Welcome to Year 4

Maths

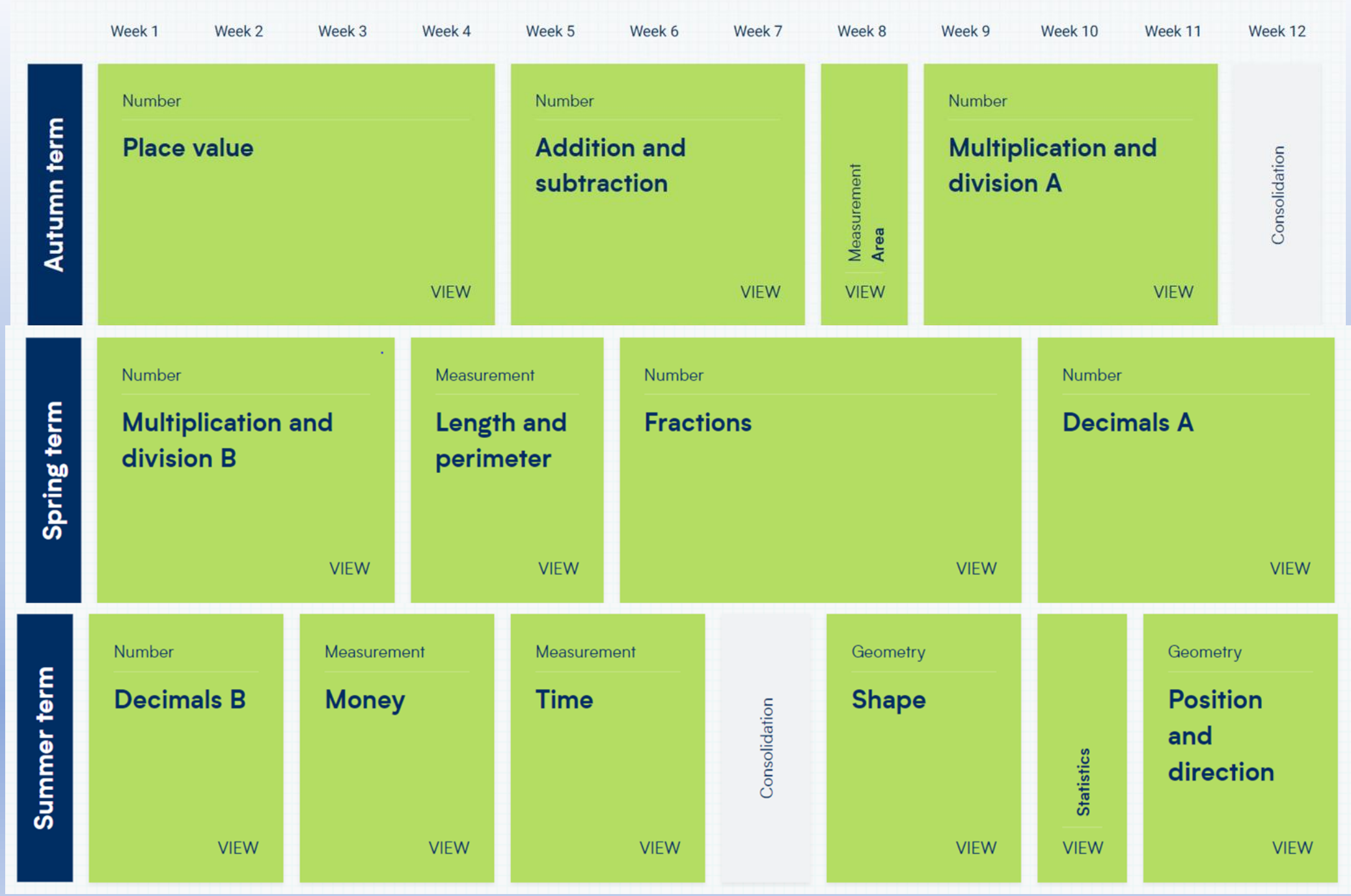
ST JOSEPH'S CATHOLIC
PRIMARY SCHOOL

MATHS

In maths we follow the White Rose scheme for learning.

Throughout the course of the year the children will be covering the following areas of maths.

There is also a real focus on the rapid recall of all multiplication facts.



Year 4 maths – what your child will learn:

Number and place value

- Counting in steps of 6, 7, 9, 25 and 1000
- Recognising place value of each digit in a four-digit number
- Counting backwards through zero to include negative numbers
- Rounding any number to the nearest 10, 100 or 1000

Calculating

- Adding and subtracting with numbers up to four digits using column addition and subtraction
- Knowing multiplication facts for all times tables up to 12 x 12
- Multiplying three-digit numbers by one-digit numbers

Fractions and decimals

- Finding fractions of quantities (for example: 2/6 of 48)
- Understanding equivalence between fractions and decimals
- Dividing one-digit and two-digit numbers by 10 and 100
- Rounding decimals with one decimal place to the nearest whole number

Year 4 maths – what your child will learn:

Measuring

- Converting between units of measurement
- Working out the perimeter and area of shapes
- Calculating with amounts of money
- Telling and writing the time using the 12-hour and 24-hour clock
- Solving problems involving converting between units of time

Geometry

- Classifying different types of triangles and quadrilaterals
- Recognising acute and obtuse angles
- Identifying lines of symmetry in 2D shapes
- Plotting coordinates in the first quadrant
- Translating shapes up/down and left/right

Statistics

- Interpreting and presenting data in bar charts and line graphs
- Solving comparison, sum and difference problems using information presented in bar charts, pictograms and tables

Place Value

Small steps

Step 1	Represent numbers to 1,000
Step 2	Partition numbers to 1,000
Step 3	Number line to 1,000
Step 4	Thousands
Step 5	Represent numbers to 10,000
Step 6	Partition numbers to 10,000
Step 7	Flexible partitioning of numbers to 10,000
Step 8	Find 1, 10, 100, 1,000 more or less

