



Key Learning in Mathematics – Year 4

| Number – number and place value | Number – addition and subtraction | Number – multiplication and division |
|---|---|--|
| <ul style="list-style-type: none"> Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero to include negative numbers Count up and down in hundredths Read and write numbers to at least 10 000 Read and write numbers with up to two decimal places Recognise the place value of each digit in a four-digit number Identify the value of each digit to two decimal places Partition numbers in different ways (e.g. $2.3 = 2+0.3$ & $1+1.3$) Identify, represent and estimate numbers using different representations (including the number line) Order and compare numbers beyond 1000 Order and compare numbers with the same number of decimal places up to two decimal places Find 0.1, 1, 10, 100 or 1000 more or less than a given number Round any number to the nearest 10, 100 or 1000 Round decimals (one decimal place) to the nearest whole number Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer Describe and extend number sequences involving counting on or back in different steps, including sequences with multiplication and division steps Read Roman numerals to 100 and know that over time, the numeral system changed to include the concept of zero and place value Solve number and practical problems that involve all of the above and with increasingly large positive numbers | <ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Select a mental strategy appropriate for the numbers involved in the calculation Recall and use addition and subtraction facts for 100 Recall and use +/- facts for multiples of 100 totalling 1000 Derive and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place) Add and subtract mentally combinations of two and three digit numbers and decimals to one decimal place Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate Estimate; 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 Solve addition and subtraction problems involving missing numbers | <ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Recognise and use factor pairs and commutativity in mental calculations Recall multiplication and division facts for multiplication tables up to 12×12 Use partitioning to double or halve any number, including decimals to one decimal place Use place value, known and derived facts to multiply and divide mentally, including: <ul style="list-style-type: none"> - multiplying by 0 and 1 - dividing by 1 - multiplying together three numbers Multiply two-digit and three-digit numbers by a one-digit number using formal written layout Divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including interpreting remainders), integer scaling problems and harder correspondence problems such as n objects are connected to m objects |
| Number – fractions and decimals <ul style="list-style-type: none"> Understand that a fraction is one whole number divided by another (e.g. $\frac{3}{4}$ can be interpreted as $3 \div 4$) Recognise, find and write fractions of a discrete set of objects including those with a range of numerators and denominators Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten Count on and back in steps of unit fractions Compare and order unit fractions and fractions with the same denominators (including on a number line) Recognise and show, using diagrams, families of common equivalent fractions Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ Add and subtract fractions with the same denominator (using diagrams) Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number Solve simple measure and money problems involving fractions and decimals to two decimal places | Geometry – properties of shapes <ul style="list-style-type: none"> Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify lines of symmetry in 2-D shapes presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines Identify acute and obtuse angles and compare and order angles up to two right angles by size | Measurement <ul style="list-style-type: none"> Estimate, compare and calculate different measures, including money in pounds and pence Order temperatures including those below 0°C Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Know area is a measure of surface within a given boundary Find the area of rectilinear shapes by counting squares Convert between different units of measure [e.g. kilometre to metre; hour to minute] Read, write and convert time between analogue and digital 12- and 24-hour clocks Write amounts of money using decimal notation Recognise that one hundred 1p coins equal $\text{£}1$ and that each coin is $\frac{1}{100}$ of $\text{£}1$ Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days and problems involving money and measures |
| | Geometry – position and direction <ul style="list-style-type: none"> Describe positions on a 2-D grid as coordinates in the first quadrant Plot specified points and draw sides to complete a given polygon Describe movements between positions as translations of a given unit to the left/right and up/down | |
| | Statistics <ul style="list-style-type: none"> Use a variety of sorting diagrams to compare and classify numbers and geometric shapes based on their properties and sizes Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts, time graphs Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs | |



Arithmetic Expectations – Year 4

| Skills | Examples |
|--|--|
| Counting | |
| Count in multiples of 6, 7, 9, 25 and 100 | Count from 0 in sixes What number would come next in this counting sequence? 0, 7, 14, 21, 28, ___ What number is missing from this counting sequence? 0, 25, 50, 100, 125 |
| Count backwards through zero to include negative numbers. | What number would come next in this counting sequence? 5, 0, -5, -10, |
| Count up and down in hundredths. | Count from 0 in hundredths Count back from $\frac{34}{100}$ to $\frac{15}{100}$ Continue this sequence: 0.06, 0.07, 0.08... |
| Find 0.1, 1, 10, 100 or 1000 more or less than a given number. | What is 1000 more than 2345? 10 less than 709 is ____. What is one tenth more than 5.9? What is 100 less than 1176? What is 100 less than 1076? |
| Number Facts | |
| Recall and use addition and subtraction facts for 100 | $100 - 33 = \underline{\quad}$ $24 + \underline{\quad} = 100$ $100 = \underline{\quad} + 71$ $100 - 49 = \underline{\quad}$ $100 - \underline{\quad} = 19$ $68 = 100 - \underline{\quad}$ |
| Recall and use addition and subtraction facts for multiples of 100 totalling 1000 | $1000 - 400 = \underline{\quad}$ $200 + \underline{\quad} = 1000$ $1000 = \underline{\quad} + 100$ $300 = 1000 - \underline{\quad}$ $100 = \underline{\quad}00 + \underline{\quad}00$ find different ways to complete |
| Recall multiplication and division facts for multiplication tables up to 12 x 12 | $7 \times 6 = \underline{\quad}$ $48 = 12 \times \underline{\quad}$ $3 \times \underline{\quad} = 27$ $\underline{\quad} \times \underline{\quad} = 35$ $45 \div 9 = \underline{\quad}$ $\underline{\quad} \div 8 = 11$ $12 = 108 \div \underline{\quad}$ |
| Multiplying by 0 and 1 | $354 \times 1 = \underline{\quad}$ $803 \times \underline{\quad} = 803$ $1734 = 1 \times \underline{\quad}$ $354 \times 0 = \underline{\quad}$ $803 \times \underline{\quad} = 0$ $0 = 0 \times \underline{\quad}$ |
| Dividing by 1 | $542 \div 1 = \underline{\quad}$ $607 = 607 \div \underline{\quad}$ $38 = \underline{\quad} \div 1$ |
| Recognise and use factor pairs and commutativity in mental calculations. | $60 \times 3 = 6 \times 10 \times 3$ reordered to give $6 \times 3 \times 10 = 180$ $14 \times 4 = 7 \times 2 \times 4$ with order of calculations being $7 \times (2 \times 4) = 56$ |
| Mental Calculation Strategies – Addition and Subtraction | |
| Derive and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place) | $0.5 + \underline{\quad} = 1$ $2.3 + \underline{\quad} = 10$ $\underline{\quad} + 0.7 = 1$ $\underline{\quad} + 8.2 = 10$ $1 = 0.3 + \underline{\quad}$ $10 = 5.6 + \underline{\quad}$ $1 = \underline{\quad} + 0.8$ $10 = \underline{\quad} + 2.2$ $1 - 0.8 = \underline{\quad}$ $10 - 6.1 = \underline{\quad}$ $1 - \underline{\quad} = 0.6$ $10 - \underline{\quad} = 4.9$ $0.4 = 1 - \underline{\quad}$ $2.8 = 10 - \underline{\quad}$ $\underline{\quad} = 1 - 0.9$ $\underline{\quad} = 10 - 6.7$ |



