

Division Routeway

Written Methods

Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs

Write and calculate mathematical statements for \div using the \times tables they know progressing to formal written methods by the end of Year 4. Continue to use place value equipment to support understanding of division throughout Years 3 and 4.

Divide numbers up to 4 digits by a 1-digit number using short division and interpret remainders appropriately for the context

Long Division

$$\begin{array}{r} 45 \\ 11 \overline{) 495} \\ \underline{44} \\ 55 \\ \underline{55} \\ 0 \end{array} \quad \begin{array}{r} 24 \\ 21 \overline{) 504} \\ \underline{42} \\ 84 \\ \underline{84} \\ 0 \end{array}$$

Short Division

$$\begin{array}{r} 23 \\ 7 \overline{) 161} \\ \underline{14} \\ 21 \\ \underline{21} \\ 0 \end{array} \quad \begin{array}{r} 34 \\ 8 \overline{) 272} \\ \underline{16} \\ 112 \\ \underline{96} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

$$\begin{array}{r} 241 \\ 6 \overline{) 1446} \\ \underline{12} \\ 24 \\ \underline{24} \\ 06 \\ \underline{06} \\ 0 \end{array} \quad \begin{array}{r} 1345 \\ 7 \overline{) 9435} \\ \underline{7} \\ 24 \\ \underline{21} \\ 33 \\ \underline{28} \\ 53 \\ \underline{49} \\ 45 \\ \underline{42} \\ 35 \\ \underline{35} \\ 0 \end{array}$$

There are 421 children here today.
How many teams of 9 can we make?

$$\begin{array}{r} 46 \text{ r } 7 \\ 9 \overline{) 421} \end{array} = 46 \text{ teams}$$

206 tickets were sold for a concert;
there are 7 seats per row, how many rows are needed?

$$\begin{array}{r} 29 \text{ r } 3 \\ 7 \overline{) 206} \end{array} = 30 \text{ rows}$$

$$\begin{array}{r} 132 \\ 26 \overline{) 3432} \\ \underline{52} \\ 83 \\ \underline{52} \\ 310 \\ \underline{310} \\ 0 \end{array} \quad \begin{array}{r} 832 \\ - 2600 \\ \hline 572 \\ - 520 \\ \hline 52 \end{array} \quad \begin{array}{r} 32 \\ - 780 \\ \hline 52 \end{array} \quad \begin{array}{r} 24 \\ - 52 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 26.4 \\ 15 \overline{) 396.0} \\ \underline{30} \\ 96 \\ \underline{90} \\ 60 \\ \underline{60} \\ 0 \end{array} \quad \begin{array}{r} 96 \\ - 90 \\ \hline 60 \\ - 60 \\ \hline 0 \end{array} \quad \begin{array}{r} 6.0 \\ - 6.0 \\ \hline 0 \end{array}$$

Also include:

$$\begin{array}{r} 57.26 \\ 6 \overline{) 343.56} \end{array}$$

Solve multi-step problems in contexts, deciding which operations to use including division and interpret remainders.

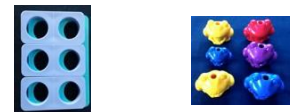
e.g. Coaches have 56 seats for passengers. How many coaches are needed to take 275 people on a trip?

Divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$)

Divide numbers given to 3 decimal places by 10, 100 and 1000

Developing conceptual understanding

$6 \div 2 = 3$ by sharing into 2 groups and by grabbing groups of 2



How many 2s?



Making groups using concrete objects from the whole amount

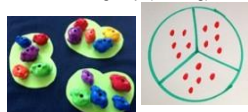


How many 2s?



Other representations and structures can include bar models and arrays
Resources can include; Numicon, counters, 100 squares and table squares

$15 \div 3 = 5$ in each group (sharing)



Link to fractions

$15 \div 3 = 5$ groups of 3 (grouping)

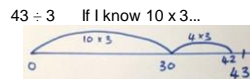


$10 \div 2 = 5$



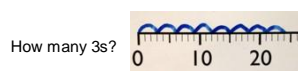
Use language of division linked to tables.

Grouping using partitioning



$$\begin{array}{r} 43 \\ 3 \overline{) 129} \\ \underline{12} \\ 09 \\ \underline{09} \\ 0 \end{array}$$

Use language of division linked to tables
eg. Counting in jumps on a number line.



Divide 3-digit by 1-digit numbers using partitioning and place value equipment



$196 \div 6$

If I know $3 \times 6 \dots$ then $30 \times 6 \dots$ and so I can fit 30 lots of 6 into 180. Then I can fit a further $2 \times 6 = 12$ into 16, with a remainder of 4.



With jottings ... or in your head ...

Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods

Use place value, known and derived facts to multiply and divide mentally, including: dividing by 1. Recognise and use factor pairs and commutativity in mental calculations. Solve division calculations involving known facts with remainders (e.g. $65 \div 7$)

Multiply and divide numbers mentally drawing upon known facts. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

Just know it!

Count in multiples of twos, fives and tens
Begin to recall and use \times and \div facts for the 10 \times tables

Recall and use \times and \div facts for the 2, 5 and 10 \times tables, including recognising odd and even numbers

Recall and use \times and \div facts for the 3, 4 and 8 times tables

Recall and use \times and \div facts for the 6, 7, 9, 11 and 12 times tables
By the year end, recall \times and \div facts for ALL \times tables up to 12×12

Recall prime numbers up to 19. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers