

DIVISION CALCULATION GUIDANCE

Year 1

Pupils should be taught to:

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

Year 2

Pupils should be taught to:

- recall and use ... division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for ... division within the multiplication tables and write them using the division (\div) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving ... division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Year 3

Pupils should be taught to:

- recall and use ... division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for ... division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving ... division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.

Year 4

Pupils should be taught to:

- recall ...division facts for multiplication tables up to 12×12
- use place value, known and derived facts to ... divide mentally, including: dividing by 1;
- recognise and use factor pairs and commutativity in mental calculations

Year 5

Pupils should be taught to:

- solve problems involving ...division where larger numbers are used by decomposing them into their factors

- ...divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- ... divide whole numbers and those involving decimals by 10, 100 and 1000
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

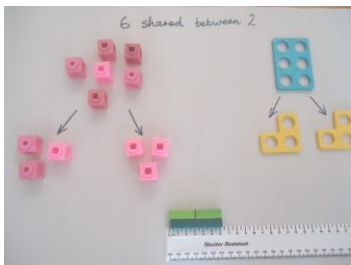
Year 6

Pupils should be taught to:

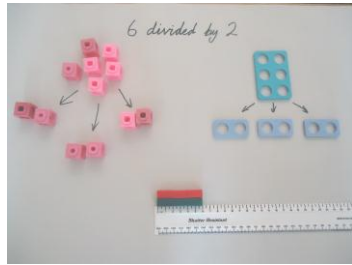
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- perform mental calculations, including with mixed operations and large numbers.
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

STAGE 1

Develop division as sharing



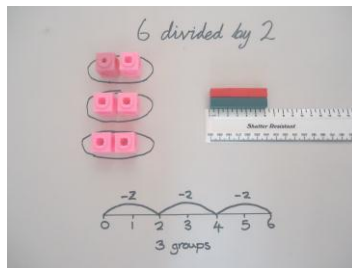
Develop division as repeated grouping (repeated subtraction of sets of the same size) using practical apparatus and diagrams.



STAGE 2

Develop an understanding of division using arrays and number lines showing repeated groups

Use number lines to show repeated grouping (repeated subtraction of sets of the same size)



STAGE 3

Develop the use of \div and $=$ symbols to record calculations horizontally

Use arrays and other practical apparatus to illustrate making of repeated groups

Begin to derive new facts from known facts

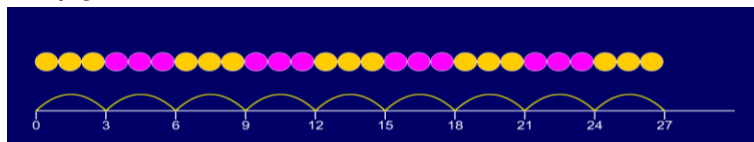
e.g. $6 \div 2 = 3$ (known fact)

$60 \div 2 = 30$

$600 \div 2 = 300$

Begin to carry out division of two-digit by one-digit numbers, first without remainders, then introducing remainders, illustrating this using informal methods first if required.

$$27 \div 3$$

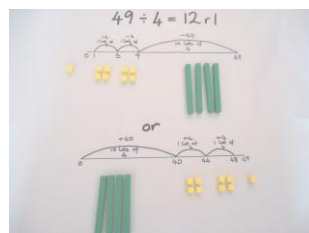
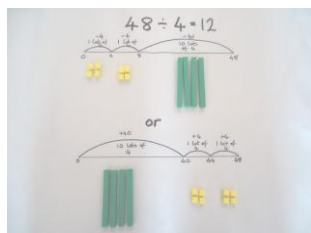


STAGE 4

Division using larger multiples of the divisor, first with no remainders, then with remainders

$$48 \div 4$$

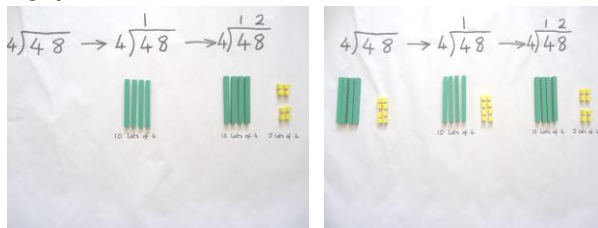
$$49 \div 4$$



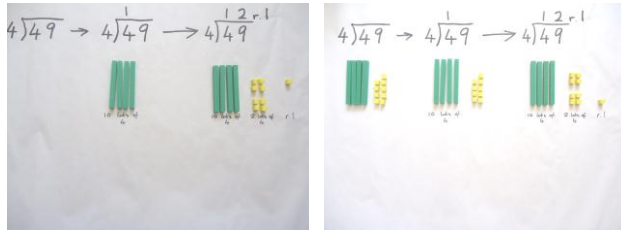
STAGE 5

Move to develop the standard method for short division, first with no remainders, then with remainders

$$48 \div 4$$



$49 \div 4$



STAGE 6

Extend written calculation methods to HTU \div U, then to ThHTU \div U, first with no remainders, then with remainders, illustrating this using informal methods first if required.

No carrying forward required

$448 \div 4$

(as above, but with additional hundreds column)

No carrying forward required, but with remainders

$449 \div 4$

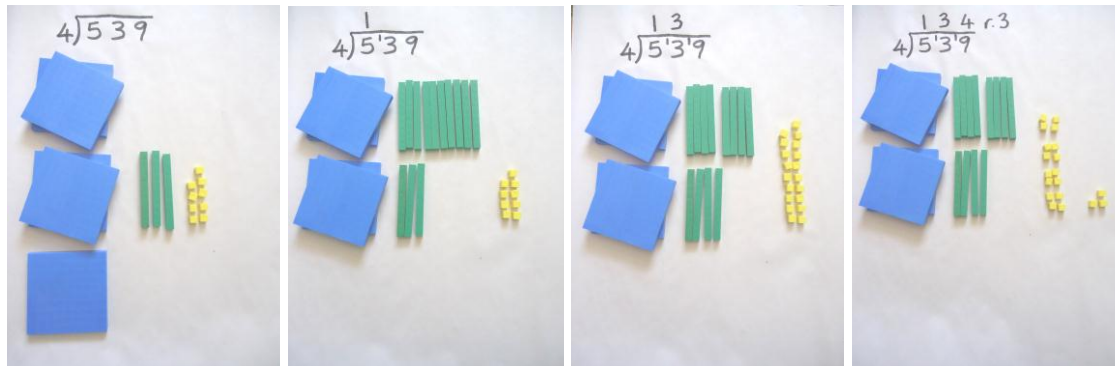
(as above, but with additional hundreds column)

Carrying forward required

$536 \div 4$

Carrying forward required, but with remainders

$539 \div 4$



STAGE 7

Extend written approaches to the formal method of long division when dividing by two-digit numbers, illustrating this using informal methods first if required.

$$\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{) 432} \\ \underline{300} \quad (15 \times 20) \\ 132 \\ \underline{120} \quad (15 \times 8) \\ 12 \end{array}$$

becomes

$$\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{) 432} \\ \underline{30} \downarrow \\ 132 \\ \underline{120} \\ 12 \end{array}$$