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| <p>Partition and combine multiples of hundreds, tens and ones. <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – number line</i></p> | <p>320 + 150 320 add 100 = 420 then add 50 = 470 243 + 230 243 add 200 = 443 then add 30 = 473 460 – 140 460 subtract 100 = 360 then subtract 40 = 320 562 – 320 562 subtract 300 = 262 then subtract 20 = 242 234 + 125 234 add 100 = 334 then add 20 = 354 then add 5 = 359 (not crossing any boundaries) 765 – 241 765 subtract 200 = 565 then subtract 40 = 515 then subtract 1 = 514 (not crossing any boundaries) 85 + 47 85 add 40 = 125 then add 7 = 132 (crossing hundreds and tens boundaries) 122 – 35 122 subtract 30 = 92 then subtract 5 = 87 (crossing hundreds and tens boundaries)</p> |
| <p>Reorder numbers in a calculation. <i>Concrete – Diennes equipment, place value counters, beadstring</i></p> | <p>7 + 12 + 3 + 5 reordered as 7 + 3 + 12 + 5 to make use of the bond to 10 18 + 6 – 8 reordered as 18 – 8 + 6 to make use of the place value of 18 27 + 75 reordered as 75 + 27 to make use of 75 + 25 seeing 27 as 25 + 2</p> |
| <p>Identify and use knowledge of number bonds within a calculation and identify related facts, e.g. 150 + 270 from 15 + 27 <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – Diennes jottings</i></p> | <p>120 + 80 using knowledge of 12 + 8 = 20 250 + 130 using knowledge of 25 + 13 = 38 200 – 70 using knowledge of 20 – 7 = 13 460 – 150 using knowledge of 46 – 15 = 31</p> |
| <p>Find differences by counting up through the next multiple of 10 or 100 <i>Concrete – Diennes equipment, beadstring</i> <i>Pictorial – number line</i></p> | <p>80 – 43 43 + 7 = 50 + 30 = 80 so the difference is 37 92 – 35 35 + 5 = 40 + 50 = 90 + 2 = 92 so the difference is 57 203 – 96 96 + 4 = 100 + 100 = 200 + 3 = 203 so the difference is 107 504 – 180 180 + 20 = 200 + 300 = 500 + 4 = 504 so the difference is 324</p> |
| <p>Bridge through 10 when adding or subtracting a single digit number (partitioning, e.g. 58 + 5 = 58 + 2 + 3 or 76 – 8 = 76 – 6 – 2) <i>Concrete – Diennes equipment, beadstring</i> <i>Pictorial – number line</i></p> | <p>48 + 35 as 48 + 2 + 33 = 50 + 33 = 83 97 + 64 as 97 + 3 + 61 = 100 + 61 = 161 103 – 25 as 103 – 3 – 22 = 100 – 22 (using number bonds to 100) 230 – 72 as 230 – 30 – 40 – 2 = 200 – 40 – 2</p> |
| <p>Add or subtract a multiple of 10 and adjust (for those numbers close to multiples of 10) <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – number line</i></p> | <p>84 + 28 as 84 + 30 – 2 = 114 – 2 = 112 167 + 48 as 167 + 50 – 2 = 217 – 2 = 215 96 – 38 as 96 – 40 + 2 = 56 + 2 = 58 213 – 58 as 213 – 60 + 2 = 153 + 2 = 155</p> |
| Mental Calculation Strategies – Multiplication and Division | |
| <p>Multiply a one- or two-digit number by 10 and 100 <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – place value chart</i></p> | <p>7 × 10 9 × 100 71 × 10 63 × 100</p> |