Small steps

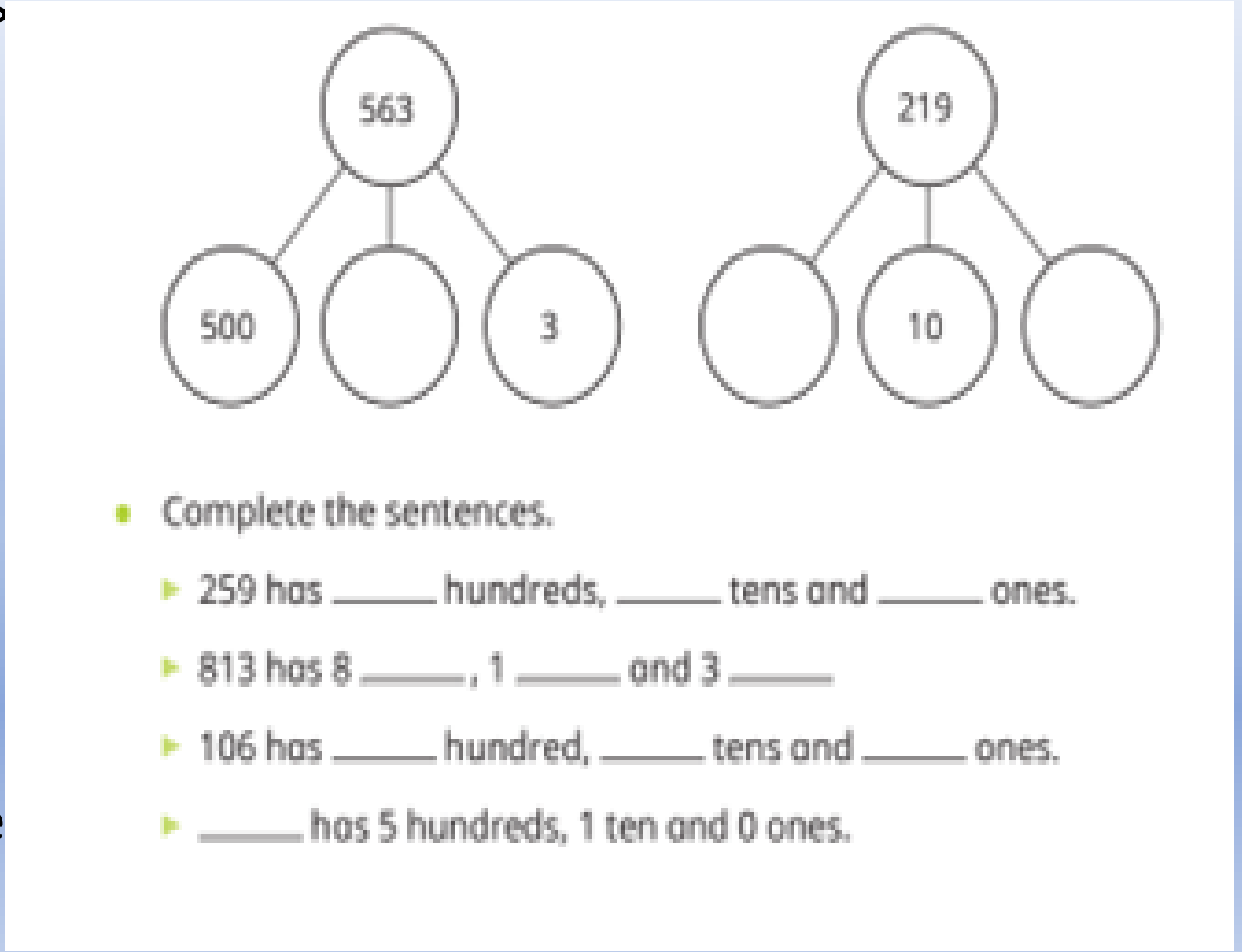
Step 9	Number line to 10,000
Step 10	Estimate on a number line to 10,000
Step 11	Compare numbers to 10,000
Step 12	Order numbers to 10,000
Step 13	Roman numerals
Step 14	Round to the nearest 10
Step 15	Round to the nearest 100
Step 16	Round to the nearest 1,000

Partition numbers to 1000

Children represent numbers in a part-whole model and identify missing parts and wholes.

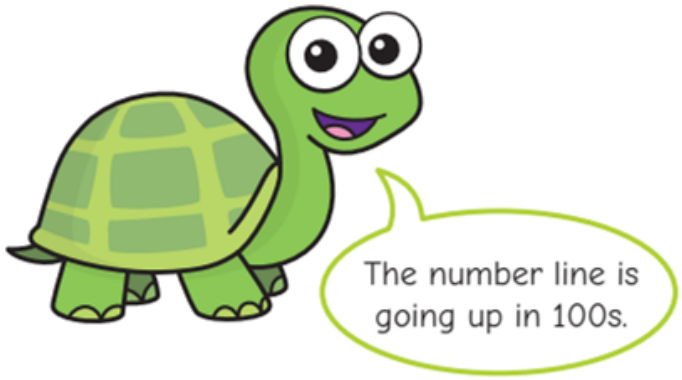
Particular attention should be paid to numbers that include zero as a placeholder, to build on learning from the previous step.

Base 10 and place value counters can continue to be used to support children's understanding.



Number line to 1,000

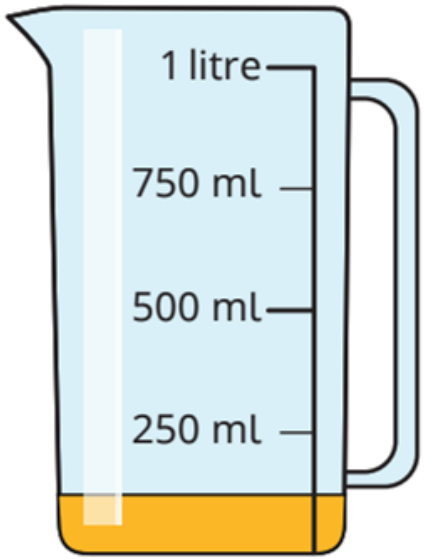
Reasoning and problem solving



Do you agree with Tiny?

Talk about your answer with a partner.

Filip has poured some juice from a jug.



approximately 125 ml

Children are expected to solve reasoning problems in all maths small steps.

Estimate how much juice is left in the jug.

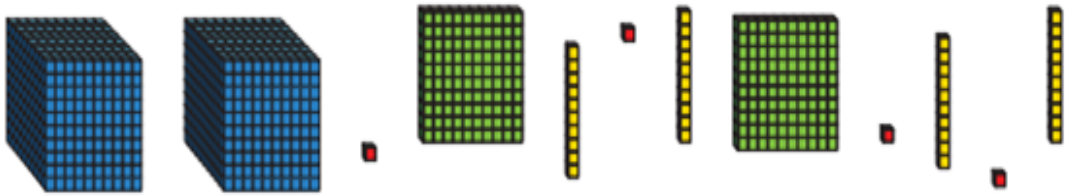
Number lines are presented in a variety of ways.

Represent numbers to 10,000

Children are encouraged to use manipulatives to make numbers so they truly understand the meaning of each digit in a number.

Key learning

- Complete the sentences.



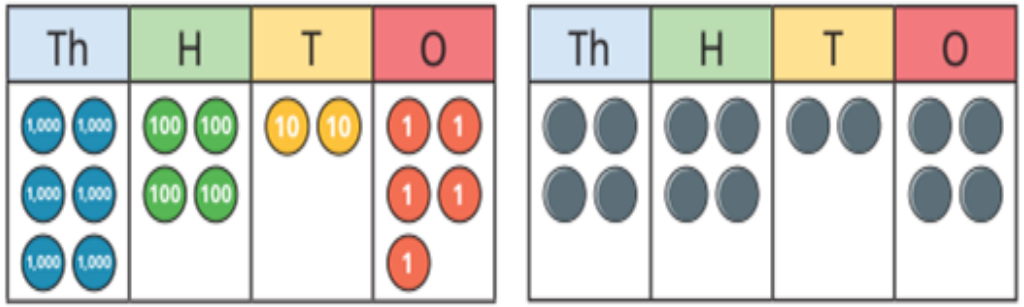
There are _____ thousands, _____ hundreds, _____ tens and _____ ones.

