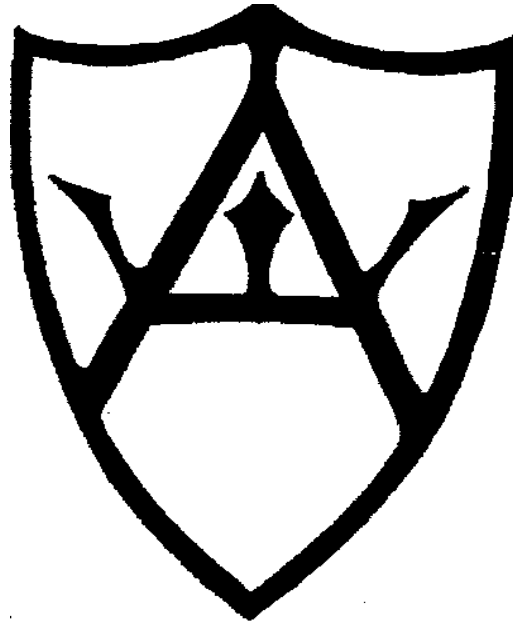



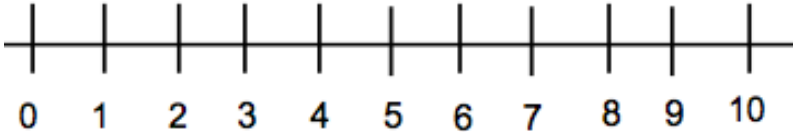


Alfriston School



Whole School Written Calculation Policy January 2015

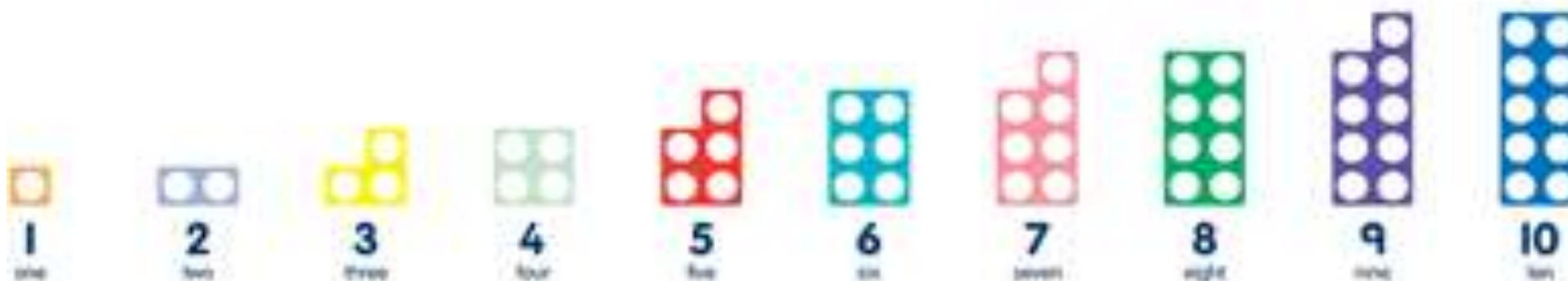
Pencil and paper procedures Key Stages 1 and 2


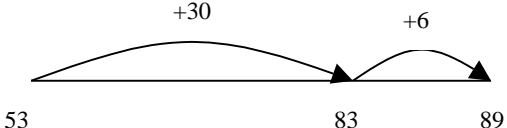
PROGRESSION OF NUMBERLINES

| | | |
|--|---|---|
| Number track | Has the numbers inside the sections, rather than on the divisions |  |
| Calibrated, numbered numberline | Equal divisions marked on the numberline and each division is numbered |  |
| Calibrated, unnumbered numberline | Equal divisions are marked, but left unnumbered for children to add relevant numbers to |  |
| Blank numberline | No divisions or numbers marked for the children |  |

Using Numicon to support the teaching and learning of mathematics.
Use Numicon to support the models and images for the 4 operations of number.





