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Year 5 Maths Long Term Plan								
Autumn	Number and Place Value (3 weeks)	Addition and Subtraction (4 weeks)		Multiplication and Division multiples, factors, square, cube numbers (2 weeks)	Fractions (3 weeks)			
Spring	Fractions (3 weeks)		Measure Converting Units of Time (1 week)	Multiplication and Division formal methods (3 weeks)		Decimals and percentages (2 weeks)	Perimeter and area (2 weeks)	
Summer	Statistics (2 weeks)	Geometry Shape (3 weeks)	Geometry Position and Direction (2 weeks)	Decimals (3 weeks)	Negative number (1 week)	Measurement Converting units (2 weeks)	Measurement Volume (1 week)	

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<table>
<tr><th colspan="4">Blocks 1 and 13</th></tr>
<tr><th colspan="4">Number and Place Value</th></tr>
<tr><th>Substantive Knowledge
National Curriculum</th><th>Ready to Progress</th><th>Key Performance Indicators</th><th>Sequence of learning
Detailed in Planning Overview</th></tr>
<tr><td>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</td><td>NPV–2 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.</td><td>• Can explain the place value in numbers up to 1 000 000
• Can order a set of numbers to 1 000 000
• Understands how a number can be partitioned into different amounts e.g. 45000 is 45 thousands, 450 hundreds, 4500 tens or 45000 ones.</td><td rowspan="3">* Reading, writing and making numbers to a million (place value charts, place value counters, digit cards)
*Understanding the size and value of a million (How Big is a Million – Usborne)
* Recognise the place value of each digit in a 7-digit number
*Partition a number up to 1 million in a standard and non standard way
* Look at partitioning a number into different amounts – to understand that 45,000 is 450 hundreds or 4500 tens
* Look at the impact of adding powers of 10 to a number up to 1,000,000 (with and without crossing boundaries)
* Position numbers up to 1 million on a number line with a range of start and ending points – blank and called number lines
* Order and compare numbers (either by positioning 0 a number line first or by using place value)
*Problem solving around ordering and comparing numbers (link to money and measure)</td></tr>
<tr><td>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</td><td></td><td>• Can count forwards and backwards in 10s and 100s and explain how to find numbers 10 and 100 bigger or smaller than any number to 1 000 000.
• Can count forwards and backwards in 1 000s and 10 000s and explain how to find numbers 1 000 and 10 000 bigger or smaller than any number to 1 000 000.</td></tr>
<tr><td>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</td><td></td><td>• Understands how to bridge through zero when counting forwards and backwards with positive and negative numbers
• Can solve problems linked to temperature involving negative numbers</td></tr>
</table>

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Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	NPV–3 Reason about the location of any number with up to 2 decimals 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.	• Understands the rules for rounding numbers and round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	* Rounding numbers up to 1 million to the nearest 10, 100, 1000, 10,000 and 100,000 (position numbers on a number line, which power of 10 is it closest to? What is the determiner if we are rounding to each power of 10?) *Problem solving around rounding * Read and position negative numbers on a number line. * Calculate the difference between a positive and a negative number by bridging back through 0 * Problem solving involving negative numbers *Reading and writing Roman Numerals up to 1000
Solve number problems and practical problems that involve all of the above		• Can solve problems involving place value, including word problems and problems linked to money and measure	
Read Roman numerals to 1000 (m) and recognise years written in roman numerals.		• Can use Roman numerals to 100 to begin to derive Roman numerals to 1000 • Can recognise years written in Roman Numerals	

