

Maths Workshop

Guide for Parents/Carers

Yrs 1, 2 & 3

Maths curriculum statement (summary)

At Herrick Primary School, we are currently adopting a **Mastery Approach** to mathematics.

The emphasis is on developing pupils' mathematic skills and master them alongside ensuring they are **fluent in their knowledge of times tables** and the **four mathematical operations**: addition, subtraction, multiplication and division. Various methods and strategies are introduced as they progress throughout the school and a greater emphasis is placed on children's **reasoning skills** once the basics are embedded.

Working Together



Aims of this presentation

To explain concrete, pictorial and abstract approaches in maths

What is A Mastery Approach?

To discuss the written calculations policy (focus on + and -)

Information on the Herrick Primary School website

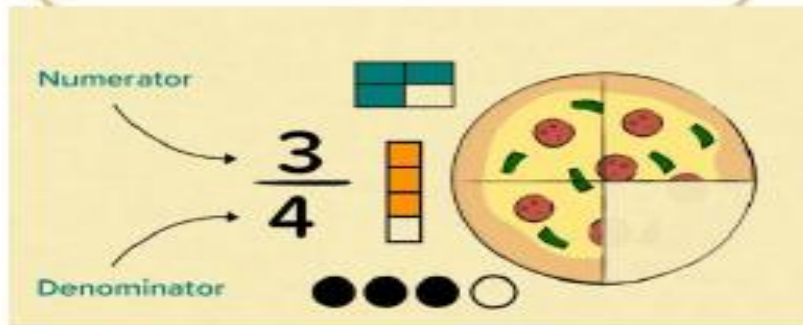
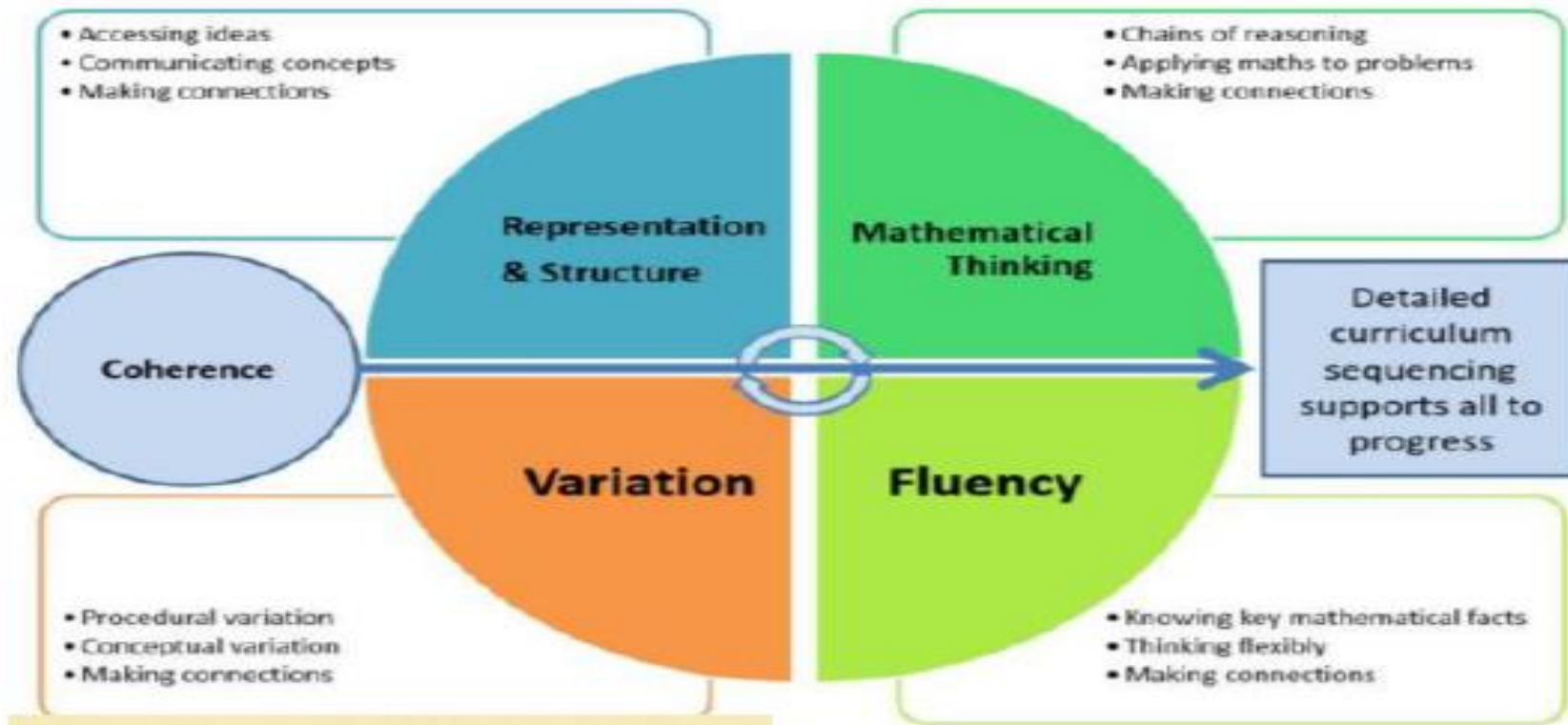
To try out some of the methods yourself!!

What is CPA?

