

Subtraction

Early Years

In the Early Years there is a big emphasis on the children using practical materials as much as possible to aid them in their learning.

Practical materials



Using counters to find one, two less



Moving onto using Numicon to explore concept of subtraction.



$$\begin{array}{|c|} \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \end{array} - \begin{array}{|c|} \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \bullet \\ \hline \end{array} = 10 - 8 =$$

Place numicon pieces on top of each other to find the difference



$$10 - 8 = 2$$

Use of Number line to count back



Rhymes, Songs and books

The children also regular participate in taking away rhymes and songs. E.g Ten in the bed and the little one said, "Roll over"... to help them find one less than a number

Year 1

Practical Resources

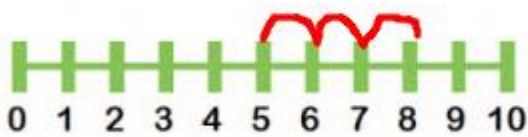
Children continue to use Numicon in their maths work and other practical counting resources.

Number lines and hundred square to find the difference

Use of number lines and hundred square is vital to support the children in their calculations.

$$8 - 3 =$$

Find 8 and jump back 3.



and check with the inverse $5 + 3 = 8$

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

Number bonds

By the end of Year 1 all children should know all number bonds to 10 and some number bonds to 20. Numicon is an excellent apparatus to help them learn them.

$$10 - 9 = 1$$

$$10 - 1 = 9$$



Missing numbers

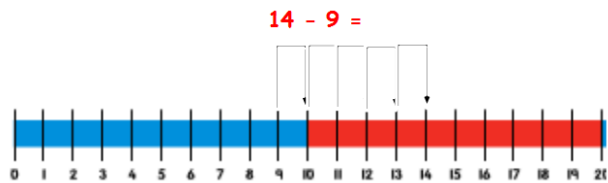
The children solve simple problems with missing numbers.

E.g. $10 - \square = 7$ but also sometimes writing it as $7 = 10 - \square$

Year 2

'Counting back' on a Number line

The children are encouraged to use a number line or ruler to jump back.



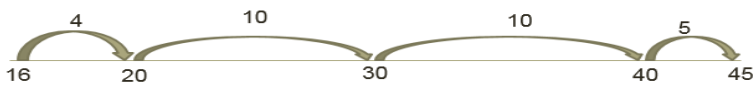
Start at 14 and count back 9 jumps. Where have you landed?

Finding the difference on a number line by jumping to the next ten

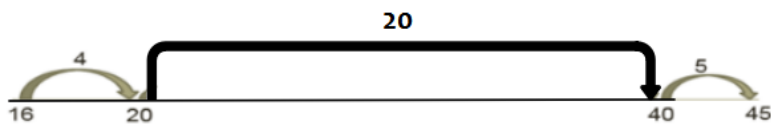
Use the term find the *difference*.

Use the empty number line to count on.

$$45 - 16 =$$
$$16 \rightarrow 20 \rightarrow 30 \rightarrow 40 \rightarrow 45 = 4 + 10 + 10 + 5 = 29$$



Gradually you need less jumps.



Add the jumps to find the difference $4 + 20 + 5 = 29$

So $45 - 16 = 29$

Hundred Square

Children are shown how to use of a hundred square to take away ten.

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

Number bonds

Pupils practise subtraction to 20 to become increasingly fluent in deriving facts such $10 - 7 = 3$ and $7 + 3 = 10$ moving on to calculate $100 - 70 = 30$ and $70 + 30 = 100$.

Numicon is still used to aid this learning.



Use of the Inverse

Children are taught how to recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. (E.g. $100 - 30 = 70$ so $70 + 30 = 100$)

Year 3

Using Place value

Pupils are taught to subtract numbers mentally, including:

3 digit and 1 digit number. e.g. $321 - 1 =$

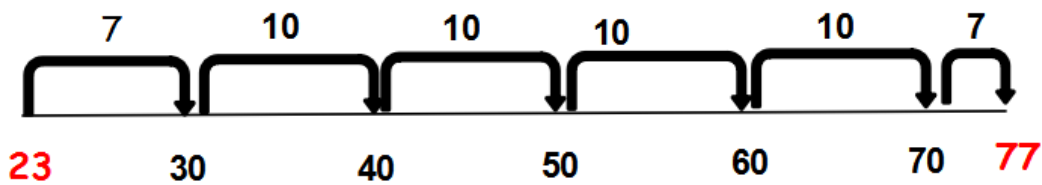
3 digit and 2 digit number. e.g. $321 - 21 =$