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|--|---|
| <p>Use related facts to multiply H00 by a one-digit number <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – place value chart, related facts multiplication trio e.g. $7 \times 6 = 42$</i> <i>then $700 \times 6 = 4200$</i></p> <div style="text-align: center;"> </div> | <p>600×7 related to $6 \times 7 = 42$ <i>This should be understood as 'six hundred sevens'.</i> <i>As the number of 7s is 100 times greater than six sevens, so the product is 100x greater.</i></p> <p>500×8 related to $5 \times 8 = 40$ 900×6 related to $9 \times 6 = 54$</p> |
| <p>Use factor pairs to multiply H00 by a one-digit number. <i>Pictorial – place value chart for multiplying by 100</i></p> | <p>600×7 becomes $6 \times 100 \times 7$ reordered as $6 \times 7 \times 100$ 500×8 becomes $5 \times 100 \times 8$ reordered as $5 \times 8 \times 100$ 900×6 becomes $9 \times 100 \times 6$ reordered as $9 \times 6 \times 100$</p> |
| <p>Use compensation to multiply T9 by a one-digit number. NB T9 represents a two-digit number with 9 ones <i>Pictorial – rectangular array or a rectangle with given dimensions</i></p> | <p>49×3 considered as $50 \times 3 - 1 \times 3$ (read as 'fifty threes subtract one three') 29×7 considered as $30 \times 7 - 1 \times 7$ (read as 'thirty sevens subtract one seven') 89×6 considered as $90 \times 6 - 1 \times 6$ (read as 'ninety sixes subtract one six')</p> |
| <p>Use related facts to multiply TU x 5 (by multiplying by 10 and halving). <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – place value chart and a part-part-whole diagram, rectangular arrays on squared paper</i></p> | <p>28×5 becomes $28 \times 10 = 280$ then $280 \div 2 = 140$ 81×5 becomes $81 \times 10 = 810$ then $810 \div 2 = 405$ 54×5 becomes $54 \times 10 = 540$ then $540 \div 2 = 270$</p> |
| <p>Use related facts to multiply TU x 20 (by multiplying by 10 and doubling). <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – place value chart and a part-part-whole diagram, rectangular arrays on squared paper</i></p> | <p>34×20 becomes $34 \times 10 = 320$ then $320 \times 2 = 640$ 47×20 becomes $47 \times 10 = 470$ then $470 \times 2 = 940$ 68×20 becomes $68 \times 10 = 680$ then $680 \times 2 = 1360$</p> |
| <p>Use partitioning to multiply TU by a one-digit number. <i>Pictorial – partitioning diagram using grid method strategy</i></p> | <p>57×4 becomes $50 \times 4 + 7 \times 4$ (read as 'fifty fours add seven fours') 36×7 becomes $30 \times 7 + 6 \times 7$ (read as 'thirty sevens add six sevens') 93×6 becomes $90 \times 6 + 3 \times 6$ (read as 'ninety sixes add three sixes')</p> |
| <p>Multiply together three numbers. <i>Concrete – rectangular arrays created with counters or cubes</i> <i>Pictorial – rectangular arrays on squared paper</i></p> | <p>$3 \times 4 \times 6$ (read as 'three lots of four sixes') $7 \times 3 \times 9$ (read as 'seven lots of three nines') $5 \times 6 \times 8$ (read as 'five lots of six eights')</p> |
| <p>Use place value, known and derived facts to divide mentally. <i>Concrete – Diennes equipment, place value counters</i> <i>Pictorial – place value chart</i></p> | <p>$120 \div 10$ $600 \div 100$ $850 \div 10$</p> |



