## HOLDEN LANE PRIMARY SCHOOL



## POLICY DOCUMENT

Mathematics Calculation Policy
Date: September 2023

## Holden Lane Primary School

## Mathematics Calculation Policy

Holden Lane Primary School's calculation policy is taken from the White Rose Maths calculation policy.

White Rose Maths is used to inform each class's long-term curriculum plan and the calculation policy reflects the strategies and methods taught. This ensures consistency and progression of skills and knowledge between year groups.

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## Addition

## Progression of calculation strategies

| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Add two 1-digit <br> numbers to 10 | 1 | Part-whole model <br> Bar model <br> Number shapes | Ten frames (within 10) <br> Bead strings (10) <br> Number tracks |
| Add 1 and 2-digit <br> numbers to 20 | 1 | Part-whole model <br> Bar model <br> Number shapes <br> Ten frames (within 20) | Bead strings (20) <br> Number tracks <br> Number lines (labelled) <br> Straws |
| Add three 1-digit <br> numbers | 2 | Part-whole model <br> Bar model | Ten frames (within 20) <br> Number shapes |
| Add 1 and 2-digit <br> numbers to 100 | 2 | Part-whole model <br> Bar model <br> Number lines (labelled) | Number lines (blank) <br> Straws <br> Hundred square |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Add two 2-digit <br> numbers | 2 | Part-whole model <br> Bar model <br> Number lines (blank) <br> Straws | Base 10 <br> Place value counters <br> Column addition |
| Add with up to 3-digits | 3 | Part-whole model <br> Bar model | Base 10 <br> Place value counters <br> Column addition |
| Add with up to 4-digits | 4 | Part-whole model <br> Bar model | Base 10 <br> Place value counters <br> Column addition |
| Add with more than 4 | 5 | Part-whole model <br> Bar model | Place value counters <br> Column addition |
| Add with up to 3 <br> decimal places | 5 | Part-whole model <br> Bar model | Place value counters <br> Column addition |


| Skill: Add 1-digit numbers within 10 |  |  |  |  |  |  | Year: 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $4+3=7$ |  |  |  |  |  |  | When adding numbers to 10, children can explore both aggregation and augmentation. <br> The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation. <br> The combination bar model, ten frame, bead string and number track all support augmentation. |


| Skill: Add 1 and 2-digit numbers to 20 | Year: 1/2 |
| :---: | :---: |
| $8+7=15$ $\left(\begin{array}{c} 8+7=15 \\ 2 \end{array}\right.$ | When adding onedigit numbers that cross 10 , it is important to highlight the importance of ten ones equalling one ten. <br> Different manipulatives can be used to represent this exchange. Use concrete resources alongside number lines to support children in understanding how to partition their jumps. |



| Skill: Add 1-digit and 2-digit numbers to 100 |  |  |  |  |  |  |  |  |  |  |  |  | Year: 2/3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 38 <br> $38+5=43$ |  |  |  |  |  |  |  |  |  |  |  |  | When adding single digits to a two-digit number, children should be encouraged to count on from the larger number. <br> They should also apply their knowledge of number bonds to add more efficiently e.g. $8+5=13$ so 38 $+5=43$. <br> Hundred squares and straws can support children to find the number bond to 10 . |




| ill: Add numbers with up to 4 digit |  |  |  |  |  |  |  | Year: 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $1,378+2,148=3,526$ |  |  |  |  |  |  |  | Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits. <br> Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. <br> Plain counters on a place value grid can also be used to support learning. |




## Subtraction

## Progression of calculation strategies

| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Subtract two 1-digit <br> numbers to 10 | 1 | Part-whole model <br> Bar model <br> Number shapes | Ten frames (within 10) <br> Bead strings (10) <br> Number tracks |
| Subtract 1 and 2-digit <br> numbers to 20 | 1 | Part-whole model <br> Bar model <br> Number shapes <br> Ten frames (within 20) | Bead string (20) <br> Number tracks <br> Number lines (labelled) <br> Straws |
| Subtract 1 and 2-digit <br> numbers to 100 | 2 | Part-whole model <br> Bar model <br> Number lines (labelled) | Number lines (blank) <br> Straws <br> Hundred square |
| Subtract two 2-digit <br> numbers | 2 | Part-whole model <br> Bar model <br> Number lines (blank) <br> Straws | Base 10 <br> Place value counters <br> Column subtraction |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Subtract with up to 3- <br> digits | 3 | Part-whole model <br> Bar model | Base 10 <br> Place value counters <br> Column subtraction |
| Subtract with up to 4- <br> digits | 4 | Part-whole model <br> Bar model | Base 10 <br> Place value counters <br> Column subtraction |
| Subtract with more than <br> 4 digits | 5 | Part-whole model <br> Bar model | Place value counters <br> Column subtraction |
| Subtract with up to 3 <br> decimal places | 5 | Part-whole model <br> Bar model | Place value counters <br> Column subtraction |