| Addition | | |
|---|--|---|
| Stage 1 | Stage 2 | Stage 3 |
| <p><u>+ = signs and missing numbers</u></p> <p> $3 + 4 = \square$ $\square = 3 + 4$ $3 + \square = 7$ $7 = \square + 4$ $\square + 4 = 7$ $7 = 3 + \square$ $\square + \nabla = 7$ $7 = \square + \nabla$ </p> <p>3 + 4 is the same as 7 as modelled using Numicon</p>  | <p><u>+ = signs and missing numbers</u></p> <p>Extend to $14 + 5 = 10 + \square$ and adding three numbers $32 + \square + \square = 100$ $35 = 1 + \square + 5$ </p> <p><u>Partition into tens and ones and recombine</u></p> <p> $12 + 23 = 10 + 2 + 20 + 3$ $= 30 + 5$ $= 35$ </p> <p>refine to partitioning the second number only:</p> <p> $23 + 12 = 23 + 10 + 1 + 1$ $= 33 + 1 + 1$ </p> | <p><u>+ = signs and missing numbers</u></p> <p><u>Partition into tens and ones and recombine</u> Partition both numbers and recombine. Refine to partitioning the second number only e.g. $36 + 53 = 53 + 30 + 6$ $= 83 + 6$ $= 89$ </p>  <p><u>Add a near multiple of 10 to a two-digit number</u></p> |

To use Numicon to further understand the equivalence in a number sentence.

(Use a picture to show what I mean)

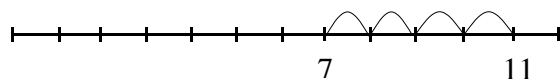
Promoting covering up of operations and numbers.

Number lines (blank)

Using blank number lines

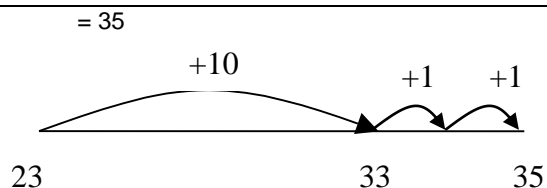
(Teacher model number lines with missing numbers)

$$7 + 4 = 11$$



Children go up in 1s

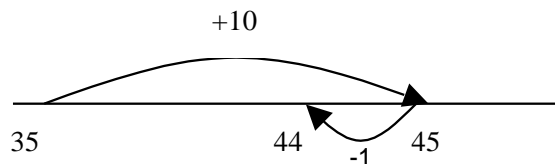
Secure Stage 1 – able to use a hundred square



Mental Method

Add 9 or 11 by adding 10 and adjusting by 1

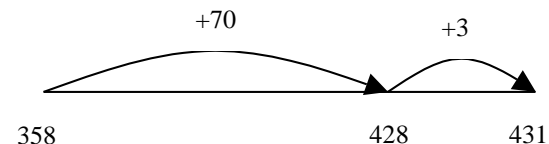
$$35 + 9 = 44$$



Partition into hundreds, tens and ones and recombine

Either partition both numbers and recombine or partition the second number only e.g.

$$\begin{aligned} 358 + 73 &= 358 + 70 + 3 \\ &= 428 + 3 \\ &= 431 \end{aligned}$$



| Addition | | |
|----------|---------|---------|
| Stage 4 | Stage 5 | Stage 6 |

Pencil and paper procedures

$$83 + 42 = 125$$

Partition both numbers

$$\begin{array}{r} 36 = 30 + 6 \\ 43 = 40 + 3 \\ \hline 79 = 70 + 9 \end{array}$$

Recombine to get the answer.

30 + 40 = 70
6 + 3 = 9

Leading to

Adding 3 digit numbers using the expanded method.

$$\begin{array}{r} 149 = 100 + 40 + 9 \\ 35 = 30 + 5 \\ \hline 184 = 100 + 70 + 14 \end{array}$$

Make sure you line up the H, T & U.

100 + 0

Pencil and paper procedures

Leading to formal method, showing numbers carried underneath

Column Addition

Column Addition will be taught alongside the Expanded Method to encourage children to see how they relate.

$$\begin{array}{r} 123 = 100 + 20 + 3 \\ + 45 = 40 + 5 \\ \hline 168 = 100 + 60 + 8 \end{array}$$

Is the same as: $\begin{array}{r} \text{HTU} \\ 123 \\ + 45 \\ \hline 168 \end{array}$

Column Addition with carrying

$$\begin{array}{r} \text{HTU} \\ 467 \\ + 215 \\ \hline 682 \end{array}$$

Remember to line up the HTU.