| Progression Towards Written Calculation Strategies – Addition | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|------------------|---|---------|------|------|-----|---|------|---|------|---------|--|-----|-----|-------|---|----|---|-----|
| <p>This is the final stage of the method, and should be continued to be used for all written addition calculations.</p> <p>The first example would be explained as follows: $5 + 8 = 13$, put 3 down and carry the 10 (<i>written as a 1 in the tens column</i>) $20 + 40 + 10$ that was carried over = 70 (<i>7 written in the tens column</i>) $600 + 0 = 600$ (<i>6 written in the hundreds column</i>) Children will be expected to use this method for adding numbers with more than 3 digits, numbers involving decimals and adding any number of amounts together.</p> <p><i>Supported (if necessary) by the use of place value counters.</i></p> | <table style="margin: auto;"> <tr> <td style="text-align: right; padding-right: 20px;">HTU</td> <td></td> <td style="text-align: right; padding-right: 20px;">321</td> <td></td> </tr> <tr> <td style="text-align: right;">625</td> <td style="text-align: right;">367</td> <td style="text-align: right;">+ 7</td> <td style="text-align: right;">£3.48</td> </tr> <tr> <td style="text-align: right;">+ 48</td> <td style="text-align: right;">+ 85</td> <td style="text-align: right;">+ 48</td> <td style="text-align: right;">+ £0.78</td> </tr> <tr style="border-top: 1px solid black;"> <td style="text-align: right;">673</td> <td style="text-align: right;">452</td> <td style="text-align: right;">376</td> <td style="text-align: right;">£4.26</td> </tr> <tr> <td style="text-align: right;">1</td> <td style="text-align: right;">11</td> <td style="text-align: right;">1</td> <td style="text-align: right;">1 1</td> </tr> </table> | HTU | | 321 | | 625 | 367 | + 7 | £3.48 | + 48 | + 85 | + 48 | + £0.78 | 673 | 452 | 376 | £4.26 | 1 | 11 | 1 | 1 1 |
| HTU | | 321 | | | | | | | | | | | | | | | | | | | |
| 625 | 367 | + 7 | £3.48 | | | | | | | | | | | | | | | | | | |
| + 48 | + 85 | + 48 | + £0.78 | | | | | | | | | | | | | | | | | | |
| 673 | 452 | 376 | £4.26 | | | | | | | | | | | | | | | | | | |
| 1 | 11 | 1 | 1 1 | | | | | | | | | | | | | | | | | | |
| Progression Towards Written Calculation Strategies – Subtraction | | | | | | | | | | | | | | | | | | | | | |
| <p>This final stage is the compact method of decomposition. The example shows how the same calculation would be carried out using the method from the previous year and the final method.</p> <p>This is the final stage of the process and will continue to be used with greater numbers and numbers involving decimals.</p> <p><i>Supported (if necessary) by the use of place value counters.</i></p> | <table style="margin: auto;"> <tr> <td style="text-align: right; padding-right: 20px;">754</td> <td style="text-align: center;">expanded</td> <td style="text-align: center;"> $\begin{array}{r} 600 \\ \cancel{700} \end{array} \rightarrow \begin{array}{r} 140 \\ \cancel{50} \end{array} \rightarrow 14$ </td> <td style="text-align: center;">compact</td> <td style="text-align: right; padding-right: 20px;">6141</td> </tr> <tr> <td style="text-align: right;">- 86</td> <td></td> <td style="text-align: center;"> $\begin{array}{r} - \\ 80 \end{array} \rightarrow 6$ </td> <td></td> <td style="text-align: right;"> $\begin{array}{r} \cancel{7}64 \\ - 86 \\ \hline 668 \end{array}$ </td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">$600 \rightarrow 60 \rightarrow 8 = 668$</td> <td></td> <td style="text-align: right;">668</td> </tr> </table> <p>The example shown would be explained as follows: We are subtracting 86 from 754. Start with the least significant place value column. Are there enough ones to subtract 6? No – so let's exchange a ten from the tens column for ten ones. 5 tens and 4 ones becomes 4 tens and 14 ones. $14 \text{ subtract } 6 = 8$ Are there enough tens to subtract 80? No – so let's exchange a hundred from the hundreds column for ten tens. 7 hundreds and 4 tens becomes 6 hundreds and 14 tens. $14 \text{ tens (140) subtract } 8 \text{ tens (80) } = 6 \text{ tens (60)}$ $600 - 0 = 600$ Answer 668</p> | 754 | expanded | $\begin{array}{r} 600 \\ \cancel{700} \end{array} \rightarrow \begin{array}{r} 140 \\ \cancel{50} \end{array} \rightarrow 14$ | compact | 6141 | - 86 | | $\begin{array}{r} - \\ 80 \end{array} \rightarrow 6$ | | $\begin{array}{r} \cancel{7}64 \\ - 86 \\ \hline 668 \end{array}$ | | | $600 \rightarrow 60 \rightarrow 8 = 668$ | | 668 | | | | | |
| 754 | expanded | $\begin{array}{r} 600 \\ \cancel{700} \end{array} \rightarrow \begin{array}{r} 140 \\ \cancel{50} \end{array} \rightarrow 14$ | compact | 6141 | | | | | | | | | | | | | | | | | |
| - 86 | | $\begin{array}{r} - \\ 80 \end{array} \rightarrow 6$ | | $\begin{array}{r} \cancel{7}64 \\ - 86 \\ \hline 668 \end{array}$ | | | | | | | | | | | | | | | | | |
| | | $600 \rightarrow 60 \rightarrow 8 = 668$ | | 668 | | | | | | | | | | | | | | | | | |
| Progression Towards Written Calculation Strategies – Multiplication | | | | | | | | | | | | | | | | | | | | | |
| <p>In this stage, the array is removed and children use the grid method. This is an important step in retaining children's understanding of multiplication.</p> | <p>23×8</p> <table style="margin: auto;"> <tr> <td style="text-align: right; padding-right: 5px;">x</td> <td style="text-align: right; padding-right: 5px;">20</td> <td style="text-align: right; padding-right: 5px;">3</td> <td></td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">8</td> <td style="border: 1px solid black; padding: 2px;">160</td> <td style="border: 1px solid black; padding: 2px;">24</td> <td style="padding-left: 10px;">$160 + 24 = 184$</td> </tr> </table> | x | 20 | 3 | | 8 | 160 | 24 | $160 + 24 = 184$ | | | | | | | | | | | | |
| x | 20 | 3 | | | | | | | | | | | | | | | | | | | |
| 8 | 160 | 24 | $160 + 24 = 184$ | | | | | | | | | | | | | | | | | | |



| Progression Towards Written Calculation Strategies – Division | | | | |
|--|---|--|---|---|
| <p>This is the 'chunking' method of division in which children use key facts of the multiplication tables of the divisor.</p> <p>The repeated subtraction is made more efficient by subtracting 'chunks' of the divisor and where steps are repeated, children are encouraged to combine these to make the process more efficient.</p> | $\begin{array}{r} 24 \\ 3 \overline{)72} \\ - 30 \\ \hline 42 \\ - 30 \\ \hline 12 \\ - 12 \\ \hline 0 \end{array}$ | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $1x = 3$ $2x = 6$ $5x = 15$ $10x = 30$ </div> | $\begin{array}{r} 24 \\ 3 \overline{)72} \\ - 60 \\ \hline 12 \\ - 12 \\ \hline 0 \end{array}$ | $\begin{array}{r} 32 \text{ r}4 \\ 6 \overline{)196} \\ - 180 \\ \hline 16 \\ - 12 \\ \hline 4 \end{array}$ |
| | | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $1x = 6$ $2x = 12$ $5x = 30$ $10x = 60$ $20x = 120$ </div> | |
| Decision Making | | | | |
| <p>When calculating, children should ask themselves:</p> <ul style="list-style-type: none"> - do I know the answer because it is a fact I have learnt? - can I work it out easily in my head? - can I use some equipment or a jotting? - do I need to use the written method? | | | | |

The strategies used within this document are taken from the Lancashire Mathematics Team Progression in Mental Calculation Strategies Policies and the Progression Towards Written Methods Policies. See www.lancsngfl.ac.uk/curriculum/primarymaths for the full policies.