The *Concrete Pictorial Abstract (CPA)* approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics.



Teaching Mastery



Addition

Vocabulary -

add, addition, amount, total, greater, sum

Addend - A number to be added to another

Children are taught and encouraged to use the key vocabulary throughout their lessons

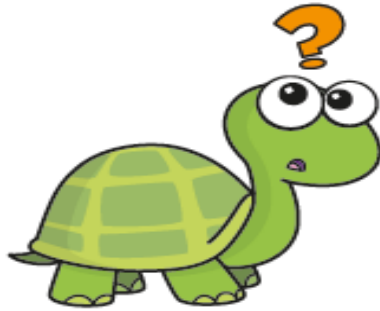


How would you solve this problem?

Reasoning and problem solving

Tiny is working out $7 + 48$

I know $7 + 3 = 10$,
but I do not know how
many more I need
to add.



What can Tiny do to simplify
the addition?

What is $7 + 48$?

Work out the additions.

$43 + 8$

$48 + 3$

$18 + 3$

$13 + 8$

$8 + 23$

$3 + 28$

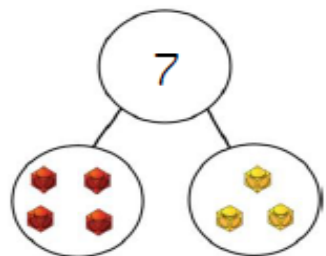
$53 + 8$

$3 + 58$

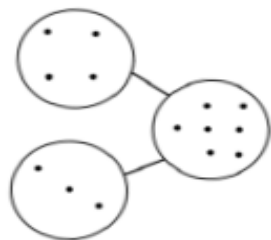
What do you notice?

Write a similar addition that has
an answer of 71

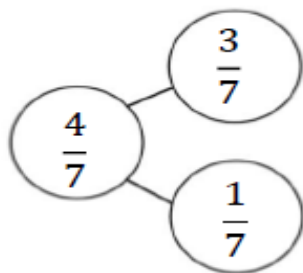
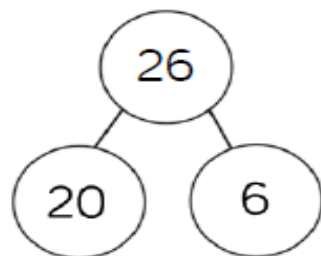
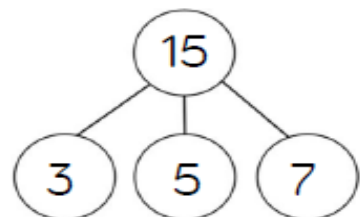
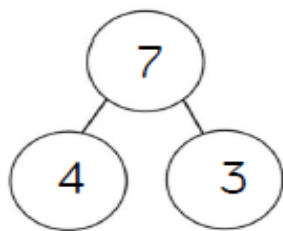
Part-Whole Model



$$7 = 4 + 3$$
$$7 = 3 + 4$$



$$7 - 3 = 4$$
$$7 - 4 = 3$$



Benefits

This part-whole model supports children in their understanding of aggregation and partitioning. Due to its shape, it can be referred to as a cherry part-whole model.

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 is empty, children use partitioning (a form of subtraction) to find the missing part.

Part-whole models can be used to partition a number into two or more parts, or to help children to partition a number into tens and ones or other place value columns.

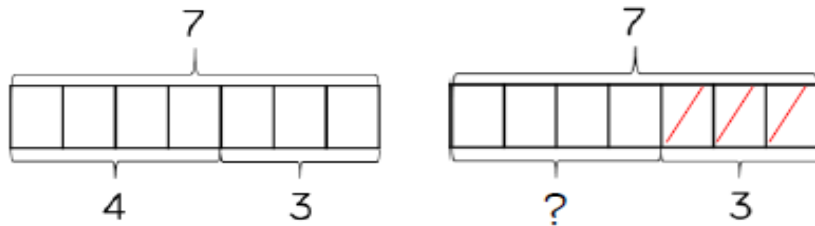
In KS2, children can apply their understanding of the part-whole model to add and subtract fractions, decimals and percentages.

Bar Model (single)

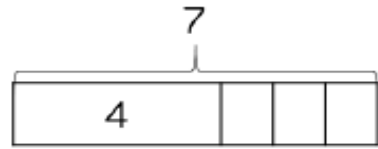
Concrete



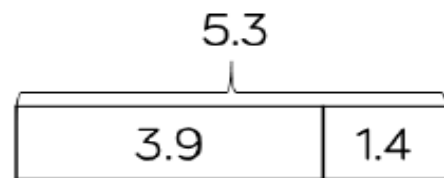
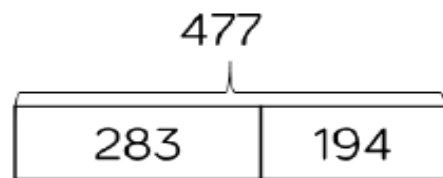
Discrete



Combination



Continuous



Benefits

The single bar model is another type of a part-whole model that can support children in representing calculations to help them unpick the structure.

Cubes and counters can be used in a line as a concrete representation of the bar model.

Discrete bar models are a good starting point with smaller numbers. Each box represents one whole.

