|  |  |  |  |
| --- | --- | --- | --- |
| **Addition** | | | |
| **Foundation Stage 1 Objectives:**  Birth –to 11 months – notice changes in number of objects/images, sounds in groups of and up to 3  8 – 20 months - has some understanding that things exist even when out of sight  16-26 months – Begins to organise and categorise objects -sorting  22 – 36 months – knows that a group of things changes in quantity when something is added  30 – 50 months – separates a group of 3 or 4 objects in different ways, beginning to recognise that the total is still the same  In practical activities and discussions begins to use the vocabulary involved in addition | | | |
| Concrete | Pictorial | Abstract | |
| Nursery rhymes and number stories.  Using numbers and objects in the environment  Sorting into two bowls  Counting using hands and through movement.  \\ssrv2\teachers\hneil\Downloads\Image-5.pngCounting using concrete objects for 1 to 1 correspondence as well as for grouping and partitioning | I can count … | Writing the digit to represent the quantity  6 | |
| **Foundation Stage 2 Objectives:**  40-60 months – finds the total number of items in two groups by counting all of them  Early Learning Goal - Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.  Count on from first group to add two groups of objects | | | |
| Concrete | Pictorial | Abstract | |
| Use objects and maths resources to add two numbers together as a group. | Use pictures to add 2 numbers together                4 + = 6 | Children will annotate their pictures with number sentences. | |
| Year 1 Objectives:   * read, write and interpret mathematical statements involving addition (+) and equals (=) signs * represent and use number bonds and related subtraction facts within 20 * add one-digit and two-digit numbers to 20, including * solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as * 17 = − 9 | | | |
| Concrete | Pictorial | Abstract | |
| Using resources to investigate the creation of numbers up to 20. First steps to bridging.  \\ssrv2\teachers\hneil\Downloads\Image-4.png  Using place value – counting on in ones, using a number line, bead string and 100 square etc. | \\ssrv2\teachers\hneil\Downloads\Image-8.pngDrawing images to reflect concrete representations  Start with the larger number and count on. | Writing the number sentences to support the pictorial  9 + 5 = 14 | |
| \\ssrv2\teachers\hneil\Downloads\Image-7.pngProgressing onto using knowledge of numbers bonds within 10 when crossing the tens boundary e.g.  9 + 5 =  Start with the 9, then add 1 to make 10, then add the remaining 4. | \\ssrv2\teachers\hneil\Downloads\Image-9.pngUse pictures or a number line. Regroup or partition the smaller number to make 10. | Place the larger number in your head and  count on the smaller number to find the  answer.  **5 + 9 = 14**  **9 + 1 = 10**  **10 + 4 = 14**  If I have nine, how many more do I need to make 10? How many more do I add on now?  15 +1 = 16 16 = 15 + 1 (commutative law) | |
| \\ssrv2\teachers\hneil\Downloads\Image-6.pngFinding missing numbers. |  | 3 + = 12 + 6 = 15 | |
| **Year 2 Objectives:**   * solve problems with addition: * 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 facts to 20 fluently, and derive and use related facts up to 100 * add numbers using concrete objects, pictorial representations, and mentally, including:   + a two-digit number and 1s   + a two-digit number and 10s   + 2 two-digit numbers   + adding 3 one-digit numbers * show that addition of 2 numbers can be done in any order (commutative)   recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems | | | |
| Concrete | Pictorial | Abstract | |
| 4 + 7 + 6 = 17  Put 4 and 6 together to make 10. Add on 7.    **+ 7**    Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit. | Add together three groups of objects. Draw a picture to recombine the groups to make 10. |  | |
| Partitioning both numbers into tens and ones  33 + 21 = 54 OR 21 + 33 = 54  \\ssrv2\teachers\hneil\Downloads\Image-10.png | \\ssrv2\teachers\hneil\Downloads\Image-11.pngStart with the two parts and combine to create the whole (Representing the concrete). | 33 + 21 =  30 + 20 = 50  3 + 1 = 4  50 + 4 = 54  33 + 21  30 3 20 1 | |
| Adding the second number to the first by partitioning the tens and ones, using a variety of resources | DSC07953 | 32 + 26 = 58  32 + 20 = 52  52 + 6 = 58  32 + 26  32 20 6 | |
| Use manipulatives to secure understanding of crossing 10’s boundaries.  24 + 18 = 42  Add together the ones first then add the tens.  \\ssrv2\teachers\hneil\Downloads\Image-12.png\\ssrv2\teachers\hneil\Downloads\Image-13.pngDevelop to include regrouping.  \\ssrv2\teachers\hneil\Downloads\Image-15.png\\ssrv2\teachers\hneil\Downloads\Image-14.png | \\ssrv2\teachers\hneil\Downloads\Image-16.png | Progress onto the expanded written column method, with column headings. Up to 2 by 2 digits without crossing the 10s boundary initially but achieving by the end of the year.   |  |  |  | | --- | --- | --- | |  | **T** | **O** | |  | 2 | 4 | | + | 1 | 8 | |  | 1 | 2 | |  | 3 | 0 | |  | 4 | 2 | | |
| **Year 3 Objectives:**   * add numbers mentally, including:   + a three-digit number and 1s   + a three-digit number and 10s   + a three-digit number and 100s * add numbers with up to 3 digits, using formal written methods of column addition * 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 | | | |
| Concrete | Pictorial | Abstract | |
