
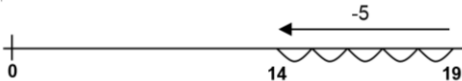
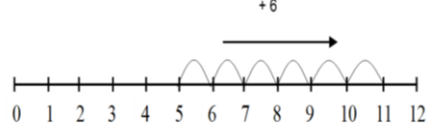
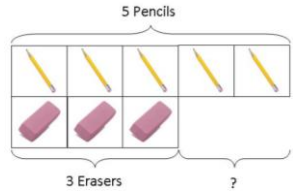
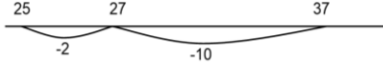
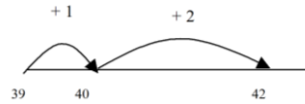
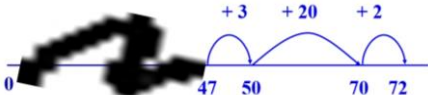
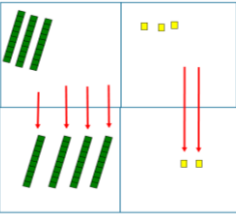
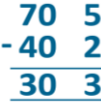
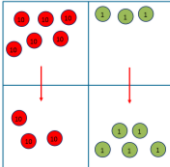

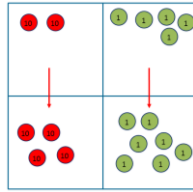
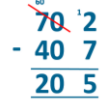
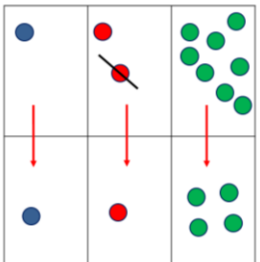
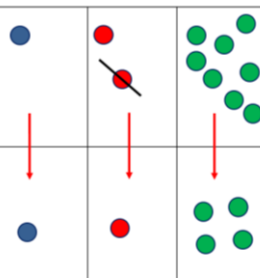
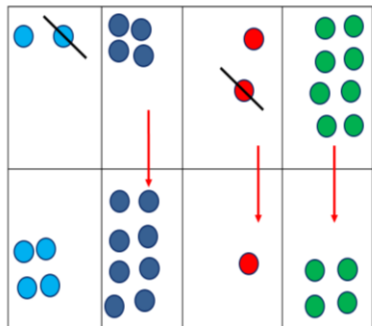


Thorntree Primary School Calculation Policy- Subtraction

Year 1	Year 2	Year 3
<p>Missing number problems e.g. $7 = \square - 9$; $20 - \square = 9$; $15 - 9 = \square$; $\square - \square = 11$; $16 - 0 = \square$</p> <p>Use concrete objects and pictorial representations. If appropriate, progress from using number lines with every number shown to number lines with significant numbers shown. Understand subtraction as take-away:</p>   <p>Understand subtraction as finding the difference:</p>   <p>The above model would be introduced with concrete objects which children can move (including cards with pictures) before progressing to pictorial representation. The use of other images is also valuable for modelling subtraction e.g. Numicon, bundles of straws, Dienes apparatus, multi-link cubes, bead strings</p>	<p>Missing number problems e.g. $52 - 8 = \square$; $\square - 20 = 25$; $22 = \square - 21$; $6 + \square + 3 = 11$</p> <p>It is valuable to use a range of representations (also see Y1). Continue to use number lines to model take-away and difference. E.g.</p>   <p>The link between the two may be supported by an image like this, with 47 being taken away from 72, leaving the difference, which is 25.</p>  <p>The bar model should continue to be used, as well as images in the context of measures.</p> <p>Towards written methods</p> <p>Recording addition and subtraction in expanded columns can support understanding of the quantity aspect of place value and prepare for efficient written methods with larger numbers. The numbers may be represented with Dienes apparatus. E.g. $75 - 42$</p>  	<p>Missing number problems e.g. $\square = 43 - 27$; $145 - \square = 138$; $274 - 30 = \square$; $245 - \square = 195$; $532 - 200 = \square$; $364 - 153 = \square$</p> <p>Mental methods should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving (see Y1 and Y2). Children should make choices about whether to use complementary addition or counting back, depending on the numbers involved.</p> <p>Written methods (progressing to 3-digits)</p> <p>Introduce expanded column subtraction with no decomposition, modelled with place value counters (Dienes could be used for those who need a less abstract representation)</p>   <p>For some children this will lead to exchanging, modelled using place value counters (or Dienes).</p>   <p>A number line and expanded column method may be compared next to each other. Some children may begin to use a formal columnar algorithm, initially introduced alongside the expanded method. The formal method should be seen as a more streamlined version of the expanded method, not a new method.</p>

