John 13:34 **'Love one another, as I have loved you'**

St Stephen's
CE Primary School

# Maths Progression Map

September 2023

Part of

The Sycamore Church of England Trust

Grow together, Learn forever

# Early Years Maths

Number Early Learning Goals

**Have a deep understanding of number to 10, including the composition of each number**

**Subitise (recognise quantities without counting) up to 5**

**Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.**

Numerical Patterns Early Learning Goal

**Verbally count beyond 20, recognising the pattern of the counting system**

**Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity**

**Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.**

# Year 1- Year 6 Maths

## Place Value

**COUNTING**

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| **Count to and across 100, forwards and backwards, starting with any number.** | | | count backwards through zero to include negative numbers | interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero | use negative numbers in context, and calculate intervals across zero |
| count, read and write numbers to 100 in numerals; count in multiples of twos, fives, and tens | count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward | count from 0 in multiples of 4, 8, 50 and 100 | count in multiples of 6, 7, 9, 25 and 1000 | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 | |
| given a number, identify one more and one less | | find 10 or 100 more or less than a given number | find 1000 more or less than a given number | | |

| COMPARING NUMBERS | | | | | |
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| use the language of equal to, more than, less than (fewer), most, least | compare and order numbers from 0 up to 100; use <, > and = signs | compare and order numbers up to 1000 | order and compare numbers beyond 1000 | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit | read, write, order, and compare numbers up to 10 000000and determine the value of each digit |
| **IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS** | | | | | |
| identify and represent numbers using objects and pictorial representations including the number line | identify, represent, and estimate numbers using different representations, including the number line | identify, represent and estimate numbers using different representations | identify, represent, and estimate numbers using different representations | | |
| **READING AND WRITING NUMBERS** (including Roman Numerals) | | | | | |
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| read and write numbers from 1 to 20 in numerals and words. | read and write numbers to at least 100 in numerals and in words. | read and write numbers up to 1000 in numerals and in words | read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. | read Roman numerals to 1000 (M) and recognise years written in Roman numerals.<br>**Convert between units of measure, including using common decimals and fractions.** | |

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| | | **Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.** | **Divide 1,000 into 2, 4, 5 and 0 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.** | **Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.** | **Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.** |
| **UNDERSTANDING PLACE VALUE** | | | | | |
| | | **Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.** | **Know that 10 hundreds are equivalent to 1 thousand and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.**<br><br>*find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths* | **Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.** | **Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1, 000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1, 000).**<br>*identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places* |

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| | **Recognise the place value of each digit in two-digit numbers and compose and decompose two-digit numbers using standard and non-standard partitioning.** | **Recognise the place value of each digit in three-digit numbers and compose and decompose three-digit numbers using standard and non-standard partitioning.** | **Recognise the place value of each digit in four-digit numbers and compose and decompose four-digit numbers using standard and non-standard partitioning.** | **Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning.** | **Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million, using standard and non-standard partitioning.** |
| **Reason about the location of numbers to 20 within the linear number system, including comparing using < > =** | **Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.** | **Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10.** | **Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.** | **Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.** | **Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.** |

| **ROUNDING** | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | | round any number to the nearest 10, 100 or 1 000 | round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 | round any whole number to a required degree of accuracy |
| | | | *round decimals with one decimal place to the nearest whole number* | *round decimals with two decimal places to the nearest whole number and to one decimal place* | *solve problems which require answers to be rounded to specified degrees of accuracy* |

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| **PROBLEM SOLVING** | | | | | |
| | use place value and number facts to solve problems | solve number problems and practical problems involving these ideas. | solve number and practical problems that involve all of the above and with increasingly large positive numbers | solve number problems and practical problems that involve all the above | solve number and practical problems that involve all the above |

# Addition and Subtraction

| **NUMBER BONDS** | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| represent and use number bonds and related subtraction facts within 20. | recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 | | | | |
| **MENTAL and WRITTEN CALCULATION** | | | | | |
| **Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognizing odd and even numbers.** | **Add and subtract across 10.** | **Calculate complements to 100.** | | | **Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).** |

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| **Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) signs.** | **Recognise the subtraction structure of difference and answer questions of the form, 'How many more…?'.** | **Add and subtract up to three digits numbers using columnar methods.** | | | **Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.** |
| add and subtract one-digit and two-digit numbers to 20, including zero | **Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.** | **Manipulate the additive relationship: understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure; understand and use the commutative property of addition and understand the related property for subtraction.** | | add and subtract numbers mentally with increasingly large numbers | **Solve problems involving ratio relationships.**<br><br>perform mental calculations, including with mixed operations and large numbers |
| | **Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.** | | | | **Solve problems with 2 unknowns.** |
| | show that addition of two numbers can be done in any order (commutative) and subtraction of one | | | | use their knowledge of the order of operations to carry out calculations involving the four operations |

