

Progression of content & concepts – MATHEMATICS

Lower Key Stage 2			
MATH KEY SKILLS	Year 3	MATH KEY SKILLS	Year 4
	Consolidate and build on Year 2 skills		Consolidate and build on Year 3 skills
Place Value	Identify, represent and estimate numbers using different representations.	Place Value	Identify, represent and estimate numbers using different representations.
Place Value	Find 10 or 100 more or less than a given number.	Place Value	Find 1000 more or less than a given number.
Place Value	*Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Place Value	*Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones)
Place Value	Compare and order numbers up to 1000.	Place Value	Compare and order numbers beyond 1000.
Place Value	Read and write numbers up to 1000 in numerals and words	Place Value	Round any number to the nearest 10, 100 or 1000.
Place Value	*Solve problems and practical problems involving place value skills.	Place Value	Count backwards through zero to include negative numbers.
Addition and Subtraction	*Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds.	Place Value	Read Roman numerals to 100 (I to C) and know that overtime, the numeral system changed to include the concept of zero and place value.
Addition and Subtraction	*Add and subtract numbers with up to three-digits, using formal written methods of columnar addition and subtraction.	Place Value	Solve number and practical problems involving place value skills, with increasingly large positive numbers.
Addition and Subtraction	Estimate the answer to a calculation and use inverse operations to check answers.	Addition and Subtraction	*Add and subtract numbers with up to four-digits, using formal written methods of columnar addition and subtraction.
Addition and Subtraction	*Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Addition and Subtraction	Estimate the answer to a calculation and use inverse operations to check answers.
Multiplication and Division	Count from 0 in multiples of 4 and 8.	Addition and Subtraction	*Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why.
Multiplication and Division	Count from 0 in multiples of 50 and 100.	Multiplication and Division	Count in multiples of 6, 7 and 9.
Multiplication and Division	*Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Multiplication and Division	Count in multiples of 25 and 1000.

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Multiplication and Division	*Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	Multiplication and Division	*Recall and use multiplication and division facts for multiplication tables up to 12x12.
Multiplication and Division	*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.	Multiplication and Division	*Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
Fractions	Count up and down in tenths: recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.	Multiplication and Division	Recognise and use factor pairs and commutativity in mental calculations.
Fractions	Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.	Multiplication and Division	*Multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout.
Fractions	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	Multiplication and Division	*Solve problems, involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one-digit (Integer scaling problems such as n objects are connected to m objects).
Fractions	Solve problems that involve tenths, unit fractions and non-unit fractions.	Fractions	Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10.
Fractions	Recognise and show, using diagrams, equivalent fractions with small denominators.	Fractions	Recognise and show, using diagrams, families of common equivalent fractions.
Fractions	Compare and order unit fractions, and fractions with the same denominators.	Fractions	Add and subtract fractions with the same denominator.
Fractions	*Add and subtract fractions with the same denominator within one whole.	Fractions	*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.

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Fractions	Solve problems that involve equivalent fractions, and ordering fractions.	Decimals	Recognise and write decimal equivalents of any number of tenths or hundredths.
Time	Tell and write the time from an analogue clock, including using Roman Numerals from I to XII and 12-hour and 24-hour clocks.	Decimals	Find the effect of dividing a one or two-digit number by 10 or 100 identifying the value of the digits in the answer as ones, tenths and hundredths.
Time	Estimate and read time with increasing accuracy to the nearest minute.	Decimals	Compare numbers with the same number of decimal places up to two decimal places.
Time	Record and compare time in terms of seconds, minutes and hours.	Decimals	Round decimals with one decimal place to the nearest whole number.
Time	Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.	Decimals	Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$.
Time	Know the number of seconds in a minute and the number of days in each month, year and leap year.	Decimals	Solve simple measure and money problems involving fractions and decimals to two places
Money	Add and subtract amounts of money to give change, using both £ and p in practical contexts.	Time	Read, write and convert time between analogue and digital 12-hour and 24-hour clocks.
Length	*Measure, compare, add and subtract: lengths (m/cm/mm)	Time	Convert between units of measure - Time: hours to minutes; minutes to seconds; years to months; weeks to days.
Mass	*Measure, compare, add and subtract: mass (kg/g)	Time	Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
Capacity	*Measure, compare, add and subtract: volume/capacity (l/ml)	Measurement	*Estimate, compare and calculate different measures, including amounts of money in pounds and pence.
Perimeter	Measure the perimeter of simple 2-D shapes	Measurement	Convert between units of measure - mm/cm, cm/m, m/km, g/kg, ml/l
Properties of shape	Recognise angles as a property of shape or a description of a turn.	Perimeter	Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m.
Properties of shape	*Identify right angles; recognise that 2 right angles make a half-turn, 3 make three quarters of a turn and 4 make a complete turn.	Area	Find the area of rectilinear shapes by counting squares.

