End of Year 3 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.	• With concrete objects, there is counting in multiples of 2, 5, 100, 1000. • There is a process of counting backwards to zero but prompts may be needed.	• 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.
	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 support, Roman numerals on a clock can be read.	• With reminders, Roman numerals to 100 (I to C) are read.
	Comparing Order and compare numbers beyond 1000.	• With the support of a teacher, place value in numbers up to 1000 is understood and these numbers can be ordered	• With reminders, the place value in numbers beyond 1000 is understood and these numbers can be ordered and compared.
	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 two-digit whole number is recognised. • With reminders, the place value of each digit in a three-digit number is recognised. • When models or frameworks are provided, any number is rounded to the nearest 10 or 100.	• 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.

	Solving problems • Solve number and practical problems with increasingly large positive numbers.	• With concrete objects, apparatus and guidance, number problems can be solved. • Equipment is beginning to be chosen to help solve problems.	• 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.

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To add and subtract	**Checking** • Estimate and use inverse operations to check answers to a calculation.	• When help or structure is provided, the inverse operations are used 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.
	Using Number facts • Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.	• There is an awareness of how to solve one step problems using number facts and place value. • With the support of a teacher, simple missing number problems can be solved using number facts and place value.	• Generally, number problems, including missing number problems, are tackled and solved using number facts, place value and addition and subtraction.
	Complexity • Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why. •	• With the support of a teacher and practical apparatus, one-step addition and subtraction problems are solved. • Two-step problems, involving addition and subtraction, are solved in different contexts.	• When reminders are given, the most appropriate operations and methods are chosen and used to solve problems
	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	• With the support of a teacher, the correct written methods are used to add and subtract numbers up to three-digits, including the number line method. • With prompts, three-digit numbers and ones are added and subtracted mentally.	• 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.

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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.	• Using practical apparatus, two-digit numbers are multiplied by a one-digit number. • With the support of a teacher and the use of concrete objects, two-digit numbers can be multiplied and divided by 2, 3, 4 and 5. • When reminders of strategies to support are given, simple multiplication and division facts can be solved mentally, including multiplying and dividing by 1. • With the support of a teacher and pictorial representations, factor pairs are recognised.	• 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.
	Checking • Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems.	• There is an awareness of the inverse relationship between multiplication and division. With the support of a teacher, this is used to solve problems and at times check calculations. • With support, division facts can be found from a known multiplication fact.	• 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.
	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).	• Using pictorial representations, concrete objects and at times the support of a teacher, simple multiplication and division problems are solved.	• 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
	Using multiplication and division facts • Recall multiplication and division facts for multiplication tables up to 12 12.	• Generally, multiplication and division facts for multiplication tables 2, 5 and 10 are recalled. • With support, multiplication and division facts are recalled for 3 and 4 multiplication tables	• Multiplication and division facts are recalled for 2, 3, 4, 5 and 10 multiplication tables at speed. • Generally and with a few reminders or corrections, multiplication and division facts for multiplication tables up to 12 12 can be recalled.

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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.	• With concrete objects and pictorial representations, fractions with the same denominator within one whole are added and subtracted, e.g. 2/7 + 3/7 = 5/7. • With the support of a teacher, there is understanding of representing 1/2 and 1/4 as a fraction, decimal and percentage. • With the support of a teacher and practical apparatus, the effect of dividing a one- or two-digit number by 10 is found and the value of the digits in the answer are identified as ones, tenths and hundredths. • When models are provided, such as concrete objects and pictorial images, simple measure and money problems involving fractions are solved.	• 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.
	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 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.	• With concrete objects and pictorial images, decimals are rounded to the nearest whole number. • With the support of a teacher, unit fractions and fractions with the same denominators are ordered. • With pictorial representations to reinforce, there is an emerging understanding that tenths arise from dividing an object into 10 equal parts and from dividing one-digit numbers or quantities by 10.	• 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

	• 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.	• With the support of a teacher, a fraction that is equivalent to 1/2 is recognised. • With the support of a teacher, a fraction that is equivalent to 1/2 is shown using diagrams. • With support and the use of pictorial representations, decimal equivalents of 1/2 are recognised. • There is an emerging understanding of the decimal equivalent to 1/4.	• 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.

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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. • 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.	• With guidance, 2-D shapes can be drawn and 3-D shapes made using modelling materials. Basic properties, e.g. number of sides, lines of symmetry, etc., are described. • With support, right angles can be identified and angles which are greater than or less than a right angle are identified. The terminology acute and obtuse is beginning to be used. • Horizontal and vertical lines are identified correctly. • When prompts are given, geometric shapes, including triangles and quadrilaterals, are classified. Different types of triangles, such as equilateral, scalene, isosceles and right-angled, may not be classified. • With the support of a teacher and when using a vertical line of symmetry, simple symmetric figures are completed. • Lines of symmetry in simple 2-D shapes, such as squares, rectangles and equilateral triangles, are identified with support. • With the support of a teacher, the net for a cube can be created.	• 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. • 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.

	• 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.		• 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.

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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.	• With the support of a teacher, angles are recognised as a property of shape and angles that are greater than a right angle are identified. • The x and y axis are identified on a coordinate grid. • When help or structure is provided, positions on a 2-D grid, as coordinates in the first quadrant, e.g. (2,2), are described. • There is an awareness of the following terminology for position, direction and movement: left / right , clockwise / anticlockwise , 90° to give directions.	• 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.

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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	• The terms area and perimeter are beginning to be understood. • By counting squares inside a shape, the area of rectilinear shapes can be found. • With support, the perimeter of simple 2-D shapes is measured in cm and m. • With the support of a teacher, the time can be understood from an analogue clock, including when using Roman numerals.	• 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).

	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.	• With the support of a teacher, a 12-hour clock can be read and time duration within the hour calculated. • With the support of a teacher and with practical apparatus, amounts of money can be added and subtracted to give change within one pound. • The number of seconds in a minute and the number of days in a year is remembered. • Lengths can be measured to the nearest cm and cm and simple scales that increase in steps of 2, 5 or 10 can be read with support. • With concrete objects and the support of a teacher, there are simple conversions between different units of measure, e.g. hours to minutes and cm to metres	• 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.

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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.	• There is an understanding of the terminology many more and many fewer . • Pictograms, tally charts, block diagrams and simple tables are constructed and interpreted with the support of a teacher. • Generally, one-step questions are solved using information presented in bar charts, pictograms and tables. • With support, questions about totalling and comparing categorical data are asked and answered. • Generally, questions about information gathered can be asked for other children to answer.	• 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.

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To use algebra	• Solve addition and subtraction, multiplication and division problems that involve missing numbers.	• With the support of a teacher and by using concrete objects and pictorial representations, simple addition, subtraction, multiplication and division problems are solved • Problems involving missing numbers are accessed when support is provided.	• 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.