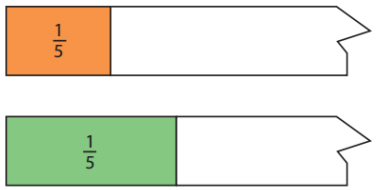
Mathematics Assessment grid
Year 4 Understanding and investigating within number

	Working towards Y4 expectations	Working at the expected Y4 expectations	Going to greater depth with Y4 expectations
Place value, ordering and rounding			
• **Counting, reading, writing, comparing, ordering and rounding whole numbers using place value**	Continues to count forwards and back in steps of 10 or100 from any given number to 1000; to find 100 more or less than a given number and starts to find 1000 more or less than a given number.	Counts forwards and back in steps of 10, 100, 1000 from any given number to beyond 1000. Finds 1000 more or less than a given number.	Applies understanding of the number system to solve number and practical problems and puzzles involving increasingly large positive numbers, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols. applies this in different contexts Demonstrates understanding in of negative numbers in context and uses to solve problems. Appreciates the difference between our number system and the Roman number system in terms of place value. May explore other number systems and appreciate that over time, the numeral system changed to include the concept of zero and place value.
	Identifies, represents and estimates numbers up to 1000 using different representations including in measures contexts.	Identifies, represents and estimates numbers using different representations beyond 1000 including in measures contexts.	
	Starts to recognize the place value of each digit in a four-digit number.	Recognizes place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	
	Reads, writes, orders and compare numbers to 1000 using vocabulary of comparing and ordering and including use of >, < symbols and = sign.	Reads, writes, orders and compares numbers beyond 1000 using appropriate vocabulary, >, < symbols and = sign.	
	Round any number up to 1000 to the nearest 10 or 100	Rounds any number to the nearest 10, 100 or 1000.	
	Starts to count backwards through zero to include negative numbers	Counts backwards through zero to include negative numbers	
	Starts to read Roman numerals to 20 and beyond	Reads Roman numerals to 100 (I to C).	
	Applies understanding of the number system to solve number and practical problems and puzzles involving familiar positive numbers, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.	Applies understanding of the number system to solve number and practical problems and puzzles involving increasingly large positive numbers, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.	
Properties of numbers and number sequences			
• **Counting in multiples**	Continues to count in known multiples and begins to count in multiples of 6, 7, 9, 25 and 1000.	Count in multiples of 6, 7, 9, 25 and 1000. Explores number sequences	Uses understanding to explore and reason about a wider range of sequences and to predict beyond the given range of the sequence explaining thinking.
Fractions and decimals	Continues to recognise, find and write fractions of a discrete set of objects: unit fractions and non – unit fractions with small denominators e.g. can find 3/5 of 25 Starts to understand the relationship between non-unit fractions and multiplication and division.	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. Understand s the relationship between non-unit fractions and multiplication and division, including tenths and hundredths.	Applies understanding of familiar fractions and decimals to solve routine and non-routine problems and puzzles involving numbers, shapes, money or measures. Problems may involve using understanding of

	Recognises and shows, using diagrams, families of common equivalent fractions with small denominators.	Recognises and shows, using diagrams, families of common equivalent fractions with increasingly larger denominators. Uses factors and multiples to recognise and simplify appropriate equivalent fractions.	equivalence, calculation with fractions or connections with decimals. Compares and orders fractions of amounts e.g. which is more, ¼ of 12 or ½ of 7? Shows understanding of relation of a fraction to the whole e.g. Two paper strips are ripped. Identify which original paper strip is longer. Explain your answer.  Applies this understanding to problems e.g. suggest how ½ of Tom's money could be equal to 1/3 of Amy's money. Explains methods and reasoning orally and in writing, including using diagrams and symbols.
	Continues to identify fractions as part of a whole form diagrams of greater complexity.	Continues to identify fractions as part of a whole form diagrams of greater complexity	
	Continues to add and subtract fractions with the same denominator within one whole e.g. 5/7 + 1/7 = 6/7	Add and subtract fractions with the same denominator and extend beyond one whole	
	Recognises and write decimal equivalents for any number of tenths. Continues to show understanding that tenths arise from dividing an object into 10 equal parts and in dividing 1 digit numbers or quantities by 10 and starts to relate this to the number system and decimal place value.	Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten and relates this to the number system and decimal place value. Recognise and write decimal equivalents for any number of tenths and some hundredths. Recognises and writes decimal equivalents to ¼, ½, and ¾.	
	Begins to understand decimals and fractions as different ways of expressing numbers and proportions.	Understands decimals and fractions are different ways of expressing numbers and proportions.	
	Counts up and down in tenths, compares and orders numbers and quantities with one decimal place and represents them in several ways, such as on number lines.	Counts up and down in tenths and hundredths, compares and orders numbers and quantities with the same number of decimal places up to two decimal places and represents them in several ways, such as on number lines.	
		Round decimals with one decimal place to the nearest whole number.	
	Find the effect of dividing a one- or two-digit number by 10, identifying the value of the digits in the answer as ones and tenths	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.	
	Apply understanding of familiar fractions and decimals to solve routine and non-routine problems and puzzles involving numbers, shapes, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.	Apply understanding of familiar fractions and decimals to solve routine and non-routine problems and puzzles involving numbers, shapes, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.	

