End of Year 4 Mathematics Objectives

Essential Objective	Key Indicators	Working at the expected standard	Working at greater depth within the expected standard
To know and use numbers	**Counting** • Count in multiples of 2 to 9, 25, 50, 100 and 1000. • Find 1000 more or less than a given number. • Count backwards through zero to include negative numbers. • There is counting in multiples of 2, 3, 4, 5, 25, 50, 100 and 1000.	• Generally, there is counting in multiples of 2 to 9. • Generally, 1000 more or less than a given number is found. • With support if necessary, there is counting backwards to zero and through zero and negative numbers are recognised.	• There is independent and fluent counting in multiples of 2 to 9, 25, 50, 100 and 1000. • 1000 more or less than a given number, including negative numbers, can be found. • There is fluent counting backwards through zero to negative numbers.
	Representing • Identify, represent and estimate numbers using different representations. • 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.	• With reminders, Roman numerals to 100 (I to C) are read.	• Using a variety of different representations, numbers are identified, estimated and represented. • Independently, Roman numerals are read up to 100 (C) and years written in Roman form are deciphered.
	Comparing Order and compare numbers beyond 1000.	• With reminders, the place value in numbers beyond 1000 is understood and these numbers can be ordered and compared.	• Numbers beyond 1000 can be ordered and compared independently and the place value in numbers beyond 1000 is understood. • Place value can be used to make approximations.
	Place value • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones). • Round any number to the nearest 10, 100 or 1000.	• The place value of each digit in a four-digit whole number is recognised. • Generally, any number is rounded accurately to the nearest 10, 100 or 1000.	• Generally, the place value of each digit in a four-digit whole number and in decimal numbers is recognised, e.g. in the number 132.73, the value of the number 7 is understood as 7/10ths. • Independently, any number is rounded to the nearest 10, 100, 1000 and rounding to the nearest 10,000 or 100,000 is generally accurate.

	Solving problems • Solve number and practical problems with increasingly large positive numbers.	• With occasional prompts, number and practical problems with large positive numbers are solved. • Generally, during problem solving, work is checked and corrections are made. • Patterns in results are looked for when problem solving. • Generally, there is a secure awareness of what operation to use when solving problems.	• Systematically and in an organised manner, number and practical problems (with increasingly large positive number) can be solved independently. • Discussion is used to break into a problem. • Work is checked and corrections are made independently during problem solving. • The operation needed in order to solve problems is identified independently.

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To add and subtract	**Checking** • Estimate and use inverse operations to check answers to a calculation.	• Generally, inverse relationships are used to find missing numbers in a number sentence and to check answers to a calculation.	• Without support, inverse relationships are used to find missing numbers in a number sentence and to check answers to a calculation.
	Using Number facts • Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.	• Generally, number problems, including missing number problems, are tackled and solved using number facts, place value and addition and subtraction.	• Independently, number problems, including missing number problems and balancing equations, are solved using more complex addition and subtraction.
	Complexity • Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why. •	• When reminders are given, the most appropriate operations and methods are chosen and used to solve problems	• Two-step problems in contexts, involving addition and subtraction, are systematically solved. • The most appropriate method and operations are chosen and used to solve two-step addition and subtraction problems independently.
	Methods • Add and subtract numbers with up to four digits using the formal written methods of columnar addition and subtraction where appropriate. • Add and subtract numbers mentally, including: - A three-digit number and ones - A three-digit number and tens - A three-digit number and hundreds	• Generally, the formal written methods of columnar addition and subtraction are used to add and subtract numbers up to four-digits. • Three-digit numbers and ones and three-digit numbers and tens are added and subtracted mentally. Reminders may be needed to address mistakes. • With prompts, three-digit number and hundreds are added and subtracted mentally.	• Independently, the columnar addition and subtraction methods are used to add and subtract numbers with up to four-digits correctly. • Three-digit numbers and ones, three-digit numbers and tens and three-digit numbers and hundreds are added and subtracted mentally and quickly. • Generally, four-digit numbers and ones, tens or hundreds are added and subtracted mentally.