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| | number from another cannot | | | | |
| | | add and subtract numbers mentally, including:<br>* a three-digit number and ones<br>* a three-digit number and tens<br>* a three-digit number and hundreds | add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate | add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) | |
| **INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS** | | | | | |
| | recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | estimate the answer to a calculation and use inverse operations to check answers | estimate and use inverse operations to check answers to a calculation | use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy | use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. |
| **PROBLEM SOLVING** | | | | | |
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and | solve problems with addition and subtraction:<br>* using concrete objects and pictorial representations, including those involving numbers, | solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why |

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| missing number problems such as 7 = □ - 9 | quantities and measures<br>* applying their increasing knowledge of mental and written methods | | | | Solve problems involving addition, subtraction, multiplication, and division |

# Multiplication and Division

## MULTIPLICATION & DIVISION FACTS

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| | 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 & WRITTEN CALCULATION

| | | | | | |
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| | **Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.** | **Apply known multiplication and division facts to solve contextual problems with different structures, including quotative and partitive division.** | **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.** | **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.** | (**See AS section for combined criteria**) |
| | **Relate grouping problems where the number of groups is unknown to multiplication equations** | | **Manipulate multiplication and division equations and understand and apply** | | use their knowledge of the order of operations to carry out calculations |

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| | **with a missing factor, and to division equations (quotative division).** | | **the commutative property of multiplication** | | involving the four operations |
| | calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) 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. | 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 |
| | | | multiply two-digit and three-digit numbers by a one-digit number using formal written layout | multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | |
| | show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | | **Understand and apply the distributive property of multiplication** | **Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.** | multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication |

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| | | | | **Divide a number with up to 4 digits by a one-digit number using formal written method, 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 |
| | | | | | **Solve problems involving ratio relationships.**<br>**Solve problems with 2 unknowns.** |
| **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 | **Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a** | identify common factors, common multiples and prime numbers |

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| | | | | **given number as a product of 2 or 3 factors.** | |
| | | | | 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 | |
| | | | | recognise and use square numbers and cube numbers, and the notation for squared ($^2$) and cubed ($^3$) | |
| **INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS** | | | | | |
| | | estimate the answer to a calculation and use inverse operations to check answers | estimate and use inverse operations to check answers to a calculation | | use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy |

| PROBLEM SOLVING | | | | | |
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| 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 | |

# Number Facts

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|
| **Develop fluency in addition and subtraction facts within 10.** | **Secure fluency in addition and subtraction facts within 10, through continued practice.** | **Secure fluency in addition and subtraction facts that bridge 10, through continued practice.** | | | |
| | | **Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).** | **Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100).** | **Apply place value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).** | |
| **Count forwards and backwards in multiples of 2, 5 and 10 up to multiples of 10, beginning with any multiple, and count forwards and backwards through the odd numbers.** | | **Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognising products in these multiplication tables as multiples of the corresponding number.** | **Recall multiplication and division facts up to 12 x 12 and recognise products in multiplication tables as multiples of the corresponding number.** | **Secure fluency in multiplication table facts, and corresponding division facts through continued practice.** | |
| | | | **Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders** | | |

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| | | | **appropriately according to the context.** | | |

# Fractions (Including Decimals and Percentages)

**COUNTING IN FRACTIONAL STEPS**

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|
| | *Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)* | count up and down in tenths | Count up and down in hundredths | | |

**RECOGNISING FRACTIONS**

| | | | | | |
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| recognise, find and name a half as one of two equal parts of an object, shape or quantity | recognise, find, name and write fractions $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ of a length, shape, set of objects or quantity | recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators | recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten | | |
| | | recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10. | **Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.** | | |
| recognise, find and name a quarter as one of four equal parts of an object, shape or quantity | | recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators | | | |

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| | | **Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.** | **Convert mixed numbers to improper fractions and vice versa.** | | **Recognise when fractions can be simplified, and use common factors to simplify fractions.** |
| **COMPARING FRACTIONS** | | | | | |
| | | compare and order unit fractions, and fractions with the same denominators | | compare and order fractions whose denominators are all multiples of the same number | compare and order fractions, including fractions >1 |
| | | **Find unit fractions of quantities using known division facts (multiplication tables fluency).** | | **Find non-unit fractions of quantities.** | **Express fractions in a common denomination and use this to compare fractions that are similar in value.** |
| | | **Reason about the location of any fraction within 1 in the linear number system.** | **Reason about the location of mixed numbers in the linear number system.** | | **Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.** |

