



Maths Resources & Representations in Year 1

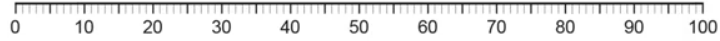


100 square

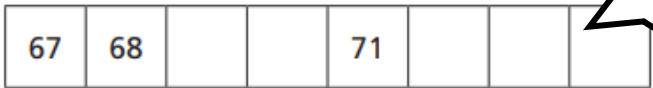
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Can you count within 100, forwards and backwards, starting with any number?

Number lines & Number tracks

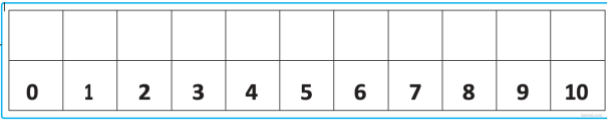


Which numbers come before/after a specific number?



Can you complete the missing numbers?

We always include 0 in our number tracks.

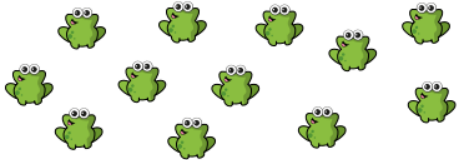


Objects



4 + 3 = 7

Can you circle 8 frogs?



How many more cherries does Rosie have than Dora?



Who has the most cherries?

Year 1 Maths Curriculum

In year 1, pupils learn to recite number names fluently forwards and backwards to 100. They will learn to identify and represent numbers using objects and pictures, such as dice and dominoes.

100 square & Number line

These resources support pupil's counting skills. By using a 100 square or number line, children are drawn to pay attention the patterns in the number system, such as counting in multiples of 10.

Number tracks are very useful to help pupils to add and subtract successfully by counting on and counting back.

Objects

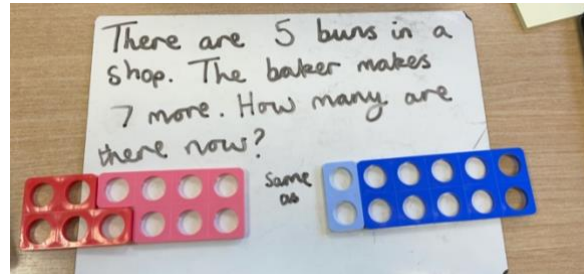
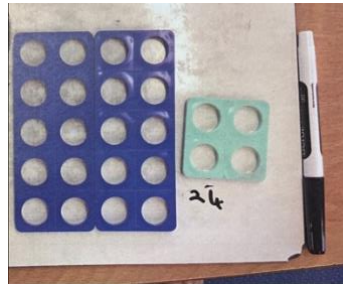
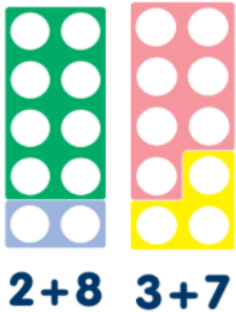
Concrete objects are used regularly in year 1 in order for pupils to count, add, subtract, group and share effectively in their learning.

When adding two numbers together using cubes, pupils are encouraged to use two different colours – they can see how two parts come together to make the whole.

Pupils learn to compare and reason mathematically about groups of objects.



Numicon

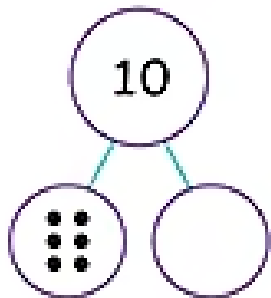


Numicon

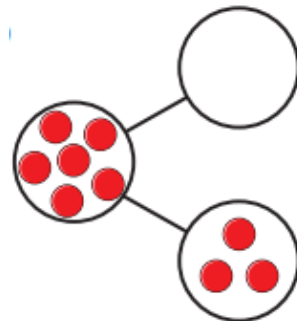
Numicon is used to explore aggregation, partitioning, number bonds and doubling. Our pupils become competent users of Numicon in Reception and continue to use these skills to subitise the total in year 1. Their familiarity of the shapes helps them to recognise patterns between numbers, for example place value patterns or consider why odd numbers are odd and even numbers are even. When adding numbers, children can see how the parts come together to equal the total. When subtracting numbers, children start with the whole and then overlay the shape they are subtracting to find out how many is left.

