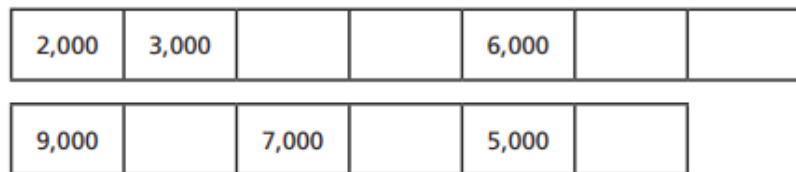


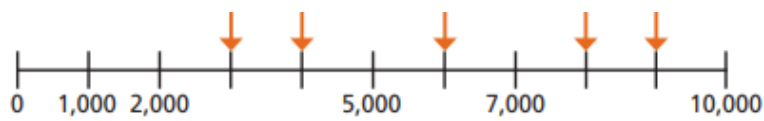


Place Value, Addition & Subtraction



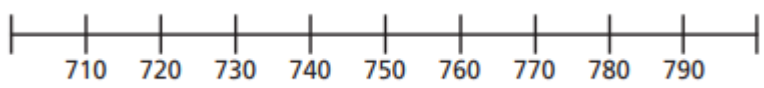
Can you complete the number tracks?

How many nails are there?



What numbers are the arrows pointing to?

Can you label 733 on the number line?



Can you round this number to the nearest 100?

Year 4 Maths Curriculum

In year 4, pupils will practise counting forwards and backwards to numbers up to and including 4 digits. This includes negative numbers beyond 0.

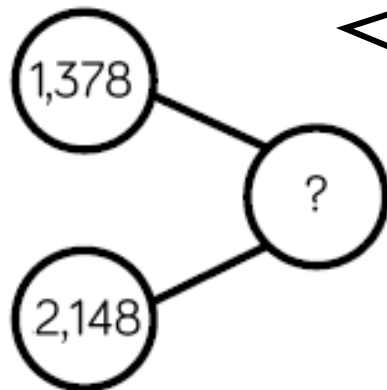
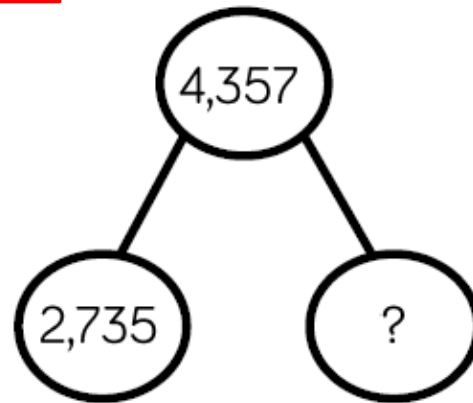
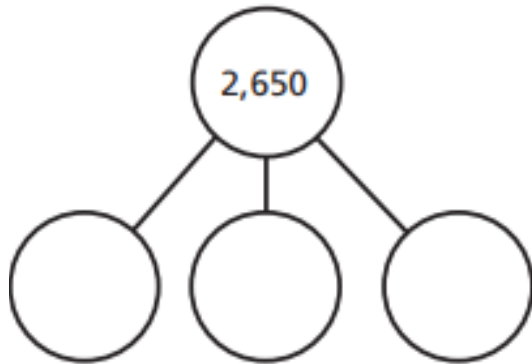
They will learn to identify the place value of each digit in a four-digit number. They will learn to combine units of ones, tens, hundreds and thousands to compose four-digit numbers and partition four-digit numbers.

They will learn to recognise and write numbers in words up to 4-digits.

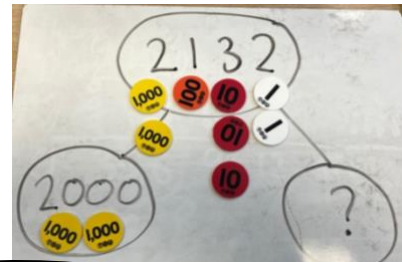
They will reason mathematically about four-digit numbers in a linear number line and learn to round numbers to the next 10, 100 or 1000.