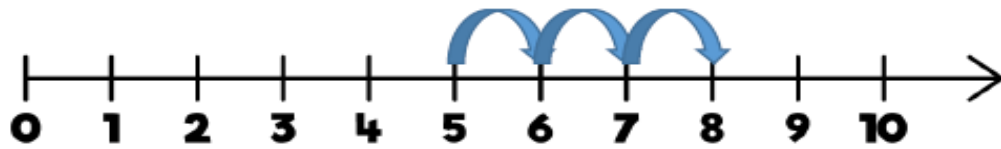
The combination bar model can support children to calculate by counting on from the larger number. It is a good stepping stone towards the continuous bar model.

Continuous bar models are useful for a range of values. Each rectangle represents a number. The question mark indicates the value to be found.

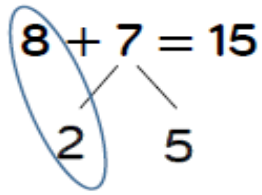
In KS2, children can use bar models to represent larger numbers, decimals and fractions.

Number Lines (labelled)

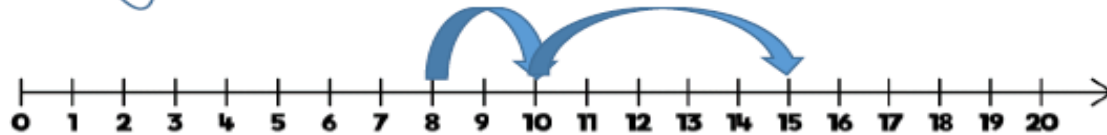
$$5 + 3 = 8$$



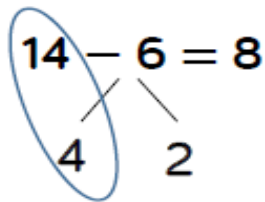
$$8 + 7 = 15$$



$$+ 2 \quad + 5$$



$$14 - 6 = 8$$



$$- 2 \quad - 4$$



Benefits

Labelled number lines support children in their understanding of addition and subtraction as augmentation and reduction.

Children can start by counting on or back in ones, up or down the number line. This skill links directly to the use of the number track.

Progressing further, children can add numbers by jumping to the nearest 10 and then jumping to the total. This links to the making 10 method which can also be supported by ten frames. The smaller number is partitioned to support children to make a number bond to 10 and to then add on the remaining part.

Children can subtract numbers by firstly jumping to the nearest 10. Again, this can be supported by ten frames so children can see how they partition the smaller number into the two separate jumps.

How could you do it differently now?

Reasoning and problem solving

Tiny is working out $7 + 48$

I know $7 + 3 = 10$,
but I do not know how
many more I need
to add.



What can Tiny do to simplify
the addition?

What is $7 + 48$?

55

Work out the additions.

$43 + 8$

$48 + 3$

$18 + 3$

$13 + 8$

$8 + 23$

$3 + 28$

$53 + 8$

$3 + 58$

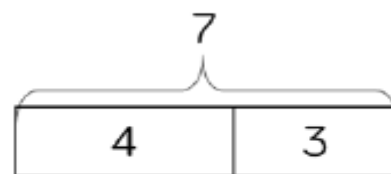
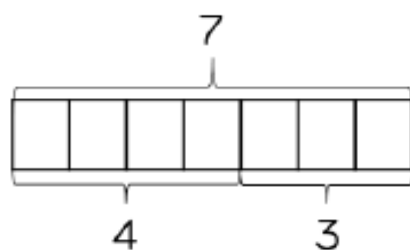
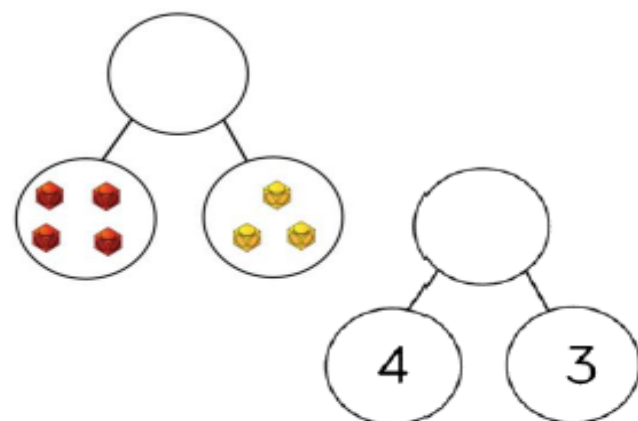
What do you notice?

Write a similar addition that has
an answer of 71

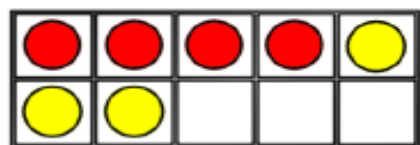
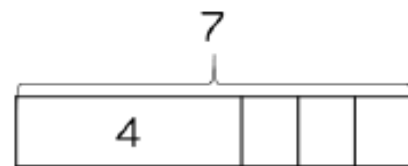
The next set of slides provide information of the objectives for each year group: 1, 2 & 3 for addition.

