

# Number: Multiplication and Division

| MULTIPLICATION & DIVISION FACTS                                                           |                                                                                                                                        |                                                                                                                                                                                                                                                                               |                                                                                                                                                                |                                                                                                                                          |                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 1                                                                                    | Year 2                                                                                                                                 | Year 3                                                                                                                                                                                                                                                                        | Year 4                                                                                                                                                         | Year 5                                                                                                                                   | Year 6                                                                                                                                                                             |
| <i>count in multiples of twos, fives and tens</i><br>(copied from Number and Place Value) | <i>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</i><br>(copied from Number and Place Value)  | <i>count from 0 in multiples of 4, 8, 50 and 100</i><br>(copied from Number and Place Value)                                                                                                                                                                                  | <i>count in multiples of 6, 7, 9, 25 and 1000</i><br>(copied from Number and Place Value)                                                                      | <i>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</i><br>(copied from Number and Place Value) |                                                                                                                                                                                    |
|                                                                                           | recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers | recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables                                                                                                                                                                                     | recall multiplication and division facts for multiplication tables up to $12 \times 12$                                                                        |                                                                                                                                          |                                                                                                                                                                                    |
| MENTAL CALCULATION                                                                        |                                                                                                                                        |                                                                                                                                                                                                                                                                               |                                                                                                                                                                |                                                                                                                                          |                                                                                                                                                                                    |
|                                                                                           |                                                                                                                                        | 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 and progressing to formal written methods (appears also in Written Methods) | use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers | multiply and divide numbers mentally drawing upon known facts                                                                            | perform mental calculations, including with mixed operations and large numbers                                                                                                     |
|                                                                                           | show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot            |                                                                                                                                                                                                                                                                               | recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)                                                | multiply and divide whole numbers and those involving decimals by 10, 100 and 1000                                                       | <i>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>\frac{3}{8}</math>)</i><br>(copied from Fractions) |

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| WRITTEN CALCULATION |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                              |                                                                                              |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 1              | Year 2                                                                                                                                                                                            | Year 3                                                                                                                                                                                                                                                                       | Year 4                                                                                       | Year 5                                                                                                                                                       | Year 6                                                                                                                                                                                                                                                                                                                                                                   |
|                     | 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 multiplication and 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 (appears also in Mental Methods) | multiply two-digit and three-digit numbers by a one-digit number using formal written layout | multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers             | multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication                                                                                                                                                                                                                                           |
|                     |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                              |                                                                                              | 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 numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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 |
|                     |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                              |                                                                                              |                                                                                                                                                              | <i>use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i>                                                                                                                                                                                                                                  |

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| PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS |        |        |                                                                                    |                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------|--------|--------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 1                                                                     | Year 2 | Year 3 | Year 4                                                                             | Year 5                                                                                                                                                                                                                                                                                                 | Year 6                                                                                                                                                                                                                                                                                                          |
|                                                                            |        |        | recognise and use factor pairs and commutativity in mental calculations (repeated) | identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.<br>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers<br>establish whether a number up to 100 is prime and recall prime numbers up to 19 | identify common factors, common multiples and prime numbers<br><br><i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i><br>(copied from Fractions)                                                                                               |
|                                                                            |        |        |                                                                                    | recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ )                                                                                                                                                                                            | <i>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>), and extending to other units such as <math>\text{mm}^3</math> and <math>\text{km}^3</math></i><br>(copied from Measures) |

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| ORDER OF OPERATIONS                                 |        |                                                                                                                                   |                                                                                                                        |        |                                                                                                                |
|-----------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------|
| Year 1                                              | Year 2 | Year 3                                                                                                                            | Year 4                                                                                                                 | Year 5 | Year 6                                                                                                         |
|                                                     |        |                                                                                                                                   |                                                                                                                        |        | use their knowledge of the order of operations to carry out calculations involving the four operations         |
| INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS |        |                                                                                                                                   |                                                                                                                        |        |                                                                                                                |
|                                                     |        | <i>estimate the answer to a calculation and use inverse operations to check answers</i><br>(copied from Addition and Subtraction) | <i>estimate and use inverse operations to check answers to a calculation</i><br>(copied from Addition and Subtraction) |        | use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy |

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| PROBLEM SOLVING                                                                                                                                                                       |                                                                                                                                                                                         |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                            |                                                                                                                                                                |                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Year 1                                                                                                                                                                                | Year 2                                                                                                                                                                                  | Year 3                                                                                                                                                                                                          | Year 4                                                                                                                                                                                                                                     | Year 5                                                                                                                                                         | Year 6                                                                                                                               |
| 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 | solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts | solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects | solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects | solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes                               | solve problems involving addition, subtraction, multiplication and division                                                          |
|                                                                                                                                                                                       |                                                                                                                                                                                         |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                            | 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                                | <i>solve problems involving similar shapes where the scale factor is known or can be found</i><br>(copied from Ratio and Proportion) |