| Skill: Subtract 1 and 2-digit numbers to 100 | Year: 2 |
| :---: | :---: |
|  | At this stage, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient. <br> Children can also use a blank number line to count on to find the difference. Encourage them to jump to multiples of 10 to become more efficient. |



Skill: Subtract numbers with more than $\mathbf{4}$ digits


## Addition and Subtraction

## Glossary of Terms

Addend - A number to be added to another.
Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative - numbers can be added in any order.
Complement - in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference - the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange - Change a number or expression for another of an equal value.

Minuend - A quantity or number from which another is subtracted.

Partitioning - Splitting a number into its component parts.

Reduction - Subtraction as take away.
Subitise - Instantly recognise the number of objects in a small group without needing to count.

Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.
Total - The aggregate or the sum found by addition.

## Times tables

## Progression of calculation strategies

| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Recall and use <br> multiplication and <br> division facts for the <br> 2-times table | 2 | Bar model <br> Number shapes <br> Counters <br> Money | Ten frames <br> Bead strings <br> Number lines |
| Recall and use <br> multiplication and <br> Evivision facts for the <br> 5-times table objects | 2 | Bar model <br> Number shapes <br> Counters <br> Money | Ten frames <br> Bead strings |
| Recall and use <br> multiplication and <br> division facts for the <br> 10-times table | 2 | Humber lines <br> Everyday objects |  |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Recall and use <br> multiplication and <br> division facts for the <br> 3-times table | 3 | Hundred square <br> Number shapes <br> Counters | Bead strings <br> Number lines <br> Everyday objects |
| Recall and use <br> multiplication and <br> division facts for the <br> 4-times table | 3 | Hundred square <br> Number shapes <br> Counters | Bead strings <br> Number lines <br> Everyday objects |
| Recall and use <br> multiplication and <br> division facts for the <br> 8-times table | 3 | Hundred square <br> Number shapes | Bead strings <br> Number tracks <br> Everyday objects |
| Recall and use <br> multiplication and <br> division facts for the <br> 6-times table | 4 | Hundred square <br> Number shapes | Bead strings <br> Numberyday tracks objects |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Recall and use <br> multiplication and <br> division facts for the <br> 7-times table | 4 | Hundred square <br> Number shapes | Bead strings <br> Number lines |
| Recall and use <br> multiplication and <br> division facts for the <br> 9-times table | 4 | Hundred square <br> Number shapes | Bead strings |
| Recall and use <br> multiplication and <br> division facts for the <br> 11-times table | 4 | Number lines |  |
| Recall and use <br> multiplication and <br> division facts for the <br> 12-times table | 4 | Base 10 | Place value counters |
| Number lines |  |  |  |


| Skill: 2 times table | Year: 2 |
| :---: | :---: |
|  | Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. <br> Look for patterns in the two times table, using concrete manipulatives to support. Notice how all the numbers are even and there is a pattern in the ones. <br> Use different models to develop fluency. |


| Skill: 5 times table | Year: 2 |
| :---: | :---: |
|  <br>  | Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. <br> Look for patterns in the five times table, using concrete manipulatives to support. Notice the pattern in the ones as well as highlighting the odd, even, odd, even pattern. |


| Skill: 10 times table |  |  |  |  |  |  |  |  |  | Year: 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} 1 \\ 20 \\ \hline \end{gathered}$ |  |  | $\begin{aligned} & 1 \\ & \hline 0 \\ & 0 \end{aligned}$ |  |  |  |  | Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. <br> Look for patterns in the ten times table, using concrete manipulatives to support. Notice the pattern in the digitsthe ones are always 0 , and the tens increase by 1 ten each time. |





