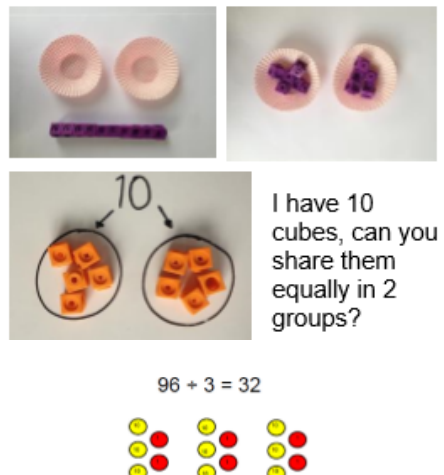
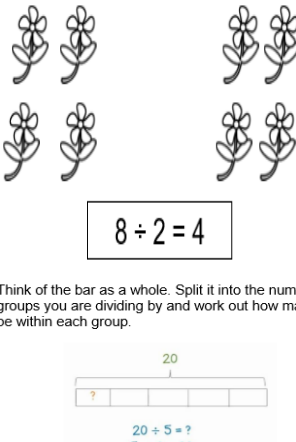
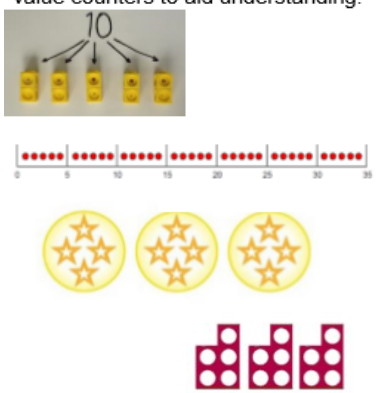
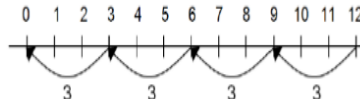


Progression in Division leading to a written form

Year Group Expectations

[Mental strategies additional to Progression.]

Objective and strategy	Concrete	Pictorial	Abstract
Sharing objects	 <p>I have 10 cubes, can you share them equally in 2 groups?</p> $9 \div 3 = 3$	<p>Children use pictures or shapes to share quantities.</p>  $8 \div 2 = 4$ <p>Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.</p> $20 \div 5 = ?$ $5 \times ? = 20$	<p>Share 9 buns between three people.</p> $9 \div 3 = 3$ <p>28 ÷ 7 = 4</p> <p>Divide 28 into 7 groups. How many are in each group?</p>
Division as grouping	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p> 	<p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p> 	$10 \div 2 = 5 \text{ groups}$ $35 \div 5 = 7 \text{ groups}$

Year 1

Fluency—counting in 2s,5s and 10s forwards and backwards.

Mental— counting along fingers to find out how many groups there are. E.g. Which finger does 10 land on?

Problems—1 step problems involving concrete objects

Year 2

Fluency—to know the 2,5,10s timetables and related division facts.


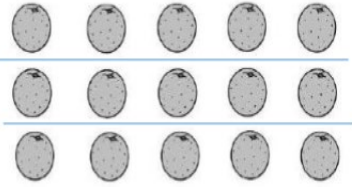
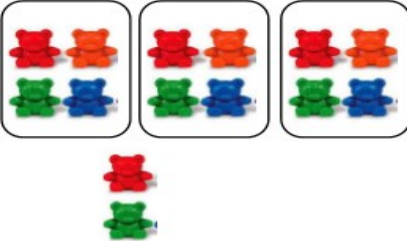
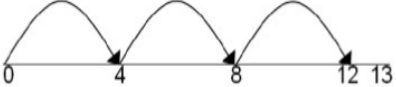

Written—Calculation of mathematical statements for division using the appropriate signs.

Missing number equations

Types of problems

Solving problems involving multiplication and division using materials, arrays repeated addition, mental methods and multiplication facts including problems in contexts

Pre-scaling problems Eg draw a line half the length of given line.