Year 4 Mathematics Yearly Overview

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---------------|--|---------------------------------|--|--|---|-------------------------------------|
| Week 1 | Unit 1 Place value, addition and subtraction | Unit 5 Multiplication | Unit 9 Place value | Unit 14 Addition and subtraction and money | Unit 20 Place value | Unit 23 Fractions |
| Week 2 | | | | Unit 15 2-D shape and sorting | Unit 21 Addition and subtraction | |
| Week 3 | Unit 2 Length and perimeter | Unit 6 Division | Unit 10 Multiplication | Unit 16 Position & direction | Unit 22 Multiplication and division | Unit 24 2-D and 3-D shape |
| Week 4 | Unit 3 Statistics | Unit 7 Time | | Unit 17 Area | | Unit 18 Statistics |
| Week 5 | Unit 4 Addition and subtraction | Unit 8 3-D shape | Unit 11 Division | Unit 19 Measures | Unit 22 Multiplication and division | Unit 26 Place value |
| Week 6 | | Assess and review week | Unit 12 Addition and Subtraction | Assess and review week | | Unit 13 Fractions |



| YEAR 4 | AUTUMN | |
|-----------|---|--|
| | Topic | Sequence of Learning |
| | Number and place value, addition and subtraction | <ul style="list-style-type: none"> Identify and represent numbers up to 10,000 using concrete materials such as base 10 apparatus and place value counters Partition a four-digit number into thousands, hundreds, tens and ones Identify and represent numbers with one decimal place using models such as place value counters and arrow cards Partition a number with one decimal place into tens, ones and tenths including in different ways (revisit of Y3 learning) Compare two numbers and order three or more numbers up to 10,000 and numbers with one decimal place when represented using the same concrete materials saying which numbers are greater or less and use $<$, $>$ and $=$ correctly Identify the multiples of 10 and 100 immediately before and after numbers with up to four-digits and round the numbers to the nearest ten and hundred Identify the number 1, 10, 100 or 1,000 more or less than a given number with up to four-digits recognising which digits stay the same and which digits change Recognise calculations that require counting on or back mentally e.g. $243 + 230$ (counting on in hundreds and then in tens) and use this strategy where appropriate From given complete sequences, identify whether these are addition/subtraction (constant step size) or multiplication/ division Recognise addition calculations that require mental partitioning e.g. $765 + 231$ (no boundaries crossed), $87 + 35$ (boundaries crossed) and use this strategy where appropriate Recognise subtraction calculations that require mental partitioning e.g. $765 - 241$ (no boundaries crossed), $122 - 35$ (boundaries crossed) and use this strategy where appropriate |
| | Length and perimeter, 2D Shape | <ul style="list-style-type: none"> Measure and draw lengths as properties of 2-D shapes e.g. a triangle with one side of 82mm Measure lengths in cm and mm, including cm as decimals with one decimal place e.g. 12mm and 1.2cm Compare the length of different objects including numbers to one decimal place Add and subtract, including finding the difference between, lengths Measure and calculate the perimeter of any rectilinear figure where all the side lengths are given Recognise where sides are the same length in oblong rectangles and square rectangles and use this when measuring and calculating perimeter Recognise where the sides are the same length in L and T shaped rectilinear figures and use this when measuring and calculating perimeter Calculate the length of missing sides using known dimensions |
| | Statistics | <ul style="list-style-type: none"> Derive and use addition and subtraction facts for 1 using number lines, bar models and related facts Derive and use addition and subtraction facts for 10 for numbers with one decimal place using number lines, bar models and related facts (recognise that when calculating addition facts to 10 the tenths total 1 and the ones total 9) Present discrete data using bar charts and a scale appropriate to Year 4 counting and place value Choose the appropriate scale when representing data in a bar chart Interpret data and solve one-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in a bar chart or table Interpret data and solve one-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in a bar chart or table Present and interpret data using pictograms with a symbol representing numbers appropriate for Year 4 (including half symbols) Solve one-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in a pictogram |
| | Addition and subtraction | <ul style="list-style-type: none"> Add two numbers with four digits using formal written methods of columnar addition with exchange Use appropriate rounding to estimate the answer to a calculation Add two numbers with one decimal place using formal written methods of columnar addition with exchange Use appropriate rounding to estimate the answer to a calculation Add three numbers with four digits using formal written methods of columnar addition with exchange Choose an appropriate strategy for a given addition calculation Subtract two numbers with four digits using formal written methods of columnar subtraction with exchange Use appropriate rounding to estimate the answer to a calculation Subtract two numbers with four digits using formal written methods of columnar subtraction with exchange where the greater number has 0 as a place holder e.g. $3805 - 2588$ Use appropriate rounding to estimate the answer to a calculation Subtract two numbers with one decimal place using formal written methods of columnar subtraction with exchange Choose an appropriate strategy for a given subtraction calculation Solve problems involving addition and subtraction Represent and solve a problem using structured pictorial representations such as the bar model |
| | Multiplication and division | <ul style="list-style-type: none"> Use arrays to understand the multiplication facts for the 11 and 9 multiplication tables (including commutativity) Identify relationships within a multiplication square Derive the 11 and 9 multiplication tables from the 10 multiplication table by using 10 groups add/subtract 1 group strategy Use arrays to identify what the term 'factor' means Use arrays to identify all the factor pairs of a given number Recognise that multiplying by 0 gives a product of 0 and that multiplying by 1 does not change the number Understand the effect of multiplying a one- or two-digit number by 10 and 100 Recognise the relationship between a known fact and a related calculation, e.g. $6 \times 9 = 54$ and $600 \times 9 = 5400$ Use compensation to multiply T9 by a one-digit number Use partitioning to mentally multiply $TU \times U$ |