Because $7 + 5 = 12$ we have to carry the 10.

Extend to numbers with at least four digits

$$3587 + 675 = 4262$$

$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \\ 111 \end{array}$$

Extend to decimals (same number of decimal places) and adding several numbers (with different numbers of digits).
Model negative numbers using a number line.

Column Addition.

Children should be comfortable with using column addition to add 4 digit numbers and several numbers with different numbers of digits at the same time.

$$\begin{array}{r} \text{Th H T U} \\ 5678 \\ 468 \\ + 72 \\ \hline 6218 \\ 121 \end{array}$$

Ensure that the digits are lined up correctly.

Carry below the line.

Adding decimals using column addition.

$$\begin{array}{r} \text{T U . } \frac{1}{10} \\ 35.2 \\ + 16.0 \\ \hline 51.2 \end{array}$$

Carry below the line.

Add '0' as a place holder.

Subtraction

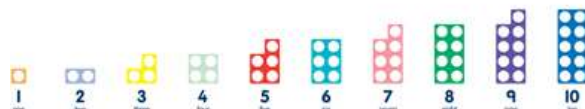
Stage 1

Stage 2

Stage 3

Pictures / marks

Sam spent 4p. What was his change from 10p?



= signs and missing numbers

$$\begin{aligned} 7 - 3 &= \square & \square &= 7 - 3 \\ 7 - \square &= 4 & 4 &= \square - 3 \\ \square - 3 &= 4 & 4 &= 7 - \square \\ \square - \nabla &= 4 & 4 &= \square - \nabla \end{aligned}$$

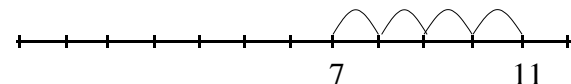
Visual / practical activities

Number lines

The difference between 7 and 11

(Counting on)

To reinforce concept. Practical strategies essential to see 'difference'.



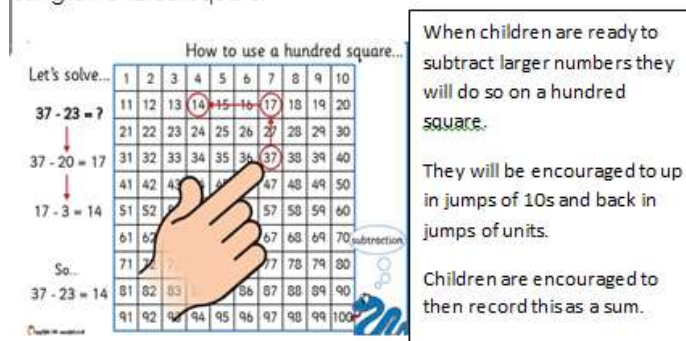
Recording by - drawing jumps on prepared lines
- constructing own lines, if appropriate

(Teachers model jottings appropriate for larger numbers)

= signs and missing numbers

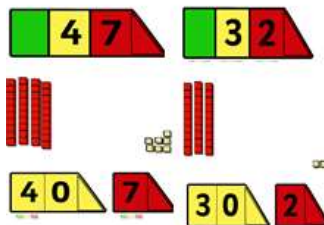
Continue using a range of equations as in Stage 1 but with appropriate numbers.

Using a Hundred Square:



Leading to:

$$47 - 32 =$$



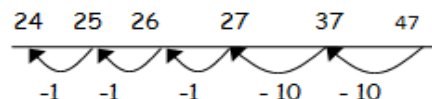
$$\begin{aligned} 40 - 30 &= 10 \\ 7 - 2 &= 5 \\ 10 + 5 &= 15 \end{aligned}$$

Children will begin to use blank number lines to support calculations.

Counting back

First counting back in tens and then in ones.

$$47 - 23 = 24$$

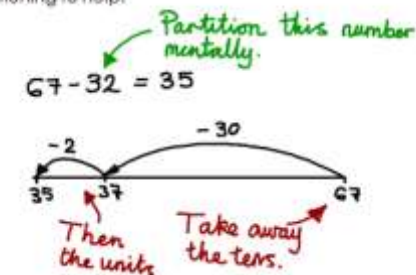


Find a small difference by counting up

Continue as in Stage 2 but with appropriate numbers
e.g. $102 - 97 = 5$

Counting back using a number line.

