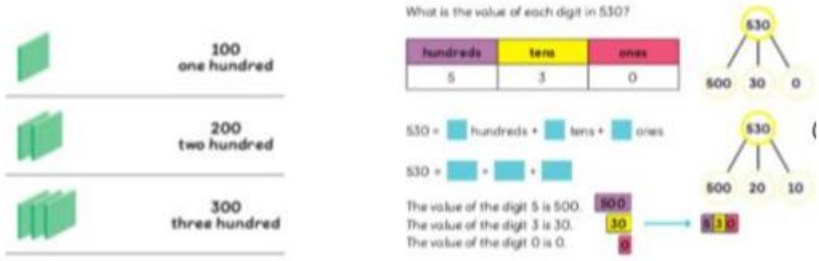


Solving problems

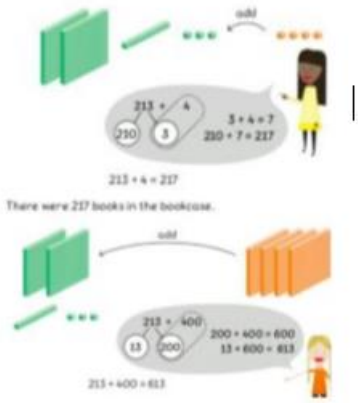
Year 3 Mathematics Policy

Place Value

Re-capping methods taught in Year 1 and Year 2.



Numbers to 1000

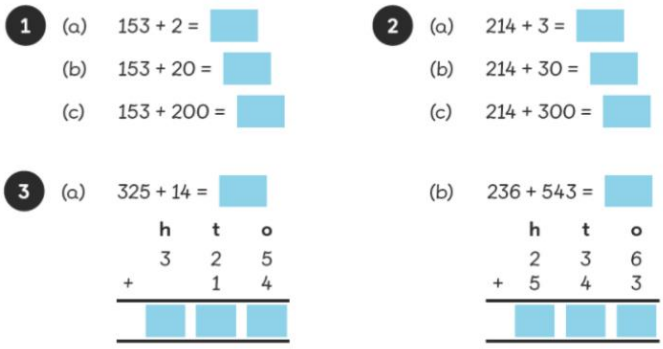


Adding ones, tens and hundreds

Addition- No renaming

Beginning practically with dienes before moving onto column addition. Number bond method is taught alongside both methods.

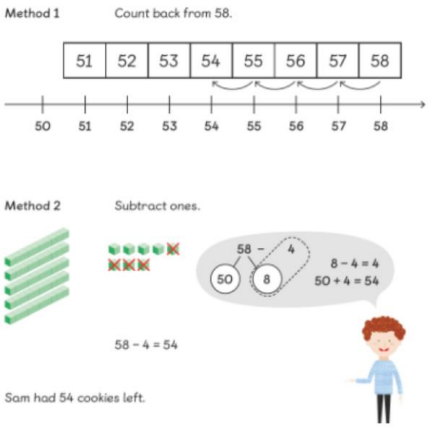
Addition- With renaming



Expected to solve a larger number of abstract calculations. Secure understanding of place value to 1000.

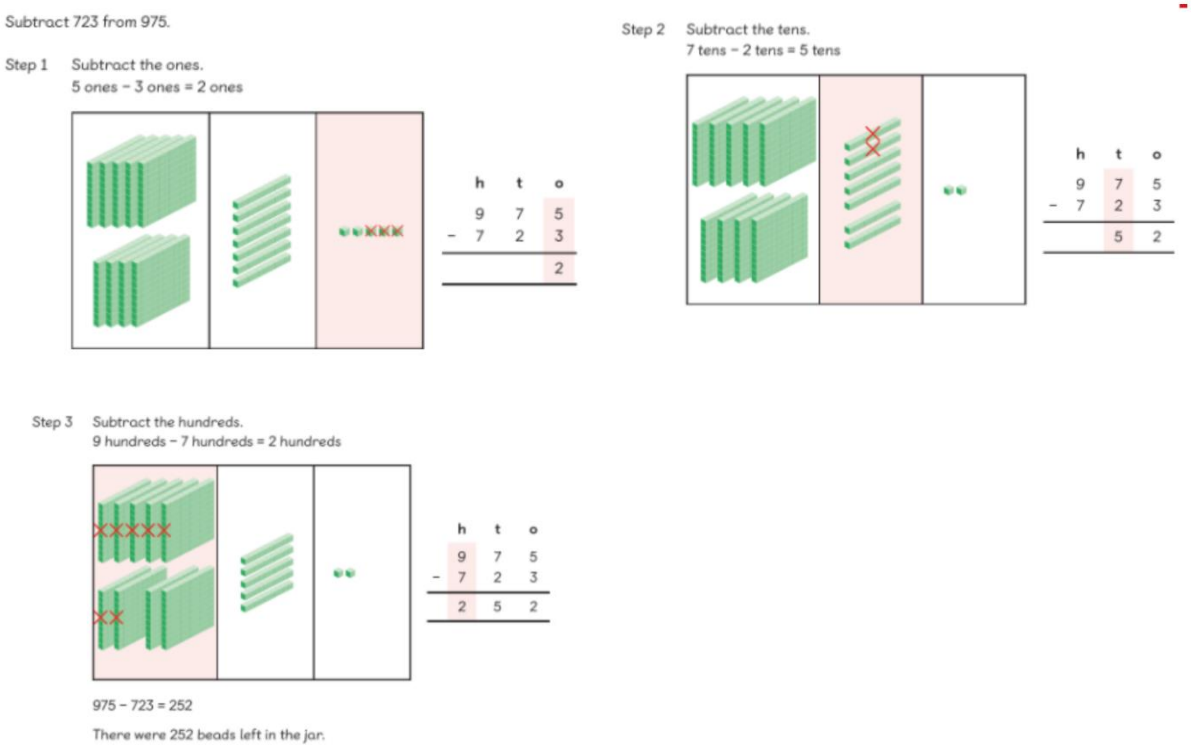
Secure understanding of place value to 1000.

Subtraction

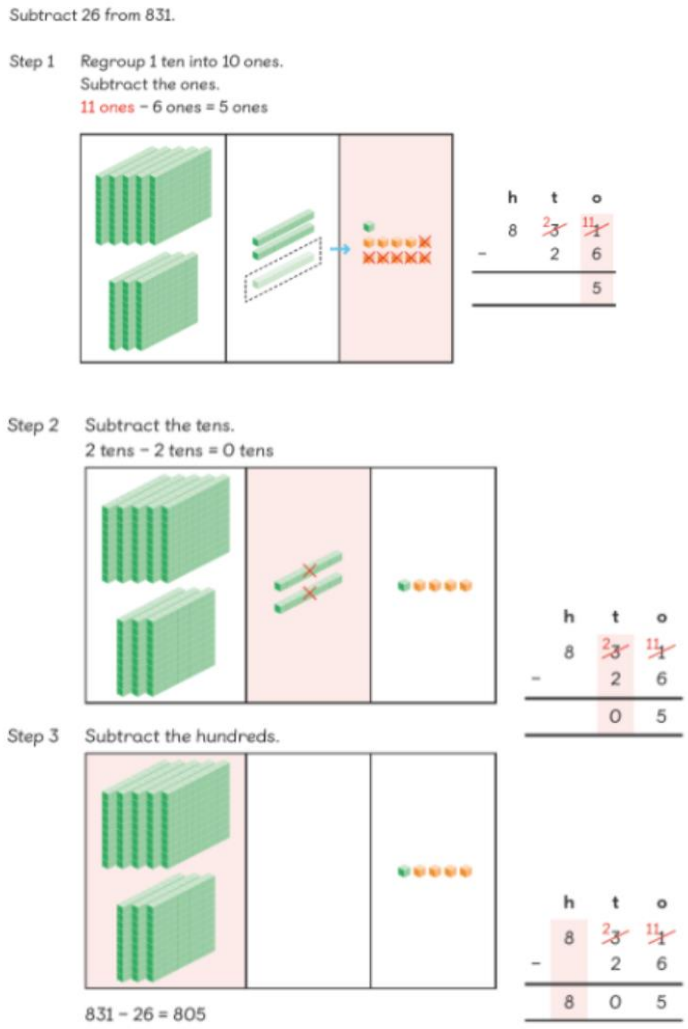


Subtraction numbers within 1000

Subtraction- no regrouping- Beginning practically with dienes before moving onto column subtraction. Number bond method is taught alongside both methods.

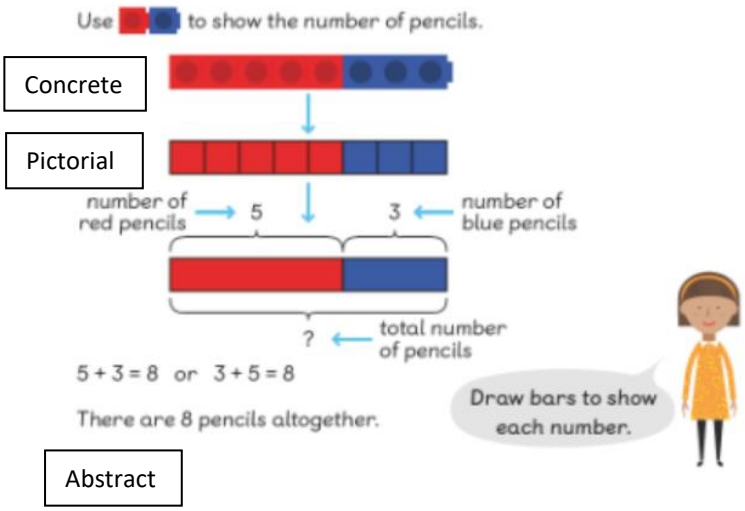


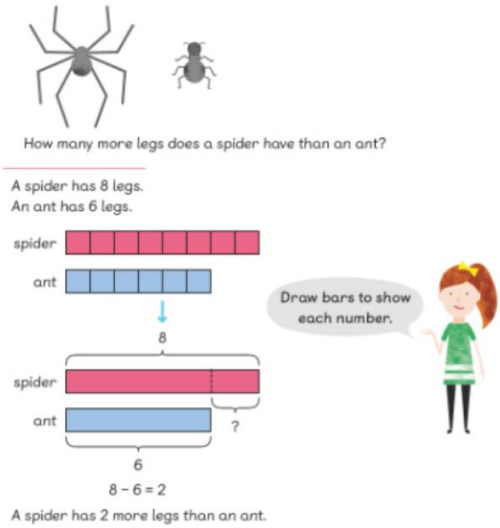
Subtraction- with regrouping



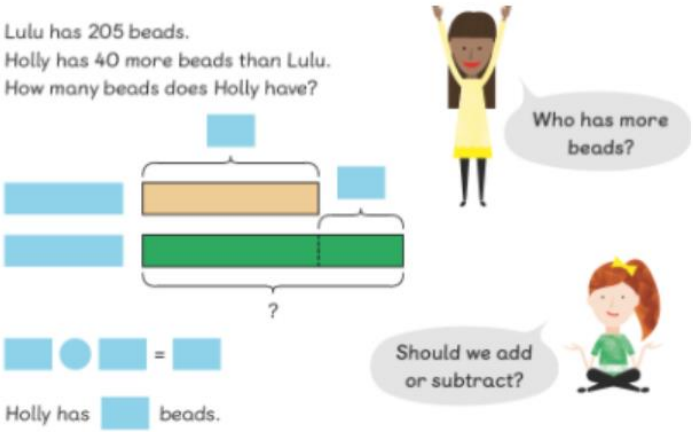
Beginning practically with Dienes before moving onto column subraction. Number bond method is taught alongside both methods.

Bar Model Method

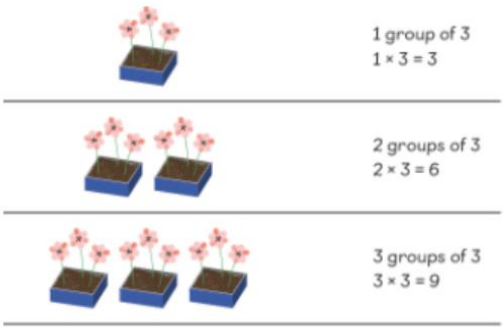


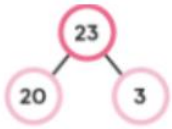


Applying addition and subtraction skills to word problems with bar models to assist.



Multiplication





Step 1 Multiply the ones by 2.

3 ones × 2 = 6 ones

Step 2 Multiply the tens by 2.

2 tens × 2 = 4 tens

Step 3 Add the products.