Thorntree Primary School Calculation Policy- Subtraction

Year 4	Year 5	Year 6
<p>Missing number/digit problems: $456 + \square = 710$; $1\square7 + 6\square = 200$; $60 + 99 + \square = 340$; $200 - 90 - 80 = \square$; $225 - \square = 150$; $\square - 25 = 67$; $3450 - 1000 = \square$; $\square - 2000 = 900$</p> <p>Mental methods should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving.</p> <p>Written methods (progressing to 4-digits) Expanded column subtraction with decomposition, modelled with place value counters, progressing to calculations with 4-digit numbers</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> $\begin{array}{r} 200 \quad \cancel{30} \quad \cancel{2} \\ - 100 \quad 10 \quad 4 \\ \hline 100 \quad 10 \quad 8 \end{array}$ </div> </div> <p>If understanding of the expanded method is secure, children will move on to the formal method of decomposition, which again can be initially modelled with place value counters.</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> $\begin{array}{r} 232 \\ - 114 \\ \hline 118 \end{array}$ </div> </div>	<p>Missing number/digit problems: $6.45 = 6 + 0.4 + \square$; $119 - \square = 86$; $1\ 000\ 000 - \square = 999\ 000$; $600\ 000 + \square + 1000 = 671\ 000$; $12\ 462 - 2\ 300 = \square$</p> <p>Mental methods should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving.</p> <p>Written methods (progressing to more than 4-digits) When understanding of the expanded method is secure, children will move on to the formal method of decomposition, which can be initially modelled with place value counters.</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> $\begin{array}{r} 6232 \\ - 4814 \\ \hline 1418 \end{array}$ </div> </div> <p>Progress to calculating with decimals, including those with different numbers of decimal places.</p>	<p>Missing number/digit problems: \square and $\#$ each stand for a different number. $\# = 34$. $\# + \# = \square + \square + \#$. What is the value of \square? What if $\# = 28$? What if $\# = 21$ $10\ 000\ 000 = 9\ 000\ 100 + \square$ $7 - 2 \times 3 = \square$; $(7 - 2) \times 3 = \square$; $(\square - 2) \times 3 = 15$</p> <p>Mental methods should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving.</p> <p>Written methods As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with decomposition to be secured. Teachers may also choose to introduce children to other efficient written layouts which help develop conceptual understanding. For example:</p> <div style="text-align: center; margin: 10px 0;"> $\begin{array}{r} 326 \\ - 148 \\ \hline -2 \\ -20 \\ \hline 200 \\ \hline 178 \end{array}$ </div> <p>Continue calculating with decimals, including those with different numbers of decimal places</p>

Thorntree Primary School Calculation Policy- Subtraction

Y1

Statutory requirements

Pupils should be taught to:

- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including zero
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.

Y2

Statutory requirements

Pupils should be taught to:

- solve problems with addition and subtraction:
 - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
 - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- 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
 - adding three one-digit numbers
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Thorntree Primary School Calculation Policy- Subtraction

Y3

Statutory requirements

Pupils should be taught to:

- add and subtract numbers mentally, including:
 - a three-digit number and ones
 - a three-digit number and tens
 - a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Y4

Statutory requirements

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Thorntree Primary School Calculation Policy- Subtraction

Y5

Statutory requirements

Pupils should be taught to:

- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Y6

Statutory requirements

Pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

135

Mathematics

Statutory requirements

- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.