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| | | <ul style="list-style-type: none"> • Use partitioning to double any number up to 4 digits (with an answer less than 10,000) • Use partitioning to calculate a $1TU \times U$ using the grid method • Use partitioning to calculate a $1TU \times U$ using the grid method • Choose an appropriate strategy to solve a calculation based upon the numbers involved • To solve problems involving multiplication including in measurement contexts |
| | Mental and written division | <ul style="list-style-type: none"> • Use knowledge of place value and multiplication facts to divide related greater numbers e.g. $540 \div 6$ • Divide two-digit numbers (beyond the multiplication facts) by a single digit number using the chunking method where there is no remainder • Divide two-digit numbers (beyond the multiplication facts) by a single digit number using the chunking method where there is a remainder • Recognise that dividing a number by 1 does not change the number • Use concrete materials to model and describe the effect of dividing a 2-digit number by 10 • Solve problems involving division including interpreting remainders in a given context |
| | Time | <ul style="list-style-type: none"> • Tell and write the time on an analogue clock to the nearest minute – past and to • Tell, write and match analogue and digital times (12-hour clock) • Know that 24-hour clock times are written using four digits • Understand how times on a digital 24-hour clock are before or after midday • Calculate the analogue time from a given 24-hour clock time when the hour value is greater than 12 • Tell the time on a 24-hour clock, e.g. 16:27 is 27 minutes past 4 in the afternoon • Solve problems involving converting between different units of time |
| | 3D Shape | <ul style="list-style-type: none"> • Identify, name and describe 2-D shapes according to the properties of their sides and vertices • Identify and name different prisms according to their properties Describe the properties of prisms: faces – number, shape and where any are congruent (identical); number of edges and where any are of equal length; number of vertices • Identify and name different pyramids according to their properties • Describe the properties of pyramids: faces – number, shape and where any are congruent (identical); number of edges and where any are of equal length; number of vertices • Identify and describe the properties of 3-D shapes: faces – number, shape and where any are congruent (identical); number of edges and where any are of equal length; number of vertices • Use Venn and Carroll diagrams to compare and sort 3-D shapes |

| YEAR 4 | SPRING | |
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| | Topic | Sequence of Learning |
| | Number and place value | <ul style="list-style-type: none"> • Identify the multiples of 1000 immediately before and after a given number • Round numbers with up to four digits to the nearest thousand, e.g. 3567 rounds to 4000 • Correctly place any number on a number line with multiples of 1000 marked but not labelled • Correctly place any number on a number line with multiples of 1000 marked but not labelled with a variety of start and end points • Label positive and negative numbers on a demarcated number line • Place temperatures including negative numbers on a number line • Count backwards through zero to include negative numbers • Make a number with 2 decimal places using straws and place value counters • Use pictorial representations such as a 10×10 grid to show that 1100 of an object can be found by dividing the object into one hundred equal parts • Identify the value of each digit to two decimal places in a variety of ways e.g. the value of the digit 7 in 53.27 is seven hundredths, 7100 or 0.07 • Use pictorial representations such as a 10×10 grid to recognise that 1100 of an object can be found by dividing 110 of the object into ten equal parts • Recognise that 10100 is equivalent to 110 or 0.1 • Recognise that 20100 is equivalent to 210 or 0.2 and so on • Write any number of hundredths in fraction and decimal form e.g. 47100 is 0.47 • Recognise how place value columns relate to money notation i.e. units/ones column relates to the number of £1 coins; tenths column relates to the number of equivalent 10p coins; hundredths column relates to the number of equivalent 1p coins • Recognise that one hundred 1p coins equal £1 • Recognise that each 1p coin is 1100 of £1, hence 1p being written as £0.01 which is consistent with the columns in a place value chart • Make a number with 2 decimal places using place value counters and coins (£1, 10p and 1p) • Understand how a number with 2 decimal places can be represented in different ways, e.g. 0.27 can 27100 or 210 and 7100 • Compare two or more numbers with ones, tenths and hundredths using concrete materials • Order two or more numbers with ones, tenths and hundredths using concrete materials • Correctly place multiples of 0.01 on a number line with multiples of 0.1 marked but not labelled • Use concrete materials to model effect of dividing a one-digit or two-digit number by 100 • Describe the effect of dividing a one-digit or two-digit number by 100 |