Mathematics Assessment grid
Year 4 Developing and applying calculation

	Working towards Y4 expectations	Working at the expected Y4 expectations	Going to greater depth with Y4 expectations
Addition and subtraction • **Understanding number operations and the links between them**	Estimate and use inverse operations to check answers to a calculation	Estimate and use inverse operations to check answers to a calculation with increasing understanding and a range of problems. Recognises and explains patterns in calculations.	Applies mental and written calculation skills to solve more complex number puzzles and problems in a wide range of different contexts including money and measure, deciding which operations and methods to use and why. Routinely checks answers in the context of the question and using a range of methods. Explain methods and reasoning. Shows understanding of structure of problems and what makes one more complex than another. Poses own problems in a given context or to match a given calculations or representation e.g. a bar model. Write statements about the equality of expressions e.g. using the distributive law 39 x 7 = 30 x 7 + 9 x 7 and the associative law (2 x 3) x 4 = 2 x (3 x 4). Combine knowledge of number facts and rules of arithmetic to solve mental and written calculations e.g. 2 x 6 x 5 = 10 x 6 = 60.
Addition and subtraction • **Mental calculation**	Continues to add and subtract numbers mentally building on previous skills.	Develops mental methods with larger numbers and decimals where appropriate**.** Using place value and known facts Explains methods.	
Addition and subtraction • **Written methods**	Continues to add and subtract numbers with up to 3 digits using the formal written methods of columnar addition and subtraction where appropriate.	Adds and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	
Addition and subtraction • **Problem solving**	Solves simple addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. Explains methods and reasoning supported by representations such as a bar model when appropriate	Solves addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. Explains methods and reasoning supported by representations such as a bar model when appropriate.	
Multiplication and division • **Understanding number operations**	Recognise commutativity in mental calculations.	Recognise and use factor pairs and commutativity in mental calculations	
		Start to write statements about the equality of expressions e.g. using the distributive law 9 x 7 = 5 x 7 + 4 x 7 and the associative law (2 x 3) x 4 = 2 x (3 x 4). Combine knowledge of number facts and rules of arithmetic to solve mental and written calculations e.g. 2 x 6 x 5 = 10 x 6 = 60.	
	Use rounding, estimation and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy.	Use rounding, estimation and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy.	
Multiplication and division • **Recall of number facts**	Continues to recall and use multiplication and division facts for 2, 3,4,5,8 and 10 multiplication tables. Connects 2,4,and 8 tables through doubling	Recall multiplication and division facts for multiplication tables up to 12 x 12. Recognises patterns and relationships between number facts	Uses recall of multiplication and division facts and place value to explain patterns and relationships between number facts Applies mental and written approaches fluently to solve more complex problems in contexts involving all four operations integer scaling problems and harder correspondence problems such as n objects are connected to m objects e.g. the number of
Multiplication and division • **Mental calculation**	Begins to use place value, known and derived facts to multiply and divide mentally (e.g. 60 ÷ 3 = 20 can be derived from 2 x 3 = 6), including multiplying by 0 and 1; dividing by 1; multiplying together three numbers.	Uses place value, known and derived facts to multiply and divide mentally (e.g. 600 ÷ 3 = 200 can be derived from 2 x 3 = 6), including multiplying by 0 and 1; dividing by 1; multiplying together three numbers.	
Multiplication and division	Begins to multiply two-digit and three-digit	Multiplies two-digit and three-digit numbers by a	

• **Written methods**	numbers by a one-digit number using formal written layout of short multiplication	one-digit number using formal written layout of short multiplication	choices of a meal on a menu or three cakes shared equally between 10 children.
		Uses the formal written method of short division for calculations involving two and three digit numbers divided by a single digit with exact answers and to solve problems.	
Multiplication and division • **Problem solving**	Solve simple problems in contexts involving multiplying and adding to multiply two digit numbers by one digit.	Solve simple problems in contexts 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	