| Skill: 6 times table |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Year: 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 10 | Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the six times table, using manipulatives to support. Make links to the 3 times table, seeing how each multiple is double the threes. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support. |
|  |  |  |  |  |  | (12) | 13 | 14 | 15 | 16 | 17 | (18) | 19 | 20 |  |
|  |  |  |  |  | 21 | 22 | 23 | (2) | 25 | 26 | 27 | 28 |  | \% |  |
|  |  |  |  |  | 31 | 32 | 33 | 34 | 35 | 3 | 37 | 38 | 39 | 40 |  |
|  |  |  |  |  |  | 42) | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |  |
|  |  |  |  |  | 51 | 52 | 53 | (54) | 55 | 56 | 57 | 58 |  |  |  |
| 6 | 12 | 18 | 24 | 30 |  | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |  |
| 36 | 42 | 48 | 54 | 60 |  | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |  |
|  |  |  |  |  |  | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |  |
| 66 | 72 | 78 | 84 | 90 |  | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |  |
| $-000000-000000-00000-$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


| Skill: 9 times table |  |  |  |  |  |  |  |  |  |  |  |  | Year: 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $00000000000002$ |  |  |  |  | 1 | 2 | 4 | 5 | 67 | 78 | (9) | 10 | Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the nine times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support as well as noting the odd, even pattern within the multiples. |
|  |  |  |  |  | 11 | 121 | 14 | 15 | 1617 | 7 (18) | 19 | 20 |  |
|  |  |  |  |  | 21 | 222 | 24 | 25 | 26 (2) | (7) 28 | 29 | 30 |  |
|  |  |  |  |  | 31 | 323 | 34 | 35 | (3) | 3738 | 39 | 40 |  |
|  |  |  |  |  | 41 | 424 | 44 | (4) | 4647 | 4748 | 49 | 50 |  |
| 9 | 18 | 27 | 36 | 45 | 51 | 52 | (54) | 55 | 56 57 | 5758 | 59 | 60 |  |
| 54 | 63 | 72 | 81 | 90 | 61 | 62 6 | 64 | 65 | 6667 | 5768 | 69 | 70 |  |
|  |  |  |  |  |  | (2) 7 | 74 | 75 | 76 | 778 | 9 | 80 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{14}{|c|}{Skill: 7 times table} \& \multirow[t]{2}{*}{\begin{tabular}{l}
Year: 4 \\
Encourage daily counting in multiples both forwards and backwards, supported by a number line or a hundred square. The seven times table can be trickier to learn due to the lack of obvious pattern in the numbers, however they already know several facts due to commutativity. Children can still see the odd, even pattern in the multiples using number shapes to support.
\end{tabular}} \\
\hline 7
42

-8 \& | 14 |
| :--- |
| 49 |
|  |
|  |
|  | \& 21

56

1

21 \& | 28 |
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| 63 |
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70 \& \begin{tabular}{|l|}
11 <br>
\hline 22 <br>
\hline 31 <br>
\hline 31 <br>
\hline 41 <br>
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\hline 61 <br>
\hline 71 <br>
\hline 71 <br>
\hline 81 <br>
\hline (9) <br>
\hline

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12 \& <br>
\hline 22 \& <br>
32 \& 3 <br>
\hline 12 \& <br>
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75 \& <br>
\hline 85 \& <br>
\hline 95 \& <br>
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6 \& <br>
16 \& 17 <br>
26 \& 27 <br>
36 \& 3 <br>
46 \& 4 <br>
\hline 6 \& 5 <br>
66 \& 6 <br>
76 \& <br>
86 \& 8 <br>
96 \& 9 <br>
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7 \& 8 <br>
17 \& 18 <br>
27 \& 28 <br>
37 \& 38 <br>
47 \& 48 <br>
57 \& 58 <br>
67 \& 68 <br>
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87 \& 88 <br>
97 \& 98 <br>
\hline 10

