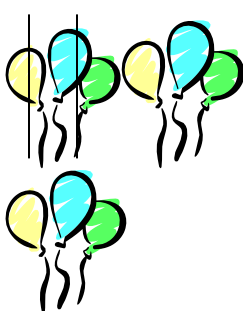

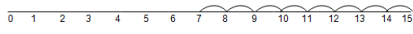
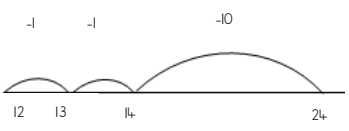
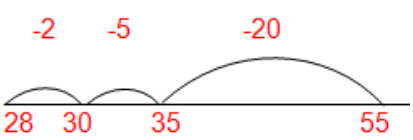




Newdale Primary school Maths Calculation Policy – Subtraction

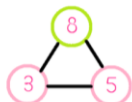
Reception	Year 1	Year 2	Year 3
<p>Key Skills: Know that the number gets smaller because objects have been removed from the set.</p> <p><u>Practical models of subtraction</u></p> <p>Counting back on fingers, orally, number lines.</p> <p>Find the difference, counting on, orally, number lines.</p> <p>Practical demonstrations of take away.</p> <p>Extended use of models and images – use apparatus to ‘move’ images (concrete to abstract)</p> <p>There were 9 balloons. Two popped. How many are left?</p>  <p>$9 - 2 = 7$</p> <p>Find the difference where numbers are close together.</p> <p>“How many more do I add to 7 to get to 9?”</p>	<p>Key Skills: Represent and use number bonds and related subtraction facts within 20</p> <p>Subtract one and two digit numbers to 20, including 0.</p> <p>Solve one step problems which involve subtraction using concrete objects and pictorial representations.</p> <p>Solve missing number problems</p> <p style="text-align: center;">$7 = \text{☺} - 9$</p> <p>Use the associated language of subtraction</p> <p>Count back in 1s.</p> <p>Record subtraction by showing jumps along number lines.</p> <p>Use the number line to count backwards from the largest number. Underline the number to be subtracted.</p> <p>There were 8 biscuits in the box. Pete ate 5. How many biscuits were left?</p> <p style="text-align: center;">$8 - 5 = 3$</p> <p style="text-align: center;">-1 -1 -1 -1 -1</p>  <p style="text-align: center;">Check their answer using addition/inverse.</p> <p>Subtracting bridging over 10</p> <p>$15 - 8 = 7$</p>  <p>Build on finding the difference when the numbers are close together.</p> <p>There are 6 boys and 4 girls. How many more girls are there than boys?</p> <p>Model –</p> <p>There are 2 more boys than girls. There are 2 less girls than boys. The difference between boys and girls is 2. If I had 2 more boys, the numbers would be equal.</p>	<p>Key skills: Count in steps of 2, 3, 5 and 10 from any number backwards.</p> <p>Solve problems with subtractions using concrete objects and pictorial representations, including numbers, quantities and measures.</p> <p>Apply knowledge of written methods to subtract.</p> <p>Subtract numbers using concrete objects, pictorial representations and mentally including</p> <ul style="list-style-type: none"> • TU – U • TU – Tens number • TU – TU <p>Understand that subtraction has to be done in the order set out in the question / largest number to go first.</p> <p>Partitioning on a numberline TU – TU (revise Yr1 partitioning of units if appropriate)</p> <p>Count back from the larger number in partitioned steps of the smaller number to reach the unknown. Underline the number to be partitioned.</p> <p>Informal method</p> <p>Start with numbers such as $24 - 12 =$</p>  <p>Then progress onto –</p> <p style="text-align: center;">$55 - 27 = 28$</p> <p>Partitioning the 27 into 20, 5 and 2.</p>  <p>Identify landmarks on number line to jump to. Progress to bigger numbers</p>	<p>Key skills: Find 10 or 100 less than any given number.</p> <p>Subtract numbers mentally, including</p> <ul style="list-style-type: none"> • HTU – U • HTU – Tens number • HTU – H <p>Subtract numbers with up to 3 digits, using formal written methods of column subtraction</p> <p>Estimate the answer and use the inverse to check answers.</p> <p>Solve problems involving missing number problems and more complex subtraction.</p> <p>Subtract fractions with the same denominator.</p> <p>Revision of Expanded decomposition method</p> <p style="text-align: center;">$89 = 80 \text{ and } 9$ $- 24 = 20 \text{ and } 4$ $65 \quad 60 \text{ and } 5$</p> <p>“9 subtract 4 equals 5 and 80 subtract 20 equals 60. 60 and 5 make 65”</p> <p>Use the expanded composition method to rearrange and exchange numbers when they are unable to subtract the unit digit</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> $\begin{array}{r} 754 \\ - 86 \\ \hline \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{r} 700 \quad 50 \quad 4 \\ \quad \quad 80 \quad 6 \\ \hline 600 \quad 60 \quad 8 = 668 \end{array}$ </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> $\begin{array}{r} 754 \\ - 86 \\ \hline \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{r} 600 \quad 140 \quad 14 \\ \quad \quad 80 \quad 6 \\ \hline 600 \quad 60 \quad 8 = 668 \end{array}$ </div> </div> <p>“It’s tricky to take 6 from 4 and 80 from 50. I need to rearrange the number. I will exchange one ten from 50 which leaves 40 and makes 14 in the units. 40 to subtract 80 is tricky. I will exchange one hundred from 700 and make 140. 14 subtract 6 equals 8. 140 subtract 80 equals 60 and 600 subtract 0 equals 600.”</p> <p>Consolidate using expanded decomposition</p>