| Use e.g. base ten, place value counters. Begin in the ones column. For every 10 created exchange for a 10 counter.    As children move on to decimals and money, decimal place value counters can be used to support learning. | \\ssrv2\teachers\hneil\Downloads\Image-18.pngDraw images to represent concrete resources:  These informal representations may be used to clarify understanding and can be used alongside number lines. It will also aid fluency in mental calculations.    \\ssrv2\teachers\hneil\Downloads\Image-17.png    The bar model can reinforce the concept of part part whole. | Expanded formal written method with labelled columns and starting with the ones column, progressing from:   1. No crossing of boundaries 2. Crossing the tens or hundreds boundary in 3 digit number 3. A combination of the above.   475 + 267 = 742 | |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | H | T | O |  |  |  | H | T | O | |  | 400 | 70 | 5 |  |  |  | 4 | 7 | 5 | | + | 200  100 | 60  10 | 7 |  |  | + | 2 | 6 | 7 | |  | 700 | 40 | 2 | =742 |  |  | 1 | 1 |  | |  |  |  |  |  |  |  | **7** | **4** | **2** | |  |  |  |  |  |  | |  |  |  |  |  |  |   Progressing on to compact column method. | |
| **Year 4 Objectives:**   * add numbers with up to 4 digits using the formal written methods of column addition where appropriate * estimate and use inverse operations to check answers to a calculation * solve addition two-step problems in contexts, deciding which operations and methods to use and why | | | |
| Concrete | Pictorial | Abstract | |
| See above. | See above.  A line to be left to record numbers crossing boundaries either above or below the answer. To be consistent at your school (numbers written smaller). | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Th | H | T | O | |  | 4 | 3 | 6 | 5 | | + | 2 | 5 | 8 | 6 | |  | 1 | 3 | 7 | 4 | |  | 1 | 2 | 1 |  | |  | **8** | **3** | **2** | **5** |   Formal written method with columns labelled  Progressing from adding 2 four digit numbers to adding 3 four digit numbers, not exceeding the thousands column.  Build knowledge by crossing one boundary at a time, beginning with the tens.  Develop understanding by moving onto crossing multiple boundaries, not following a set pattern. Variation – missing numbers.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Th | H | T | O | |  | 4 | 3 | 6 | 5 | | + | 2 | 5 | 7 | 6 | |  |  | 1 | 1 |  | |  | **6** | **9** | **4** | **1** | | |
|  | To promote fluency number lines can be used for addition of decimals | When secure, progress to adding money with two decimal places. Place value headings to be labelled.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | Th | H |  | T | O | |  | 2 | 9 | **.** | 4 | 5 | | + | 2 | 5 | **.** | 2 | 9 | |  | 1 |  | **.** | 1 |  | | **£** | **5** | **4** | **.** | **7** | **4** | | |
| **Year 5 Objectives:**   * add whole numbers with more than 4 digits, including using formal written methods (columnar addition) * add 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 multi-step problems in contexts, deciding which operations and methods to use and why | | | |
| Concrete | Pictorial | Abstract | |
| See above | Where necessary do not be afraid to use the expanded method for initial explanation.  Number lines promote fluency and are a clear assessment tool for teachers.  Bar models to be used to support their understanding of problems – help them identify what they need to do. | Addition of 4 and 5 digit numbers to one million.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | TTh | Th | H | T | O | |  | 2 | 9 | 6 | 1 | 5 | | + | 2 | 5 | 4 | 3 | 9 | |  | 4 | 3 | 5 | 2 | 3 | |  | 1 | 1 |  | 1 |  | |  | **9** | **8** | **5** | **7** | **7** |   Children provided with numbers where they have to decide whether to ‘carry’ or not – this will identify if they have a secure understanding of place value.  Pupils to record numbers using commas e.g. 98,577  Addition of numbers with 2 decimal places in context e.g. money and measurement.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  | H | T | 0 | . | t | h | |  | 2 | 3 | 8 | **.** | 8 | 4 | | + | 4 | 2 | 6 | **.** | 5 | 2 | |  |  | 1 | 1 | **.** |  |  | |  | **£ 6** | **6** | **5** | **.** | **3** | **6** |   Pupils to use estimation before completing calculations. Provide examples in context to support understanding of the importance of estimating. Use rounding to estimate. E.g.  423 + 158 + 296 = Estimate: 420 + 160 + 300 = | |
| **Year 6 Objectives:**   * perform mental calculations, including with mixed operations and large numbers * solve addition multi-step problems in contexts, deciding which operations and methods to use and why * use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy | | | |
| **Concrete** | **Pictorial** | | **Abstract** |
| **See above for concrete examples to use when beginning addition work to emphasise the need to exchange when you make ten and place value understanding.** | **See above for pictorial images to use when beginning addition work.** | | Pupils to record numbers using commas e.g. 2,598,577  Addition of numbers, not exceeding 10 million.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 6 | 3 | 4 | 3 | | + | 2 | 8 | 7 | 3 | 5 | 2 | |  | 3 | 2 | 2 | 1 | 5 | 4 | |  | 1 | 1 |  | 1 |  |  | |  | **7** | **3** | **5** | **8** | **4** | **9** |   Addition of numbers with up to 3 decimal places, using 0 as a place holder.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 1 | **.** | 8 | 2 | 1 | | + | 0 | **.** | 4 | 3 | 3 | |  | 2 | **.** | 0 | 2 | 6 | |  | 1 | **.** |  | 1 |  | |  | **4** | **.** | **2** | **8** | **0** | |