6 + 40 = 46

23 × 2 = 46

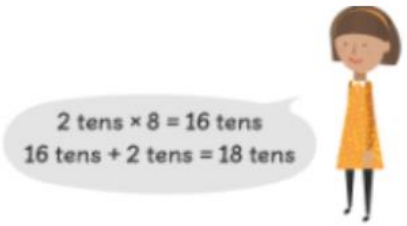
	t	o
	2	3
×		4
	1	2
+	8	0
	9	2

Step 2

	h	t	o
		2 2	3
×			8
	1	8	4

23 × 8 = 184

The product of 23 and 8 is 184.



Division

$20 \div 4 = 5$
$5 \times 4 = 20$

$20 \div 5 = 4$
$4 \times 5 = 20$

We can make a family of multiplication and division equations.

In Focus

How many coins does  have?

Let's Learn

1 

Method 1 $8 + 8 = 16$

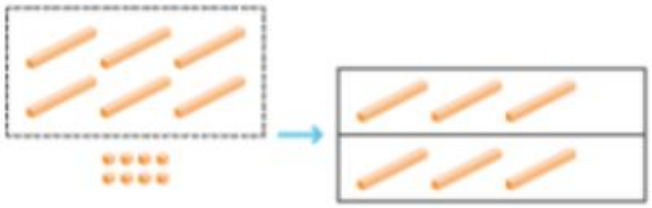
Method 2 $2 \times 8 = 16$

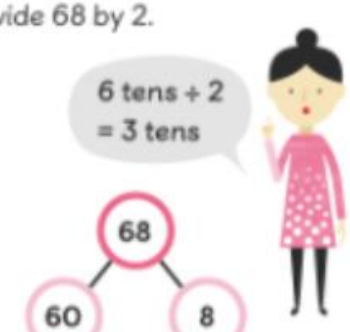
 has 16 coins.

To find the number of sweets each person gets, divide 68 by 2.

$68 \div 2 =$ ☐

Step 1 Divide 6 tens by 2.

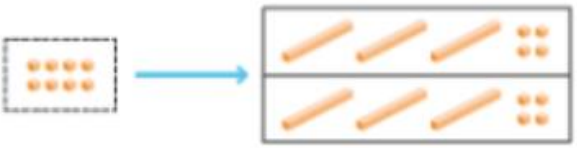


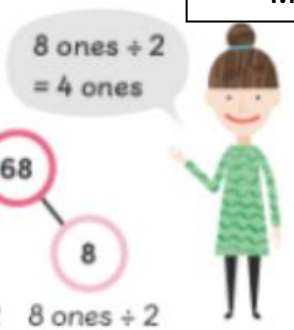


6 tens ÷ 2

Number Bond Method

Step 2 Divide 8 ones by 2.



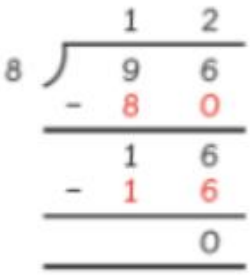


6 tens ÷ 2 8 ones ÷ 2

Step 3 Add the results.

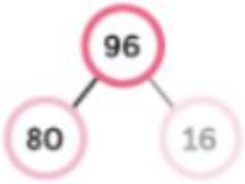
$68 \div 2 = 30 + 4 = 34$

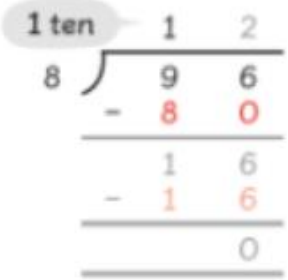
Each person gets 34 sweets.



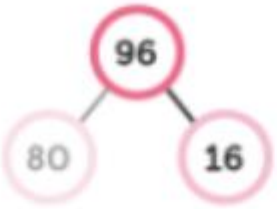
First, I take 80 from 96. Then, I take 16 from the remaining 16.

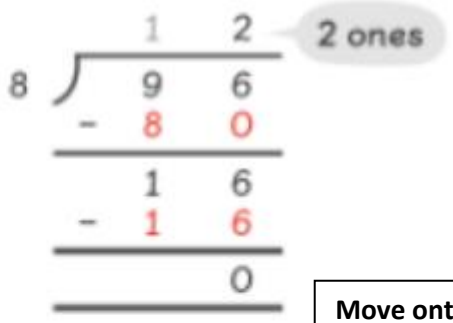
Long Division Method





8 tens ÷ 8 = 1 ten

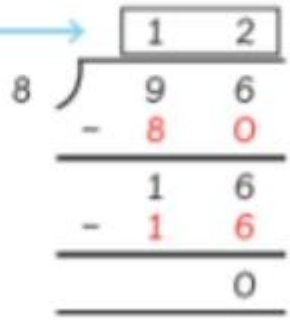




16 ones ÷ 8 = 2 ones

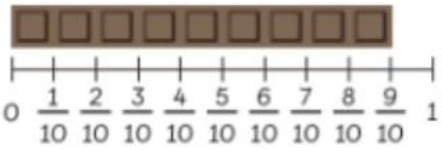
Move onto problem solving involving these methods and bar models

1 ten + 2 ones = 12



96 ÷ 8 = 12

Fractions



9 tenths

Tenths

$\frac{6}{8}$

$\frac{3}{4}$

$\frac{6}{8}$ is equal to $\frac{3}{4}$.

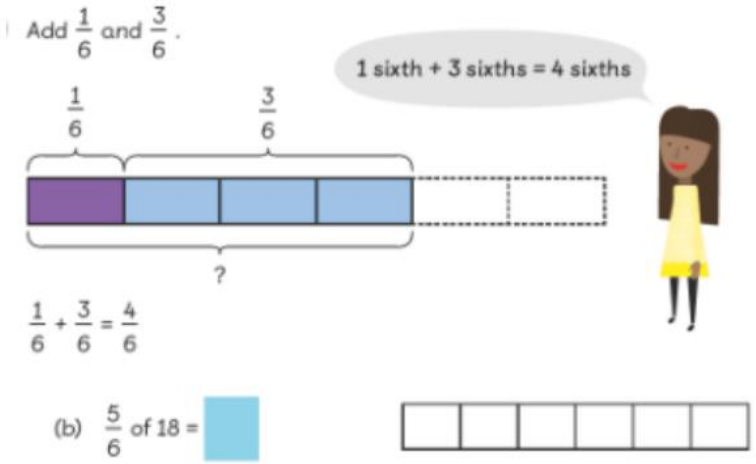
$\frac{6}{8} = \frac{3}{4}$

They are equivalent fractions.

$\frac{3}{4}$ is the simplest form of $\frac{6}{8}$.

Amira is correct.

Finding equivalent and simplifying fractions.



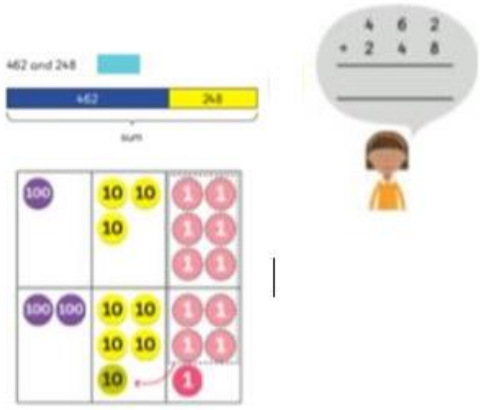
Adding Fractions

Move onto problem solving involving these methods and bar models.

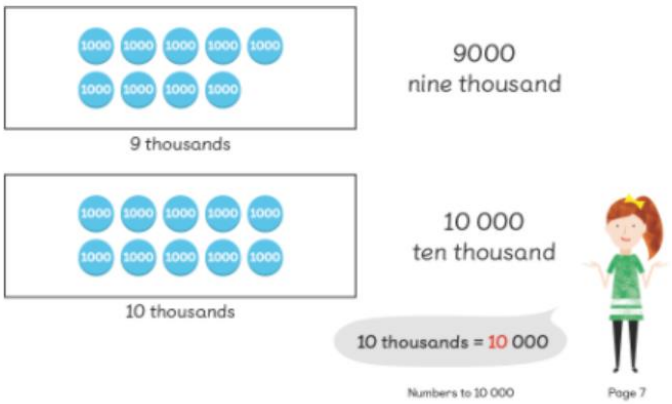
Year 4 Mathematics Policy

Place Value

Re-capping methods taught in Year 3, as well as applying it to measure problems straight away (e.g. money).



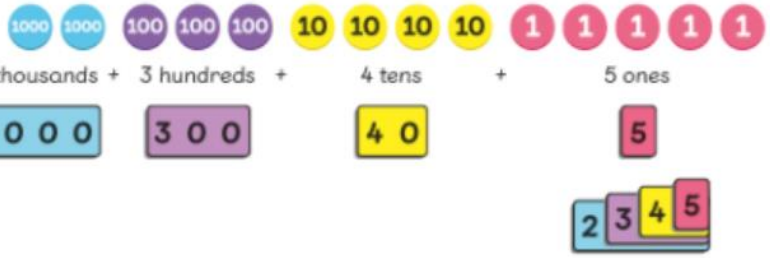
Numbers to 10,000



1

2 thousands + 3 hundreds + 4 tens + 5 ones

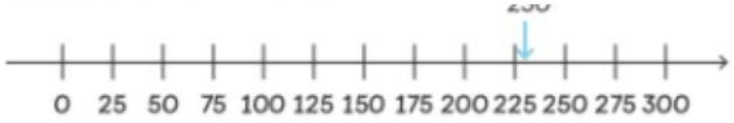
2



Use a place-value chart.

2 thousands + 3 hundreds + 4 tens + 5 ones

thousands	hundreds	tens	ones
2	3	4	5



2345 = 2000 + 300 + 40 + 5

We write 2345 as two thousand, three hundred and forty-five.

Round 4218 to the nearest 10.

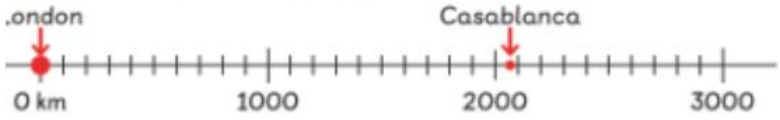
4218 is between 4210 and 4220.

Round 4218 to the nearest 100.

4218 is between 4200 and 4300.

4218 is closer to 4200 than to 4300.
4218 is 4200 when rounded to the nearest 100.

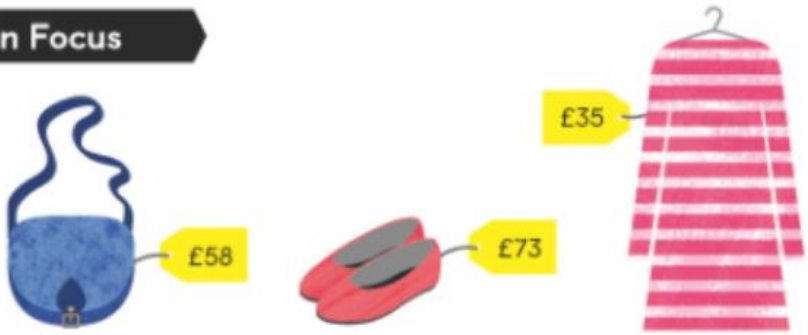
Round 2078 to the nearest 1000.



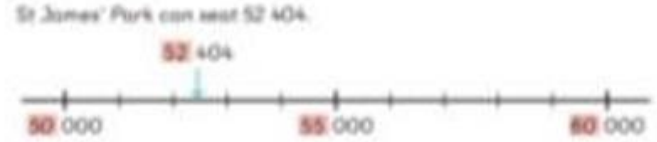
2078 is between 2000 and 3000.
2078 is closer to 2000 than to 3000.

We say 2078 is 2000 when **rounded** to the nearest 1000.

In Focus

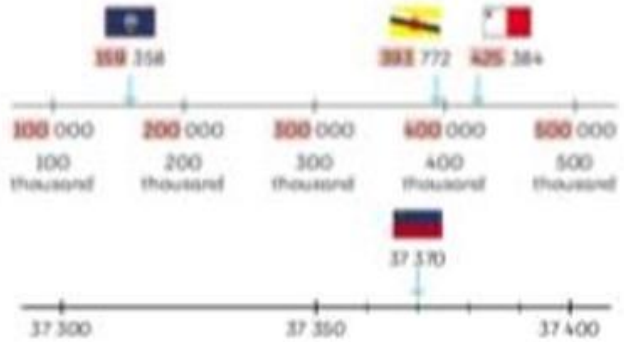


Ravi's mother went shopping.
She bought a handbag for £58, a pair of shoes for £73 and a dress for £35.
Estimate the total cost of these three items.



52 404 is closer to 50 000 than to 60 000.