3 digit and 3 digit number. e.g. $432 - 221 =$

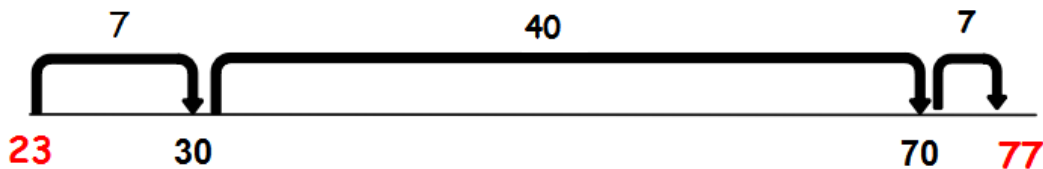
Number lines to find the difference

The children continue to use the number line to subtract numbers with a difference less than 50, using the 'counting on' method.

$$77 - 23 =$$



Moving to less jumps



Add the jumps to find the difference.

Formal column subtraction

In the Spring Term the children move on to subtract numbers with up to three digits, using more formal written methods of column subtraction. Dienes are used to show how 'we exchange'. Lots of practical work is done to ensure the concept is firmly embedded. (This method of subtraction is only introduced when the children have mastered informal methods.)



$$\begin{array}{r} \overset{2}{\cancel{3}}\overset{1}{4} \\ -19 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} \overset{2}{\cancel{3}}\overset{1}{4} \\ -19 \\ \hline 15 \\ \hline \end{array}$$

Estimation and use of inverse

Children are encouraged to estimate the answer to a calculation and use inverse operations to check them.

Key Vocabulary

Use the terms *find the difference* and *decrease*.

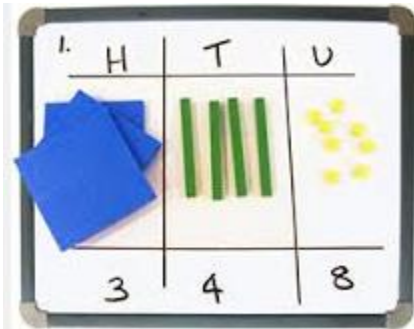
Subtraction Problems

They solve problems, including missing number problems, using number facts, place value, and more complex subtraction.

Year 4

Formal column subtraction

When the children have mastered informal methods previously taught they move on to formal column subtraction. Dienes apparatus are continued to be used when appropriate to show how 'we exchange'.



The children subtract numbers with up to 4 digits using the formal written methods of column subtraction where appropriate.

$$\begin{array}{r} ^4 ^{12} ^1 \\ 533 \\ - 187 \\ \hline 346 \end{array}$$

Estimation and use of inverse

Children are shown how to estimate and use inverse operations to check answers to a calculation.

Subtraction Problems

They solve subtraction two-step problems in contexts (including money), deciding which operations and methods to use and why.

Year 5

Approximation

In Year 5 children are strongly encouraged to approximate their answers before carrying out a subtraction.

Formal column subtraction

Children subtract 4 digit or 5 digit numbers using the column method.

$$\begin{array}{r} \text{T Th Th H T O} \\ 7 \quad 4 \cancel{5} \quad 15 \quad 2 \cancel{3} \quad 12 \\ - 2 \quad 2 \quad 6 \quad 2 \quad 3 \\ \hline 5 \quad 2 \quad 9 \quad 0 \quad 9 \end{array}$$

Formal column subtraction with decimals

They subtract decimals with one or two places.

Line up the decimal points	Line up the decimal points
↓	↓
76.3	4.321
- 34.1	- 4.1
42.2	0.221

Mental calculations using Place Value

They practise mental calculations involving increasingly large numbers to aid fluency (for example, $12\,462 - 2300 = 10\,162$).

They solve multi-stepped number problems and practical problems involving subtraction.

Year 6

Consolidate written and mental methods from Year 5, emphasising the need for approximation.

Subtraction Problems

Solve multi-stepped number problems and practical problems involving subtraction.