We will be using a number line to count back from the biggest number using partitioning to help.



Note: Counting back is not always the most efficient method when the numbers are closer together.

Subtraction

Stage 4

Stage 5

Stage 6

The Expanded Method of Subtraction.

Partitioning both numbers leads to the opportunity to use more formal methods of subtraction.

Partition both numbers. $67 - 32 = 35$

$67 = 60 + 7$ line up the tens and units.

$-32 = 30 + 2$

Recombine to get the answer. $35 = 30 + 5$

$60 - 30 = 30$

$7 - 2 = 5$

The Expanded Method of Subtraction with carrying.

$62 = 50 + 12$

$62 = 50 + 12$

$-35 = 30 + 5$

Write these numbers above. $27 = 20 + 7$

We exchange 1 ten for 10 units.

Pencil and paper procedures

$$\begin{array}{r} 8 2 \\ - 38 \\ \hline 54 \end{array}$$

Find a difference by counting on

e.g. $8006 - 2993 = 5013$

This can be modelled on an empty number line

Develop the stages of decomposition introducing 'zero'

$$\begin{array}{r} 2 4 1 \\ 352 \\ - 178 \\ \hline 174 \end{array}$$

$$\begin{array}{r} 4 9 9 1 \\ 5000 \\ - 457 \\ \hline 4543 \end{array}$$

Column Subtraction.

Children will move on to using Column Subtraction on its own and with larger numbers.

Exchange with the next digit.

Start subtracting from the units

$150 - 60 = 90$

Subtracting decimals using Column Subtraction.

Exchange with the next digit.

Line up H, T, U

Add '0' as a place holder.

$2 - 1 = 1$

Develop the use of decomposition

extend to up to 2 decimal places

$48.42 - 37.61 =$

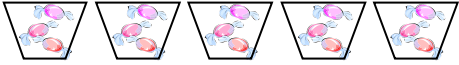
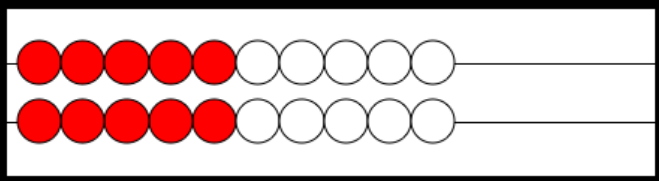
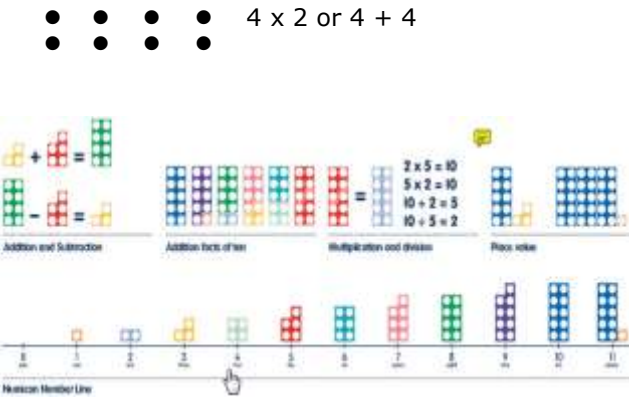
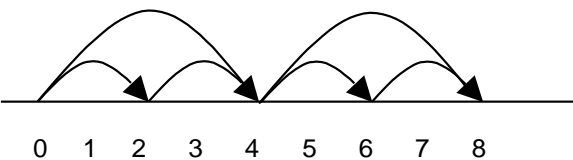
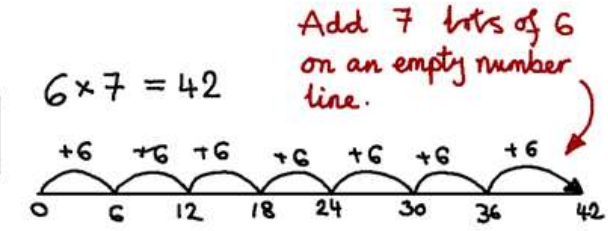
$$\begin{array}{r} 48.42 \\ - 37.61 \\ \hline 10.81 \end{array}$$