Skill: Add 1-digit numbers within 10

Year: 1



$$4 + 3 = 7$$



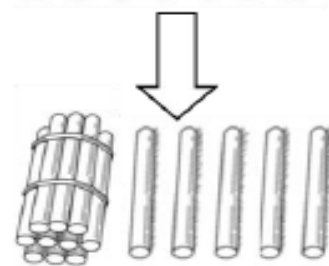
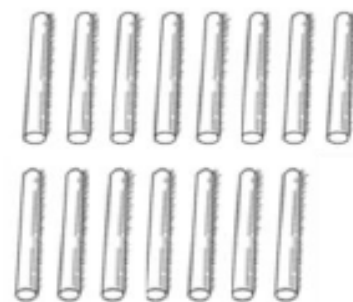
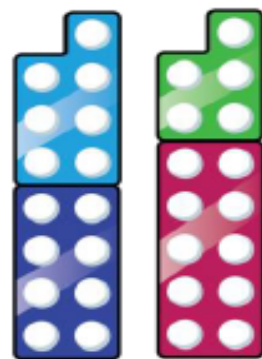
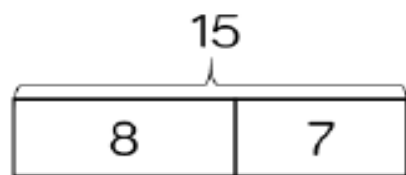
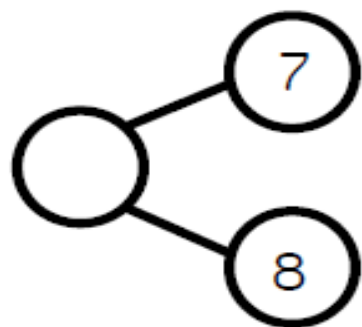
When adding numbers to 10, children can explore both aggregation and augmentation.

The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.

The combination bar model, ten frame, bead string and number track all support augmentation.

Skill: Add 1 and 2-digit numbers to 20

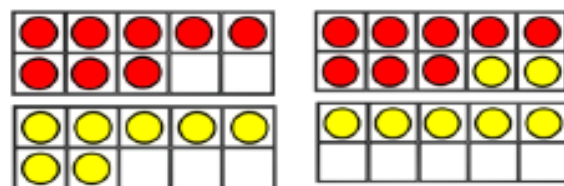
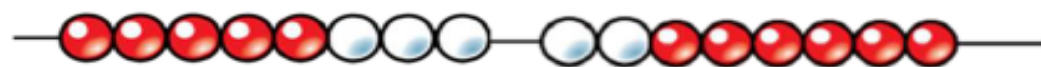
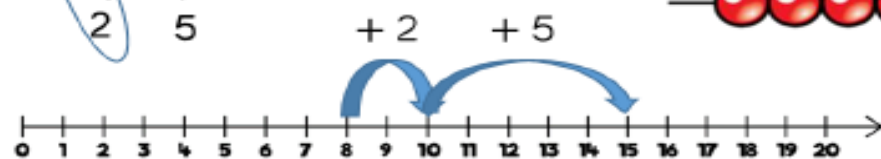
Year: 1/2



$$8 + 7 = 15$$

$$8 + 7 = 15$$

2 5



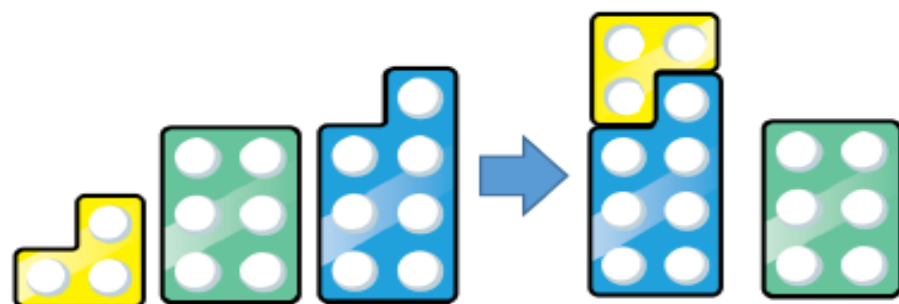
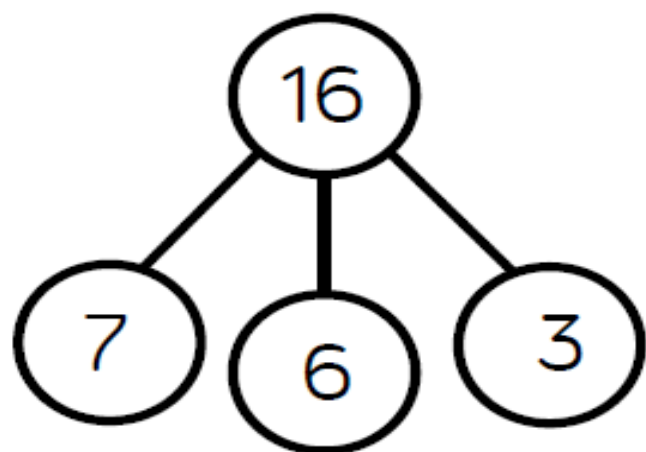
$$8 + 7 = 15$$

2 5

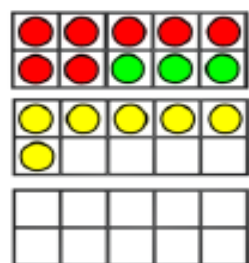
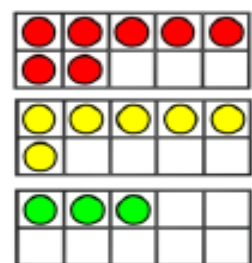
When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten. In Year 1, this is only done just by counting on. From Year 2, use different manipulatives can be used to represent this exchange alongside number lines to support children in understanding how to partition their jumps.