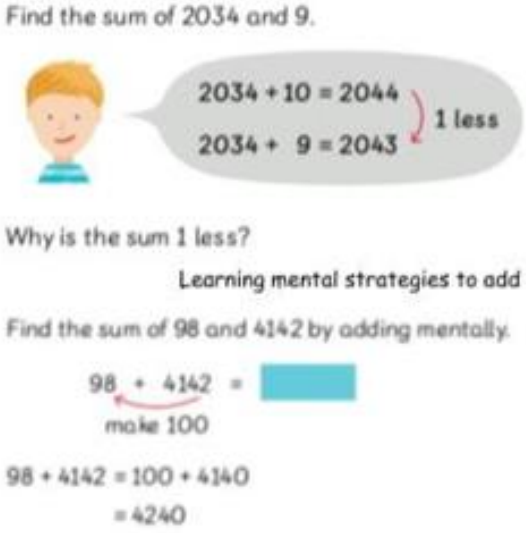
Rounding to the nearest 100, 1000, 10 000 and 100,000



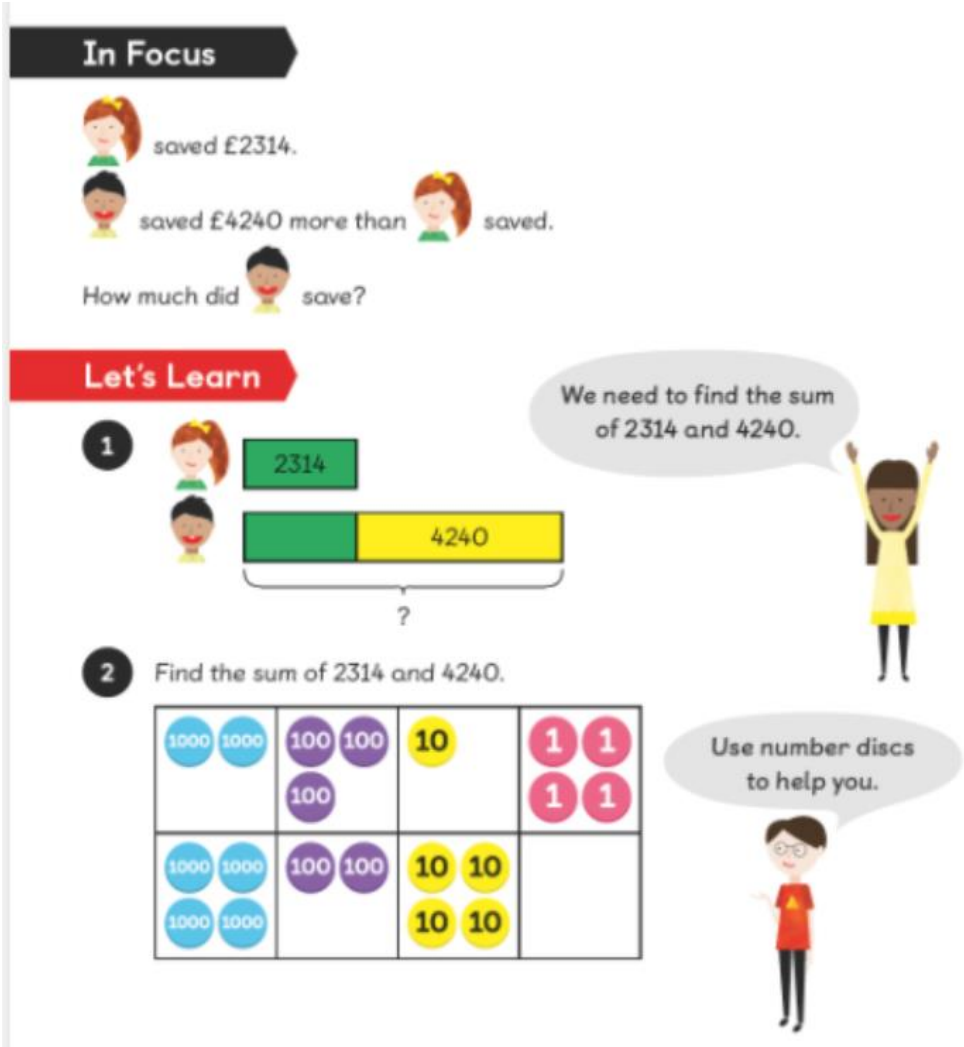
37 370 is closer to 37 400 than to 37 300.

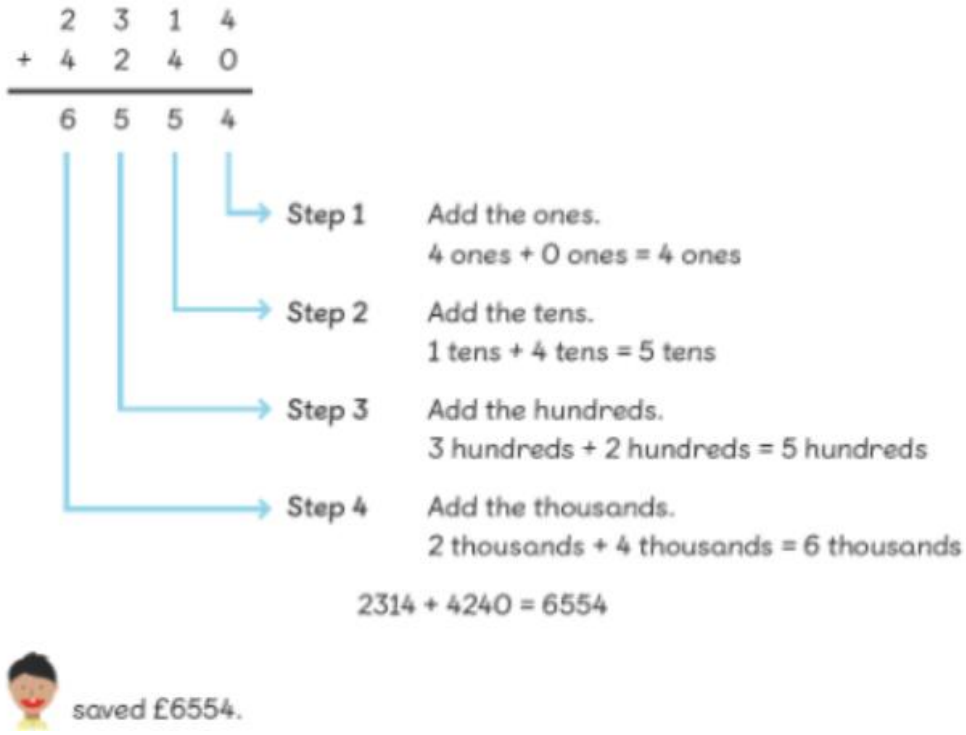
Addition

Children are expected to be secure in methods taught in Year 3.

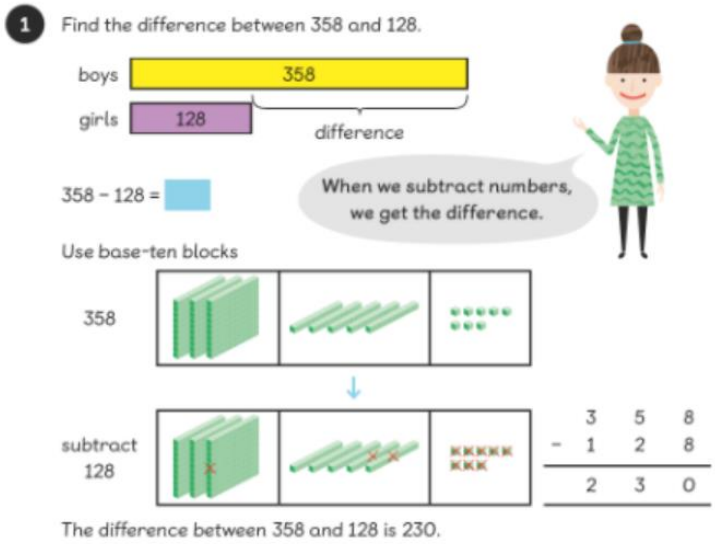


Addition – No renaming

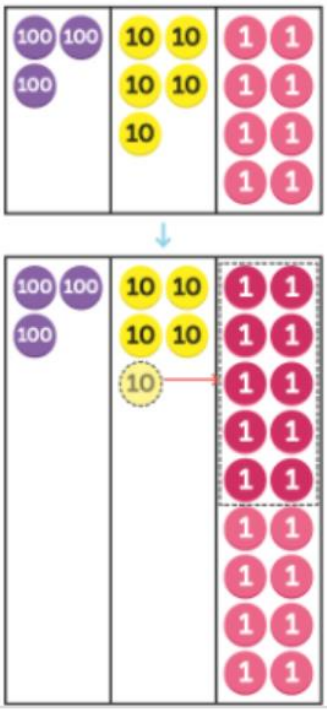




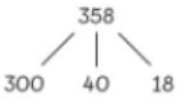
Subtraction- No regrouping



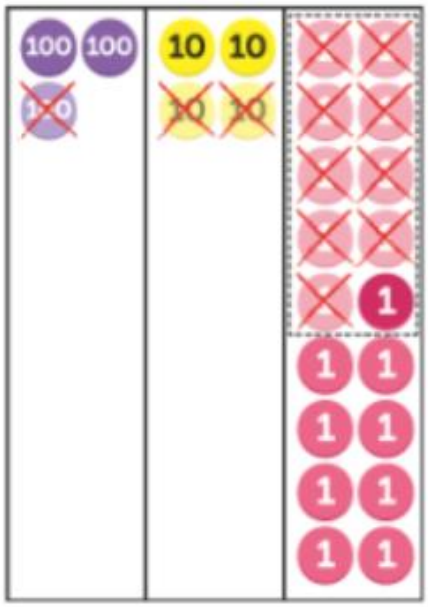
2 Find the difference between 358 and 129.

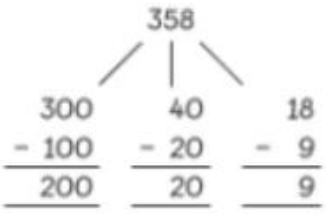


358



subtract 129



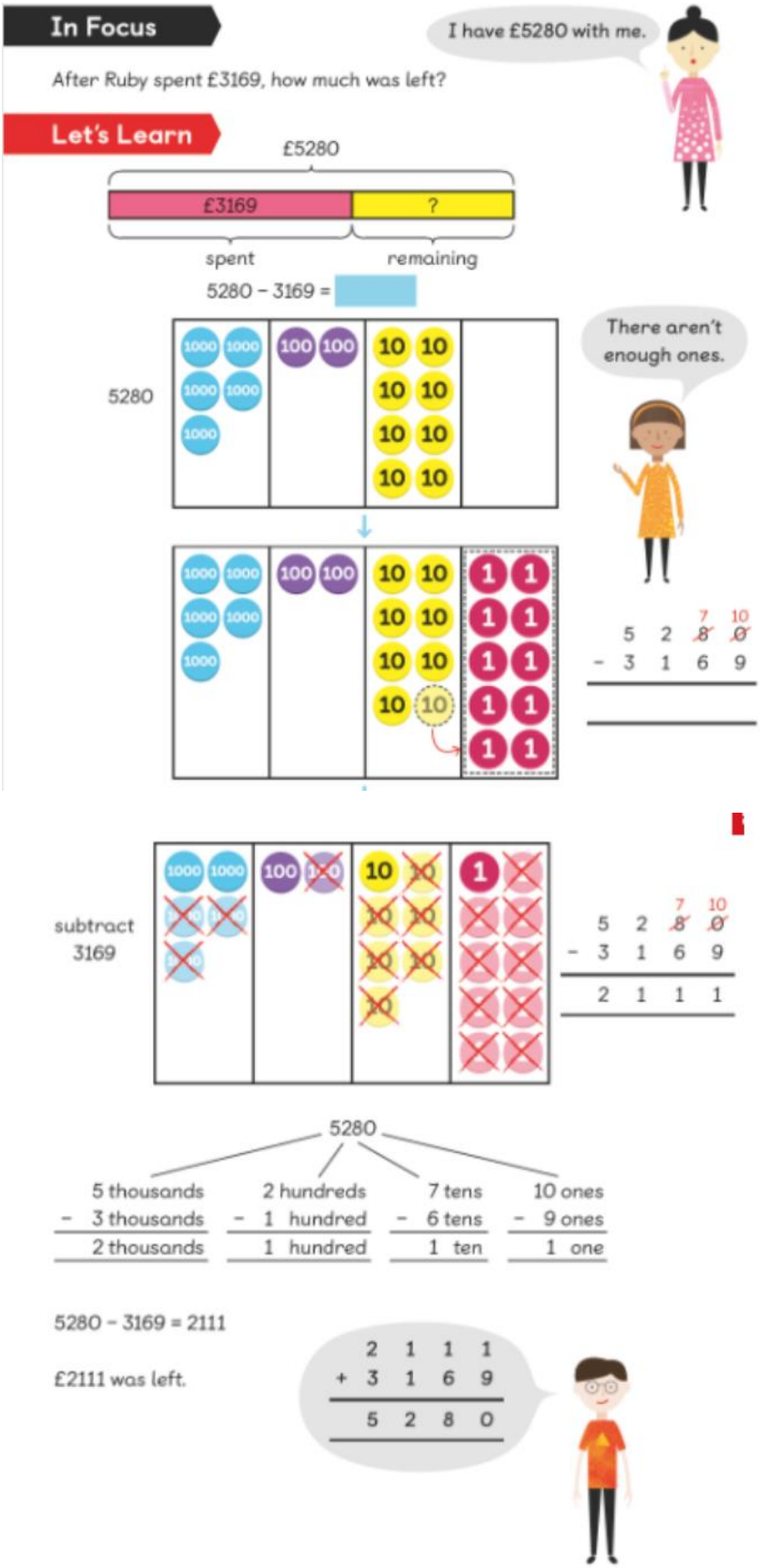


	3	4 ~~5~~	18 ~~8~~
-	1	2	9
	2	2	9

358 − 129 = 229

The difference between 358 and 129 is 229.