extend to up to 3 decimal places if appropriate

$302.63 - 178.124 =$

$$\begin{array}{r} 2 9 1 \\ 302.630 \\ - 178.124 \\ \hline 124.506 \end{array}$$

Multiplication

| Stage 1 | Stage 2 | Stage 3 | | | | | | |
|--|---|---|---|----|---|---|----|----|
| <p><u>Pictures and symbols</u> There are 3 sweets in one bag. How many sweets are there in 5 bags?</p>  <p>(Recording on a number line modelled by the teacher when solving problems)</p> <p>Use of bead strings to model groups of.</p>  <p>Use cubes and pegs. Begin to learn 2, 5 and 10 times tables.</p> | <p><u>x = signs and missing numbers</u> $7 \times 2 = \square$ $\square = 2 \times 7$ $7 \times \square = 14$ $14 = \square \times 7$ $\square \times 2 = 14$ $14 = 2 \times \square$ $\square \times \nabla = 14$ $14 = \square \times \nabla$</p> <p><u>Arrays and repeated addition</u></p>  <p>4×2 or $4 + 4$</p> <p>2×4 or repeated addition $2 + 2 + 2 + 2$</p>  <p><u>Doubling multiples of 5 up to 50</u></p> <p>$15 \times 2 = 30$</p> <p>Partition $(10 \times 2) + (5 \times 2)$ $20 + 10 = 30$</p> | <p><u>x = signs and missing numbers</u> Continue using a range of equations as in Stage 2 but with appropriate numbers.</p> <p>Repeated addition using a number line.</p> <p>Understanding multiplication as repeated addition is key to understanding formal methods of multiplication.</p>  <p>$6 \times 7 = 42$</p> <p>35 x 2 = 70</p> <p>Partition using Grid Method</p> <table border="1" data-bbox="1534 837 1758 917"> <tr> <td>x</td><td>30</td><td>5</td></tr> <tr> <td>2</td><td>60</td><td>10</td></tr> </table> | x | 30 | 5 | 2 | 60 | 10 |
| x | 30 | 5 | | | | | | |
| 2 | 60 | 10 | | | | | | |