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| <p>Multiplication</p> | <ul style="list-style-type: none"> Recall and use multiplication and division facts for the 7-multiplication table Recall and use multiplication and division facts for the 12-multiplication table Identify and describe the rule in a number sequence by calculating the difference between two adjacent numbers Extend number sequences by using the identified rule Use partitioning to double a number with ones and tenths, e.g. double 6.8 Use partitioning to halve any four-digit number where each digit is even Use partitioning to halve a number with ones and tenths where both digits are even Use partitioning to halve any four-digit even number where some of the digits are odd e.g. 4524 could be partitioned into $4000 + 500 + 20 + 4$ or $4400 + 100 + 24$ Use partitioning to halve any number with ones and tenths where the tenths digit is even e.g. half of 3.6 could be partitioned into $3 + 0.6$ or $2 + 1.6$ Identify factor pairs of a given number within the multiplication tables that they know Use appropriate factor pairs and commutativity in mental calculations e.g. $300 \times 6 = 3 \times 100 \times 6$ which becomes $3 \times 6 \times 100 = 18 \times 100$ Use partitioning to calculate a three-digit number multiplied by a single digit number using grid method. Estimate multiplication by rounding to the nearest multiple of 10 or 100 and using related facts e.g. $384 \times 6 \approx 400 \times 6$ Solve problems by using partitioning to calculate a three-digit number multiplied by a single digit number using grid method Estimate multiplication by rounding to the nearest multiple of 10 or 100 and using related facts e.g. $384 \times 6 \approx 400 \times 6$ Represent multiplication of three numbers using arrays e.g. $2 \times 3 \times 4$ can be shown using a 2×3 array four times Use commutativity to reorder multiplication of three numbers to simplify the calculation e.g. $4 \times 7 \times 5$ becomes $4 \times 5 \times 7 = 20 \times 7$ Use inverse to check the answer to a calculation, e.g. $256 \div 4 = 64$ can be checked by carrying out the following calculation correctly: 64×4 |
| <p>Division</p> | <ul style="list-style-type: none"> Divide a two-digit number by a one-digit number using a partitioning strategy e.g. $96 \div 4$ becomes $(80 \div 4) + (16 \div 4)$ Divide three-digit numbers by a single digit number using the chunking method where there is no remainder e.g. $248 \div 4$ Divide three-digit numbers by a single digit number using the chunking method, making the calculation more efficient by subtracting more than one multiple of 10 of the divisor e.g. $248 \div 4$ by subtracting 240 (60 groups of 4) and 8 (2 groups of 4) Divide three-digit numbers by a single digit number using the chunking method, making the calculation more efficient by subtracting more than one multiple of 10 of the divisor e.g. $248 \div 4$ by subtracting 240 (60 groups of 4) and 8 (2 groups of 4) Estimate division by rounding to the nearest multiple of 10 of the divisor and using related facts e.g. $352 \div 6 \approx 360 \div 6$ Use inverse to check the answer to a calculation, e.g. $78 \times 6 = 468$ can be checked by carrying out the following calculation correctly: $468 \div 6$ |
| <p>Addition and subtraction</p> | <ul style="list-style-type: none"> Recognise calculations that require counting on or back mentally, bridging through a multiple of 10 efficiently Recognise calculations that require a mental compensation method |
| <p>Fractions</p> | <ul style="list-style-type: none"> Where a fraction of an amount cannot be found by using known division facts, use pictorial representations, e.g. bar model, to find non-unit fractions of a set of objects Use pictorial representations, such as fraction strips, to add fractions with the same denominator crossing a ones boundary Add fractions with the same denominator crossing a ones boundary by adding the numerators Use pictorial representations, such as fraction strips, to subtract fractions with the same denominator crossing a ones boundary Subtract fractions with the same denominator crossing a ones boundary by subtracting the numerators |
| <p>Addition and subtraction and money</p> | <ul style="list-style-type: none"> Add and subtract a three-digit number to/from a three-digit number including crossing the hundreds boundary, e.g. $203 - 96$ (This could be supported by jottings or a number line) Add more than two numbers with up to four digits using formal written method of columnar addition, e.g. $673 + 5,394 + 3,027$ Use inverse to check the answer to a calculation, e.g. $4,423 + 2,389 = 6,812$ can be checked by carrying out either of the following calculations correctly: $6,812 - 4,423$ or $6,812 - 2,389$ Add two numbers with two decimal places using formal written methods of columnar addition with exchange, e.g. $36.13 + 45.68$ Write amounts of money using decimal notation Subtract two numbers with two decimal places using formal written methods of columnar subtraction with exchange, e.g. $43.44 - 28.62$ Write amounts of money using decimal notation |
| <p>2D Shape and sorting</p> | <ul style="list-style-type: none"> Know that an angle less than a right angle is called 'acute' Know that an angle between a right angle and a straight angle is called 'obtuse' Identify acute and obtu se angles where one of the lines is horizontal or vertical Identify acute and obtuse angles in any orientation Compare any two angles less than two right angles where one of the lines is horizontal or vertical, identifying which is greater and less Order more than two angles less than two right angles where one of the lines is horizontal or vertical Identify a vertical or horizontal line of symmetry in a shape From a set of shapes, identify those with a vertical or horizontal line of symmetry and those without Complete a simple symmetric figure using a vertical or horizontal line of symmetry where the mirror line cuts the shape in half Name triangles according to their properties (scalene, isosceles, equilateral) and use the terms regular and irregular Name quadrilaterals (square rectangle, oblong rectangle, rhombus, parallelogram, kite, trapezium, isosceles trapezium) according to their properties and use the terms regular and irregular Identify properties of 2-D shapes including: sides – number of sides, where any are equal, parallel and perpendicular vertices – number of vertices, size of angles (right, acute, obtuse and where angles are equal), diagonals – number, if and how they intersect, line symmetry |



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| | Position and direction | <ul style="list-style-type: none"> Describe positions on a 2-D grid as coordinates in the first quadrant Plot specified points Plot specified points and draw sides to complete a given polygon Describe movements between positions as translations of a given unit to the left/right and up/down |
| | Area | <ul style="list-style-type: none"> Know area is a measure of surface within a given boundary Find the area of irregular shapes (including those with curved sides) by counting squares Find the area of rectangles presented on squared paper where the sides are horizontal and vertical by counting squares Use knowledge of arrays to find the area of rectangles by counting squares in groups Find the area of other rectilinear shapes presented on squared paper where the sides are horizontal and vertical by counting squares in groups |
| | Statistics | <ul style="list-style-type: none"> Explain what a time graph is showing e.g. a child might describe temperature increasing or decreasing at different times during a day Answer questions using time graphs by reading from labelled values e.g. what was the temperature at 3:00pm (where each hour is labelled on the x axis) Present time graphs from given data using appropriate scales Answer questions using time graphs by reading from between labelled values e.g. what was the temperature at 1:30pm (where each hour is labelled on the x axis) |
| | Measures | <ul style="list-style-type: none"> Measure and draw lengths (m/cm/mm) and use known measurements to make reasonable estimates including numbers to two decimal places Measure, draw and compare the length of different objects including numbers to two decimal places Use the relationship between different units of length to identify the calculation necessary for conversion e.g. to convert between cm and m, divide the number of cm by 100 NB – there is no requirement in Year 4 to multiply and divide by 1,000. Therefore, when converting from m to km or vice versa children would use related facts and whole numbers e.g. 1km is 1,000m so 4km is 4,000m Measure mass (kg/g) and use known measurements to make reasonable estimates including numbers to two decimal places Compare the mass of different objects including numbers to two decimal places Measure volume/capacity (l/ml) and use known measurements to make reasonable estimates including numbers to two decimal places Compare the volume/capacity of different objects including numbers to two decimal places |