The number is _____

- Use base 10 to represent each number.

1,222	1,871	3,468	2,107

- What numbers are represented on the place value charts?



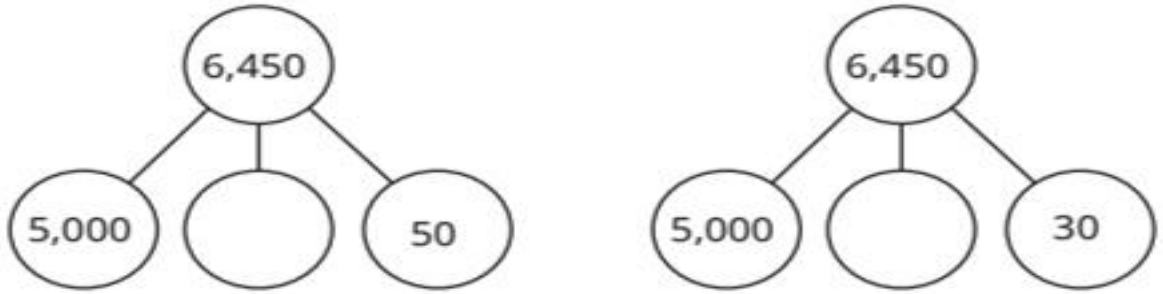
Write your answers in words and numerals.

What is the same and what is different about the place value charts?

- Use plain counters to represent each number on a place value chart.

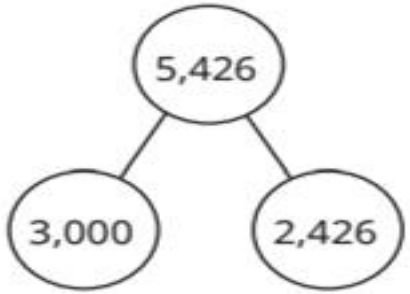
Flexible partitioning of numbers

- Complete the part-whole models.



What is the same and what is different?

- Here is one way of partitioning 5,426 into two parts.



Find three other ways of partitioning 5,426 into two parts.

Compare answers with a partner.

- Complete the number sentences.

Children are encouraged to consider different ways of partitioning four-digit numbers

- The place value chart shows that 100 more than 4,932 is 5,032

Use this method to find the values.

100 more than 3,904	10 more than 1,993	1 more than 8,999

- The place value chart shows that 10 less than 3,402 is 3,392

Use this method to find the values.

100 less than 2,034	10 less than 1,903

If another hundred is added to 900, it then becomes a 1000 and so a 1000 counter is added to the thousands place value column and there will be nothing in the hundreds column.

In this place value chart, to demonstrate 10 less a hundred has been exchanged for ten tens. Now, one ten counter can be taken away.

Comparing numbers to 10,000

Tiny is thinking of a number.

- It is greater than 4,200 but less than 5,800
- The digits sum to 16

What number could Tiny be thinking of?

Give four possible answers.

various possible answers, e.g.

4,219

5,227

4,930

5,713

Use the digit cards to complete the comparison.

1	2	3	4	5

You can use each digit once only.

5,64__ < __,73__

2,__38 > 2,3__5

various possible answers, e.g.

5,641 < 5,732

2,438 > 2,335

Children use symbols to compare numbers in reasoning and problem solving questions.

Roman numerals

- Children build on their knowledge of Roman numerals from 1 to 12 on a clock face, and learn that L represents 50 and C represents 100 Children explore the similarities and differences between the Roman number system and our number system, understanding that the Roman system does not have a zero and does not use placeholders.

- They are already familiar with the idea that, for example, 4 is written as IV rather than IIII, and they apply the same concept to write 40 as XL and 90 as XC

- Roman Numerals are written with a combination of symbols:

I = 1	V = 5	X = 10
L = 50	C = 100	

Rules:

- *A maximum of three of the same symbol can be used in the same number (eg 3 = III)*
- *When a symbol is written after a larger or equal symbol, it is added (eg 6 = VI)*
- *When a symbol is written before a larger symbol, it is subtracted (eg 4 = IV)*

Key learning

- Write each number in Roman numerals.

20	50	60	62
64	78	85	99

- Four numbers are written in Roman numerals.

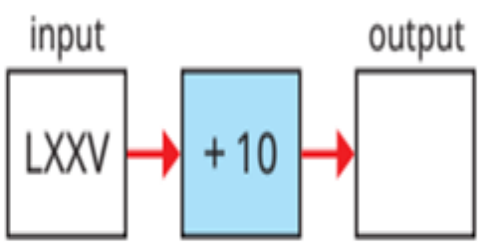
XXIV	LIX
LXXXVII	XCVII

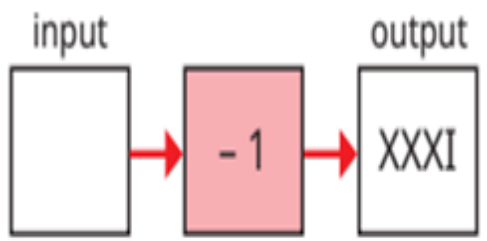
What are the numbers?

- Choose the correct answer to each calculation.

L + L	LL	X	C	V
C – X	CX	XC	V	L
IX + XI	XX	XXII	IXXI	IXIX

- Complete the function machines.





Addition and subtraction

Small steps

Step 1	Add and subtract 1s, 10s, 100s and 1,000s
Step 2	Add up to two 4-digit numbers – no exchange
Step 3	Add two 4-digit numbers – one exchange
Step 4	Add two 4-digit numbers – more than one exchange
Step 5	Subtract two 4-digit numbers – no exchange
Step 6	Subtract two 4-digit numbers – one exchange
Step 7	Subtract two 4-digit numbers – more than one exchange
Step 8	Efficient subtraction