Part Whole Model

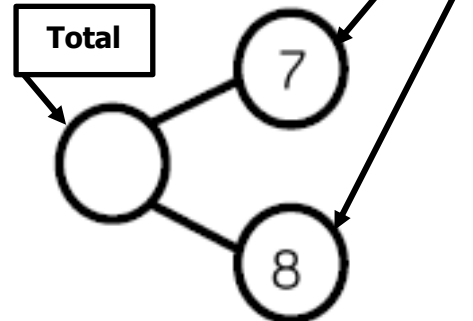
$10 = 6 + 4$



$10 = 5 + 5$



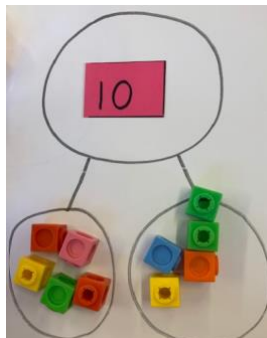
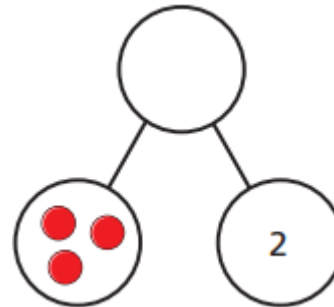
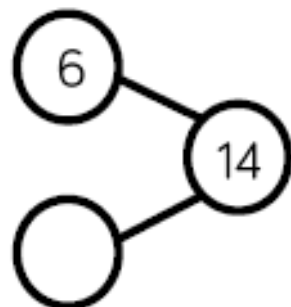
Total partitioned



Part Whole Model

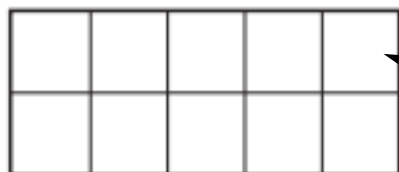
The part whole model supports pupil's understanding of place value and partitioning. The part whole model is represented in a variety of ways; using images, concrete resources, numicon or numbers.

Pupil's learn to compose quantities of two (and sometimes three) parts. When the parts are complete and the whole is empty, children 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 children use partitioning (a form of subtraction) to find the missing part.

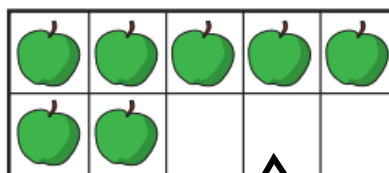


Maths Resources & Representations in Year 1

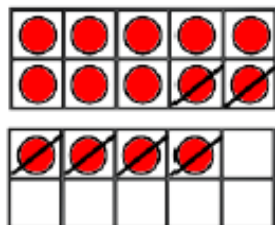
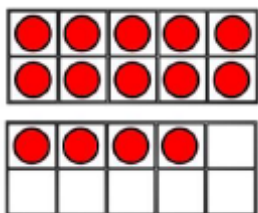
Ten Frame



Can you draw 8 counters?

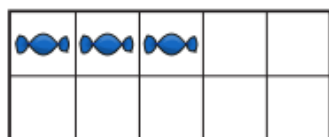
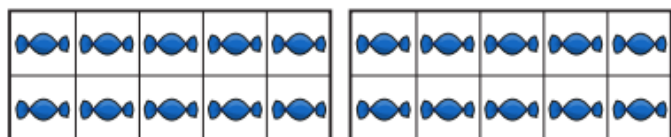


How many apples are there?



$$14 - 6 =$$

Can you write an addition sentence to match the ten frames?



How many sweets are there altogether?

Ten Frame

The ten frame supports children's addition and subtraction skills. They are used to support pupil's fluency to recall addition and subtraction facts to 10 (and beyond.) Fluency in number facts to 10 allows pupils to more easily master addition and subtraction with 2-digit numbers in year 2, and underpins all future calculation.

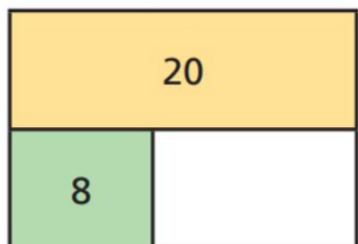
By combining ten frames together, children can explore place value beyond 10 and practise adding and subtracting beyond 10.

When the ten frame is used to add two numbers together, different coloured counters are used to represent the number problem clearly.

As pupils progress through the year 1 curriculum, the ten frame is used to combine multiples of ten. They should leave year 1 understanding that when objects are grouped equally, it is more efficient to skip count than to count in ones. Recognising that a group of 5, for example, can be treated as a single unit is called unitising, and is the basis of multiplicative reasoning.

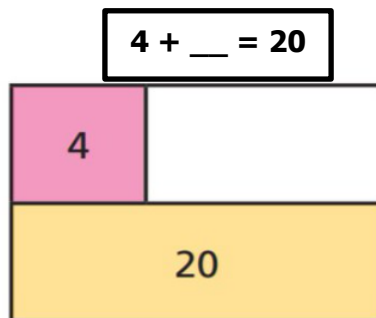
Maths Resources & Representations in Year 1

Bar Model



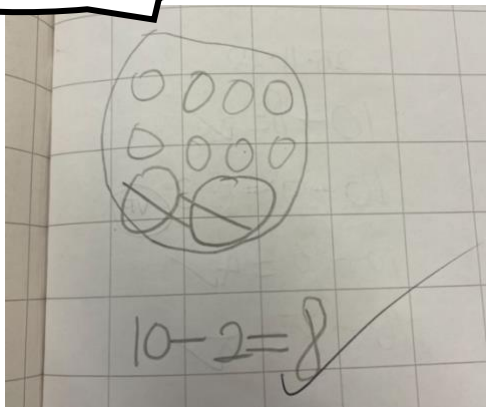
$$20 - 8 = \underline{\quad}$$

What does this bar model show?



$$4 + \underline{\quad} = 20$$

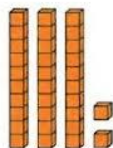
We sometimes draw counters to help us.