Subtraction- With regrouping



Bar Model Method

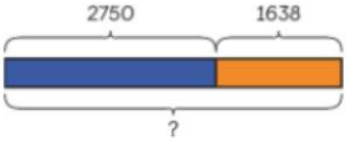
A baker made 2750 chocolate cookies and 1638 vanilla cookies.
He sold 3195 cookies altogether.
How many cookies did he have left?

Let's Learn

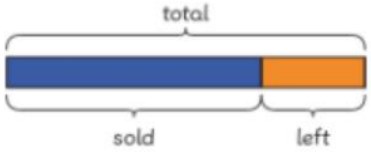
1 Understand the problem

Who?	 baker
What?	 cookies

Make a plan



Find the total number of cookies he made.



Then, subtract the number of cookies sold.

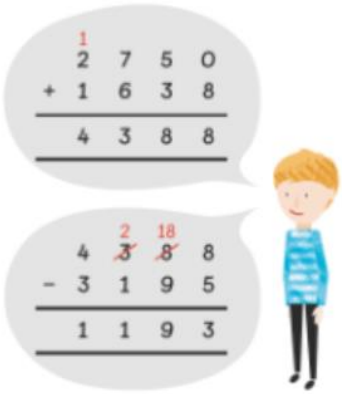
Carry out the plan

2750 + 1638 = 4388

The baker baked 4388 cookies.

4388 − 3195 = 1193

He had 1193 cookies left.



Check

Cookies sold	3195
Cookies left	1193
Cookies baked	4388

3 1 9 5
+ 1 1 9 3
4 3 8 8

In Focus

On Saturday, 3018 people attended a funfair. 850 more people attended the funfair on Saturday than attended it on Sunday.

Altogether, how many people attended the funfair over the two days?

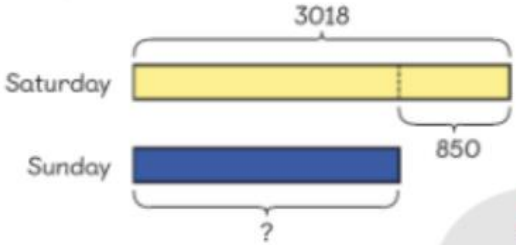
Let's Learn

1 Understand the problem

Who?	 people
What?	funfair

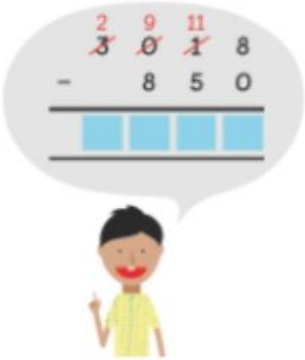
Make a plan

Carry out the plan



3018 − 850 = 2168

2168 people attended the funfair on Sunday.

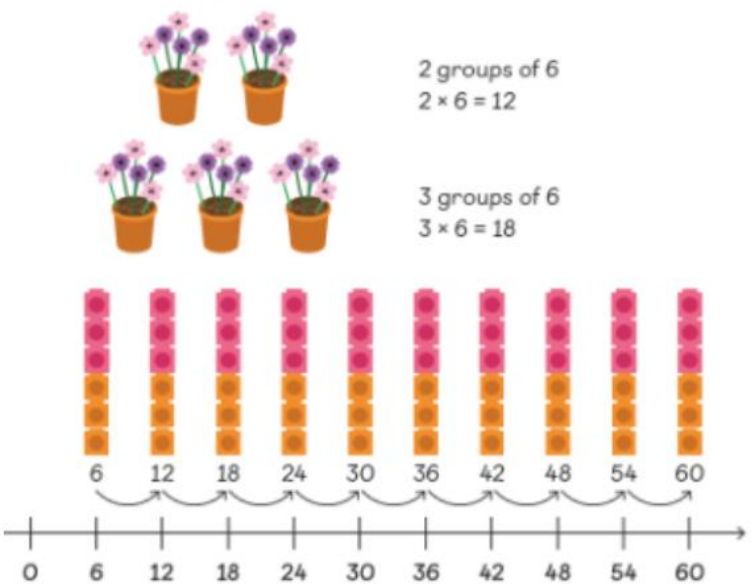


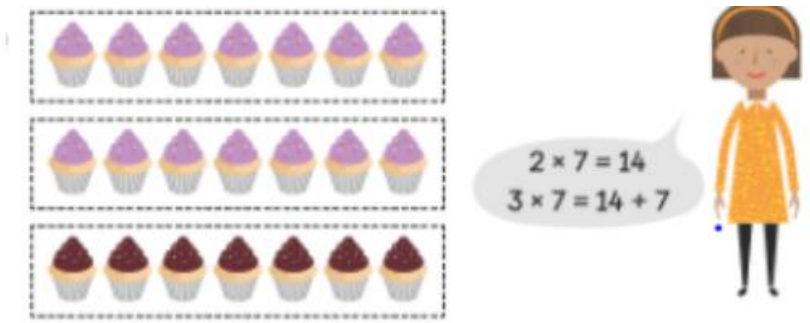
			1	
Saturday	3	0	1	8
Sunday	+ 2	1	6	8
	5	1	8	6

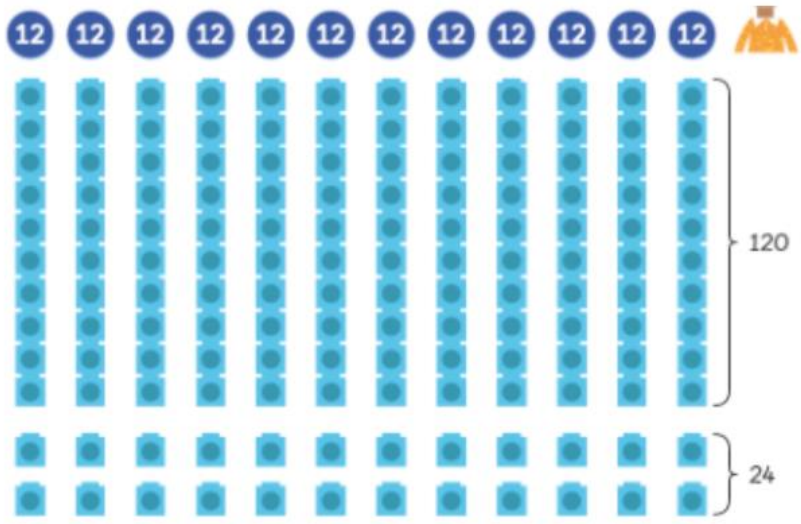
3018 + 2168 = 5186

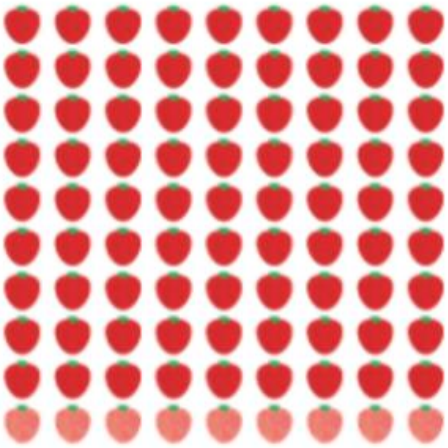
Altogether, 5186 people attended the funfair over the two days.

Multiplication









10 rows of 9 = 90
10 × 9 = 90

3 × 10 = 30

3 × 1 = 3

3 × 11 = 30 + 3

Recap: bridged and short multiplication

		2	3
×			6
		1	8
+	1	2	0
	1	3	8

		1	
		2	3
×			6
	1	3	8

New: multiplying 3 numbers

$2 \times 5 \times 6 = 10 \times 6 = 60$

2 × 5 × 6

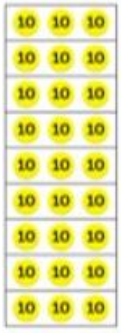
2 × 5 × 10

2 × 5 × 6 = 10 × 6 = 60

What is the product of 9 and 30?
9 × 30 = ☐

Method 1	Method 2	Method 3
30	9 × 3 = 27	9 × 30 = 9 × 3 × 10
30	9 × 3 tens = 27 tens	= 9 × 3 × 10
30	9 × 30 = 270	= 27 × 10
30		= 27 tens
30		= 270
30		
30		
30		
+ 30		

Which method is best?



Recap multiplying by a multiple of 10

		4	7	3
×				2
				6
		1	4	0
+		8	0	0
		9	4	6

Recap:
Bridged and short multiplication

		1	
		4	7	3
×				2
		9	4	6

New: multiplying by multiples of 100

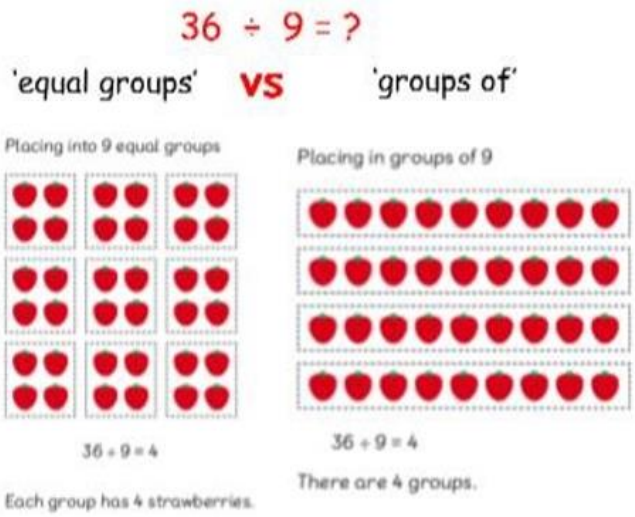
7 × 300 = ☐

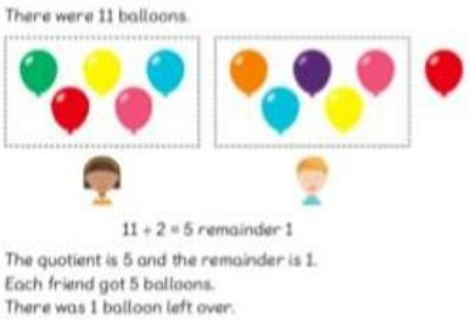
Method 1	Method 2	Method 3
300	7 × 3 = 21	7 × 300 = 7 × 3 × 100
300	7 × 3 hundreds = 21 hundreds	= 7 × 3 × 100
300	7 × 300 = 2100	= 21 × 100
300		= 21 hundreds
300		= 2100
300		
300		
+ 300		
2100		

21 hundreds = 2100

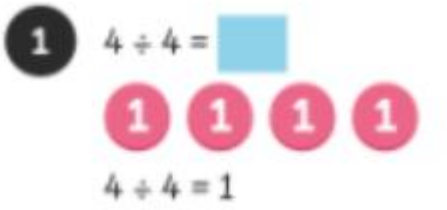
Which method is best?