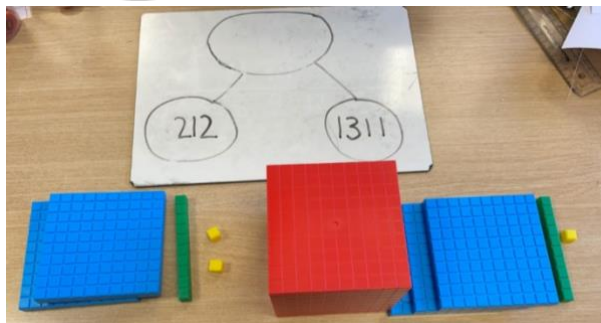
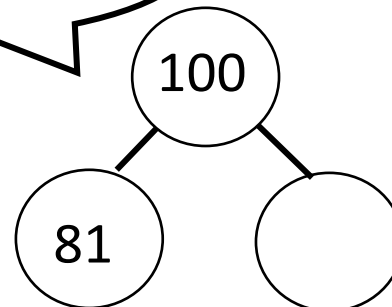
Part Whole Model



Can you complete the part whole models?



Here is an example of a non-standard partition. Can you fill in the missing number?



Part Whole Model

Pupils will learn to partition four-digit numbers in a standard and non-standard way and carry out related addition and subtraction facts.

The part whole model can be used to partition a number into two or more parts or to partition numbers into place value columns. When the parts are complete and the whole is empty, pupils use aggregation to add the parts together to find the total. When the whole is complete and at least one of the parts are empty pupils use partitioning (a form of subtraction) to find the missing part.

This can be partitioned in several ways, for example- 2,650 can be partitioned in to:

Standard:

2000, 600, 50, 0

Non-Standard:

1600, 1000, 25, 25

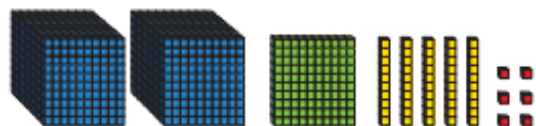
2000, 530, 120, 0.



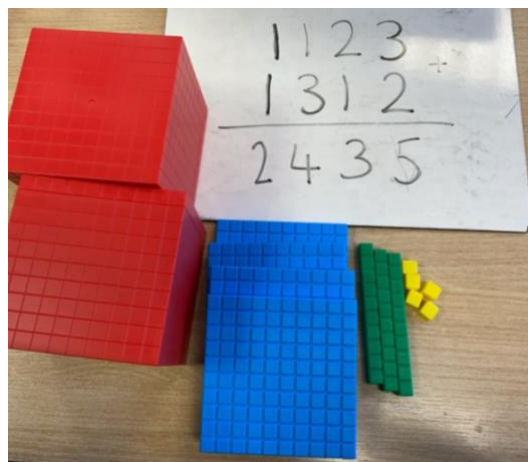
Maths Resources & Representations in Year 4



Base 10



$$2,156 = 2,000 + \square + \square + \square$$



Thousands	Hundreds	Tens	Ones

1	3	7	8
+	2	1	4
3	5	2	6
		1	1

In both calculation's the pupil has made an exchange.

Thousands	Hundreds	Tens	Ones

3	1		
4	3	5	7
-	2	7	3
1	6	2	2

This is how formal subtraction is written. The exchanges are demonstrated by crossing through and 'carrying' over.

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

Base 10

Base 10 is a very effective manipulative for pupils to use when calculating four-digit numbers as it clearly exposes the structure of place value. A place value grid can be used with the manipulatives to enhance children's understanding of place value during the calculation process.

Pupils continue to build on their maths experiences from year 3 (calculating three-digit numbers using Base 10) by exploring the use of the 1000 block and how to use the manipulatives to calculate four-digit numbers accurately.

Pupils will learn to record addition and subtraction of four-digit numbers using a formal written method. By this stage in their learning pupils will have greater understanding of the exchange process – they will explore this in greater detail in year 4 as they exchange between hundreds and thousands.