Skill: Add three 1-digit numbers

Year: 2

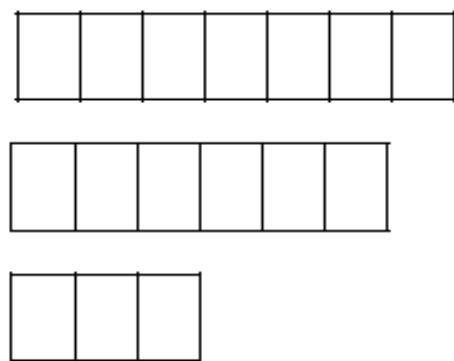


$$7 + 6 + 3 = 16$$



$$7 + 6 + 3 = 16$$

10



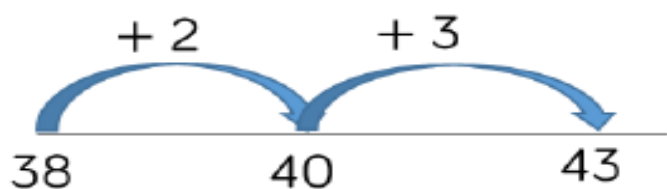
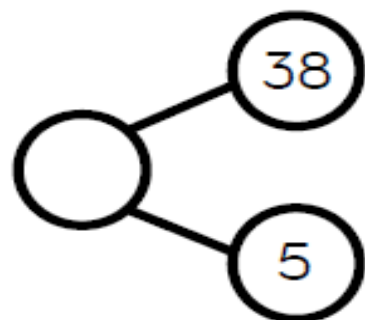
When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.

This supports children in their understanding of commutativity.

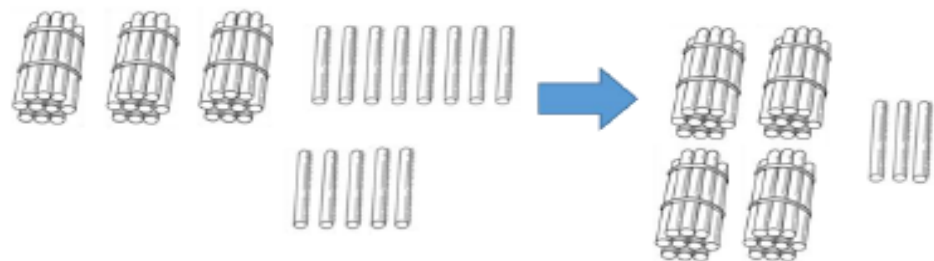
Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.

Skill: Add 1-digit and 2-digit numbers to 100

Year: 2/3



$$38 + 5 = 43$$



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

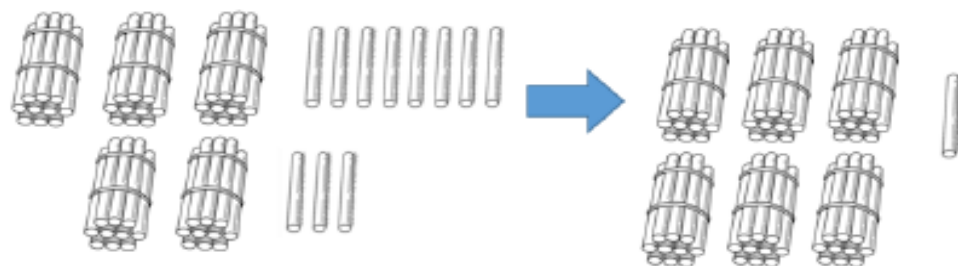
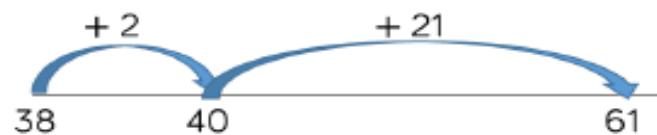
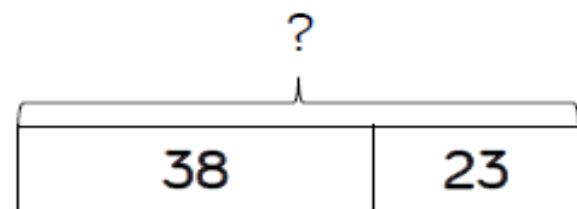
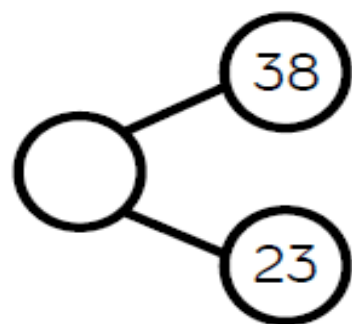
When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

They should also apply their knowledge of number bonds to add more efficiently e.g. $8 + 5 = 13$ so $38 + 5 = 43$.

Hundred squares and straws can support children to find the number bond to 10.