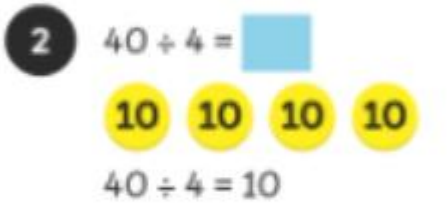
Division

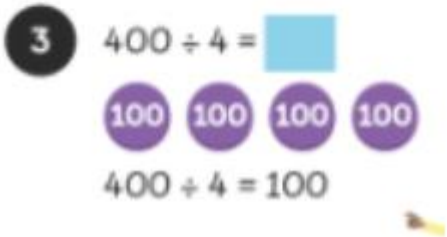


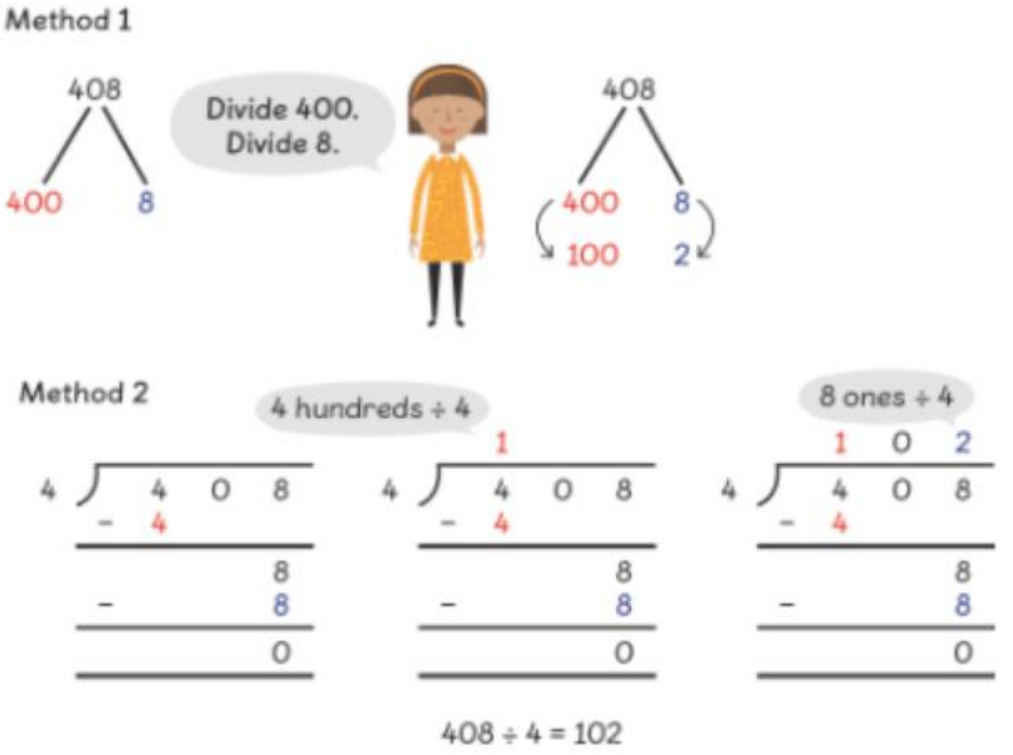


Children are introduced to the concept of remainders

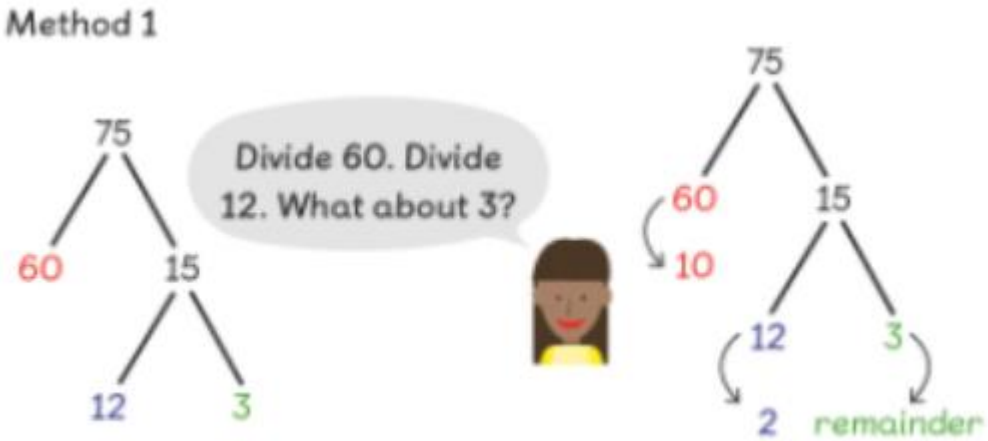




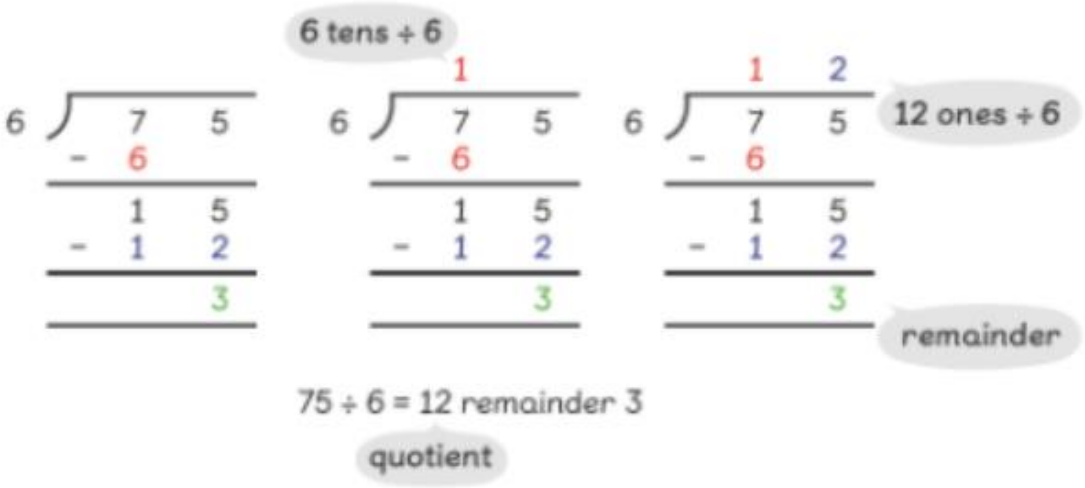




Once confident with the partitioning and long division methods, remainders are introduced using these methods.



Method 2



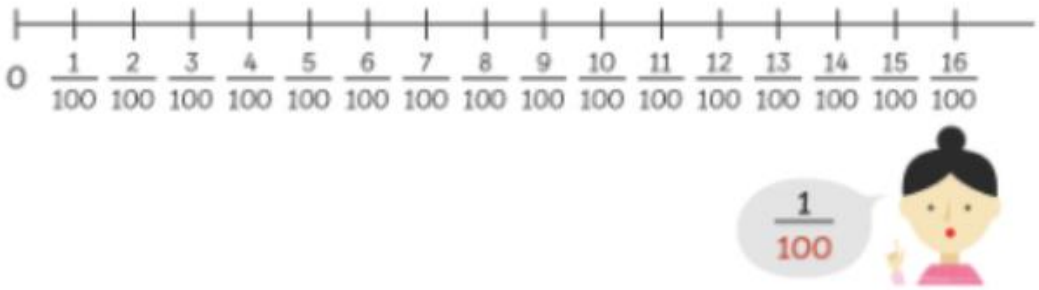
75 ÷ 6 = 12 remainder 3

quotient

It is not possible to put 75 children into 6 equal groups.

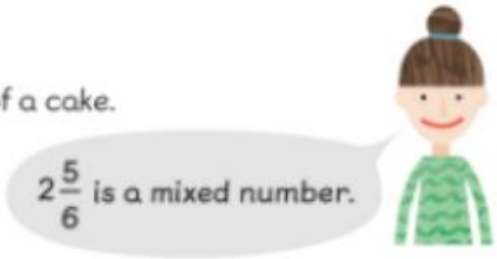
Move onto problem solving involving these methods and bar models

Fractions



There are 2 whole cakes and 5 sixths of a cake.

$2 + \frac{5}{6} = 2\frac{5}{6}$



$$\frac{12}{8} \overset{\div 4}{=} \frac{3}{2}$$

8 smaller parts become 2 larger parts.

$$\frac{6}{4} \overset{\div 2}{=} \frac{3}{2}$$

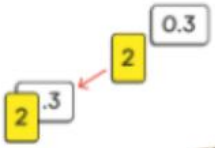
4 smaller parts become 2 larger parts.

Decimals

makes 1 1 0.1 0.1 0.1 .

1	0.1 0.1
1	0.1

ones	tenths
2	3



We read 2.3 as two and three tenths.

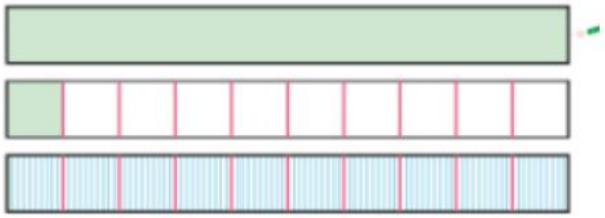
2 ones + 3 tenths

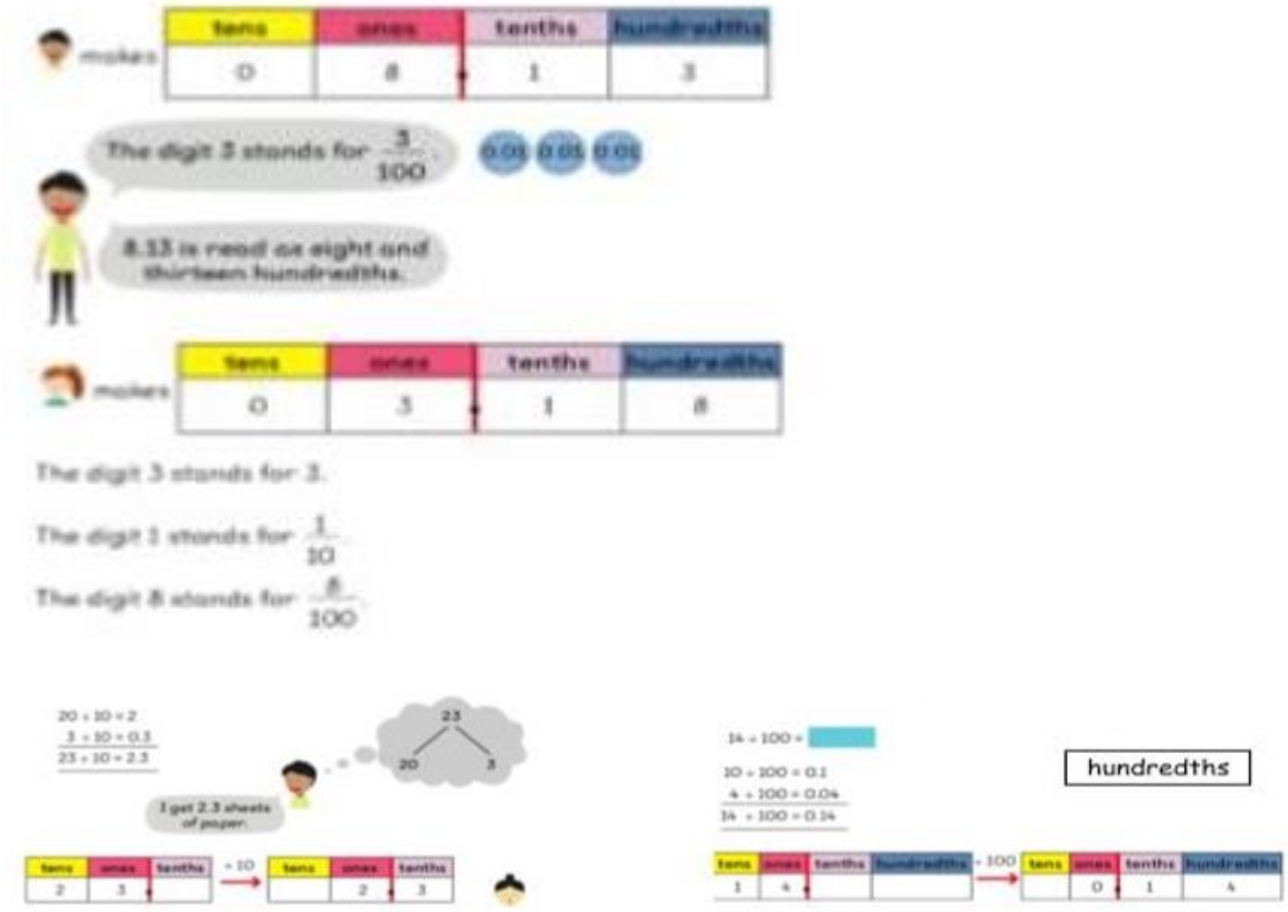
= 2 + 0.3

= 2.3

The digit 2 stands for 2 ones.

The digit 3 stand for 3 tenths.





YEAR 4 - Multiplication tables check

- From the 2019/20 academic year onwards, schools in England will be required to administer an online multiplication tables check (MTC) to year 4 children.
- The national curriculum specifies that children should be taught to recall the multiplication tables up to and including 12 × 12 by the end of year 4.
- The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided

Here at The Beeches, we use Times Table Rockstars to best support the children in the lead up to this. The Sound Check area mirrors the layout in which the MTC will have.

Year 5 Mathematics Policy

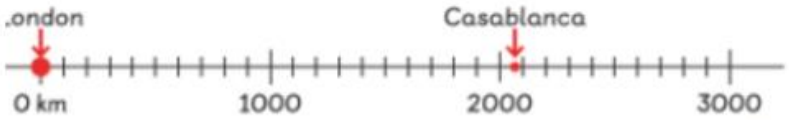
Place Value

Round 4218 to the nearest 100.