| COMPARING DECIMALS | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | | compare numbers with the same number of decimal places up to two decimal places | read, write, order, and compare numbers with up to three decimal places | identify the value of each digit in numbers given to three decimal places |
| **ROUNDING INCLUDING DECIMALS** | | | | | |
| | | | round decimals with one decimal place to the nearest whole number | round decimals with two decimal places to the nearest whole number and to one decimal place | solve problems which require answers to be rounded to specified degrees of accuracy |
| **EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)** | | | | | |
| | write simple fractions e.g. $^1/_2$ of 6 = 3 and recognise the equivalence of $^2/_4$ and $^1/_2$. | recognise and show, using diagrams, equivalent fractions with small denominators | recognise and show, using diagrams, families of common equivalent fractions | identify, name, and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths<br>**Find equivalent fractions and understand that they have the same value and the same position in the linear number system.** | use common factors to simplify fractions; use common multiples to express fractions in the same denomination |
| | | | recognise and write decimal equivalents of any number of tenths or hundredths | read and write decimal numbers as fractions (e.g., 0.71 = $^{71}/_{100}$)<br>**Recall decimal fraction equivalents for ½, ¼, 1/5 and 1/10, and for multiples of these proper fractions.**<br>recognise and use thousandths and relate them to tenths, hundredths, and decimal equivalents | associate a fraction with division and calculate decimal fraction equivalents (e.g., 0.375) for a simple fraction (e.g., $^3/_8$) |

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| | | | recognise and write decimal equivalents to $^{1}/_{4}$; $^{1}/_{2}$; $^{3}/_{4}$ | recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction | recall and use equivalences between simple fractions, decimals, and percentages, including in different contexts. |

| ADDITION AND SUBTRACTION OF FRACTIONS | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | **Add and subtract fractions with the same denominator, within 1.** | **Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.** | add and subtract fractions with the same denominator and multiples of the same number<br>recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $^{2}/_{5} + {}^{4}/_{5} = {}^{6}/_{5} = 1\,{}^{1}/_{5}$) | add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions |

| MULTIPLICATION AND DIVISION OF FRACTIONS | | | | | |
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| | | | | multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams | multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^{1}/_{4} \times {}^{1}/_{2} = {}^{1}/_{8}$)<br>multiply one-digit numbers with up to two decimal places by whole numbers |

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| | | | | | divide proper fractions by whole numbers (e.g., $^{1}/_{3} \div 2 = {}^{1}/_{6}$) |
| **MULTIPLICATION AND DIVISION OF DECIMALS** | | | | | |
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | | | | multiply one-digit numbers with up to two decimal places by whole numbers |
| | | | find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths | | multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places |
| | | | | | identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places |
| | | | | | associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^{3}/_{8}$) |
| | | | | | use written division methods in cases where the answer has up to two decimal places |

| PROBLEM SOLVING | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | solve problems that involve all of the above | solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number | solve problems involving numbers up to three decimal places | |
| | | | solve simple measure and money problems involving fractions and decimals to two decimal places. | solve problems which require knowing percentage and decimal equivalents of $^{1}/_{2}$, $^{1}/_{4}$, $^{1}/_{5}$, $^{2}/_{5}$, $^{4}/_{5}$ and those with a denominator of a multiple of 10 or 25. | |

# Geometry

## IDENTIFYING SHAPES AND THEIR PROPERTIES

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|
| **Recognise and name common 2-D and 3-D shapes presented in different orientations, and know that rectangles, triangles, cuboids, and pyramids are not always similar to one another.** | **Use precise language to describe the properties of 2D and 3D shapes and compare shapes by reasoning about similarities and difference in properties.** | **Recognise right angles as a property of shape or a description of a turn and identify right angles in 2D shapes presented in different orientations.** | | **Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.** | recognise, describe and build simple 3-D shapes, including making nets |
| | identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line | | identify lines of symmetry in 2-D shapes presented in different orientations | | |
| | identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces | | **Identify regular polygons, including equilateral triangles and squares, as those in which the side-length are equal, and the angles are equal. Find the perimeter of regular and irregular polygons.** | | |
| | identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] | | **Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete symmetric figure or pattern with respect to a specified line of symmetry** | identify 3-D shapes, including cubes and other cuboids, from 2-D representations | illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius |

| DRAWING AND CONSTRUCTING | | | | | |
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| **Compose 2D and 3 D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.** | | **Draw polygons by joining marked points and identify parallel and perpendicular sides.** | **Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.** | | **Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.** |
| | | draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them | complete a simple symmetric figure with respect to a specific line of symmetry | draw given angles, and measure them in degrees ( $^{o}$ ) | |
| **COMPARING AND CLASSIFYING** | | | | | |
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | compare and sort common 2-D and 3-D shapes and everyday objects | | compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes | use the properties of rectangles to deduce related facts and find missing lengths and angles | compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons |
| | | | | **Compare areas and calculate the area of rectangles (including squares) using standard units.** | |
| | | | | distinguish between regular and irregular polygons based on reasoning about equal sides and angles | |

| ANGLES | | | | | |
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| | | | | know angles are measured in degrees: estimate and compare acute, obtuse, and reflex angles | |
| | | identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle | identify acute and obtuse angles and compare and order angles up to two right angles by size | identify:<br>* angles at a point and one whole turn (total $360^{o}$)<br>* angles at a point on a straight line and ½ a turn (total $180^{o}$)<br>* other multiples of $90^{o}$ | recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles |
| | | identify horizontal and vertical lines and pairs of perpendicular and parallel lines | | | |