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To multiply and divide	**Methods** • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. • Use place value, and known and derived facts to multiply and divide mentally, including multiplying by 0 and 1, dividing by 1, multiplying together three numbers. • Recognise and use factor pairs in mental calculations.	• Two-digit numbers can be multiplied and divided by a one-digit number, using formal written layout accurately. • With reminders, three-digit numbers can be multiplied and divided by a one-digit number, using formal written layout. • Generally, place value and known multiplication and division facts are used to divide and multiply mentally, including multiplying by 0 and 1. • Two-digit numbers can be multiplied by 2, 3, 4 and 5 mentally. • Generally, three numbers can be multiplied together. • Two-digit and three-digit numbers are multiplied by 0 and 1 and two-digit and threedigit numbers are divided by 1 mentally with reminders occasionally needed. • Generally, factor pairs in mental calculations are used and recognised, e.g. 1 x 48 = 48, 2 x 24 = 48, 3 x 16 = 48.	• Independently, two-digit and three-digit numbers are multiplied by a one-digit number using formal written layout correctly. • The following mental calculations occur independently: - multiplying two-digit and three-digit numbers by 0 and 1 - dividing two-digit and threedigit numbers by 1 - multiplying together three numbers. • Place value and known multiplication and division facts are used to divide and multiply mentally, including multiplying by 0 and 1. • Factor pairs in mental calculations are used and recognised, e.g. 1 x 48 = 48, 2 x 24 = 48, 3 x 16 = 4
	Checking • Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems.	• The inverse relationship between multiplication and division is recognised. • With some support, the inverse relationship between multiplication and division is used to solve problems and check calculations. • Division facts can be found from a known multiplication fact.	• The inverse relationship between multiplication and division is used to check calculations and to solve problems independently
	Complexity • 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).	• Generally there is an understanding of the distributive law: multiplying a number by a group of numbers added together is the same as doing each multiplication separately, e.g. 3 (2 + 4) = 3 2 + 3 4. • The distributive law and other multiplication and addition methods are used to solve: - Problems involving multiplying two-digit numbers by a one-digit number - Integer scaling problems - Correspondence problems	• The distributive law and other multiplication and addition methods are used to solve: - Problems involving multiplying two-digit numbers by a one digit number without support. - Problems involving multiplying three-digit numbers by a one-digit number without support. - Integer scaling problems without support. - Harder correspondence problems without support
	Using multiplication and division facts	• Multiplication and division facts are recalled for 2, 3, 4, 5 and 10 multiplication tables at speed.	• Multiplication and division facts for multiplication tables up to 12 12 are recalled at speed.

	• Recall multiplication and division facts for multiplication tables up to 12 12.	• Generally and with a few reminders or corrections, multiplication and division facts for multiplication tables up to 12 12 can be recalled.	• Multiplication and division questions involving multiples of 10, 100, 1000, etc. are answered by using times table facts, e.g. 6 x 6 = 36 so 60 x 6 = 360.

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To use fractions	**Solving problems** • Add and subtract fractions with the same denominator within one whole. • Solve problems involving increasingly harder fractions. • Add and subtract fractions with the same denominator. • ind 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. • Solve simple measure and money problems involving fractions and decimals to two decimal places.	• Fractions with the same denominator within one whole are added and subtracted. • Generally, fractions with the same denominator are added and subtracted correctly, e.g. 1 – 3/4 = 1/2 • With reminders, problems involving fractions are solved. • With prompts, the effect of dividing a one- or two-digit number by 10 and 100 is found and the value of the digits in the answer are identified as ones, tenths and hundredths, e.g. 136 ÷ 100 = 1.36 and the value of the number 3 in the answer is 3 tenths. • Generally, simple measure and money problems involving fractions and decimals to two decimal places are solved.	• Independently, fractions with the same denominator are added and subtracted. • Independently, the effect of dividing a one- or two-digit number by 10, 100 or 1000 is found and the value of the digits in the answer are identified as ones, tenths, hundredths and thousandths. • Measure and money problems involving fractions and decimals to three decimal places are solved independently. • Problems involving increasingly harder fractions, such as improper fractions, fractions with different denominations, etc. are solved
	Recognising fractions • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • Round decimals with one decimal place to the nearest whole number. • Compare numbers with the same number of decimal places up to two decimal places. • Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal	• Fractions as numbers and fractions of a discrete set of objects are generally recognised and used. • Decimals with one decimal place are rounded to the nearest whole number. • Generally, counting up and down in tenths and hundredths is correct. It is generally recognised that tenths or hundredths arise from dividing an object into 10 or 100 equal parts and from dividing one-digit numbers or quantities by 10 or 100. • Unit fractions and fractions with the same denominators are ordered	• Fractions of a discrete set of objects and fractions as numbers are used and recognised independently. • Decimals with two decimal places are rounded to the nearest whole number without support. • Counting up and down in tenths, hundredths and thousandths is correct and takes place independently. It is recognised that tenths, hundredths and thousandths arise from dividing an object into 10, 100 or 1000 equal parts and from dividing one digit numbers or quantities by 10 or 100. • Unit fractions and fractions with the same denominators are compared and ordered.