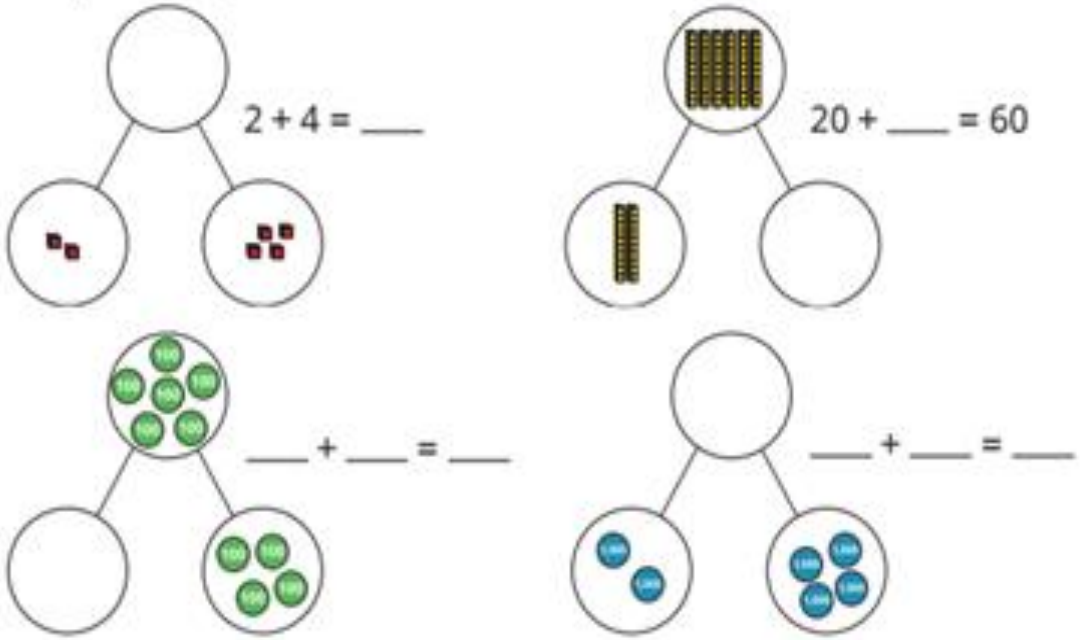
Small steps

Step 9	Estimate answers
Step 10	Checking strategies

Adding 1, 10's, 100's and 1000's

Key learning

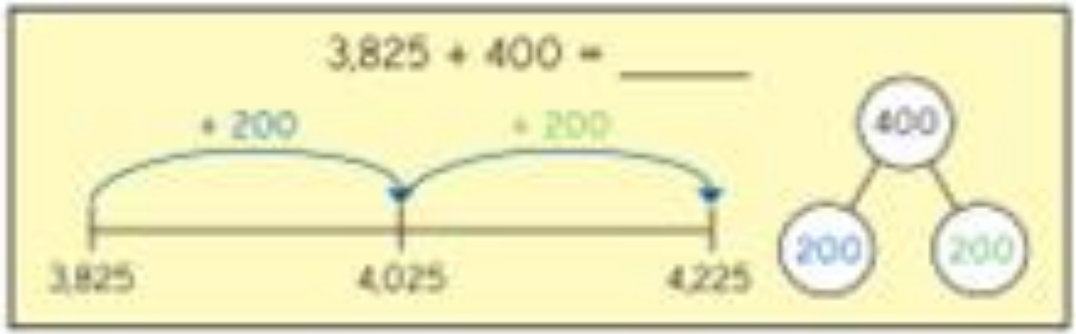
- Complete the part-whole models and number sentences.



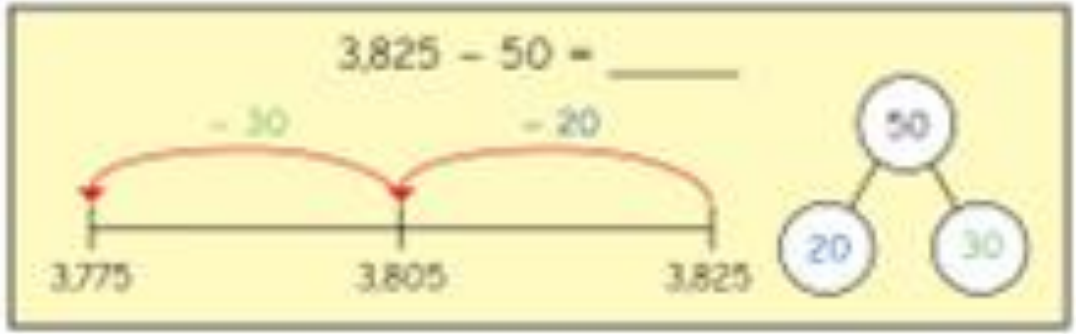
What do you notice?

- Amir and Whitney are using number lines to add and subtract.

Amir



Whitney



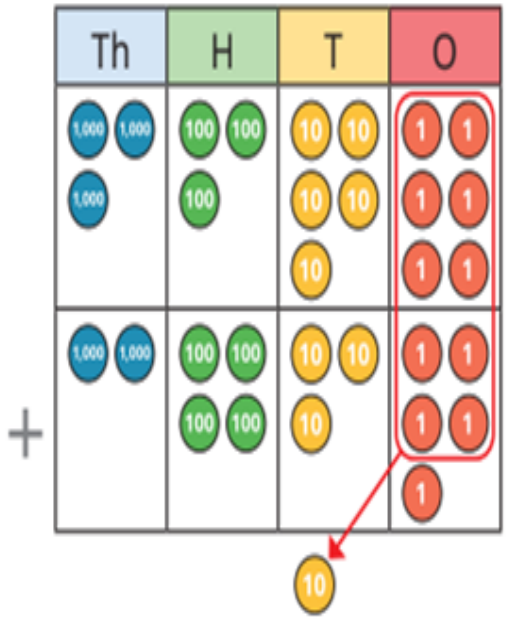
Use this method to work out the calculations.

2,418 + 6	2,418 + 800	2,418 + 90
2,418 – 30	2,418 – 9	2,418 – 700

Adding and subtracting with one exchange

Key learning

- Kim uses counters to find the total of 3,356 and 2,435



		Th	H	T	O
		3	3	5	6
+		2	4	3	5
		5	7	9	1
				1	

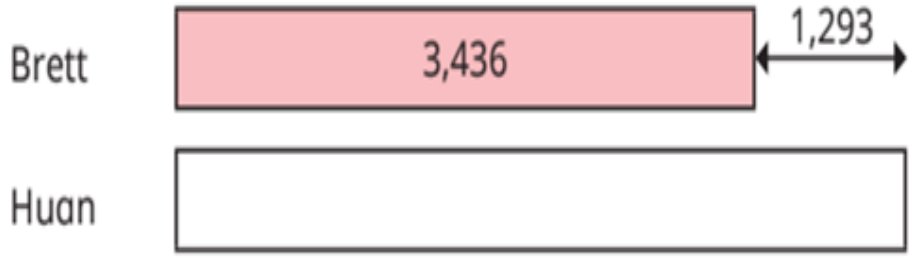
- Find the sum of 6,825 and 1,344

Model this?

- Brett has 3,436 marbles.

  Huan has 1,293 more marbles than Brett.