Objective and strategy	Concrete	Pictorial	Abstract
<p>Making arrays To link division with multiplication</p>	 <p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$</p>	 <p>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p>	<p>Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p>$7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$</p>
<p>Division with remainders</p>	<p>Divide objects between groups and see how much is left over</p> 	<p>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.</p>  <p>Draw dots and group them to divide an amount and clearly show a remainder.</p> 	<p>Complete written divisions and show the remainder using r.</p> <p>$29 \div 8 = 3 \text{ REMAINDER } 5$</p> <p>↑ ↑ ↑ ↑ dividend divisor quotient remainder</p> <p>Reminders can be worked out by sharing or grouping</p>

Year 3

Fluency– derive and know the corresponding division facts for the 3,4,and 8 timetables.

Mental - Derive related facts from known multiplication facts
 $30 \times 4 = 120$ 120 divided by $3 = 4$

Missing number equations.

Written-2 digit numbers divided by one digit numbers.

Problems- Problems involving remainders and the need to round up or down according to the context.

Year 4

Fluency—recall and derive the division facts for all numbers up to the 12 x table. Know how to divide by 1.

Mental -Use known facts and apply to 3 digit numbers
 $600 \div 3 = 200$ because $2 \times 3 = 6$

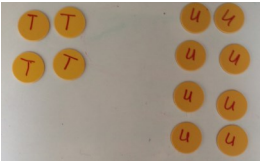
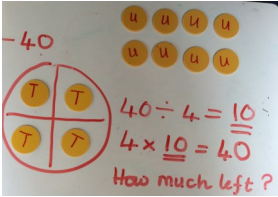
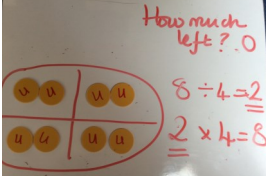
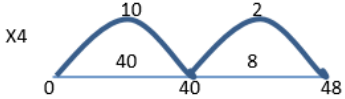
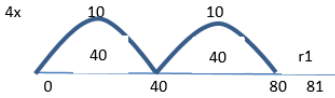
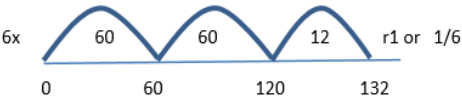
Missing number equations.

Written –dividing 2 or 3 digit numbers by 1 digit numbers.

Problems -Solve 2 step problems in context, choosing the appropriate operation. Scaling up and down problems.

Problems involving remainders where the children decide whether to round up or down depending on a context.

Problems such as 3 cakes shared equally between 10 children

Objective and strategy	Concrete	Pictorial	Abstract
<p>Chunking</p>	  <p>$40 \div 4 = 10$ $4 \times 10 = 40$ How much left?</p>  <p>How much left? .0 $8 \div 4 = 2$ $2 \times 4 = 8$</p>	<p>$48 \div 4$</p>  <p>X4</p> <p><u>with Remainders</u> $81 \div 4 = 10 \text{ r}1$</p>  <p>4x</p> <p>$61 \div 4 = 15 \frac{1}{4}$ or 15.25 <u>chunking on a number line</u></p> <p>$133 \div 6 = 22 \frac{1}{6}$</p>  <p>6x</p>	<p>When ready make link between chunking on a number line and strategy below.</p> <p>$69 \div 4 = 17 \text{ r}1$ or show as a fraction $\frac{1}{4}$</p> $\begin{array}{r} 4 \overline{) 69} \\ \underline{40} \text{ [10]} \\ 29 \\ \underline{28} \text{ [7]} \\ 1 \end{array}$ $\begin{array}{r} 6 \overline{) 242} \\ \underline{1200} \text{ [200]} \\ 254 \\ \underline{240} \text{ [40]} \\ 14 \\ \underline{12} \text{ [2]} \\ 2 \end{array}$

Year 5

Fluency-derive division facts for all number

multiplication facts Identify multiples and factors, including finding all factors pairs of a number and common factors or two numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19.