Using manipulatives alongside their written formal methods enables pupils to see links between the two processes.

Exchange: Change a number or expression for another of an equal value.



Place Value Counters

Thousands	Hundreds	Tens	Ones
1000	100 100 100	10 10 10 10 10 10 10 10	1 1 1 1 1 1 1 1
1000 1000	100	10 10 10 10 10 10 10 10	1 1 1 1 1 1 1 1

Below the grid: 100 (red counter), 10 (yellow counter)

1	3	7	8
+	2	1	4
<hr/>			
3	5	2	6
	1	1	

In both calculations the pupil has made an exchange.

Place Value Counters & Flip Stands

Place value counters are another very effective manipulative for year 4 pupils to use when calculating four-digit numbers. Unlike Base 10, it clearly exposes the structure of place value and can be used with a place value grid.

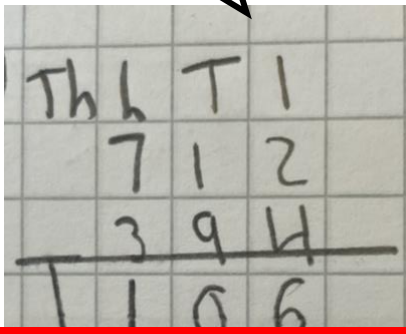
Children often use flip stands to demonstrate their understanding, particularly when adding 10, 100 or 1000.

They will explore the manipulatives thoroughly before moving to a written formal method. Using manipulatives alongside their written formal methods enables pupils to see links between the two processes; this is a critical stage in children's maths development.

Place value counters are used before and alongside formal methods.

$$\begin{array}{r} 3 \ 1 \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$$

Thousands	Hundreds	Tens	Ones
1000 1000 1000 1000	100 100 100	10 10 10 10	1 1 1 1
	100 100 100 100 100 100 100 100 100 100 100 100		1 1 1 1 1 1 1 1



Maths Resources & Representations in Year 4

Problem Solving & Reasoning



Who has the smallest amount of drink? Explain how you know.

Talk about your findings with a partner.

Alex has 4 digit cards.



She makes a 4-digit number.

Her number has 7 thousands and 1 ten.

What numbers could Alex have made?

There are 10 teams with 7 players on each team.

There are 10 red flowers and 7 yellow flowers.

There are 7 ten frames with 10 counters in each.

Which statement is the odd one out? Explain how you know.

Problem Solving & Reasoning

As pupils develop a secure understanding of place value and four-digit numbers, they develop the ability to reason mathematically and solve multi-step number problems.

They will encounter a range of mathematical problems that involve using concrete, pictorial and abstract representations.

Pupils are encouraged to talk about their maths verbally in class discussions. With the support of the class teacher, pupils are always encouraged to use mathematical vocabulary to explain their answers.

True or False?

Can you prove it?

Is that true sometimes, always or never?

How do you know that?



Multiplication & Division



Can you write a calculation to match the images?

Balloons come in bags of 10
Huan has 130 balloons.
How many bags does he have?



Multiplication & Division

In year 4, pupils will learn to multiply and divide whole numbers by 10 and 100. They will learn to apply a scaling approach; knowing that by multiplying a number by 10 makes the number 10 times the size and by dividing the number by ten makes the number one-tenth of the size.

The same rule applies when multiplying and dividing by 100; by multiplying a number by 100 makes the number 100 times the size and by dividing the number by 100 makes the number one-hundredth of the size. This process will prepare pupils for learning about decimals in year 5.

Teddy makes 2,300 using base 10



Complete the sentences.

$2,300 = 2 \text{ thousands} + \square \text{ hundreds}$

$1 \text{ thousand} = \square \text{ hundreds}$

$2 \text{ thousands} = \square \text{ hundreds}$

Teddy has \square hundreds altogether.

$2,300 \div 100 = \square$

Make 3,700 using base 10

Complete the sentences.

$3,700 = 3 \text{ thousands} + \square \text{ hundreds}$

$3 \text{ thousands} = \square \text{ hundreds}$

There are \square hundreds altogether.