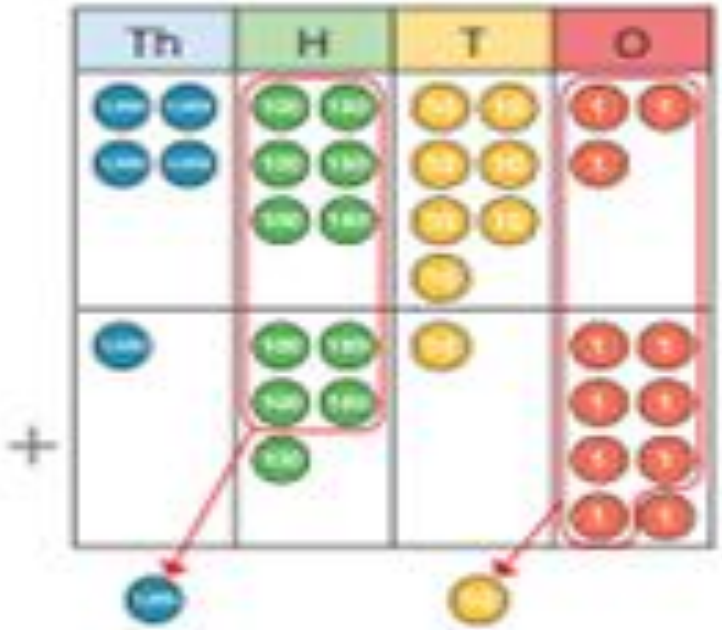
  How many marbles does Huan have?



To add two, four digit numbers with more than one exchange.

Key learning

- Nijah uses place value counters to help her work out 4,673 + 1,518

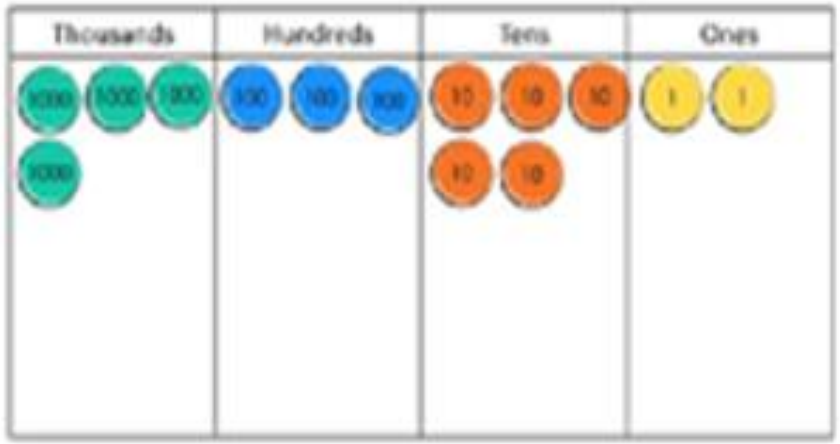


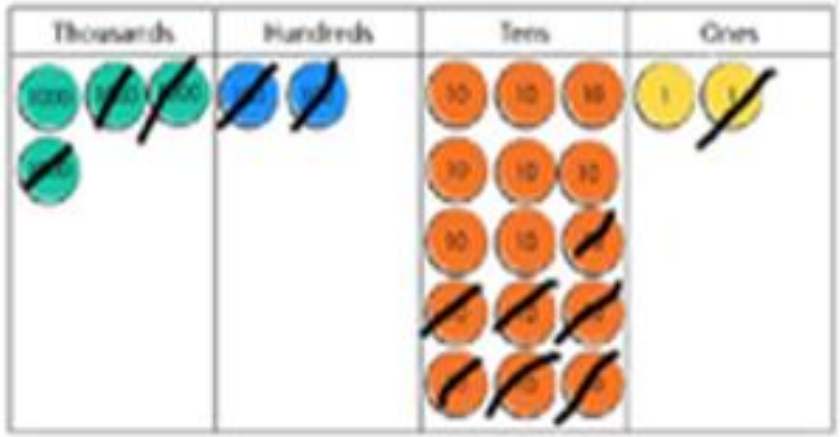
		Th	H	T	O	
		4	6	7	3	
	+	1	5	1	8	
		6	1	9	1	
		1		1		

Subtract two four-digit numbers – More than one exchange.

Written column methods for subtraction

Place value counters are a useful manipulative for representing the steps of the formal written method. These should be used alongside the written layout to ensure conceptual understanding and as a tool for explaining.

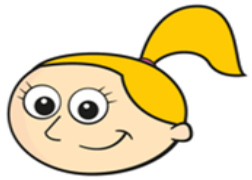




$$\begin{array}{r} 4\,{}^{2}\not{3}\,{}^{1}5\,2 \\ -\,3\,2\,7\,1 \\ \hline 1\,0\,8\,1 \\ \hline \end{array}$$

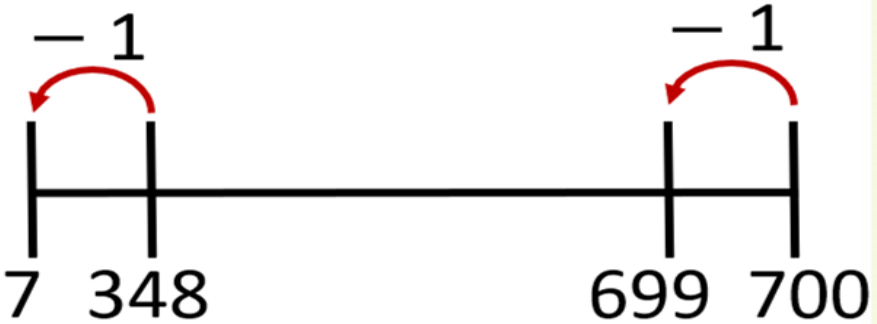
Using efficient strategies

	$^{6}\cancel{7}^{1}\cancel{0}^{9}0$			
−	3	4	8	
	3	5	2	



	6	9	9	
−	3	4	7	
	3	5	2	

	6	9	9	
−	3	4	8	
	3	5	1	



$351 + 1 = 352$

The original calculation is 700 – 348. This, as a mental calculation is tricky to do.

700 – 1 = 699
It is easier now to take 348 away from 699.
However because you have taken away 1 from the original number, then you have to add 1 to get the correct answer.

Inverse operations to check calculations

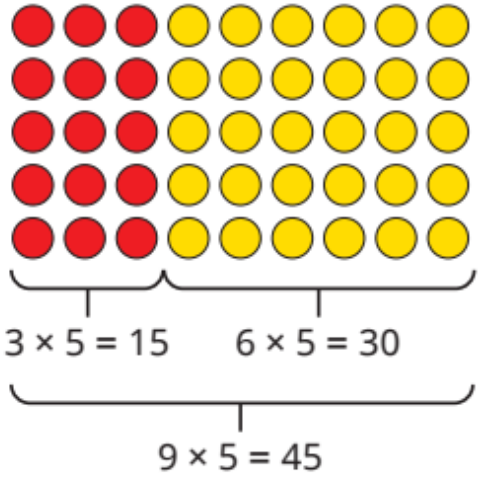
How many different inverse calculations can you do for each?

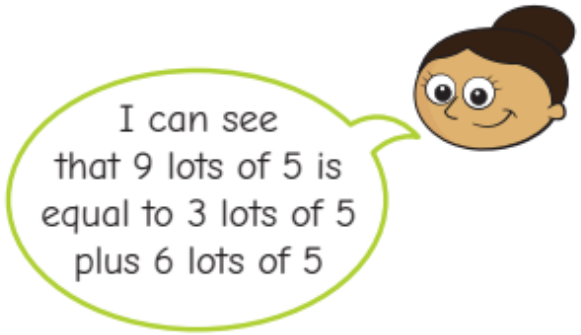
		Th	H	T	O	
		4	5	1	9	
	+		7	2	3	
		5	2	4	2	
		1		1		

		Th	H	T	O	
		3	$^{4}\not{5}$	$^{1}6$	4	
	−	1	4	8	4	
		2	0	8	0	

Multiplying and Dividing

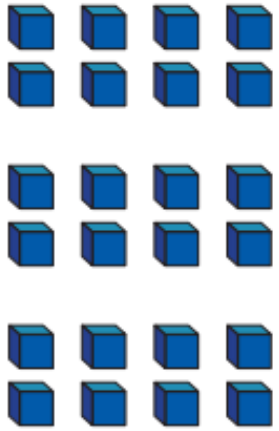
Dora has made an array to show 9 × 5





Draw and label an array to show that $9 \times 4 = 3 \times 4 + 6 \times 4$

Complete the workings.



$2 \times 4 =$ _____

$2 \times 4 =$ _____

$2 \times 4 =$ _____

$3 \times 2 \times 4 = 3 \times 8 =$ _____

Sam is building the 12 times-table.

$1 \times 12 = 12$

$2 \times 12 = 24$

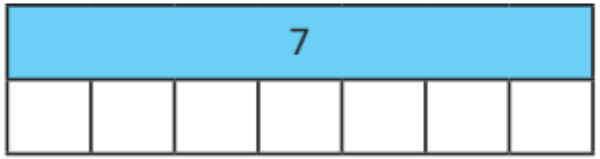
$3 \times 12 = 36$

Use base 10 to help you complete the multiplications.

Dani bakes 7 cookies.

She shares them equally between her 7 friends.

How many cookies does each friend get?



7 ÷ _____ = _____

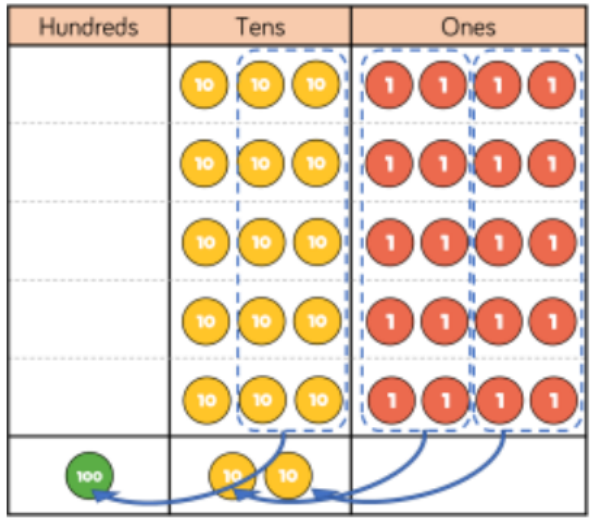
MULTIPLICATION
Written Methods

Complete the calculation.