Skill: Add two 2-digit numbers to 100

Year: 2/3



$$38 + 23 = 61$$

Tens	Ones

A green arrow points from the 11 ones to the 5 tens, indicating a carry-over.

$$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$$

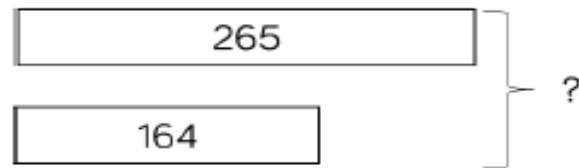
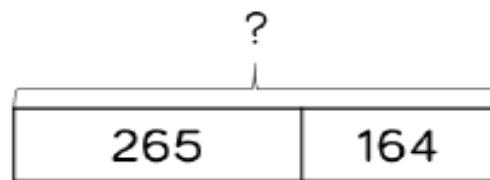
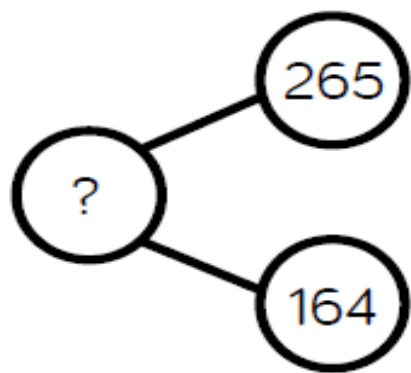
Tens	Ones

A green arrow points from the 11 ones to the 5 tens, indicating a carry-over.

Children can use a blank number line and other representations to count on to find the total. Encourage them to jump to multiples of 10 to become more efficient. From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

Skill: Add numbers with up to 3 digits

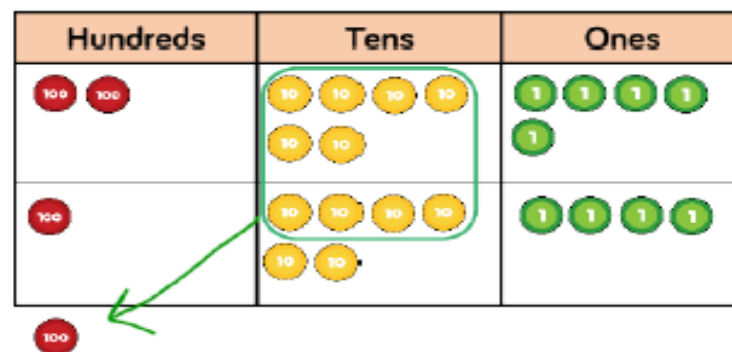
Year: 3



$$265 + 164 = 429$$



$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$$



Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

Subtraction

Vocabulary -

subtract, subtraction, take(away), minus leave, how many are left/leftover?

One less, two less...ten less... how many?

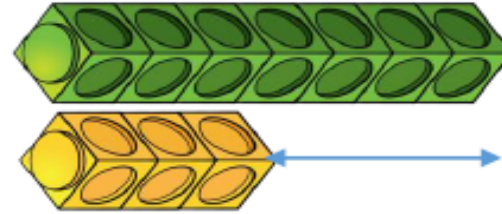
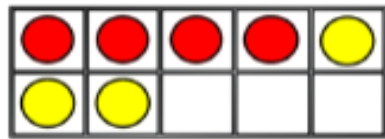
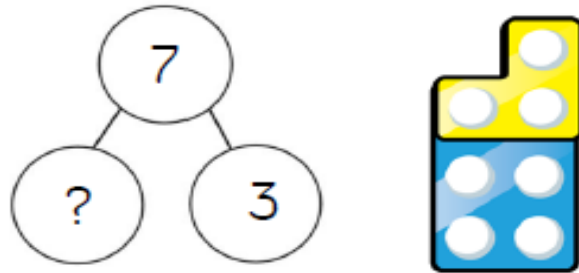
How much less is...? Difference between.....



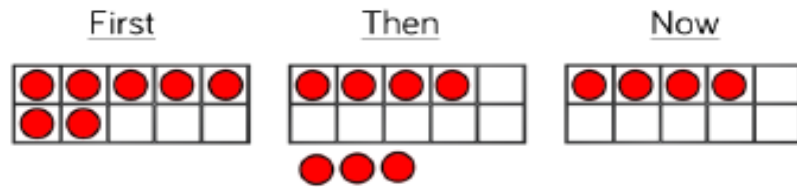
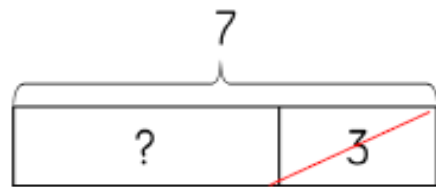
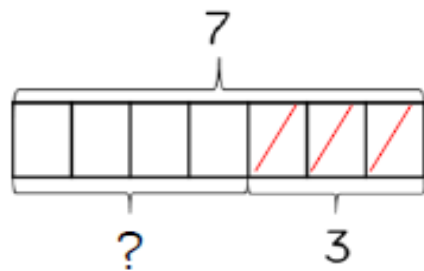
The next set of slides provide information of the objectives for each year group: 1, 2 & 3 for subtraction.