	parts and from dividing one-digit numbers or quantities by 10. • Count up and down in hundredths; recognise that hundredths arise from dividing an object by 100 and dividing tenths by 10. • Compare and order unit fractions and fractions with the same denominators.		
	Equivalence • Recognise and show, using diagrams, families of common equivalent fractions. • Recognise and write decimal equivalents of any number of tenths or hundredths. • Recognise and write decimal equivalents to 1/4, 1/2, 3/4. • With the support of a teacher and by using diagrams, families of common equivalent fractions are recognised.	• Families of common equivalent fractions, e.g. 1/2 is equivalent to 2/4, 3/6, 4/8, etc., are recognised and shown. • Decimal equivalents of any number of tenths is recognised and written. • Generally, decimal equivalents of any number of hundredths is recognised and written. • Generally, decimal equivalents to 1/4, 1/2 and 3/4 are recognised and written correctly.	• Families of common equivalent fractions, e.g. 1/2 is equivalent to 2/4, 3/6, 4/8, etc., are recognised and shown independently. • Balancing equations are beginning to be solved. • Decimal equivalents of any number of tenths or hundredths is recognised and written. • Decimal equivalents to 1/4, and 3/4 are recognised and written correctly and independently. • Decimal equivalents of 1/3 and 2/3 are recognised and written.

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To understand the properties of shapes	• Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. • Recognise angles as a property of shape or a description of a turn. • Identify right angles; recognise that two right angles make a half turn, three make three quarters of a turn and four make a complete turn; identify whether angles are greater than or less than a right angle.	• Generally, 2-D shapes can be drawn and 3-D shapes made using modelling materials. 3-D shapes in different orientations are recognised. • Angles, as a property of shape, are recognised. • Generally, right angles, obtuse angles and acute angles are identified, compared and ordered correctly and the correct terminology is used. • Angles as a measure of a turn are recognised, i.e. two right angles make a half turn, three make three quarters of a turn and four make a complete turn. • Right-angled or equilateral triangles are recognised. When reminders are given, isosceles and scalene triangles are identified.	• 2-D shapes can be drawn and 3-D shapes made using modelling materials. 3-D shapes in different orientations are recognised without support. • Angles, as a property of shape or description of a turn, are recognised. • Right angles, obtuse angles, acute angles and reflex angles are identified correctly and independently. • Angles as a measure of a turn are recognised, e.g. there is a secure understanding that 180° (two right angles) is a half turn, 270° (three right angles) is three quarters of a turn and that 360° (four right angles) is a whole turn. • Right-angled, isosceles, scalene and equilateral triangles are recognised independently.

	• Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. • Identify acute and obtuse angles and compare and order angles up to two right angles by size. • Identify lines of symmetry in 2-D shapes presented in different orientations. • Complete a simple symmetric figure with respect to a specific line of symmetry.	• Horizontal and vertical lines are identified independently and pairs of perpendicular and parallel lines are generally identified correctly • Geometric shapes, including triangles and quadrilaterals, are generally classified. • Generally, lines of symmetry in 2-D shapes presented in different orientations are identified. • With help, there is classification of triangles into equilateral, scalene, isosceles and right-angled triangles, using the properties of shape. • With prompts and when using a vertical or horizontal line of symmetry, simple symmetric figures are completed. • Nets of 3-D shapes have started to be recognised and some nets for more common 3-D shapes can be created.	• Horizontal and vertical lines and pairs of perpendicular and parallel lines are identified correctly and without support • Geometric shapes, including triangles and quadrilaterals are classified and there is classification of triangles into equilateral, scalene isosceles and right-angled triangles, using the properties of shape. • When using a vertical or horizontal line of symmetry, symmetric figures are completed. • Lines of symmetry in 2-D shapes presented in different orientations are identified correctly and independently. • Generally, shapes can be reflected at 45° to a mirror line. • Nets of a variety of 3-D shapes are recognised and constructed