Mathematics Assessment grid
Year 4 Measurement

	Working towards Y4 expectations	Working at the expected Y4 expectations	Going to greater depth with Y4 expectations
Measurement • **length** • **mass** • **capacity**	Continue to estimate, compare, order and calculate different measures • length (m/cm/mm) • mass (kg/g) • capacity (l/ml)	Continue to estimate, compare, order and calculate different measures building on their understanding of place value and decimal notation to record measures for: • length (m/cm/mm) • mass (kg/g) • capacity (l/ml)	Applies measuring skills and understanding to solve more complex routine and non-routine problems and puzzles in measures contexts using information in practical situations or diagrams.
	Begin to convert between units of measure e.g. kilometre to metre / kilograms to grams / litres to millilitres and vice versa using multiplication to convert from larger to smaller units.	Convert between units of measure e.g. kilometre to metre / kilograms to grams / litres to millilitres and vice versa	
	Continue to measure the perimeter of simple 2D shapes in centimetres and metres.	Measure and calculate the perimeter of a rectilinear figure, including squares, in centimetres and metres.	Begin to express perimeter algebraically as 2 (a + b) where a and b are dimensions in the same unit.
	Starts to find the area of rectilinear shapes by counting squares.	Finds the area of rectilinear shapes by counting squares. Relates area to arrays and multiplication.	Explains how to find the area of rectilinear shapes by counting squares or by using multiplication.
•	Uses all four operations to solve problems in the context of measures using appropriate numbers including with practical materials equipment. Represent thinking including bar modelling.	Uses all four operations to solve problems in the context of measures using appropriate numbers including with practical materials equipment. Represent including bar modelling.	*Use understanding of temperature in context to solve problems*
• **Temperature**	*Estimate, compare and order temperatures (°C) relating to understanding of negative numbers.*	*Estimate, compare and order temperatures (°C) relating to understanding of negative numbers.*	
• **Time**	Continues to read and write time to nearest minute from analogue and digital 12 hour clocks	Read, write and convert time between analogue and digital 12- and 24-hour clocks	
	Solves problems by converting from hours to minutes. Begins to solve problems involving converting from minutes to seconds; years to months; weeks to days.	Solves problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	
• **Money**	Continue to compare and calculate with money including money in pounds and pence.	Estimate, compare and calculate with money in pounds and pence building on understanding of place value and decimal notation. Convert pounds to pence and vice versa	

Mathematics Assessment grid
Year 4 Geometry

	Working towards Y4 expectations	Working at the expected Y4 expectations	Going to greater depth with Y4 expectations
Geometry • **Properties of shapes**	Begin to compare and classify geometric shapes, including quadrilaterals e.g. parallelogram, rhombus, trapezium and triangles e.g. isosceles, equilateral, scalene, based on properties and sizes.	Compare and classify geometric shapes, including quadrilaterals e.g. parallelogram, rhombus, trapezium and triangles e.g. isosceles, equilateral, scalene, based on properties and sizes.	Solve more complex problems, involving reasoning about properties of shapes, position and direction. Explain solutions orally or using writing, diagrams, practical materials or dynamic geometry ICT tools Explores given conjectures about shapes and explains reasoning
	Begin to compare lengths and angles to decide if a polygon is regular or irregular.	Compare lengths and angles to decide if a polygon is regular or irregular.	
	Continue to identify right angles as measure of turn; identify angles that are greater or less than a right angle and use language of acute and obtuse.	Identify, in a wider range of situations acute and obtuse angles and compare and order angles up to two right angles by size	
	Begin to identify lines of symmetry in 2-D shapes presented in different orientations.	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	Complete a simple symmetric figure with respect to a specific line of symmetry in different orientations	
	Begin to draw symmetric patterns using a variety of media to become familiar with different orientations of lines symmetry. Recognise line symmetry in a variety of diagrams including where it does not dissect the original shape.	Draw symmetric patterns using a variety of media to become familiar with different orientations of lines symmetry; and recognise line symmetry in a variety of diagrams including where the line of symmetry does not dissect the original shape.	
Geometry: • **Position and direction**		Begin to draw a pair of axes in one quadrant, with equal scales and integer labels.	
	Begin to describe positions on a 2-D grid as coordinates in the first quadrant.	Describe positions on a 2-D grid as coordinates in the first quadrant.	
	Begin to plot specified points and draw sides to complete a simple polygon.	Plot specified points and draw sides to complete given polygon.	
	Begin to describe movements between positions as translations of a given unit to the left/right and up/down.	Describe movements between positions as translations of a given unit to the left/right and up/down.	
Geometry • **Problem solving**	Solve simple problems, involving reasoning about properties of shapes, position and direction. Explain solutions orally or using writing, diagrams, practical materials or dynamic geometry ICT tools	Solve problems, involving reasoning about shapes and their properties. Explain solutions orally or using writing, diagrams, practical materials or dynamic geometry ICT tools	

Mathematics Assessment grid
Year 4 Statistics

	Working towards Y4 expectations	Working at the expected Y4 expectations	Going to greater depth with Y4 expectations
Statistics	Continue to interpret and present discrete data using a wide range of graphs and charts.	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and begin to interpret time graphs Uses a greater range of scales in representations.	Applies understanding to interpret and present statistical information to solve problems and to pose their own questions. Suggest their own appropriate scales for graphs. Explains how the graphical representation of data relates to recording change over time. Start to hypothesise beyond the data that are presented asking e.g. • What would happen if? • What could this graph be about?
		Begin to relate the graphical representation of data to recording change over time.	
	Begin to 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 bar charts, pictograms, tables and other graphs.	
		Pose questions that can be answered using information presented in different graphs charts and tables.	