Hundreds	Tens	Ones
100 100		1 1 1
100 100		1 1 1
100 100		1 1 1

	H	T	O
	2	0	3
×			3

	H	T	O		
		3	4		
×			5		
		2	0	(5 × 4)	
+	1	5	0	(5 × 30)	
	1	7	0		



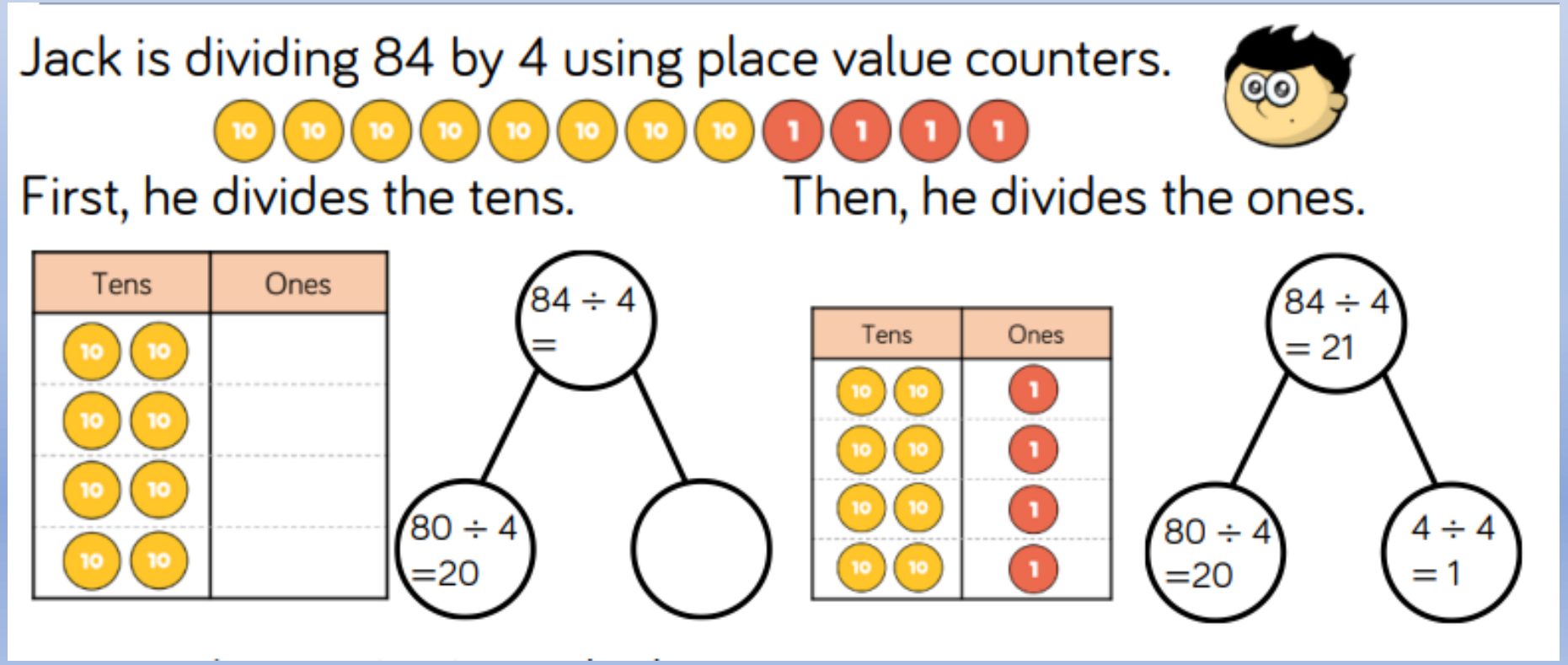
	H	T	O		
		3	4		
×			5		
	1	7	0		

1 2

DIVISION
Written Methods

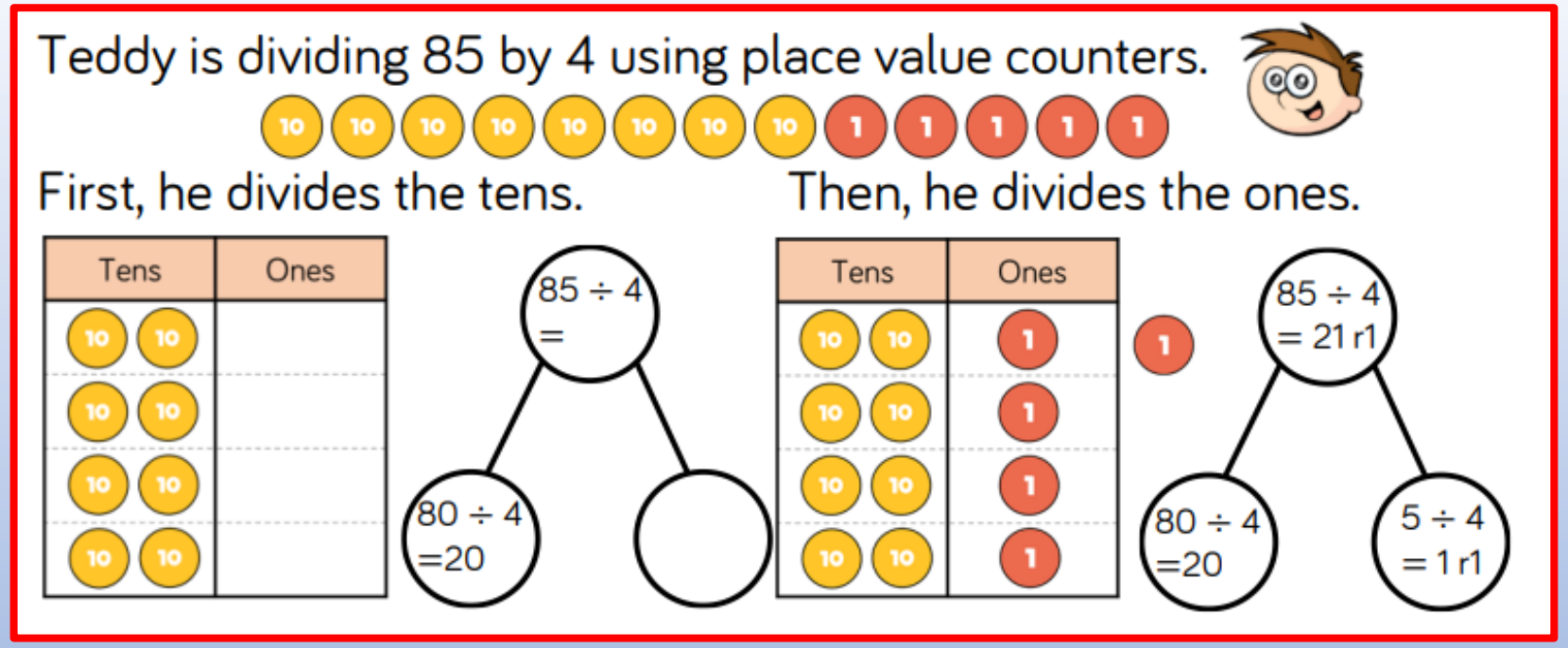
Children build on their knowledge of dividing a 2-digit number by a 1-digit number from Year 3 by sharing into equal groups.

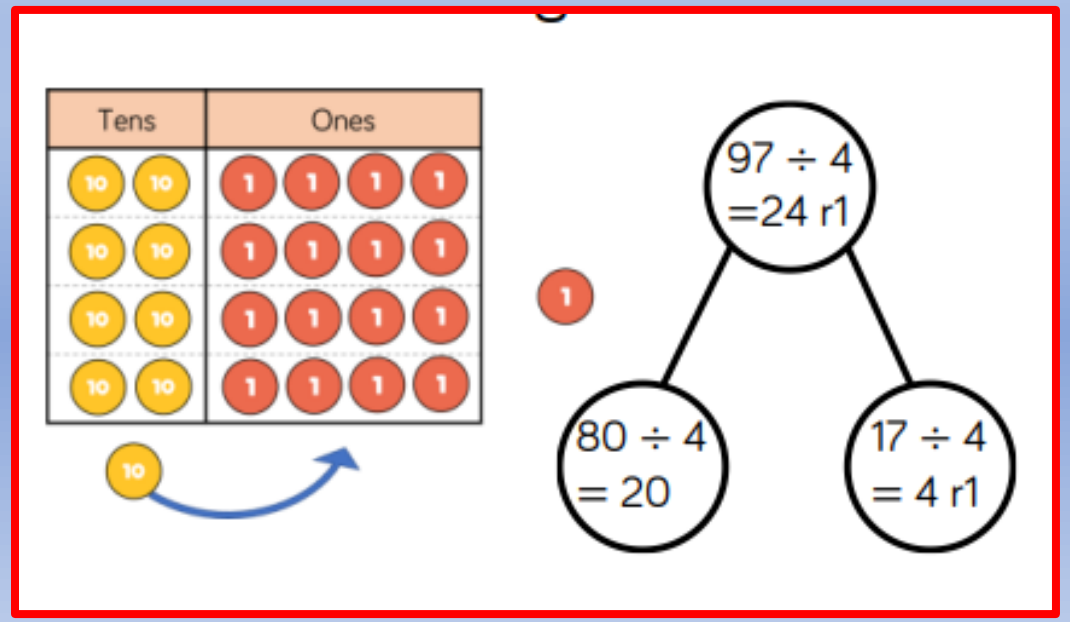
Children use examples where the tens and the ones are exactly divisible by the divisor, e.g. 96 divided by 3 and 84 divided by 4.