Newdale Primary school Maths Calculation Policy – Subtraction

Lear number trios for numbers up to 20

Number Bonds
also known as
Fact Families

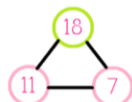


$$\underline{5} + \underline{3} = \underline{8}$$

$$\underline{3} + \underline{5} = \underline{8}$$

$$\underline{8} - \underline{5} = \underline{3}$$

$$\underline{8} - \underline{3} = \underline{5}$$



$$\underline{11} + \underline{7} = \underline{18}$$

$$\underline{7} + \underline{11} = \underline{18}$$

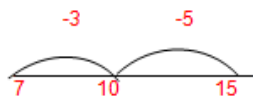
$$\underline{18} - \underline{11} = \underline{7}$$

$$\underline{18} - \underline{7} = \underline{11}$$

Using number bonds for subtraction

Know that numbers can be split to help solve a calculation so; 8 can be thought of as 5 and 3.

$$15 - 8 =$$



Mastery check:

Encourage use of reasoning / convince me –

- Show me an subtraction number fact with the answer 8
- Convince me that 10 take away 4 is not 5
- I'm thinking of a number. I've subtracted 5 and the answer was 7. What was my number? Explain how you know.
- I have 20p to spend. If I spend 20p exactly, which two items can I buy? What is I chose other items?
- Complete

$3 + \square = 10$

$10 - \square = 3$

$13 + \square = 20$

$20 - \square = 13$

$\square + 5 = 10$

$10 - 5 = \square$

$15 + \square = 20$

$20 - \square = 15$

$\square + \square = 10$

$10 - \square = \square$

$16 + \square = 20$

$20 - \square = 16$

- Sam and Tom have 19 stickers. Tom has 8 stickers? How many stickers does Sam have? Write a number sentence you could use to solve the problem

See NCETM assessment materials for more examples.

Find the difference by counting on

Know they can also find the difference by counting on along a number line, begin to make decisions about which method is the most appropriate.

$$15 - 8 =$$

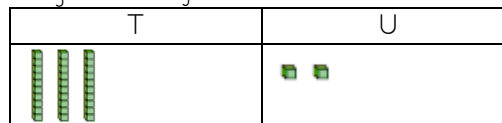
$$+1 +1 +1 +1 +1 +1 +1$$

8 9 10 11 12 13 14 15

Use Base 10 to rearrange and exchange numbers when they are unable to subtract the unit digit

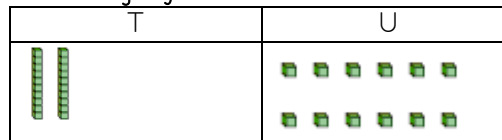
$$32 - 14 =$$

'What do you notice about the units digits in both numbers?'
'Can you subtract 4 from 2?'



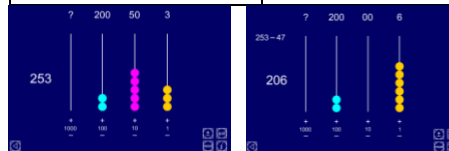
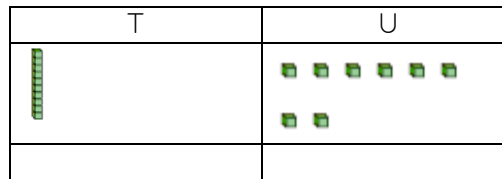
'What do we need to do with one of the tens from the 32?'

- Exchange it for Units.



Practical modelling of exchange and removal of the 14

'We can now take the 14 away'



methods to include:

ThHTU – HTU ThHTU – ThHTU and decimals (2dp)

Expanded Decomposition with decimals

£	£
895	8 . 90 5
<u>-438</u>	<u>4 . 30 8</u>
	4 . 50 7 = 4.57

£	£
895	7 . 80 15
<u>-438</u>	<u>4 . 30 8</u>
	4 . 50 7 = 4.57

N.B – When subtracting amounts of money from numbers such as £20, use a number line as the most efficient method.

Mastery Check

Encourage use of reasoning / convince me –

Flo and Jim are answering a problem:
Danny has read 62 pages of the class book, Jack has read 43. How many more pages has Danny read than Jack?
Flo does the calculation $62 + 43$. Jim does the calculation $62 - 43$.
Who is correct?

Explain how you know.

See NCETM assessment materials for more examples.