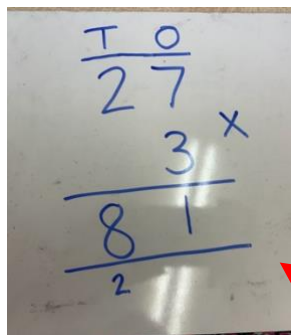
$3,700 \div 100 = \square$

Maths Resources & Representations in Year 4

Multiplication & Division

H	T	O
100 100	10	1 1 1 1 1
100 100	10	1 1 1 1 1
100 100	10	1 1 1 1 1

What multiplication is being worked out?



Rosie works out 4×37 using a written method.

	H	T	O
	2	1	5
x			3

	H	T	O	
		3	7	
x			4	
		2	8	(7 x 4)
	1	2	0	(3 0 x 4)
	1	4	8	

Multiplication & Division

In year 4, pupils will learn to become fluent in using a formal written method to multiply two-digit and three-digit numbers by a one-digit number. They will also learn to divide two-digit and three-digit numbers by a one-digit number.

They will use maths manipulatives to explore these calculations first, before learning to record their maths formally.

Here, a formal method is being used. We call it the 'short method'.

Step 1: Begin on the right- $3 \times 7 = 21$

Step 2: Carry over the 2 tens, put the 1 in the ones column.

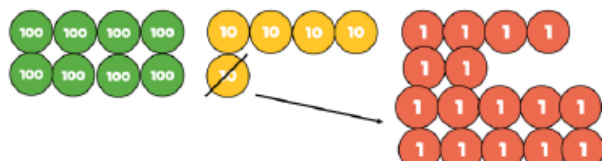
Step 3: $2 \times 3 = 6$

Step 4= Add the 2 tens to the 6

Step 5: Place your answer in the box.

The children also learn long multiplication, which is the next step from linear multiplication.

When dividing pupils start with the place value counters outside of the grid before sharing them equally into the rows. This method helps to highlight the exchange process and any remainders, consequently developing their understanding and precision when recording division formally.



Hundreds	Tens	Ones
100 100	10	1 1 1 1
100 100	10	1 1 1 1
100 100	10	1 1 1 1
100 100	10	1 1 1 1

Calculate 856 divided by 4

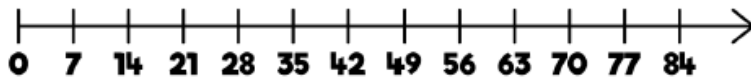
Notice how the pupil needed to make an exchange in the calculation in order to be able to share 856 equally – exchanging one ten for 10 ones.



Times tables

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
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

What do you notice about the pattern of odd and even numbers in the 7 times tables?

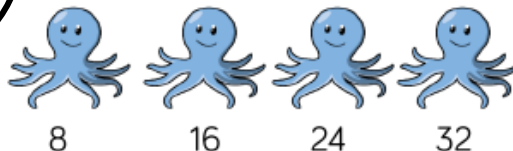


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

What do you notice about the tens and ones in the 11 times tables?



What do you notice about the multiples in the 4 and 8 times tables?



Times tables

In year 4, pupils are expected to recall the multiplication tables to 12 x 12, including corresponding division facts. They will practise their multiplication skills daily so that they are able to develop fluency and precision. Pupils will be encouraged to count and chant in multiples, as well as encounter a variety of mathematical representations. They will explore multiplication and division using maths manipulatives and be encouraged to look for and discuss patterns and links.

Through exploring multiplication and division using maths manipulatives and looking for patterns and links, pupils continue to enhance their fluency and understanding. For example, using the 100 square or a number line to notice patterns in the tens and ones.

Pupils will be encouraged to discuss whether multiples are odd or even and how they can use this information to aid their memory.

Fluency in multiplication is particularly important for pupil's progression to the year 5 maths curriculum.

Acknowledgements:

Some representations have been taken from White Rose Maths, NCETM and Twinkl. These are a sample of questions that the children use in class.