| YEAR 4 | SUMMER | |
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| | Topic | Sequence of Learning |
| | Place value | <ul style="list-style-type: none"> Identify, represent and estimate numbers using different representations (including the number line) Order and compare numbers beyond 1,000 Find 0.1, 1, 10, 100 or 1,000 more or less than a given number Compare numbers with the same number of decimal places saying which number is more or less and use <, > and = correctly. Pay particular attention to numbers that have the same digits, e.g. 115.62 and 161.52 Order numbers with the same number of decimal places saying which numbers are greater or less. Pay particular attention to numbers that have the same digits, e.g. 65.12, 21.56 and 26.15 Round any number to the nearest 10, 100 or 1,000 Round numbers with one decimal place to the nearest whole number where the number is less than 10 Round numbers with one decimal place to the nearest whole number where the number is up to 10,000 |
| | Addition and subtraction and measurement | <ul style="list-style-type: none"> Partition a four-digit number without the use of practical equipment into two groups in different ways where one group is appropriate to the context e.g. $1,500 + 2,643 = 1,500 + 2,500 + 143$ (Recap) Mental addition strategies – whole numbers and decimals incl. add a number with one decimal place to another where the ones boundary is crossed, e.g. $14.7 + 8.6$ (This could be supported by jottings or a number line) (Recap) Mental subtraction strategies – whole numbers and decimals incl. subtract a number with one decimal place from another where the ones boundary is crossed, e.g. $14.2 - 5.6$ (This could be supported by jottings or a number line) (Recap) Mental calculation strategies – whole numbers and decimals Select a mental strategy appropriate for the numbers involved in the calculation (counting on, partitioning, bridging, reordering, compensation) Calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Calculate a missing length when perimeter given and lengths of other sides Add more than two numbers with up to two decimal places using formal written methods of columnar addition with exchange, e.g. $268 + 34.7 + 356.53$ Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why Subtract two numbers with up to two decimal places using formal written methods of columnar subtraction with exchange where the greater number has one 0 as a place holder, e.g. $51.07 - 23.58$ Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why Estimate; use inverse operations to check answers to a calculation Solve addition and subtraction problems involving missing numbers Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Describe and extend number sequences involving counting on or back in different steps |
| | Multiplication and division and area | <ul style="list-style-type: none"> Recap mental multiplication strategies incl. use related facts to multiply 10×20 (by multiplying by 10 and doubling) Recognise and use factor pairs and commutativity in mental calculations Use place value, known and derived facts to multiply and divide mentally, including: <ul style="list-style-type: none"> - multiplying by 0 and 1 - multiplying together three numbers |



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| | | <ul style="list-style-type: none"> Recap mental multiplication strategies Recap mental division strategies (halving, dividing by 1, partitioning, related facts) Select a mental strategy appropriate for the numbers involved in the calculation Multiply two-digit and three-digit numbers by a one-digit number using formal written layout Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, harder correspondence problems such as n objects are connected to m objects Divide three-digit numbers by a single digit number efficiently using the chunking method where there is a remainder e.g. $176 \div 6$ and interpret remainders appropriately for the context Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Solve problems involving converting from years to months; weeks to days Solve problems involving converting from hours to minutes; minutes to seconds Find the area of rectilinear shapes by counting squares in groups (where sides are horizontal or vertical) Find the area of rectangles (and rectilinear shapes) presented on squared paper where the sides are not horizontal and vertical by counting half squares |
| | <p>Fractions</p> | <ul style="list-style-type: none"> Use pictorial representations such as fraction walls to recognise where more than two fractions are equivalent Recognise and show, using diagrams, families of common equivalent fractions Recognise and show, using diagrams, families of common equivalent fractions Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ Add and subtract fractions with the same denominator (using diagrams) Where a fraction of an amount cannot be found by using known division facts, use pictorial representations, e.g. bar model to find non-unit fractions of a set of objects Find non-unit fractions of an amount by using division to find the unit fraction then multiplying to scale up by the numerator Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number Solve simple measure problems involving fractions and decimals to two decimal places Solve simple money problems involving fractions and decimals to two decimal places |
| | <p>2D and 3D shapes</p> | <ul style="list-style-type: none"> Complete a simple symmetric figure where the line of symmetry is not vertical or horizontal Compare and name any two angles less than two right angles in any orientation, identifying which is greater and less Order more than two angles less than two right angles in any orientation Identify acute and obtuse angles (in shapes) and compare angles (in shapes) up to two right angles by size Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes (2-D shapes) Compare and classify geometric shapes based on their properties and sizes (3-D shapes) |
| | <p>Statistics</p> | <ul style="list-style-type: none"> Understand that discrete data that can only take specific, separate values and the data sets are not related to each other Interpret and present discrete data using appropriate graphical methods, including bar charts Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs Understand that continuous data is data that can take on any value along a continuum Interpret and present continuous data using appropriate graphical methods, including time graphs Solve comparison, sum and difference problems using information presented in time graphs Use a variety of sorting diagrams to compare and classify numbers and geometric shapes based on their properties and sizes |
| | <p>Place value</p> | <ul style="list-style-type: none"> Count backwards through zero to include negative numbers Order temperatures including those below 0°C Know that L represents 50 and C represents 100 Represent numbers with only additive properties up to 100 i.e. not ending in 4 or 9 Know that I can only be used before V and X to represent 1 less than 5 (4) and 1 less than 10 (9) Know that X can only be used before L and C to represent 10 less than 50 (40) and 10 less than 100 (90) Represent any number up to 100 |