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Properties of shape	*Identify whether angles are greater than or less than a right angle.	Properties of shape	*Identify acute and obtuse angles; compare and order angles up to 2 right angles by size.
Properties of shape	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	Properties of shape	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.
Properties of shape	Draw 2-D shapes and make 3-D shapes using modelling materials.	Properties of shape	Identify lines of symmetry in 2-D shapes presented in different orientations.
Properties of shape	Recognise 3-D shapes in different orientations and describe them.	Properties of shape	Complete a simple symmetric figure with respect to a specific line of symmetry.
Statistics	Interpret and present data using bar charts, pictograms and tables.	Position and Direction	Describe positions on a 2-D grid as coordinates in the first quadrant.
Statistics	Solve one-step and two-step questions using information presented in scaled bar charts, pictograms and tables.	Position and Direction	Plot specified points and draw sides to complete a given polygon.
		Position and Direction	Describe movements between positions as translations of a given unit to the left/right and up/down.
		Statistics	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
		Statistics	Solve comparison, sum and difference problems using information presented in bar charts, pictograms and other graphs.

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Upper Key Stage 2			
MATH KEY SKILLS	Year 5	MATH KEY SKILLS	Year 6
	Consolidate and build on Year 4 skills		Consolidate and build on Year 5 skills
Place Value	*Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.	Place Value	*Read, write, order and compare numbers to at least 10,000,000 and determine the value of each digit.
Place Value	Count forwards or backwards in steps of powers of 10 for any given number to 1,000,000.	Place Value	Round any whole number to a required degree of accuracy.
Place Value	Interpret negative numbers in context; count forwards and backwards with positive and negative whole numbers including through zero.	Place Value	Use negative numbers in context and calculate intervals across zero.
Place Value	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.	Place Value	Solve number and practical problems involving place value skills.
Place Value	Solve number and practical problems involving place value skills.	Addition and Subtraction	*Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.
Place Value	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Multiplication and Division	*Multiply a multi-digit number (up to four-digits) by a two-digit number using the formal written method of long multiplication.
Addition and Subtraction	*Add and subtract numbers with more than four-digits, including using formal written methods of columnar addition and subtraction.	Multiplication and Division	*Divide numbers up to four-digits by a two-digit whole number using the formal written method of long division; interpret remainders as whole number remainders, fractions, or by rounding as appropriate for the context.
Addition and Subtraction	*Add and subtract numbers mentally with increasingly large numbers.	Multiplication and Division	*Divide numbers up to four-digits by a two-digit whole number using the formal written method of short division, interpreting remainders according to the context.
Addition and Subtraction	Use rounding to check answers to calculations.	Multiplication and Division	Identify common factors, common multiples and prime numbers.
Addition and Subtraction	*Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.	4 Operations	Use their knowledge of the order of operations to carry out calculations involving the four operations - BODMAS

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Multiplication and Division	*Multiply and divide numbers mentally drawing upon known facts.	4 Operations	*Perform mental calculations, including with mixed operations and large numbers.
Multiplication and Division	*Multiply and divide whole numbers by 10, 100 and 1,000	4 Operations	Solve problems involving addition and subtraction, multiplication and division.
Multiplication and Division	Identify multiples and factors, including finding all pairs of a number, and common factors of two numbers.	4 Operations	Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.
Multiplication and Division	Recognise and use square numbers and cube numbers and the associated notation.	Fractions	Compare and order fractions including fractions > 1 .
Multiplication and Division	*Solve problems involving multiplication and division (including knowledge of factors, multiples, squares and cubes).	Fractions	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
Multiplication and Division	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.	Fractions	Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions.
Multiplication and Division	*Multiply numbers up to four-digits by a one or two-digit number using a formal written method, including long multiplication for two-digit numbers.	Fractions	Multiply simple pairs of proper fractions, writing the answer in its simplest form.
Multiplication and Division	Divide numbers up to four-digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.	Fractions	Divide proper fractions by whole numbers.
4 operations	*Solve problems involving addition and subtraction, multiplication and division and any combination of these, including understanding the use of the equals sign.	Fractions	Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction.
Multiplication and Division	Establish whether a number up to 100 is prime and recall prime numbers up to 19.	Decimals	Identify the value of each digit in numbers given to 3 decimal places; multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places.
Fractions	Compare and order fractions whose denominators are multiples of the same number.	Decimals	Multiply one-digit numbers with up to 2 decimal places by whole numbers.