| Multiplication | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------|---------|-----|---------|---|----|---|---|-----|----|--|---|---|---|---|-----|----|---|---|-----|----|---|---|--|---|----|---|----|------|----|---|-----|----|--|----|---|---|---|---|------|-----|----|---|---|------|-----|-----|----|--|--|---|----|---|----|------|-----|---|-----|----|---|---|-----|---|----|-----|-----|-----|------|
| Stage 4 | | Stage 5 | | Stage 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p><u>Pencil and paper procedures</u></p> <p>Grid method</p> <p>TU x U</p> <p>23 x 7 is approximately 20 x 10 = 200</p> <p>23 x 7 = 161</p> <table><tr><td></td><td>T</td><td>U</td></tr><tr><td>x</td><td>20</td><td>3</td></tr><tr><td>7</td><td>140</td><td>21</td></tr></table> <p>HTU x U</p> <p>123 x 3 = 369</p> <table><tr><td></td><td>H</td><td>T</td><td>U</td></tr><tr><td>x</td><td>100</td><td>20</td><td>3</td></tr><tr><td>3</td><td>300</td><td>60</td><td>9</td></tr></table> | | | T | U | x | 20 | 3 | 7 | 140 | 21 | | H | T | U | x | 100 | 20 | 3 | 3 | 300 | 60 | 9 | <p><u>x = signs and missing numbers</u></p> <p><u>Pencil and paper procedures</u></p> <p>Grid method</p> <p>72 x 38 is approximately 70 x 40 = 2800</p> <table><tr><td>x</td><td>70</td><td>2</td></tr><tr><td>30</td><td>2100</td><td>60</td></tr><tr><td>8</td><td>560</td><td>16</td></tr></table> <p>= 2160</p> <p>= 576 +</p> <p>2736</p> <p>1</p> <p>Estimate and check</p> <p>Moving on to formal method when appropriate.</p> <p>'Carried' numbers to sit on top line of answer box</p> <p>1125 x 7 = 7875</p> <table><tr><td></td><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td>x</td><td>1000</td><td>100</td><td>20</td><td>5</td></tr><tr><td>7</td><td>7000</td><td>700</td><td>140</td><td>35</td></tr></table> | | x | 70 | 2 | 30 | 2100 | 60 | 8 | 560 | 16 | | Th | H | T | U | x | 1000 | 100 | 20 | 5 | 7 | 7000 | 700 | 140 | 35 | <p><u>x = signs and missing numbers</u></p> <p>Pencil and paper procedures</p> <p>Grid method</p> <p>Estimate and check</p> <p>Multiplying larger numbers using the Grid Method.</p> <p>Children will go on to multiply 2-digit by 2-digit numbers using the Grid Method. Children need to be secure in their place value and knowledge of multiplication of multiples of 10 and 100.</p> <p>56 x 43 = 2408</p> <p>Partition both numbers.</p> <p>Recombine the rows</p> <p>Multiply the top numbers by the side.</p> <p>Add to get the total.</p> <table><tr><td>x</td><td>50</td><td>6</td></tr><tr><td>40</td><td>2000</td><td>240</td></tr><tr><td>3</td><td>150</td><td>18</td></tr></table> <p>= 2240</p> <p>= 168</p> <p>2408</p> <p>Grid method for decimals</p> <p>Multiplying decimal numbers using the grid method.</p> <table><tr><td>x</td><td>5</td><td>0.2</td></tr><tr><td>6</td><td>30</td><td>1.2</td></tr><tr><td>0.3</td><td>1.5</td><td>0.06</td></tr></table> <p>= 31.20</p> <p>= 1.56</p> <p>32.76</p> <p>0.3 x 0.2 = 0.06</p> <p>Take care to line up the digits. Adding a place holder will help.</p> | | x | 50 | 6 | 40 | 2000 | 240 | 3 | 150 | 18 | x | 5 | 0.2 | 6 | 30 | 1.2 | 0.3 | 1.5 | 0.06 |
| | T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 20 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 140 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | H | T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 100 | 20 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 300 | 60 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 70 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 2100 | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 560 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Th | H | T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 1000 | 100 | 20 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 7000 | 700 | 140 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 50 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 2000 | 240 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 150 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | 5 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 30 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.3 | 1.5 | 0.06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Expanded vertical column multiplication:

$$\begin{array}{r} \text{t u} \quad \text{u} \\ 26 \times 7 \end{array}$$

$$\begin{array}{r} \text{t u} \\ 26 \\ \times \quad 7 \\ \hline 42 \quad (6 \times 7) \\ + 140 \quad (20 \times 7) \\ \hline 182 \end{array} \quad \left. \vphantom{\begin{array}{r} 42 \\ + 140 \end{array}} \right\}$$

Expanded with partial products

To support understanding and progression the grid method, expanded and compact methods should be shown side-by-side to emphasise the links between the different formats.

$$\begin{array}{cc} \text{t u} & \text{t u} \\ 48 & \times 35 \end{array}$$

$$\begin{array}{r} \text{t u} \\ 48 \\ \times 35 \\ \hline 40 \quad (8 \times 5) \\ 200 \quad (40 \times 5) \\ 240 \quad (8 \times 30) \\ + 1200 \quad (40 \times 30) \\ \hline 1680 \end{array}$$

To support understanding and progression the grid method, expanded and compact methods should be shown side-by-side to emphasise the links between the different formats.

| |
|--|
| |
|--|

Compact vertical column multiplication:

$$\begin{array}{r} \text{t u} \quad \text{u} \\ 26 \times 7 \end{array}$$

$$\begin{array}{r} \text{t u} \\ 26 \\ \times \quad 7 \\ \hline 182 \\ \hline 4 \end{array}$$

Key elements:

- Working RIGHT to LEFT
- The language of place value

Accurate use of the language of place value when carrying will support pupil progression and understanding.