Skill: Subtract 1-digit numbers within 10

Year: 1



$$7 - 3 = 4$$



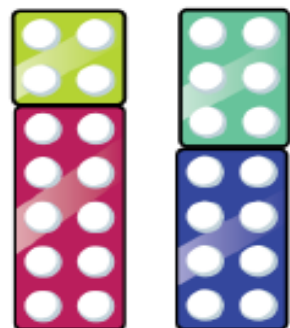
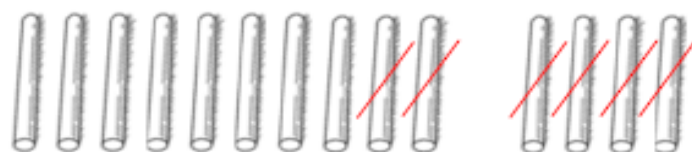
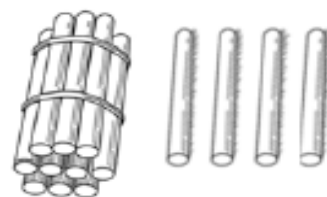
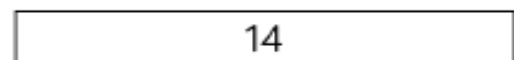
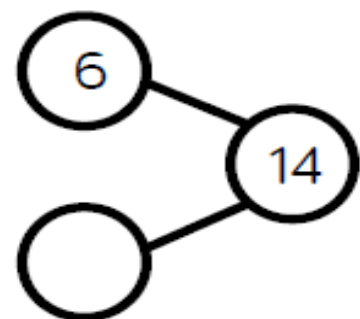
Part-whole models, bar models, ten frames and number shapes support partitioning.

Ten frames, number tracks, single bar models and bead strings support reduction.

Cubes and bar models with two bars can support finding the difference.

Skill: Subtract 1 and 2-digit numbers to 20

Year: 1/2

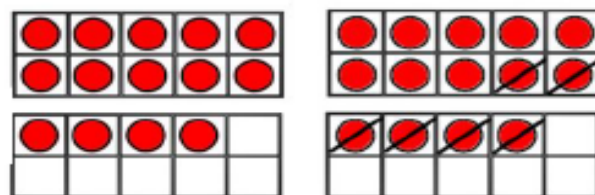
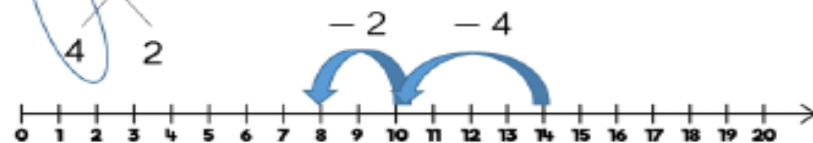


$$14 - 6 = 8$$



$$14 - 6 = 8$$

A diagram showing the number 14 circled in blue. A line from the 4 in 14 goes to the 6 in 6, and another line goes to the 8 in 8.



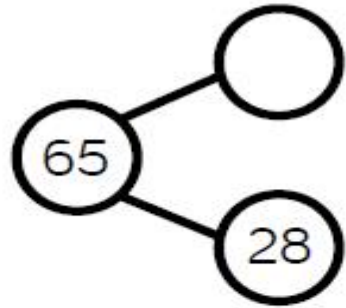
$$14 - 6 = 8$$

A diagram showing the number 14 circled in blue. A line from the 4 in 14 goes to the 6 in 6, and another line goes to the 8 in 8.

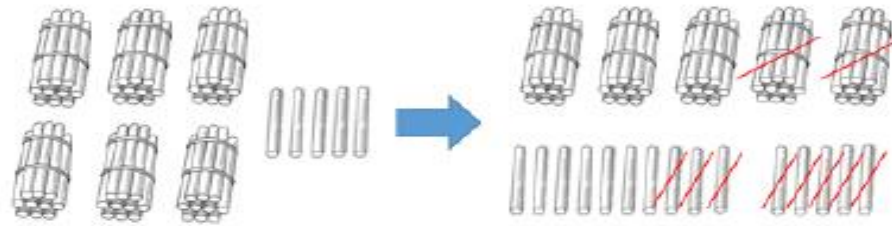
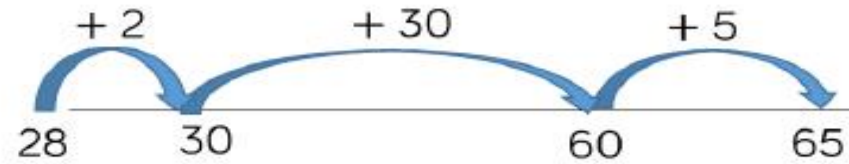
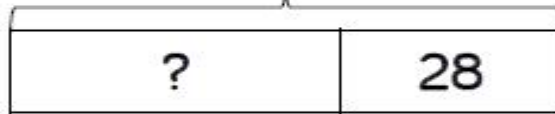
In Year 1, subtracting one-digit numbers that cross 10, is done by counting back, using objects, number tracks and number lines. From Year 2, children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this.