# Ration and Proportion

| Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division | | | | | |
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| | | | | | Year 6 |
| | | | | | solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts |

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| | | | | | solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison |
| | | | | | solve problems involving similar shapes where the scale factor is known or can be found |
| | | | | | solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. |

# Algebra

| EQUATIONS | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | | | | express missing number problems algebraically |
| | | | | | find pairs of numbers that satisfy number sentences involving two unknowns |
| | | | | | enumerate all possibilities of combinations of two variables |

| FORMULAE | | | | | |
|---|---|---|---|---|---|
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | | | | use simple formulae |
| **SEQUENCES** | | | | | |
| | | | | | generate and describe linear number sequences |

# Measurement

| COMPARING AND ESTIMATING | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |

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| compare, describe, and solve practical problems for:<br>* lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]<br>* mass/weight [e.g. heavy/light, heavier than, lighter than]<br>* capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]<br>* time [e.g. quicker, slower, earlier, later] | compare and order lengths, mass, volume/capacity and record the results using >, < and = | | | estimate volume (e.g. using 1 $cm^3$ blocks to build cubes and cuboids) and capacity (e.g. using water) | calculate, estimate, and compare volume of cubes and cuboids using standard units, including centimetre cubed ($cm^3$) and cubic metres ($m^3$), and extending to other units such as $mm^3$ and $km^3$. |
| sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] | compare and sequence intervals of time | compare durations of events, for example to calculate the time taken by particular events or tasks | | | |
| | | estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time) | | | |

| MEASURING and CALCULATING | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| measure and begin to record the following:<br>* lengths and heights<br>* mass/weight<br>* capacity and volume<br>* time (hours, minutes, seconds**)** | choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels | measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) | estimate, compare and calculate different measures, including money in pounds and pence<br>(appears also in Comparing) | use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. | solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate<br>(appears also in Converting) |
| | | measure the perimeter of simple 2-D shapes | measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres | measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres | recognise that shapes with the same areas can have different perimeters and vice versa |

| MEASURING and CALCULATING | | | | | |
|---|---|---|---|---|---|
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| recognise and know the value of different denominations of coins and notes | recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value | add and subtract amounts of money to give change, using both £ and p in practical contexts | | | |
| | find different combinations of coins that equal the same amounts of money | | | | |
| | solve simple problems in a practical context | | | | |

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| | involving addition and subtraction of money of the same unit, including giving change | | | | |
| | | | find the area of rectilinear shapes by counting squares | calculate and compare the area of squares and rectangles including using standard units, square centimetres ($cm^2$) and square metres ($m^2$) and estimate the area of irregular shapes | calculate the area of parallelograms and triangles |
| | | | | | calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ($cm^3$) and cubic metres ($m^3$), and extending to other units [e.g. $mm^3$ and $km^3$]. |
| | | | | | recognise when it is possible to use formulae for area and volume of shapes |

| TELLING THE TIME | | | | | |
|---|---|---|---|---|---|
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. | tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a | tell and write the time from an analogue clock, including using Roman numerals from I to XII, and | | solve problems involving converting between units of time | |

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| | clock face to show these times. | 12-hour and 24-hour clocks | | | |
| recognise and use language relating to dates, including days of the week, weeks, months and years | | | | | |

| CONVERTING | | | | | |
|---|---|---|---|---|---|
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time) | know the number of seconds in a minute and the number of days in each month, year and leap year | convert between different units of measure (e.g. kilometre to metre; hour to minute) | convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) | use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places |
| | | | | solve problems involving converting between units of time | |
| | | | | understand and use equivalences between metric units and common imperial units such as inches, pounds and pints | convert between miles and kilometres |

# Statistics

| INTERPRETING, CONSTRUCTING AND PRESENTING DATA | | | | | |
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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | interpret and construct simple pictograms, tally charts, block diagrams and simple tables | interpret and present data using bar charts, pictograms and tables | interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs | complete, read and interpret information in tables, including timetables | interpret and construct pie charts and line graphs and use these to solve problems |
| | ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity | | | | |
| | ask and answer questions about totalling and comparing categorical data | | | | |
| **SOLVING PROBLEMS** | | | | | |
| | | solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. | solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. | solve comparison, sum and difference problems using information presented in a line graph | calculate and interpret the mean as an average |

Critical knowledge from the DfE's Ready to Progress Non statutory guidance is highlighted in bold.