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10 <br>
20 <br>
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40 <br>
50 <br>
60 <br>
60 <br>
\hline 80 <br>
90 <br>
100 <br>
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\end{tabular}

| Skill: 11 times table |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Year: 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11 | 22 | 33 | 44 | 55 | 66 | 1 | 2 | 3 | 4 | 5 | 67 | 78 | 9 | 10 | Encourage daily |
|  |  |  |  |  |  | (11) | 12 | 13 | 14 | 15 | 1617 | 17 | 19 | 20 | counting in multiples |
| 77 | 88 | 99 | 110 | 121 | 132 | 21 | (2) | 232 | 24 | 25 | 2627 | 27.28 | 29 | 30 | both forwards and |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | backwards. This can |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | be supported using a |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | number line or |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | hundred square. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | the eleven times |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | table, using concrete |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support. Also consider the pattern after crossing 100 |


| Skill: 12 times table |  |  |  |  |  |  |  |  |  |  |  |  |  | Year: 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  | 5 | 6 |  |  | 10 | Encourage |
| 12 | 24 | 36 | 48 | 60 |  | (12) | 13 | 14 | 15 | 16 | 17 | 1819 | 20 | counting in multiples, |
| 72 | 84 | 96 | 108 | 120 |  | 22 | 23 | (24) | 25 | 26 | 27 | 2829 | 30 |  |
|  |  |  |  |  |  | 32 | 33 | 34 |  | (3) | 373 | 3839 | 40 |  |
| 132 | 144 |  |  |  |  | 42 | 43 | 44 | 45 | 46 | (4) | (4) 49 | 50 | hundred |
|  <br> the 12 times table, using manipulatives to support. Make links to the 6 times table, seeing how each multiple is double the sixes. Notice the pattern in the ones within each group of five multiples. The hundred square can support in highlighting this pattern. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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## Multiplication

## Progression of calculation strategies

| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Solve one-step <br> problems with <br> multiplication | $1 / 2$ | Bar model <br> Number shapes <br> Counters | Ten frames <br> Bead strings <br> Number lines |
| Multiply 2-digit by 1- <br> digit numbers | $3 / 4$ | Place value counters <br> Base 10 | Short written method <br> Expanded written method |
| Multiply 3-digit by 1- <br> digit numbers | 4 | Place value counters <br> Base 10 | Short written method |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Multiply 2-digit by 2- <br> digit numbers | 5 | Place value counters <br> Base 10 | Short written method <br> Grid method |
| Multiply 2-digit by 3- <br> digit numbers | 5 | Place value counters | Short written method <br> Grid method |
| Multiply 2-digit by 4- <br> digit numbers | $5 / 6$ | Formal written method |  |

Skill: Solve 1-step problems using multiplication $\quad$| Year: $1 / 2$ |
| :--- |

| Skill: Multiply 2-digit numbers by 1-digit numbers |  |  |  |  |  |  |  |  | Year: 3/4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Hmant |  |  |  |  | H | T | 0 |  | Teachers may decide to first look at the expanded column method before moving on to the short multiplication method. <br> The place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge. |
|  |  |  | -ner |  | H |  |  |  |  |
|  |  |  | nem |  |  | 3 | 4 |  |  |
|  |  |  | cree |  |  |  | 5 |  |  |
|  |  | 䁑 | -nee |  |  | 2 | 0 | ( $5 \times 4$ ) |  |
|  |  | 咀 | ereer |  | 1 | 5 | 0 | $(5 \times 30)$ |  |
|  |  |  | enes |  | 1 | 7 | 0 |  |  |
|  | $\begin{aligned} & 11111111 \\ & 41111111 \end{aligned}$ |  | $34 \times 5=170$ |  |  |  |  |  |  |
|  | H | T | 0 | * | Tome |  | (1) |  |  |
|  |  | 3 | 4 |  |  | $\bigcirc$ | Bio |  |  |
|  |  |  | 5 |  | $00$ |  | (1)0 | (1)00 |  |
|  | 1 | 7 | 0 |  | $000$ | 1000 |  |  |  |
|  | 12 |  |  | Q | 20-2 |  |  |  |  |



| Skill: Multiply 4-dig |  |  |  | 1-digi | Year: 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | >T <br> 2 <br>  <br> 7 <br> 1 |  | When multiplying 4digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method. <br> If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method. |