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To describe position, direction and movement	• Recognise angles as a property of shape and as an amount of rotation. • Identify angles that are greater than a right angle. • Describe positions on a 2-D grid as coordinates in the first quadrant. • Describe movements between positions as translations of a given unit to the left/right and up/down. • Plot specified points and draw sides to complete a given polygon.	• Angles are recognised as a property of shape and as an amount of rotation and angles that are greater than a right angle are identified and called obtuse angles. • Positions on a 2-D grid, as coordinates in the first quadrant, e.g. (2,2), are described and plotted. • When guidance is provided, specified points are plotted on a coordinate grid and sides are drawn to complete a given polygon, e.g. a hexagon. • The following directional terminology: left / right , clockwise / anticlockwise , 90° , is understood and used correctly to describe position, direction and movement.	• Angles that are greater than a right angle are identified and called obtuse and angles that are bigger than 180° are called reflex angles. • Positions on a 2-D grid, as coordinates in the first, second, third or fourth quadrant, e.g. (-2,2) are described. • Shapes can be reflected on a vertical and horizontal mirror line independently. • Movements between positions, as translations of a given unit, are described and translations using vectors are plotted. • Independently, specified points are plotted on a coordinate grid and sides are drawn to complete a given polygon, e.g. a hexagon

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To use measures	• Measure, compare, add and subtract: lengths/heights (m/cm/mm); mass/weight (kg/g); volume/capacity (l/ml). • Measure the perimeter of simple 2-D shapes. • Add and subtract amounts of money to give change (£ and p). • Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use appropriate vocabulary. • Know the number of seconds in a minute and the number of days in each month, year and leap year. Compare durations of events. • Convert between different units of measure. (e.g. kilometre to metre, hour to minute). • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. • Find the area of rectilinear shapes by counting squares. • Estimate, compare and calculate different measures, including money in pounds and pence. • Read, write and convert time between analogue and digital 12- and 24-hour clocks. • Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days.	• Generally, the terminology of area and perimeter is secure and used correctly. • The perimeter of a rectilinear figure (including squares) in centimetres and metres is measured and calculated. • The area of rectilinear shapes is found by counting squares. • With reminders, times are read, written and converted between analogue and digital 12- and 24hour clocks, (e.g. 3:00 o'clock – 15:00hrs). • Time is read to the nearest minute, time is compared and recorded, and the correct vocabulary is used: hours , minutes , seconds , etc. • Generally, amounts of money can be added and subtracted to give change. • The number of seconds in a minute and the number of days in each month, year and leap year are remembered, with prompts when necessary. • With some guidance, problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days are solved. • Lengths can be measured to the nearest cm and simple scales that increase in steps of 2, 5 or 10 can be read. • Different units of measure are converted confidently. • Generally, lengths (m/cm/mm), mass (kg/g) and volume/capacity (l/ml) are measured, compared, added and subtracted.	• The terminology of area and perimeter is secure. • The area and perimeter of rectilinear shapes are measured and calculated independently. • Amounts of money can be added and subtracted to give change confidently and correctly. • Without support, times are read, written and converted between analogue and digital 12- and 24-hour clocks, (e.g. 3:00 o'clock – 15:00hrs). • The number of seconds in a minute and the number of days in each month, year and leap year are remembered independently. • Different units of measure are converted confidently, e.g. kilometre to metre, hour to minute. • Problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to day are solved independently Lengths (m/cm/mm), mass (kg/g) and volume/capacity (l/ml) are measured, compared, added and subtracted independently. • Without support, conversions between wide varieties of different units of measure occur accurately.

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To use statistics	• Interpret and present data using bar charts, pictograms and tables. • Solve one-step and two-step questions (e.g. 'How many more?' and 'How many fewer?') using information presented in scaled bar charts, pictograms and tables. • Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	• Generally, data can be interpreted and presented using bar charts, pictograms, tables Venn diagrams and Carroll diagrams. • When reminders are provided, the most appropriate choice as to how to present and collect data is made. • Generally, one-step and twostep questions are solved using information presented in bar charts, pictograms and tables. • There is an emerging understanding of the difference between discrete and continuous data. • Generally, discrete and continuous data can be presented and interpreted using appropriate graphical methods.	• Data can be interpreted and presented using bar charts pictograms, tables, Venn diagrams and Carroll diagrams without support. • The difference between discrete and continuous data is securely understood. (Discrete data is counted; continuous data is measured.) • Discrete and continuous data can be presented and interpreted accurately using appropriate graphical methods. The most appropriate graphical methods are chosen independently. • One-step and two-step questions are solved independently using information presenting in bar charts, pictograms and tables. • Comparison, sum and difference problems are solved using information presented in bar charts, pictograms, tables and other graphs.

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To use algebra	• Solve addition and subtraction, multiplication and division problems that involve missing numbers.	• Addition, subtraction, multiplication and division problems, including missing number problems, are generally solved correctly by applying an understanding to a variety of routine and non-routine problems. • Patterns in results are looked for when solving problems.	• Addition, subtraction, multiplication and division problems, including missing number problems, are solved by applying understanding to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions