



Multiplication and Division

| Strand | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|--------|--------|--|--|---|--|---|
| MD | | <u>2MD-1</u> Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables. | <u>3MD-1</u> Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division. | <u>4MD-1</u> Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size. → | <u>5MD-1</u> Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size. | For year 6, MD ready-to-progress criteria are combined with AS ready-to-progress criteria (please see above). |
| | | <u>2MD-2</u> Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division). | | <u>4MD-2</u> Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication. | <u>5MD-2</u> Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors. | |
| | | | | <u>4MD-3</u> Understand and apply the distributive property of multiplication. → | <u>5MD-3</u> Multiply any whole number with up to 4 digits by any one-digit number using a formal written method. | |
| | | | | | <u>5MD-4</u> Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context. | |



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|---|--|---|--|--|--|
| <i>count in multiples of twos, fives and tens</i> (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> (copied from Number and Place Value) | <i>count from 0 in multiples of 4, 8, 50 and 100</i> (copied from Number and Place Value) | <i>count in multiples of 6, 7, 9, 25 and 1000</i> (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> (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 12×12 | | |
| 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. $\frac{3}{8}$)</i> (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 division methods where the answer has up to two decimal places (copied from Fractions (including decimals))</i> |



Multiplication and Division

| 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. know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 | identify common factors, common multiples and prime numbers <i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i> (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 (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³</i> (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> (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 |



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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> (copied from Ratio and Proportion) |



Multiplication and Division

Stem Sentences and Generalisations

KS1

___ x ___ = ___

There are ___ equal groups of ___ There are ___ in each group. There are ___ groups of ___.

___ group(s) of ___ ___ group(s) of ___ make ___

KS2

___ is a factor ___ is a factor.

The product of ___ and ___ is ___

___ is the product of ___ and ___

Multiplication

The multiplication of two numbers can be done in any order. Multiplication is commutative, for example $2 \times 4 = 8$ therefore $4 \times 2 = 8$.

When one of the factors is two, the product is double the other factor.

When zero is a factor, the product is zero.

KS1:

Division

Division is not commutative, for example $4 \div 2$ is not equal to $2 \div 4$.

When the dividend is zero, the quotient is zero.

Both KS1 & KS2:

We can skip count using the divisor to find the quotient. For example, if the divisor is 5, count in multiples of 5.

If the divisor is ten, we can use the ten times table to find the quotient. For



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A number is odd if the ones digit is odd. It can't be made from groups of two.

A number is even if the ones digit is even. It can be made from groups of two.

KS2:

The square of a number is the result of multiplying that number by itself.

A number is called 'prime' if its only factors are one and itself. All prime numbers, apart from two, are odd numbers.

example, $3 \times 10 = 30$ $30 \div 10 = \underline{\quad}$

KS2:

If the dividend is a multiple of the divisor, there is no remainder. If the dividend is not a multiple of the divisor, there is a remainder. The remainder is always less than the divisor.

Misconceptions

[Misconceptions - Subject Folders - Google Drive](#)