Missing number equations.

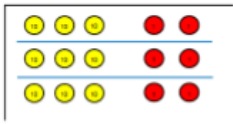
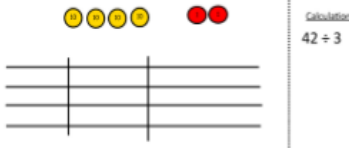
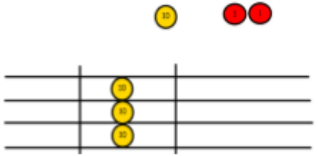
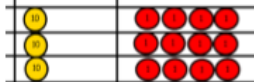
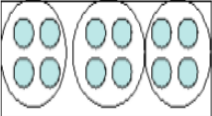
Mental-Divide whole numbers and those involving decimals by 10,100,1000

Written-divide up to 4 digits by a 1 digit number and interpret remainders.

Solving problems involving multiplication and division including scaling by simple fractions and problems involving simple rates

Solve problems involving all operations and combinations of these, including understanding the meaning of the equal sign.

Solve problems multiplication and division including their knowledge of factors.

Objective and strategy	Concrete	Pictorial	Abstract
Short method	<p style="text-align: center;"> Tens Units </p> <p style="text-align: center;"> 3 2 </p>  <p>Use place value counters to divide using the bus stop method alongside</p>  <p>$42 \div 3 =$ Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.</p>  <p>We exchange this ten for ten ones and then share the ones equally among the groups.</p>  <p>We look how much in 1 group so the answer is 14.</p>	<p>Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</p>  <p>Encourage them to move towards counting in multiples to divide more efficiently.</p>	<p>Begin with divisions that divide equally with no remainder.</p> $\begin{array}{r} 218 \\ 3 \overline{) 654} \end{array}$ <p>Move onto divisions with a remainder.</p> $\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$ <p>Finally move into decimal places to divide the total accurately.</p> $\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \\ \underline{35} \\ 16 \\ \underline{15} \\ 11 \\ \underline{10} \\ 10 \\ \underline{10} \\ 0 \end{array}$

Year 6

Fluency– derive division number facts from known time tables.

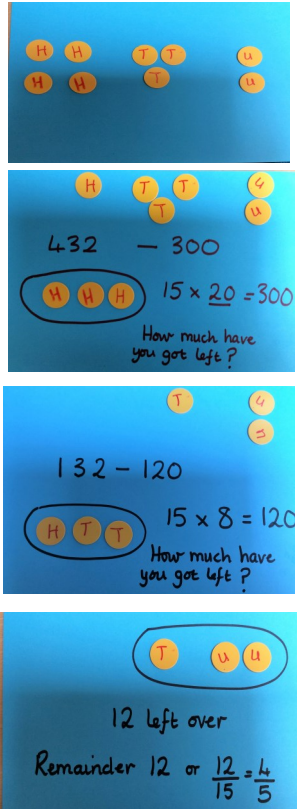
Use knowledge of common factors for equivalent fractions.

Missing number equations.

Mental -Divide whole numbers and those involving decimals by 10,100,1000. Perform mental calculation involving more than 1 operation.

Written—divide up to 4 digit numbers by 1 and 2 digit numbers. Interpreting remainder according to context or converting to fraction or decimal.

Problems- Solving problems involving multiplication and division including scaling by simple fractions and problems involving simple rates. Solve problems involving all operations and combinations of these, including understanding the meaning of the equal sign. Solve problems multiplication and division including their knowledge of factors and multiples squares and cubes.

Objective and strategy	Concrete	Pictorial	Abstract
Long division			<p>Show quotients as fraction, decimal or remainder depending on the context.</p> $\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \\ 132 \\ \underline{120} \\ 12 \end{array}$ <p>$28 \frac{4}{5}$ or 0.8</p> <p>The children need to know that 20 and 8 refers to $[15 \times 20]$ $[15 \times 8]$</p>