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Fractions	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	Decimals	Use written division methods in cases where the answer has up to 2 decimal places.
Fractions	Add and subtract fractions with the same denominator and denominators that are multiples of the same number.	Decimals	Solve problems which require answers to be rounded to specified degrees of accuracy.
Fractions	Recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements >1 as a mixed number.	Percentages	Solve problems involving the calculation of percentages and the use of percentage comparisons.
Fractions	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Percentages	*Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.
Fractions	Read and write decimal numbers as fractions.	Algebra	*Use simple formulae: express missing number problems algebraically.
Fractions	Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Algebra	Generate and describe linear number sequences.
Decimals	Read, write, order and compare numbers with up to three decimal places.	Algebra	Find pairs of numbers that satisfy an equation with two unknowns.
Decimals	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Ratio	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
Decimals	Round decimals with two decimal places to the nearest whole number and to one decimal place.	Ratio	Solve problems involving similar shapes where the scale factor is known or can be found.
Decimals	Multiply and divide whole numbers and decimals by 10, 100 and 1,000.	Ratio	Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
Decimals	*Solve problems involving numbers with up to three decimal places.	Area and Volume	Recognise that shapes with the same areas can have different perimeters and vice versa.
Decimals	Use all four operations to solve problems involving units of measure using decimal notation.	Area and Volume	Recognise when it is possible to use formulae for area and volume of shapes.
Decimals/%	Recognise the % symbol and understand that per cent relates to 'number of parts per hundred';	Area and Volume	Calculate the area of parallelograms and triangles.

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	write percentages as a fraction with denominator 100, and as a decimal.		
Decimals/%	*Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	Area and Volume	Calculate, estimate and compare the volume of cubes and cuboids using standard units, including cm^3 , m^3 and extending to other units (mm^3 , km^3).
Perimeter	Measure and calculate the perimeter of composite rectilinear shapes in cm and m.	Converting units	*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 up to 3 decimal places. Solve problems involving these skills.
Area	*Calculate and compare the area of rectangles (including squares); including using standard units cm^2 , m^2 , estimate the area of irregular shapes.	Converting units	Convert between miles and kilometres.
Measurement	*Convert between units of measure and solve problems - mm/cm, cm/m, m/km, g/kg, ml/l and units of time.	Position and Direction	Describe positions on the full coordinate grid (all four quadrants).
Measurement	Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.	Position and Direction	Draw and translate shapes on the coordinate plane and reflect them in the axes.
Measurement	Estimate volume (e.g. 1cm^3 blocks to build cuboids): Estimate capacity (e.g. using water).	Properties of Shapes	Draw 2-D shapes using given dimensions and angles.
Properties of shape	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	Properties of Shapes	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.
Properties of shape	Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Properties of Shapes	*Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
Properties of shape	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Statistics	Illustrate and name parts of circles, including radius, diameter and circumference; know that the diameter is twice the radius.

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Properties of shape	*Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	Statistics	Interpret and construct pie charts and line graphs and use these to solve problems.
Properties of shape	Draw given angles and measure them in degrees.	Statistics	Calculate the mean as an average.
Properties of shape	*Identify: angles at a point and one whole turn (360 degrees); angles at a point on a straight line and half a turn (total 180 degrees) other multiples of 90 degrees.		
Position and Direction	Identify, describe and represent, the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.		
Statistics	Solve comparison, sum and difference problems using information presented in a line graph.		
Statistics	Complete, read and interpret information in tables including timetables.		

*Key Performance Indicators (KPIs)

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Cross curricular application

MATHEICAL CONTENT	Lower Key Stage 2		Upper Key Stage 2	
	Year A	Year B	Year A	Year B
Topic Big Question Sticky Vocabulary Subject-linked reading				