4218 is between 4200 and 4300.

4218 is closer to 4200 than to 4300.
4218 is 4200 when rounded to the nearest 100.

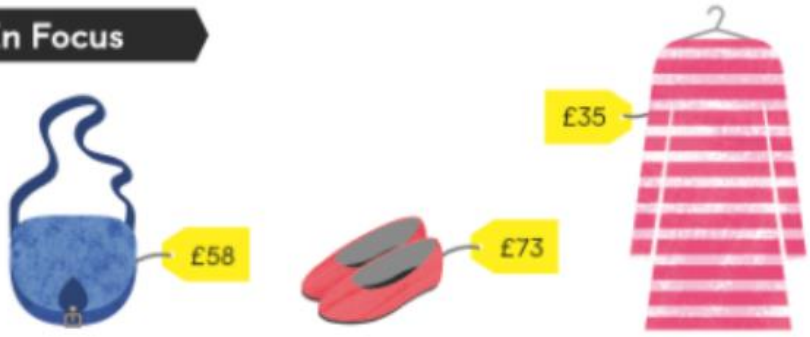
Round 2078 to the nearest 1000.



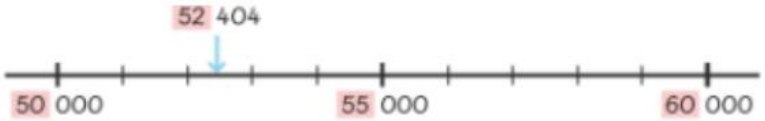
2078 is between 2000 and 3000.
2078 is closer to 2000 than to 3000.

We say 2078 is 2000 when **rounded** to the nearest 1000.

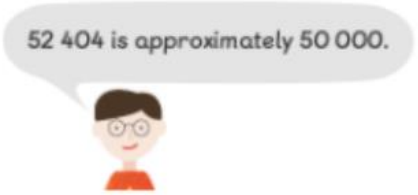
In Focus



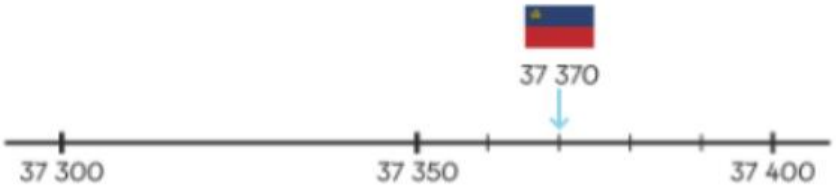
Ravi's mother went shopping.
She bought a handbag for £58, a pair of shoes for £73 and a dress for £35.
Estimate the total cost of these three items.



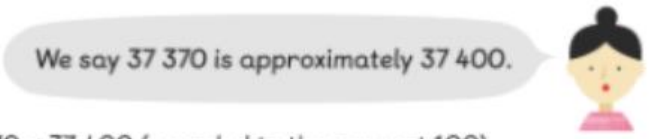
52 404 is closer to 50 000 than to 60 000.



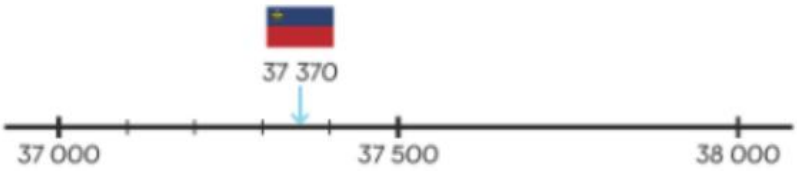
52 404 ≈ 50 000
(rounded to the nearest 10 000)



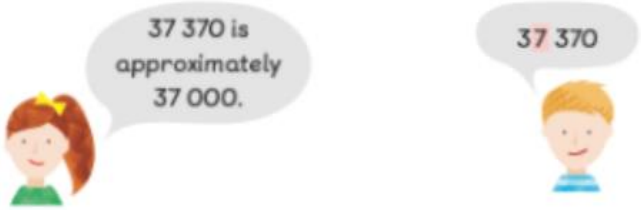
37 370 is closer to 37 400 than to 37 300.



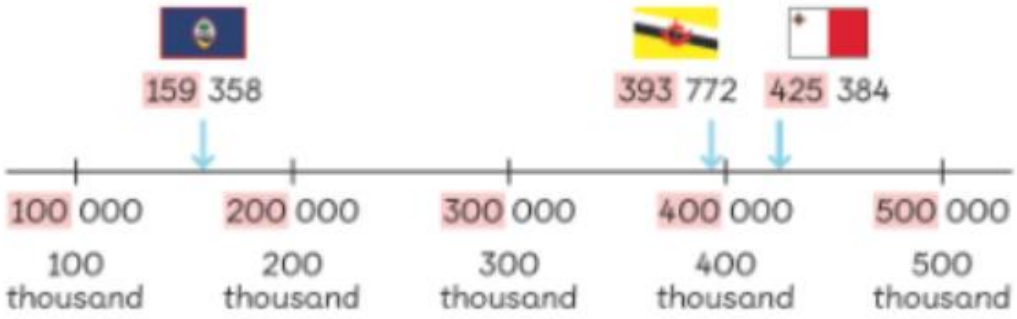
37 370 ≈ 37 400 (rounded to the nearest 100)



37 370 is closer to 37 000 than to 38 000.

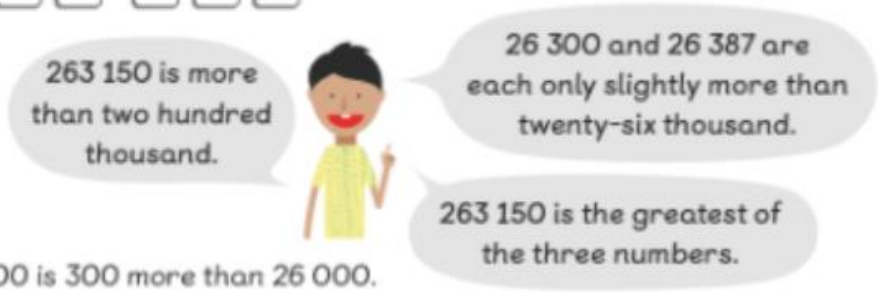


37 370 ≈ 37 000 (rounded to the nearest 1000)



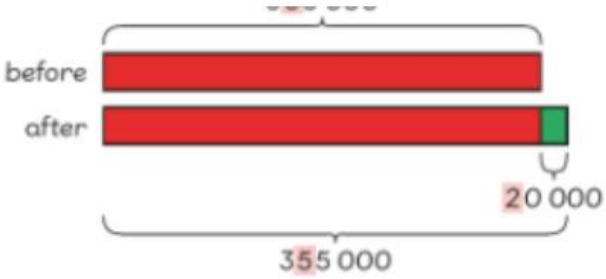
393 772 is closer to 400 000 than to 300 000.
425 384 is closer to 400 000 than to 500 000.

2	6	3	1	5	0	263 150
	2	6	3	0	0	26 300
	2	6	3	8	7	26 387

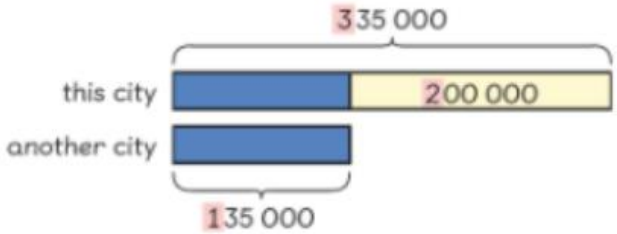


26 300 is 300 more than 26 000.
26 387 is 387 more than 26 000.
26 300 is less than 26 387.

263 150 > 26 387 > 26 300



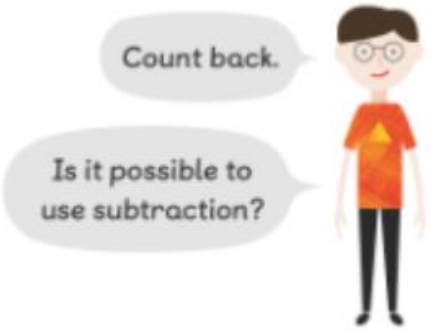
The digit in the ten thousands place increases by 2.



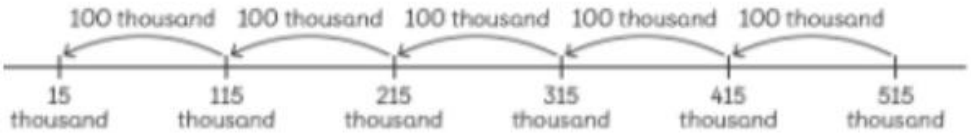
The digit in the hundred thousands place decreases by 2.

Method 1 Make a list.

515 000
415 000
315 000
215 000
115 000
15 000

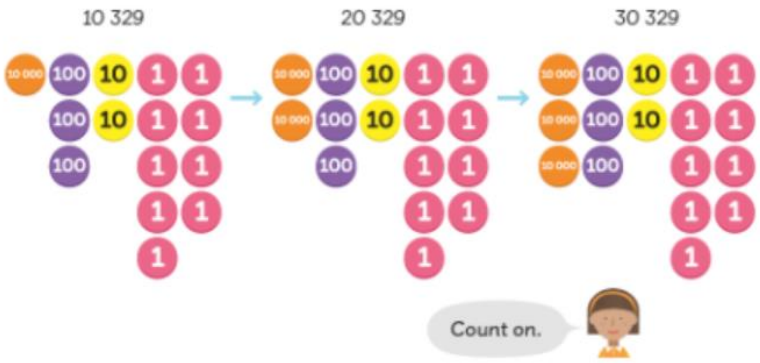


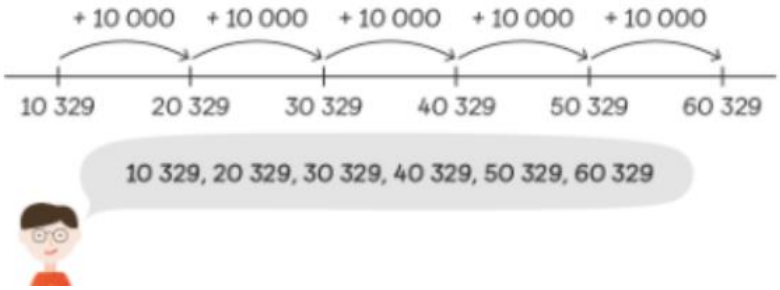
Method 2 Use a number line.



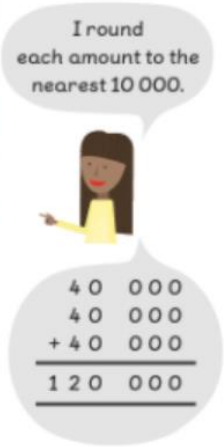
Addition

1 10 329 + 50 000 = ☐





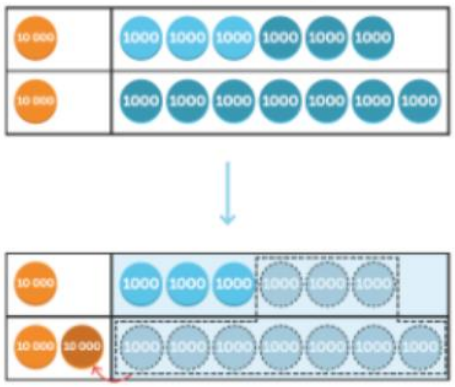
	A	B	C
1	Date	Trip	Fare
2	13 September	Airport to Hotel	150 000
3	14 September	Hotel to Office	40 000
4		Office to Hotel	45 000
5	15 September	Hotel to Office	43 000
6		Office to Hotel	42 000
7		Hotel to Restaurant	25 000
8		Restaurant to Hotel	21 000
9	16 September	Hotel to Office	46 000
10		Office to Airport	150 000
11			
12		Total for Taxi Fare	562 000



$$\begin{array}{r} 37\,000 \\ +\,12\,000 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 120\ 000 \\ +\ 120\ 000 \\ \hline \\ \hline \end{array}$$

1 16 000 + 17 000 =



$$\begin{array}{r} 16\ 000 \\ +\ 17\ 000 \\ \hline \\ \hline \end{array}$$

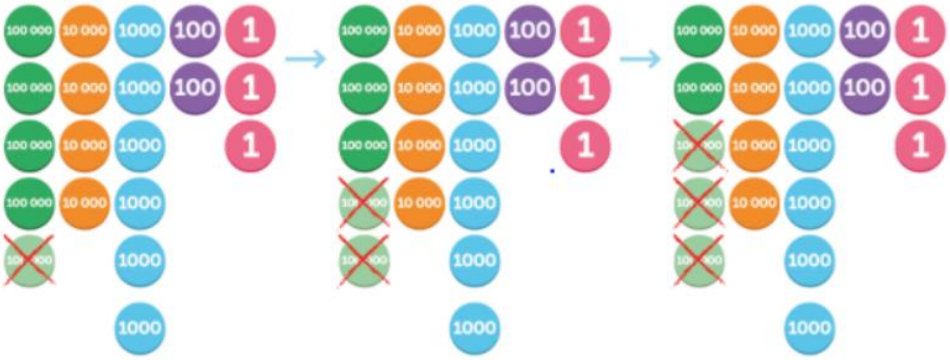
$$\begin{array}{r} {\scriptstyle 1} \\ 16\ 000 \\ +\ 17\ 000 \\ \hline 3\ 000 \\ \hline \end{array}$$

$$\begin{array}{r} {\scriptstyle 1} \\ 16\ 000 \\ +\ 17\ 000 \\ \hline 33\ 000 \\ \hline \end{array}$$

Subtraction

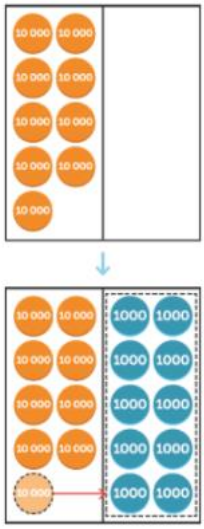
By counting back

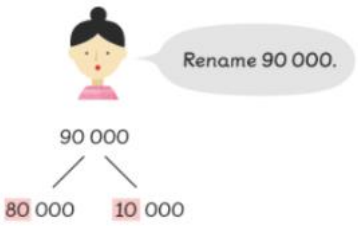
The number is 546 203.
Count back by 100 000s.



