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 (÷) 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

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- …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.

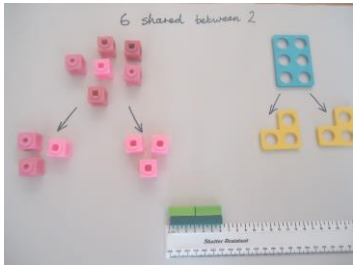
Year 6

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



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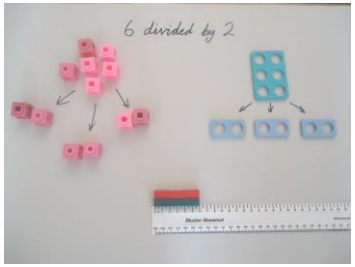
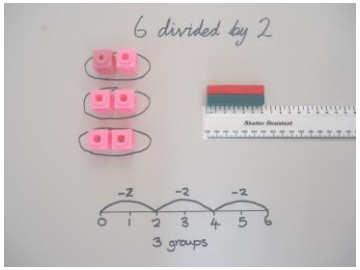
Develop division as repeated grouping (repeated subtraction of sets of the same size) using practical apparatus and diagrams.



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 ÷ 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 ÷ 2 = 3 (known fact)
60 ÷ 2 = 30
600 ÷ 2 = 300

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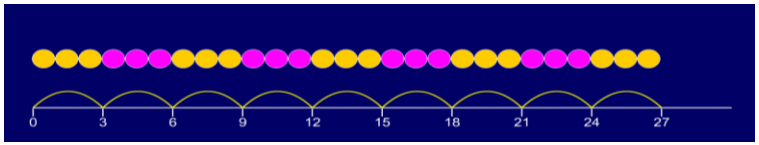
Begin to carry out division of two- digit by one -digit numbers, first without remainders, then introducing remainders, illustrating this using informal methods first if required.

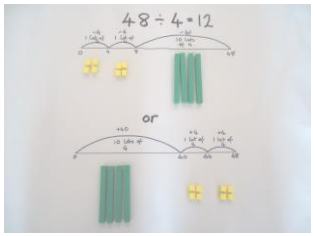
27 ÷ 3



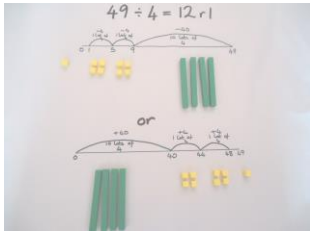
STAGE 4

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

48 ÷ 4



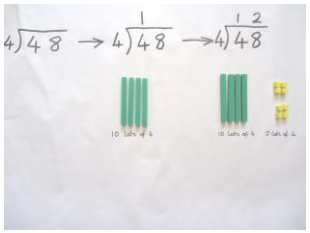
49 ÷ 4

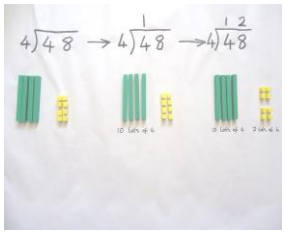


STAGE 5

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

48 ÷ 4





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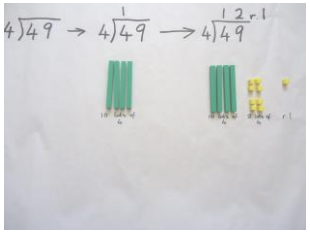
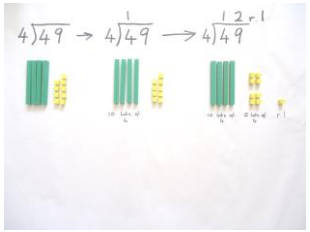
49 ÷ 4





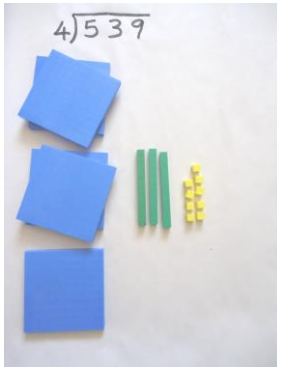
STAGE 6

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

No carrying forward required
448 ÷ 4
(as above, but with additional hundreds column)

No carrying forward required, but with remainders
449 ÷ 4
(as above, but with additional hundreds column)
Carrying forward required
536 ÷ 4

Carrying forward required, but with remainders
539 ÷ 4



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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.

```
        2  8  r 1 2
1 5 ) 4  3  2
      3  0  0    (15 x 20)
      1  3  2
      1  2  0    (15 x 8)
         1  2
```

becomes

```
        2  8 r 1 2
1 5)  4  3  2
      3  0  ↓
      1  3  2
      1  2  0
         1  2
```

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