Skill: Subtract 1 and 2-digit numbers to 100

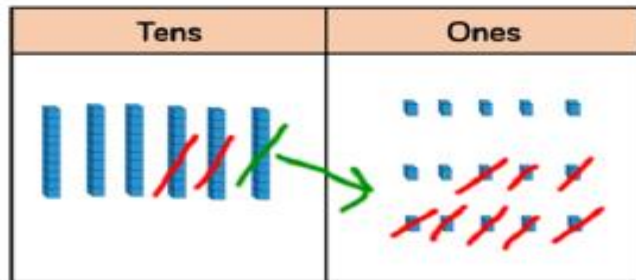
Year: 2/3



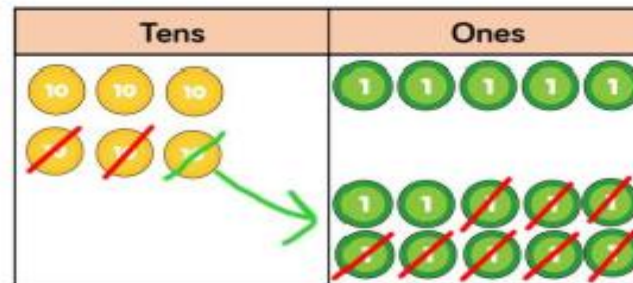
65



$$65 - 28 = 37$$



$$\begin{array}{r} 5 \quad 1 \\ 65 \\ - 28 \\ \hline 37 \end{array}$$



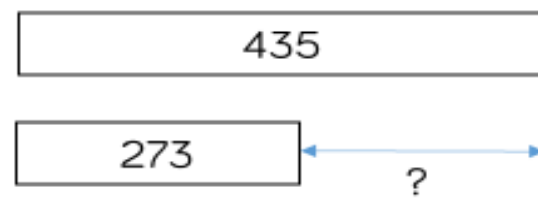
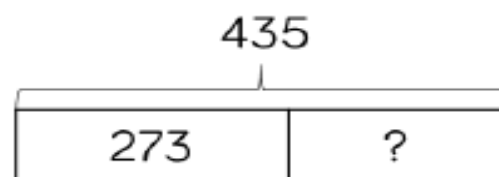
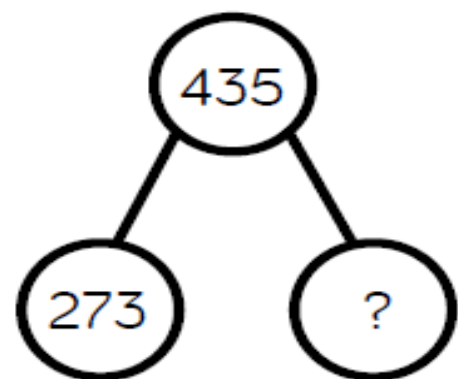
Children can also use a blank number line to count back to find the difference.

Encourage them to jump to multiples of 10 to become more efficient.

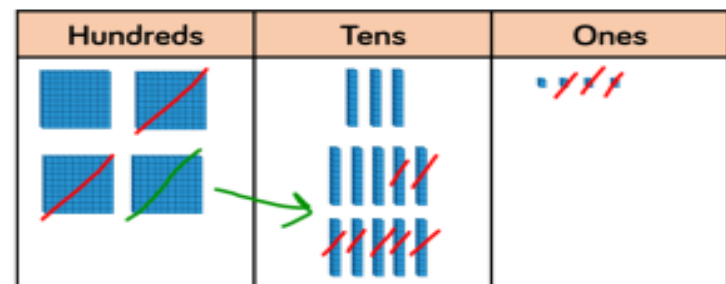
From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

Skill: Subtract numbers with up to 3 digits

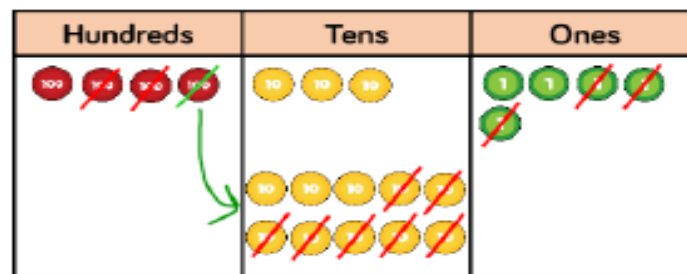
Year: 3



$$435 - 273 = 162$$



$$\begin{array}{r} 3 \quad 1 \\ 435 \\ - 273 \\ \hline 162 \\ \hline \end{array}$$



Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

Please look at the school website for all the information on what children will be learning and how they will be taught. (Go to Curriculum – Maths)

Children from reception to Year 6 follow a scheme called 'White Rose Maths'.

Maths Curriculum Statement

At Herrick Primary School, we are currently adopting a Mastery Approach to mathematics.

The emphasis is on developing pupils' mathematic skills and master them alongside ensuring they are fluent in their knowledge of times tables and the four mathematical operations: addition, subtraction, multiplication and division. Various methods and strategies are introduced as they progress throughout the school and a greater emphasis is placed on children's reasoning skills once the basics are embedded.

National Curriculum Progression

National curriculum and 'Ready to progress' mapping

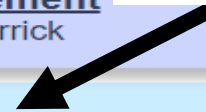
Maths Curriculum Statement

Our vision for Maths at Herrick

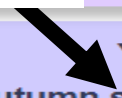
Multiplication and division calculation policy.

Addition and subtraction calculation policy.

This provides strategies



This tells you what the children will be learning



Reception

Autumn scheme of learning

Year 1

Autumn scheme of learning
Term overview

Year 2

Autumn scheme of learning
Term overview

Year 3

Autumn scheme of learning
Term overview

Year 4

Autumn scheme of learning
Term overview

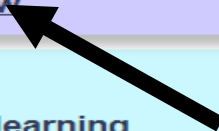
Year 5

Autumn scheme of learning
Term overview

Year 6

Autumn scheme of learning
Term overview

This is a weekly breakdown





**To give each and
everyone a chance**

'learning never stops'