446 203 346 203 246 203

Subtraction with re-grouping





$$\begin{array}{r} {\scriptstyle 8\ 10} \\ \cancel{9}\cancel{0}\ 0\,0\,0 \\ -\ 5\,4\ 0\,0\,0 \\ \hline \\ \hline \end{array}$$

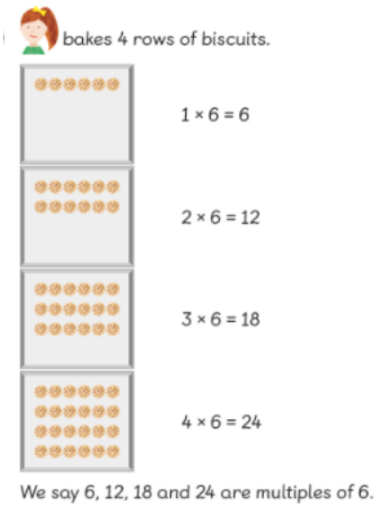
$$\begin{array}{r} {\scriptstyle 8\ 10} \\ \cancel{9}\cancel{0}\ 0\,0\,0 \\ -\ 5\,4\ 0\,0\,0 \\ \hline 3\,6\ 0\,0\,0 \\ \hline \end{array}$$

Regrouping in each place value column

$$\begin{array}{r} {\scriptstyle 9\ 12} \\ \cancel{1}\,0\,\cancel{2}\,7 \\ -\ 3\,5\,9 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} {\scriptstyle 11} \\ {\scriptstyle 9\ \cancel{12}\ 17} \\ \cancel{1}\,0\,\cancel{2}\,\cancel{7} \\ -\ 3\,5\,9 \\ \hline 6\,6\,8 \\ \hline \end{array}$$

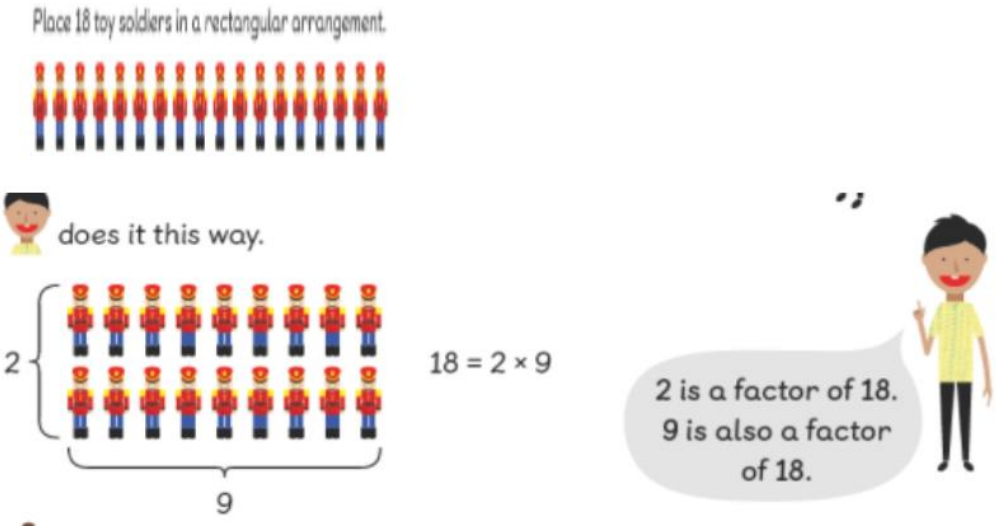
Finding multiples



Find the first 12 multiples of 6.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

Finding factors



Prime numbers

number	factors
5	1 and 5
7	1 and 7
4	1, 2 and 4
9	1, 3 and 9
6	1, 2, 3 and 6
8	1, 2, 4 and 8

5 and 7 are prime numbers.

4, 9, 6 and 8 are not prime numbers.

Common factors

Find the common factors of 48 and 64.

$48 = (1) \times 48$ $\quad$ $64 = (1) \times 64$

$48 = (2) \times 24$ $\quad$ $64 = (2) \times 32$

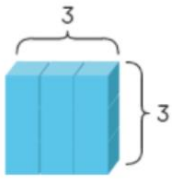
$48 = 3 \times (16)$ $\quad$ $64 = (4) \times (16)$

$48 = (4) \times 12$ $\quad$ $64 = (8) \times 8$

$48 = 6 \times (8)$

The common factors of 48 and 64 are 1, 2, 4, 8 and 16.

Square and cube numbers



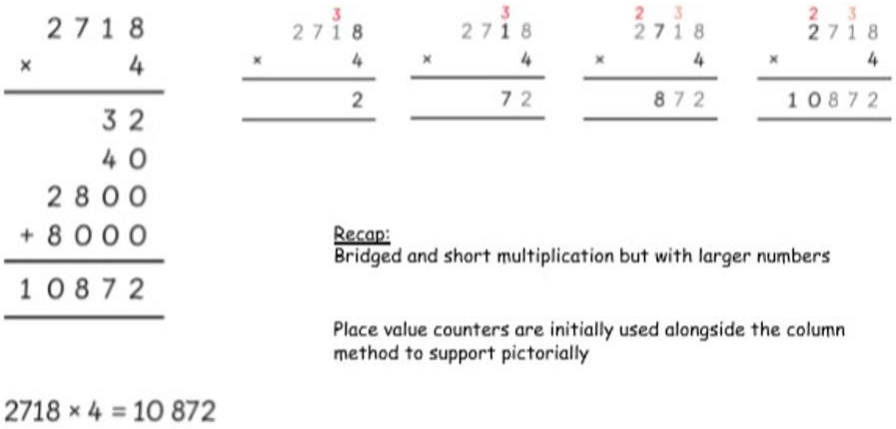
$9 = 3 \times 3 = 3^2$

$27 = 3 \times 3 \times 3 = 3^3$

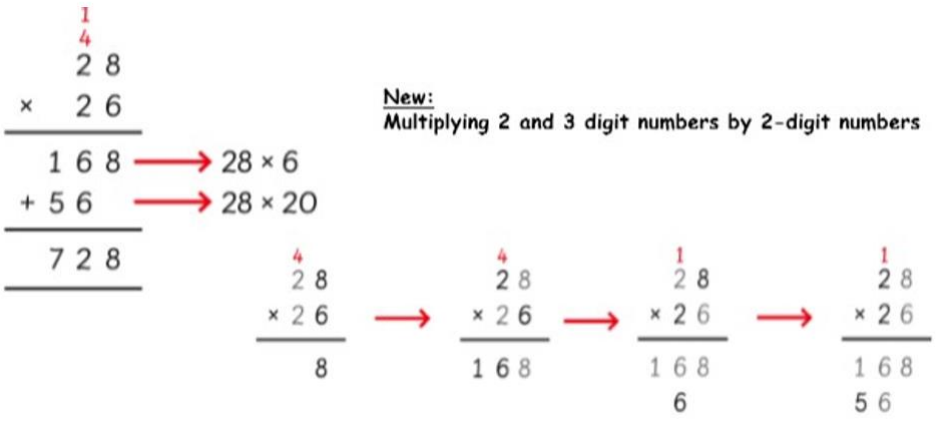
27 is a cube.

12 × 10	12 × 100	12 × 1000
		
12 × 10 = 12 × 1 ten = 12 tens	12 × 100 = 12 × 1 hundred = 12 hundreds	12 × 1000 = 12 × 1 thousand = 12 thousands

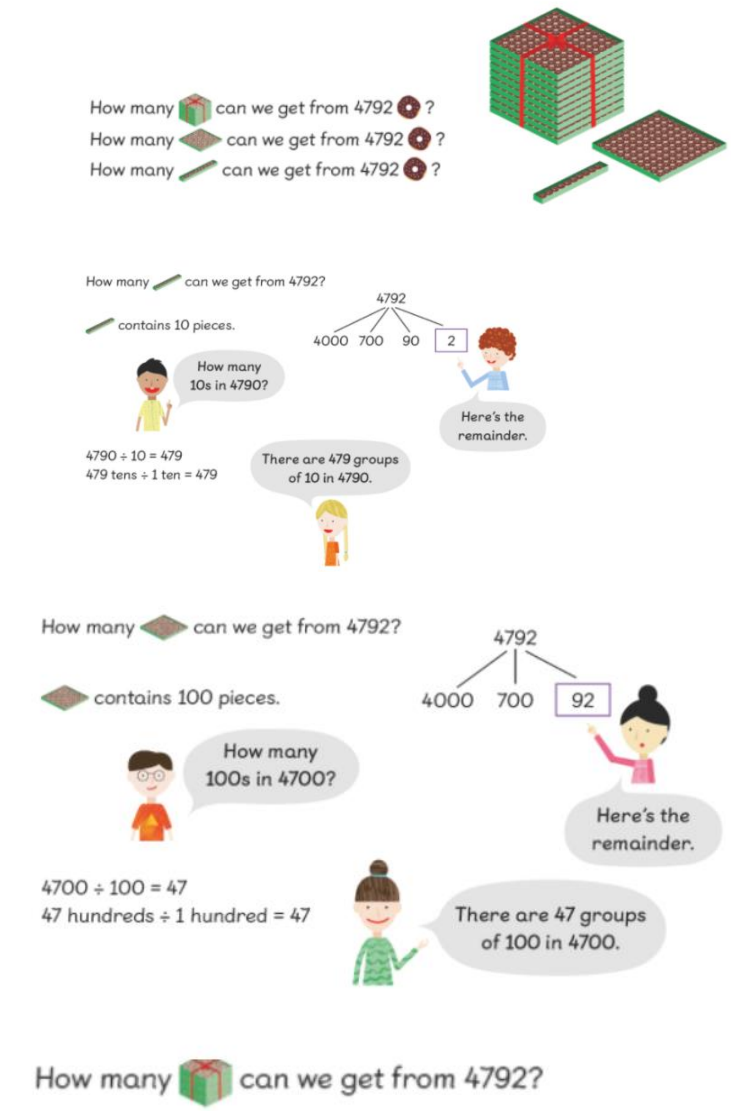
Multiplication

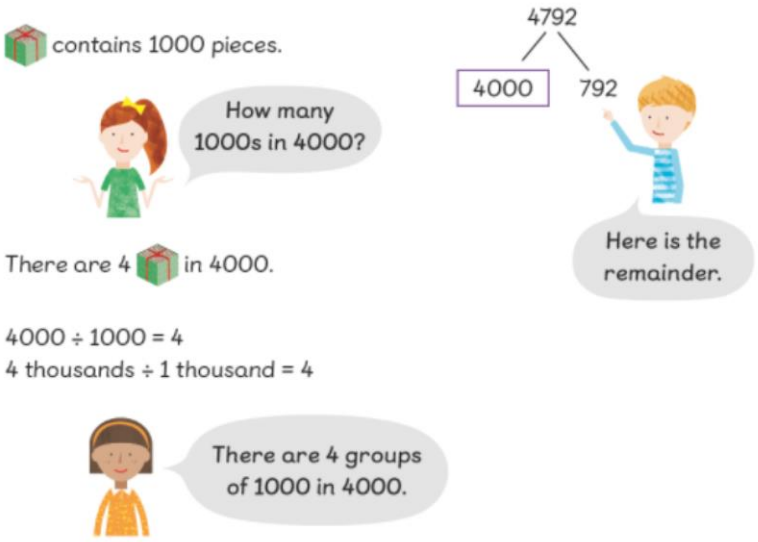


2718 × 4 = 10 872

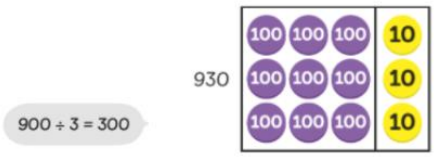

New:
Multiplying 2 and 3 digit numbers by 2-digit numbers
28 × 26
168 → 28 × 6
+ 56 → 28 × 20
728

