

# Number: Multiplication and Division

| MULTIPLICATION & DIVISION FACTS |           |   |  |   |  |  |  |
|---------------------------------|-----------|---|--|---|--|--|--|
| Nursery                         | Reception | Year 1  | Year 2   | Year 3  | Year 4   | Year 5   | Year 6   |
|                                 |           | count in multiples of twos, fives and tens (copied from Number and Place Value) | count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)            | count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)  | count in multiples of 6, 7, 9, 25 and 1000 (copied from Number and Place Value)  | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (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   | associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$ ) (copied from Fractions) |

# Number: Multiplication and Division

| WRITTEN CALCULATION |           |        |   |  |  |  |  |
|---------------------|-----------|--------|---|--|--|--|--|
| Nursery             | Reception | 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>  |

# Number: Multiplication and Division

| PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS |           |        |        |        |  |   |   |
|--|-----------|--------|--------|--------|--|---|---|
| Nursery  | Reception | Year 1 | Year 2 | Year 3 | Year 4   | Year 5  | Year 6  |
|  |           |        |        |        | recognise and use factor pairs and commutativity in mental calculations (repeated) | <p>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>establish whether a number up to 100 is prime and recall prime numbers up to 19</p> | <p>identify common factors, common multiples and prime numbers</p> <p><i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions)</i></p>   |
|  |           |        |        |        |  | <p>recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</p>  | <p><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> (copied from Measures)</i></p> |

# Number: Multiplication and Division

| 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> (copied from Addition and Subtraction) | <i>estimate and use inverse operations to check answers to a calculation</i> (copied from Addition and Subtraction) |        | use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy |

# Number: Multiplication and Division

| PROBLEM SOLVING |           |   |   |   |  |  |   |
|-----------------|-----------|---|---|---|--|--|---|
| Nursery         | Reception | 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 | <p>solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</p> <p>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</p> <p>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</p> | <p>solve problems involving addition, subtraction, multiplication and division</p> <p><i>solve problems involving similar shapes where the scale factor is known or can be found</i><br/>(copied from Ratio and Proportion)</p> |