Newdale Primary school Maths Calculation Policy – Subtraction

Expanded decomposition method

$$\begin{array}{r} 89 = 80 + 9 \\ - 24 = \underline{20} + \underline{4} \\ 65 \quad \underline{60} + \underline{5} \end{array}$$

"9 subtract 4 equals 5 and 80 subtract 20 equals 60. 60 and 5 make 65"

Mastery Check

Encourage use of reasoning / convince me –

- What's wrong with this statement:
 $91 - 74 = 23$
- Convince me that $91 - 74 = 17$
- Nisha and Charlie play skittles. Nisha scores 38. Charlie scores 50. How much more does Charlie score than Nisha?
- Sam says the answer to $75 - 28$ is 53. Kit says it is 47. Who is right? How can you check? What mistake do you think was made?
-

See NCETM assessment materials for more examples



Newdale Primary school Maths Calculation Policy – Subtraction

Year 4	Year 5	Year 6																							
<p>Key Skills: Count backwards through 0 to include negative numbers.</p> <p>Find 1000 less than a given number.</p> <p>Subtract numbers with up to 4 digits using the compact method of subtraction.</p> <p>Estimate and use the inverse to check answers to a calculation.</p> <p>Solve subtraction two step problems in context, deciding which operations to use and why.</p> <p>Subtract fractions with the same denominator.</p> <p><u>Compact Decomposition</u> Key Skill: Children are taught to cross out the numbers and replace them with the exchanged number.</p> $ \begin{array}{r} 6 \ 14 \ 1 \\ \cancel{1} \ \cancel{5} \ 4 \\ - \ 2 \ 8 \ 6 \\ \hline 4 \ 6 \ 8 \end{array} $ <p><u>Ensure number positioning is consistent and placed above the correct column when exchanging from the number on the top row.</u></p> <p><u>Mastery check</u> Encourage use of reasoning / convince me Write >, = or < in each of the circles to make the number sentence correct.</p> <p>1023 + 24 + 24 ○ 1023 + 48 1232 – 232 ○ 1355 – 252 1237 – 68 + 32 ○ 1242 – 69 + 31</p> <p><i>Pupils should reason about the numbers and relationships, rather than calculate.</i></p> <p>See NCETM assessment materials for examples.</p>	<p>Key Skills: Count backwards in steps of 10 from any given number up to 1,000,000</p> <p>Count backwards with positive and negative whole numbers, including through 0.</p> <p>Subtract whole numbers with more than 4 digits, including the use of column subtraction formal written method.</p> <p>Subtract mentally with increasingly large numbers e.g. 12,462 – 2300 = 10,162</p> <p>Solve subtraction multi step problems in contexts, deciding which operations and methods to use and why.</p> <p>Subtract fractions with the same denominator and denominators that are multiples of the same number.</p> <p><u>Compact Decomposition</u> Key Skill: Children are taught to cross out the numbers and replace them with the exchanged number</p> <p><u>Ensure number positioning is consistent</u></p> <p><u>Mastery check</u> Encourage use of reasoning / convince me The table shows the cost of train tickets from different cities.</p> <p>What is the total cost for a return journey to York for one adult and two children? How much more does it cost for two adults to make a single journey to Hull than to Leeds?</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2"></th> <th>York</th> <th>Hull</th> <th>Leeds</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Adult</td> <td>Single</td> <td>£13-50</td> <td>£16-60</td> <td>£11-00</td> </tr> <tr> <td>Return</td> <td>£24-50</td> <td>£30-00</td> <td>£20-00</td> </tr> <tr> <td rowspan="2">Child</td> <td>Single</td> <td>£9-75</td> <td>£11-00</td> <td>£8-00</td> </tr> <tr> <td>Return</td> <td>£15-00</td> <td>£18-50</td> <td>£13-50</td> </tr> </tbody> </table> <p>See NCETM assessment materials for examples.</p>			York	Hull	Leeds	Adult	Single	£13-50	£16-60	£11-00	Return	£24-50	£30-00	£20-00	Child	Single	£9-75	£11-00	£8-00	Return	£15-00	£18-50	£13-50	<p>Key Skills: Calculate negative number intervals, including across 0.</p> <p>Perform mental calculations including with mixed operations and large numbers.</p> <p>Solve subtraction multi step problems in contexts, deciding which operations and methods to use and why.</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p> <p><u>Mastery check</u> Encourage use of reasoning / convince me</p> <div style="display: flex; justify-content: space-between; font-size: small;"> <div style="width: 45%;"> <p>Two numbers have a difference of 2.38. The smaller number is 3.12. What is the bigger number? Two numbers have a difference of 2.3. They are both less than 10. What could the numbers be?</p> </div> <div style="width: 45%;"> <p>Two numbers have a difference of 2.38. What could the numbers be if: ■ the two numbers add up to 6? ■ one of the numbers is three times as big as the other number?</p> <p>Two numbers have a difference of 2.3. To the nearest 10, they are both 10. What could the numbers be?</p> </div> </div> <p>See NCETM assessment materials for examples.</p>
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