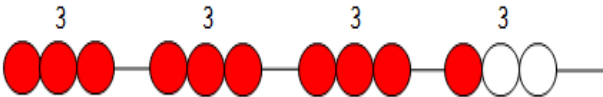

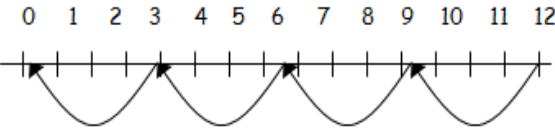
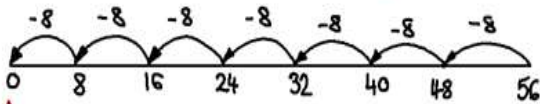
“6 multiplied by 7 equals 42. Four tens and two units/ones”

Avoid ‘carrying’ stories such as ‘put the milk bottles on the next door step’ – it is much more effective to use the language of place value.

$$\begin{array}{r} \text{t u} \\ 47 \\ \times \quad 36 \\ \hline 282 \quad (47 \times 6) \\ \quad 4 \\ + 1410 \quad (47 \times 30) \\ \quad 2 \\ \hline 1692 \end{array}$$

$$\begin{array}{r} \text{t u} \quad \text{t u} \\ 47 \times 36 \end{array}$$

Optional additional notes

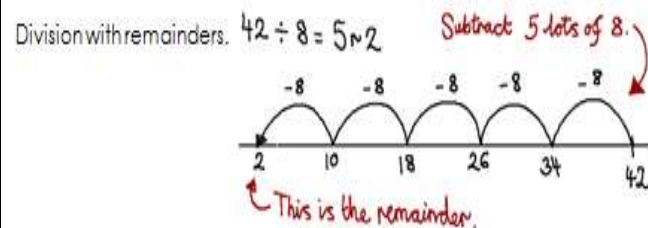
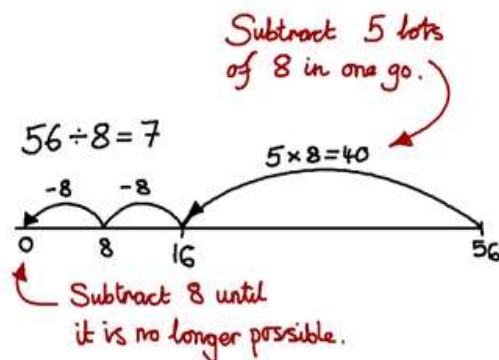
| Division | | |
|--|---|--|
| Stage 1 | Stage 2 | Stage 3 |
| <p><u>Pictures / marks</u> 12 children get into teams of 4 to play a game. How many teams are there?</p>  <p>The bead bar will help children with interpreting division calculations such as $10 \div 5$ as 'how many 5s make 10?'</p>  <p>Use practical resources – cubes, counters, children etc</p> | <p><u>\div = signs and missing numbers</u></p> $6 \div 2 = \square \qquad \square = 6 \div 2$ $6 \div \square = 3 \qquad 3 = 6 \div \square$ $\square \div 2 = 3 \qquad 3 = \square \div 2$ $\square \div \nabla = 3 \qquad 3 = \square \div \nabla$ <p><u>Understand division as sharing and grouping</u></p> <p>Grouping or repeated subtraction</p> <p>There are 6 sweets, how many people can have 2 sweets each?</p>  <p>Repeated subtraction using a number line and bead bar</p> $12 \div 3 = 4$  | <p><u>\div = signs and missing numbers</u> Continue using a range of equations as in Stage 2 but with appropriate numbers.</p> <p><u>Understand division as sharing and grouping</u></p> <p>Understanding division as repeated subtraction is key to understanding formal methods of division.</p> <p>$56 \div 8 = 7$ <i>Repeatedly subtract 8.</i></p>  <p><i>Subtract until it is no longer possible.</i></p> <p><i>7 lots of 8 have been taken away.</i></p> |

Division

Stage 4

÷ = signs and missing numbers

By using known times table facts shortcuts can be taken to reduce the number of steps needed to divide.