DIVISION
Written Methods

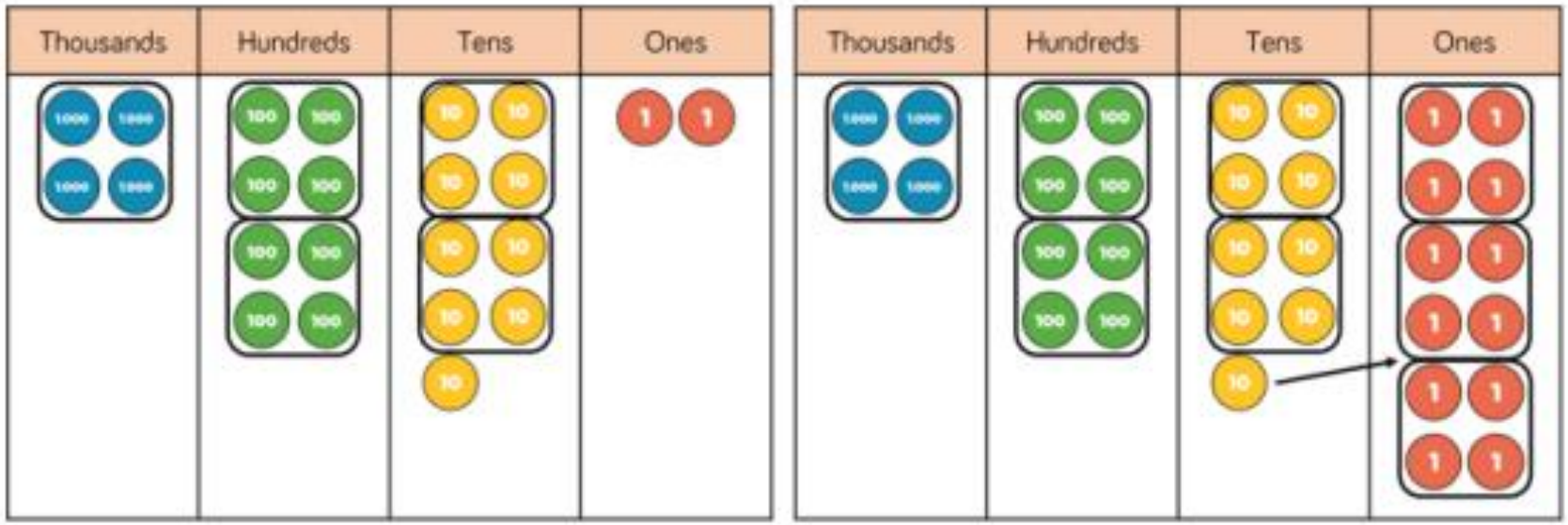
Children then move on to calculations where they exchange between tens and ones and show remainders.

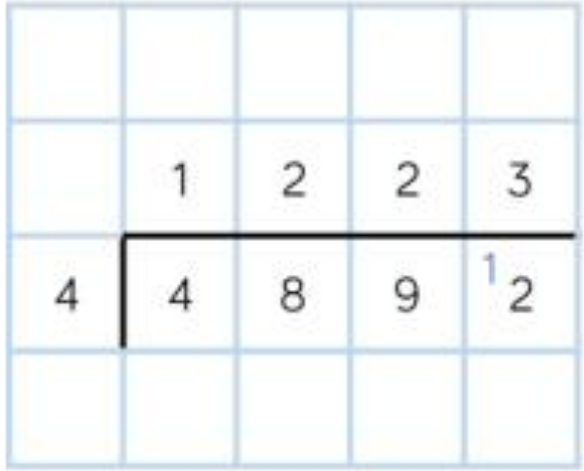




DIVISION
Written Methods
Year 5

The formal written short method is not introduced to students until Year 5. When this method is introduced it is still taught using manipulatives and pictures.





Reasoning and Problem Solving

Spot the mistake

Alex and Dexter have both completed the same multiplication.

Alex

	H	T	O
	2	3	4
×			6
1	2	0	4
	2	2	

Dexter

	H	T	O
	2	3	4
×			6
1	4	0	4
	2	2	

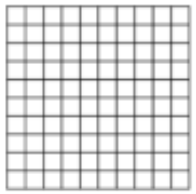
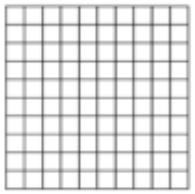
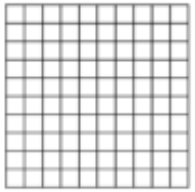
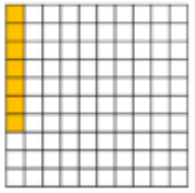
Who has the correct answer?
What mistake has been made by one of the children?

Dexter has the correct answer.

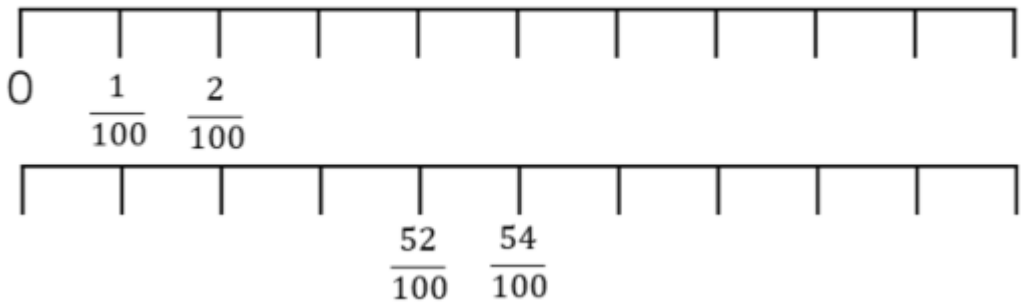
Alex has forgotten to add the two hundreds she exchanged from the tens column.

As well as using concrete, pictorial and abstract methods to calculate, the children will apply what they know in order to reason and problem solve.

Complete the table.

Image	Words	Fraction	Decimals
	56 hundredths		
		$\frac{17}{100}$	
			0.2
	7 hundredths	$\frac{7}{100}$	0.07

Complete the number lines.



Here is a two-digit number on a place value chart.

Tens	Ones	Tenths	Hundredths
7	2		

When dividing by 100, we move the digits 2 places to the _____.

$72 \div 100 = \square$

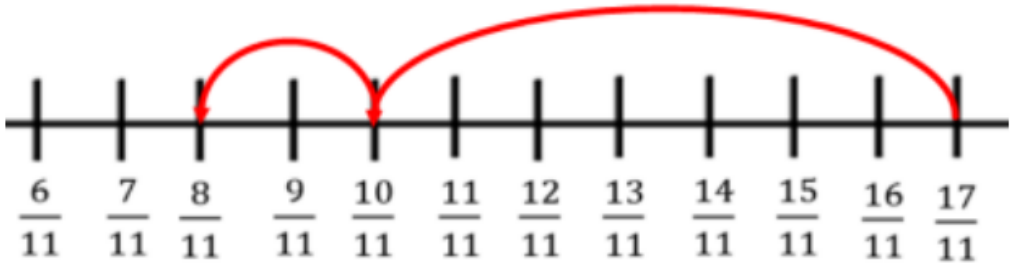
Adding and Subtracting Fractions

Use the models to add the fractions:

$\frac{2}{7} + \frac{2}{7} =$

$\frac{5}{7} - \frac{\square}{7} = \frac{\square}{7}$

Annie uses the number line to solve $\frac{17}{11} - \frac{9}{11}$



ST JOSEPH'S CATHOLIC PRIMARY SCHOOL

Times Tables

- When: **June**
- How: On the computers, the test is not just about whether they know the answer, it is about **rapid recall**. Please practise **daily on TT Rock stars to build up rapid recall.**

Mathematics

A leaflet explaining ways to support your child with mathematics at home will be available for you to take away.

This is some of the maths your child should be able to do by the end of Year 4.

Count in multiples of 6, 7, 9, 25 and 1000. Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). Order and compare numbers beyond 1000. Read Roman numerals to 100 (I to C). Recall multiplication and division facts for multiplication tables up to 12 × 12. Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. Convert between different units of measure (e.g. kilometre to metre; hour to minute). Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. Estimate, compare and calculate different measures, including money in pounds and pence. Read, write and convert time between analogue and digital 12 and 24-hour clocks.