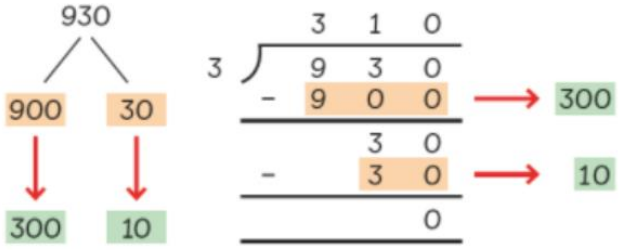
Division

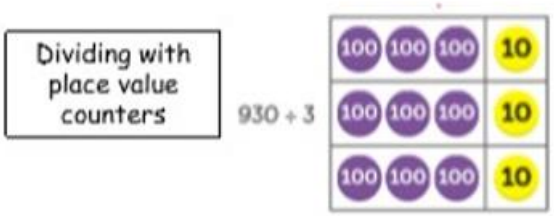

How many can we get from 4792 ?
How many can we get from 4792 ?
How many can we get from 4792 ?
How many can we get from 4792?
contains 10 pieces.
4792
4000 700 90 2
How many 10s in 4790?
Here's the remainder.
4790 ÷ 10 = 479
479 tens ÷ 1 ten = 479
There are 479 groups of 10 in 4790.
How many can we get from 4792?
contains 100 pieces.
4792
4000 700 92
How many 100s in 4700?
Here's the remainder.
4700 ÷ 100 = 47
47 hundreds ÷ 1 hundred = 47
There are 47 groups of 100 in 4700.
How many can we get from 4792?

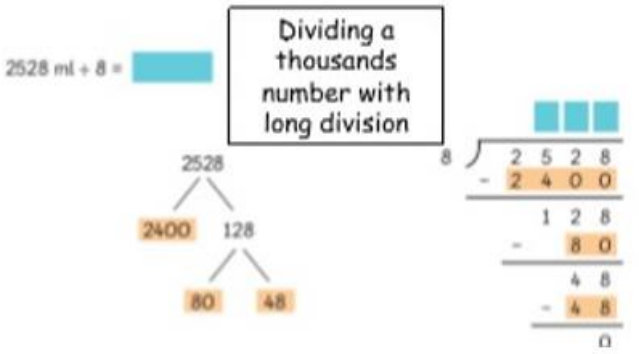


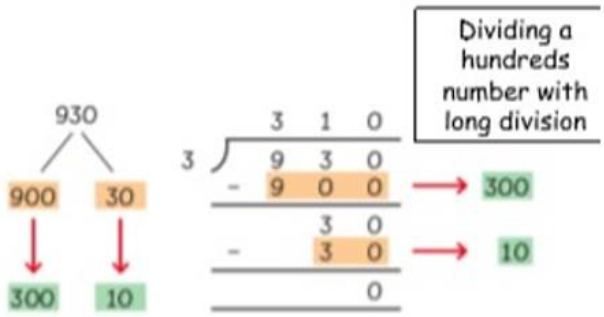
Further Division





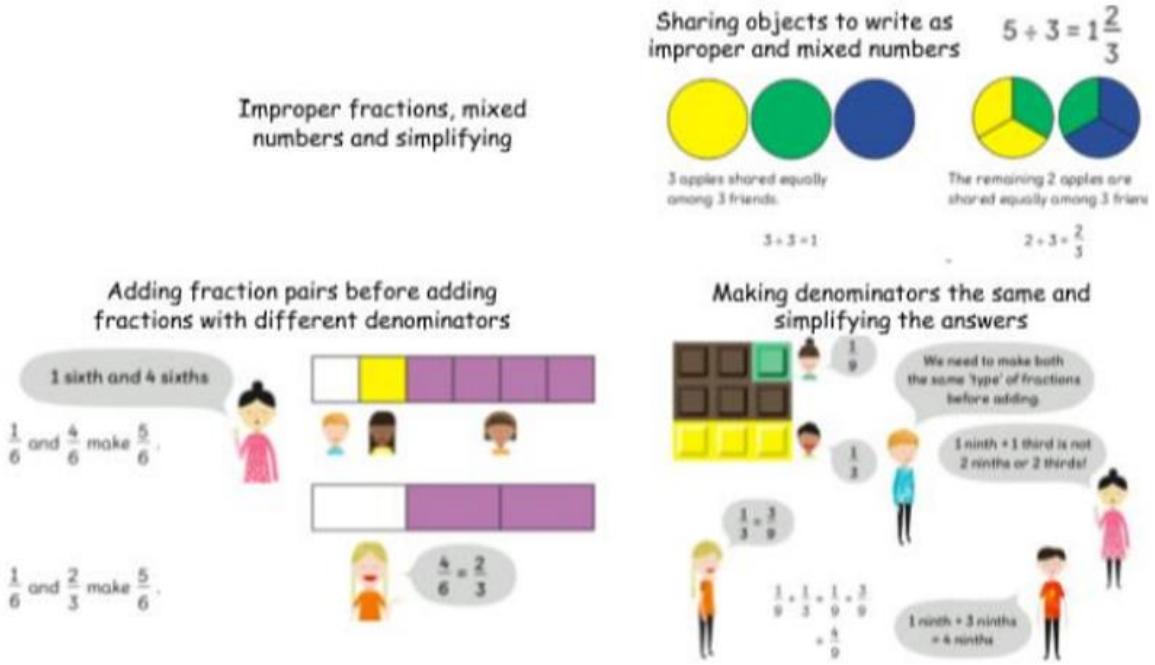




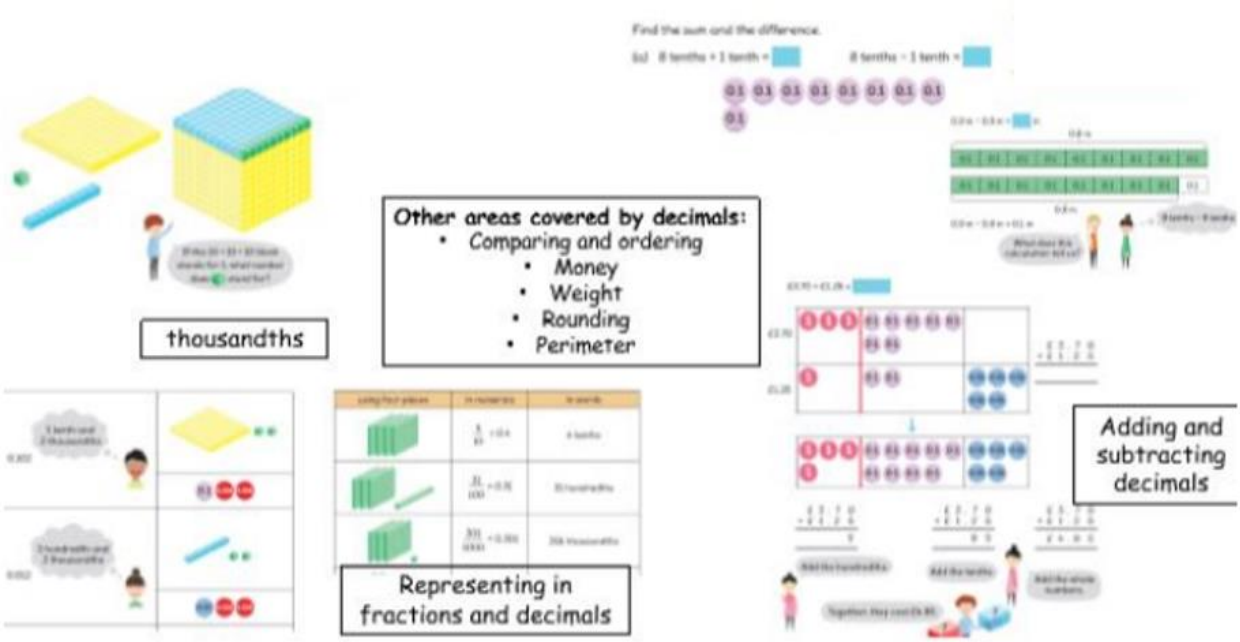


Short division

Fractions



Decimals



Year 6 Mathematics Policy

On the lead up to SATs, the children should be encouraged to use formal written methods for all four of the operations.

Addition and Subtraction

789 + 642 becomes

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 789 \\ +\ 642 \\ \hline 1431 \end{array}$$

874 – 523 becomes

$$\begin{array}{r} 874 \\ -\ 523 \\ \hline 351 \end{array}$$

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle 8\ 12\ 1} \\ 9\not{3}\not{2} \\ -\ 457 \\ \hline 475 \end{array}$$

932 – 457 becomes

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 932 \\ -\ 4\not{5}\not{7} \\ {\scriptstyle 5\ 6} \\ \hline 475 \end{array}$$

Multiplication

24 × 16 becomes

$$\begin{array}{r} {\scriptstyle 2} \\ 24 \\ \times\ 16 \\ \hline 240 \\ 144 \\ \hline 384 \end{array}$$

124 × 26 becomes

$$\begin{array}{r} {\scriptstyle 1\ 2} \\ 124 \\ \times\ 26 \\ \hline 2480 \\ 744 \\ \hline 3224 \\ {\scriptstyle 1\ 1} \end{array}$$

124 × 26 becomes

$$\begin{array}{r} {\scriptstyle 1\ 2} \\ 124 \\ \times\ 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ {\scriptstyle 1\ 1} \end{array}$$

Division

98 ÷ 7 becomes

$$\begin{array}{r} 14 \\ 7\overline{)98} \end{array}$$

432 ÷ 5 becomes

$$\begin{array}{r} 86\ r2 \\ 5\overline{)432} \end{array}$$

496 ÷ 11 becomes

$$\begin{array}{r} 45\ r1 \\ 11\overline{)496} \end{array}$$

PIXL Policy

The Beeches Primary School uses the Maths No Problem scheme and supplements the arithmetic with PIXL; to ensure pupils are provided opportunities to develop fluency becoming efficient mathematicians.

Arithmetic is a branch of Mathematics that consists the study of numbers and basic calculations we do in everyday life: addition, subtraction, multiplication and division. Arithmetic also includes other skills that are related to the four operations, e.g. fractions and percentage that are related to division.

PIXL is used in a range of ways across different year groups. Largely, after teaching a sequence of lessons, you will have collected a range of evidence to show what pupils can and cannot do.

A PIXL Classroom lesson is an intervention lesson that you will deliver at the end of a sequence of lessons that will focus on a single PLC skill. The PLC skill will have been identified as an area of weakness with the aim of ensuring that all pupils make progress.

PIXL has a range of Mathematical resources that will enable you to create a bespoke and heavily differentiated set of activities that will ensure all students are involved in the learning and are shown to make progress in one lesson.

All pupils from Year 2 and above have arithmetic books to keep their PIXL separate from their journaling and MNP workbooks.

Each year groups uses PIXL in the following ways:

Year 2

PIXL is used as extra intervention with twice a week to support target children to meet the expected standard. It is also used as a revision tool once children have completed test papers. PIXl resources are utilised to revise strands of mathematics that have been identified as areas of weakness to plug the gaps.

Year 3

PIXL Arithmetic 10 in 10 tests are undertaken every other week. . The arithmetic test is undertaken as a ‘walking, talking mock.’ Follow up work is then planned related to the test once a week using PIXL resources.

Year 4

PIXL Arithmetic 10 in 10 tests and a 3 in 3 are undertaken every week. The arithmetic test is undertaken as a ‘walking, talking mock.’

Year 5

PIXL 3 in 3s are used, 2 or 3 days per week, for a 3-minute starter for maths lessons. In addition to this, PIXL resources are used for tuition alongside Century. The PIXL tests informs the priority therapies and we follow the PLCs from Y5 maths. In addi-tion to this, the PIXL resources are utilised in tuition lessons and for pre-teaching les-sons.

Year 6

PIXL 3 in 3s are used every day as a 3-minute starter for maths lessons. In addition to this, PIXL resources are used for tuition alongside Century. The PIXL tests in-forms the priority therapies and we follow the PLCs from Y6 maths. In addition to this, the PIXL resources are utilised in tuition lessons and for pre-teaching lessons.