## Division

## Progression of calculation strategies

| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Solve one-step <br> problems with division <br> (sharing) | $1 / 2$ | Bar model <br> Real life objects | Arrays <br> Counters |
| Solve one-step <br> problems with division <br> (grouping) | $1 / 2$ | Real life objects <br> Number shapes <br> Bead strings <br> Ten frames | Number lines <br> Arrays <br> Counters |
| Divide 2-digits by 1- <br> digit (no exchange <br> sharing) | 3 | Straws <br> Base 10 <br> Bar model | Place value counters <br> Part-whole model |
| Divide 2-digits by 1- <br> digit (sharing with <br> exchange) | 3 | Straws <br> Base 10 <br> Bar model | Place value counters |
| Part-whole model |  |  |  |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Divide 2-digits by 1- <br> digit (sharing with <br> remainders) | $3 / 4$ | Straws <br> Base 10 <br> Bar model | Place value counters <br> Part-whole model |
| Divide 2-digits by 1- <br> digit (grouping) | $4 / 5$ | Place value counters <br> Counters | Place value grid <br> Written short division |
| Divide 3-digits by 1- <br> digit (sharing with <br> exchange) | 4 | Base 10 <br> Bar model | Place value counters <br> Part-whole model |
| Divide 3-digits by 1- <br> digit (grouping) | $4 / 5$ | Place value counters <br> Counters | Place value grid <br> Written short division |


| Skill | Year | Representations and models |  |
| :---: | :---: | :---: | :---: |
| Divide 4-digits by 1- <br> digit (grouping) | 5 | Place value counters <br> Counters | Place value grid <br> Written short division |
| Divide multi-digits by <br> 2-digits (short <br> division) | 6 | Written short division | List of multiples |
| Divide multi-digits by <br> 2-digits (long division) | 6 | Written long division | List of multiples |


| Skill: Solve 1-step problems using multiplication (sharing) | Year: 1/2 |
| :---: | :---: |
| There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag? <br> 00000 <br> 00000 <br> -00 <br> O $20 \div 5=4$ | Children solve problems by sharing amounts into equal groups. <br> In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally. <br> In Year 2, children are introduced to the division symbol. |

Skill: Solve 1-step problems using division (grouping) \begin{tabular}{l}

\multicolumn{1}{|c|}{| Year: $1 / 2$ |
| :--- |} <br>


| Children solve |
| :--- |
| problems by grouping |
| and counting the |
| number of groups. |
| Grouping encourages |
| children to count in |
| multiples and links to |
| repeated subtraction |
| on a number line. |
| They can use |
| concrete |
| representations in |
| fixed groups such as |
| number shapes which |
| helps to show the link |
| between |
| multiplication and |
| division. | <br>

\hline
\end{tabular}

| Skill: Divide 2-digits by 1-digit (sharing with no exchange) |  | Year: $\mathbf{1 / 2}$ |
| :--- | :--- | :--- |
| Tens | Ones |  |
| When dividing larger |  |  |
| numbers, children can |  |  |
| use manipulatives |  |  |
| that allow them to |  |  |
| partition into tens and |  |  |
| ones. |  |  |
| Straws, Base 10 and |  |  |
| place value counters |  |  |
| can all be used to |  |  |
| share numbers into |  |  |
| equal groups. |  |  |


| Skill: Divide 2-digits by 1-digit (sharing with exchange) |  |  |  | Year: 3/4 |
| :---: | :---: | :---: | :---: | :---: |
|  |  | 52 |  | When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones. Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows. <br> Flexible partitioning in a part-whole model supports this method. |
| Tens |  |  |  |  |
| mmmm | - 0 - |  |  |  |
| memmm |  | ? | ? |  |
| mmmm | - 0 |  |  |  |
| ㅍmemm | 0 EB | $1$ |  |  |
| 52 | $52 \div 4=13$ |  |  |  |
| $40$ |  |  |  |  |
|  |  | (1)(1) |  |  |
| $\div 4$ |  | (1)(1) |  |  |
| 10 |  | (1)(1) |  |  |
| $10+3=13$ |  | (1)(1) |  |  |










## Multiplication and division

## Glossary of terms

Array - An ordered collection of counters, cubes or other item in rows and columns.

Commutative - Numbers can be multiplied in any order.

Dividend - In division, the number that is divided.

Divisor - In division, the number by which another is divided.

Exchange - Change a number or expression for another of an equal value.

Factor - A number that multiplies with another to make a product.

Multiplicand - In multiplication, a number to be multiplied by another.

Partitioning - Splitting a number into its component parts.

Product - The result of multiplying one number by another.

Quotient - The result of a division

Remainder - The amount left over after a division when the divisor is not a factor of the dividend.

Scaling - Enlarging or reducing a number by a given amount, called the scale factor