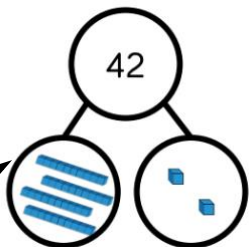
Place Value Counters



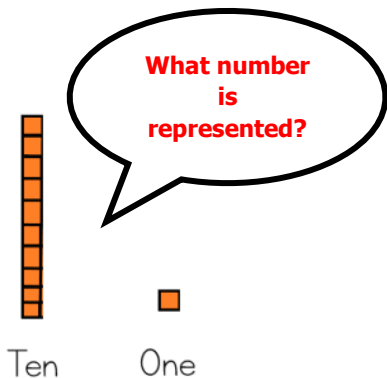
Base Ten



Tens	Ones
3	2



What would the addition sentence be?



What number is represented?

Bar Model

A bar model can be used to represent addition problems, as well as a number of other aspects of maths. The top bar usually represents the total and the children are taught to understand that the bottom parts need to add to make the total, although this can be reversed. This helps children work out subtraction problems.

Place Value Counters: Place value counters and place value grids are useful tools for pupils to work mathematically through place value problems, such as addition and subtraction. Place value counters are used in a similar way to base ten, except the counter is the same size and the number is printed on it.

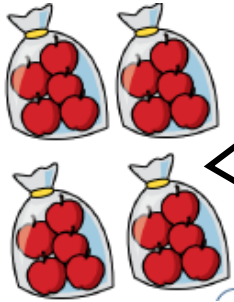
Base 10 Equipment:

Base 10 equipment exposes the structures of numbers. In year 1 it can be used to help pupils determine place value, solve addition and subtraction problems and to partition numbers.

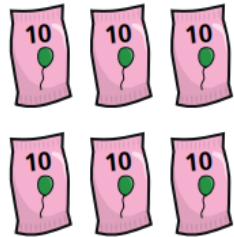
Pupils will learn to add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers and adding three one-digit numbers.



Multiplication & Division



Can you write a repeated addition statement to match this representation?

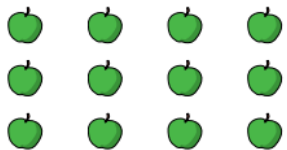


Tom needs 70 balloons. Does he have enough?

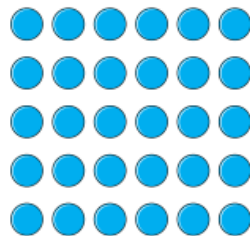
How many spots are there altogether?



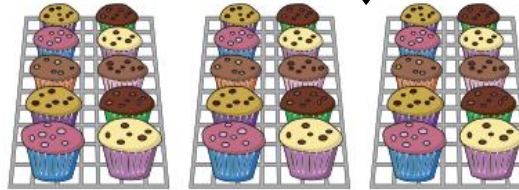
Arrays



Can you share the apples between 4 boxes?



Can you share the counters between 5 friends?



Multiplication & Division

In year 1 pupils use concrete and pictorial maths to carry out repeated addition. This is a vital stage in a pupil's maths development that then supports them understanding the structure of multiplication and division.

In year 1, pupils learn to count in multiples of 2s, 5s and 10s. This skill prepares them for the year 2 maths curriculum. In year 2, pupils are taught the multiplication sign formally and are expected to recall and use multiplication and division facts confidently for the 2, 5 and 10 multiplication tables.

An Array

An array is an arrangement of objects in rows or columns. Arrays are used to help pupils understand multiplication and division.

In year 1, arrays are used to help pupils share equally into groups. Sharing equally into groups helps children to understand the structure of division.

Maths Resources & Representations in Year 1

I am going to count
from 21 to 36



Will Rosie say the number 29?

How do you know?

Use the digit cards.



Make a number greater than 25

Make a number less than 72

Make a number greater than 59

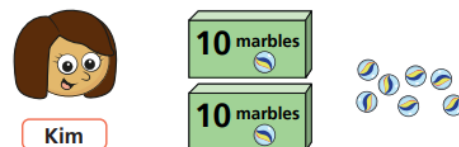
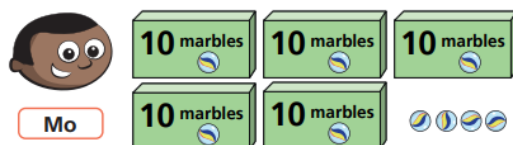
Talk about your answers.

Tens	Ones
4	6

Tens	Ones
5	1

Which number
is smallest in
this pair? How
do you know?

Mo and Kim each have some marbles.



- How many marbles does Mo have?
- How many marbles does Kim have?
- Who has more marbles?

How do you know?

Problem Solving & Reasoning

Pupils are encouraged to draw on their mathematical knowledge to solve one or two 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.

What
did you
notice?

How did
you work
it out?

How do
you
know?

True or
False?

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.