Stage 5

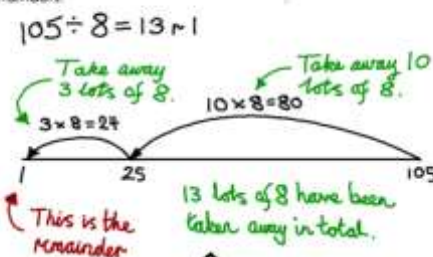
÷ = signs and missing numbers

Remainders

Quotients expressed as fractions or decimal fractions
 $61 \div 4 = 15 \frac{1}{4}$ or 15.25

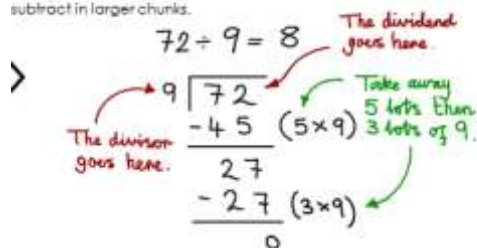
Repeated subtraction using times table facts.

Using known times table facts allows children to subtract larger 'chunks' from the original number. Children will be performing division where there are remainders.



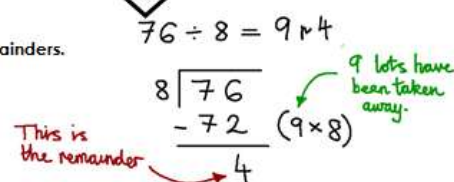
Chunking using times table facts.

Once children are comfortable with division as repeated subtraction they can start to use more of a more formal layout. When children are comfortable with the layout they can begin to use their ten times table to subtract in larger chunks.



Next Steps:

Chunking with remainders.



Stage 6

÷ = signs and missing numbers

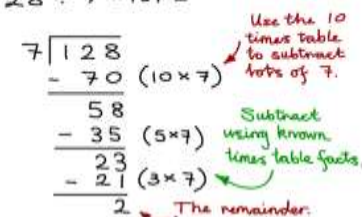
Remainders

Quotients expressed as fractions or decimal fractions
 $676 \div 8 = 84.5$

Chunking using times table facts.

Children will continue to explore division as repeated subtraction. They will use their increasing knowledge of times tables to subtract in larger chunks.

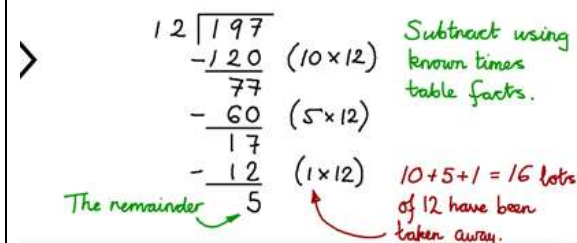
$128 \div 7 = 18 \text{ r } 2$



Chunking using times table facts and multiples of 10.

Using their knowledge of the 10 times table will allow children to divide larger numbers by two-digit numbers while reducing the number of steps.

$197 \div 12 = 16 \text{ r } 5$



Expressing the remainder as a fraction.

$50 \div 4 = 12 \text{ r } 2$

The remainder.

$= 12 \frac{2}{4}$

The divisor.

This can then be converted into a decimal.

Short division

98 ÷ 7 becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \end{array}$$

Answer: 14

432 ÷ 5 becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$$

Answer: 86 remainder 2

496 ÷ 11 becomes

$$\begin{array}{r} 45 \text{ r } 1 \\ 11 \overline{) 496} \end{array}$$

Answer: $45\frac{1}{11}$

Long division

432 ÷ 15 becomes

$$\begin{array}{r}
 \overline{) 432} \\
 \underline{300} \\
 132 \\
 \underline{120} \\
 12
 \end{array}$$

Answer: 28 remainder 12

432 ÷ 15 becomes

$$\begin{array}{r}
 \overline{) 432} \\
 \underline{300} \quad 15 \times 20 \\
 132 \\
 \underline{120} \quad 15 \times 8 \\
 12
 \end{array}$$

$$\frac{\cancel{12}}{\cancel{15}} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

432 ÷ 15 becomes

$$\begin{array}{r}
 \overline{) 432} \cdot 8 \\
 \underline{300} \\
 132 \\
 \underline{120} \\
 120 \\
 \underline{120} \\
 0
 \end{array}$$

Answer: 28.8