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Block 2			
Addition and Subtraction			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**
Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)		• Can solve THTU + THTU (bridging 10 and 100) • Can solve THTU - THTU (bridging 10 and 100) • Can use a formal written method to add money and measure using decimal notation to tenths • Use a formal written method to add money and measure using decimal notation to hundredths • Use a formal written method to add units of measure using decimal notation to hundredths	***Teach mental strategies first*** * Partitioning to add using place value * Calculate using known facts and scaling (3 + 5 = 8 becomes 3000 + 5000 = 8000 or 0.3 + 0.5 = 0.8) * Adding 2 numbers by bridging through 10 or a power of 10 * Subtracting numbers by bridging back through 10 or a power of 10 * Add and subtract numbers by bridging multiple times
Add and subtract numbers mentally with increasingly large numbers	NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth)	• Can add and subtract increasing large numbers using a variety of strategies • Doubling, Partitioning, Reordering, Bridging through a multiple of 10 • Can add and subtract simple decimals mentally *e.g. 0.25 + 0.5*	* Subtracting by finding the difference (applying bridging if necessary) *Reordering calculations to look for known facts * Using a bar model or number facts triangle to find fact families for calculations * Checking calculations using the inverse operation * Check calculations by using rounding to estimate the answer to a problem
Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy		• Can estimate the answer up to 4 digits by rounding	* Using compensating as a strategy to mentally add or subtract numbers * Using adjusting as a strategy to mentally add or subtract numbers

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Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why		• Can use addition and/or subtraction strategies to solve a complex problem • Use the inverse to check the answer • Solve problems including those with more than one step • Solve open-ended investigations using a variety of units of measure	* Formal written strategy for addition * Formal written strategy for subtraction * Children reflect on most efficient strategy to use for a range of calculations * Problem solving using a range of strategies (link to money and measure)

Blocks 3 and 7			
Multiplication and Division			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**
Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	MD–2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	• Can identify multiples of a number • Can systematically find all factor pairs of a 2 digit number • Can identify common factors in two 2 digit numbers • Can explain the relationship between a factor and a multiple	***Recap and refresh times tables as starter activities throughout the unit*** * Revisit arrays, commutative and inverse from the previous curriculum. * Create fact families for known multiplication calculations *Missing box multiplication and division calculations *Multiplying a number by 10, 100 and 1000 using the concept that numbers get 10, 100 or 1000 times larger and how this looks on a place value chart
Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers		• Understands the definition of prime number • Can break a number down into prime factors • Understands the definition of a composite number	

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			*Dividing a number by 10, 100 and 1000
Establish whether a number up to 100 is prime and recall prime numbers up to 19		• Can identify prime numbers to 100 • Can recall prime numbers to 19 • Can explain why a number is prime	*Use known facts and scaling to create related facts (3 x 4 = 12 so 30 x 4 = 120 and 30 x 40 = 1200 or 0.3 x 0.4) *Create fact families for scaled multiplication calculations
Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	• Can use a formal written method to multiply ThHTU by U • Can use a formal written method to multiply TU by TU • Can use a formal written method to multiply HTU by TU • Can use a formal written method to multiply ThHTU by TU	* Reordering Calculations to make multiplying easier * Double and halve relationship in multiplication and division (for example 9 x 20 becomes 18 x 10 because we can halve one side of the calculation and double the other side) * Partitioning to multiply 234 x 3 becomes 200 x 3, 30 x 3, 4 x 3 * Partitioning to divide by place value or by multiples (72 ÷ 6 becomes 60 ÷ 6 and 12 ÷ 6 = * Using arrays investigate factors * Develop a systematic way of finding all multiples of a number * Investigate common multiples using factors * Build arrays for square numbers and discuss that these have an odd number of factors
Multiply and divide numbers mentally drawing upon known facts	NF–1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth)	• Quickly recall multiplication and division facts to 12 x 12 • Use knowledge of times tables to multiply and divide by multiples of 10 • Use knowledge of times tables to multiply and divide by multiples of 100 • Use knowledge of times tables to multiply and divide by multiples of 1000 • Can multiply multiples of 10 by multiples of 10 • Can multiply multiples of 10 by multiples of 100 • Can use rounding to estimate answers to larger multiplication or division calculations	

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	MD–1 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.	• Can use factors to calculate other multiplication facts *e.g. 17 x 6 = 17 x 3 x 2*	* Build arrays for prime numbers and establish what makes these numbers prime * Substantial problem involving investigating factors, prime and square numbers such as nRich Abundant Numbers * Investigate square numbers using practical equipment and relating this to the abstract notation * Formal written strategy for multiplication TO x TO (in line with your school's calculation policy) * Formal written strategy for division HTO ÷ O (in line with your school's calculation policy) * Solving problems involving multiplication and division (using mental and written strategies, scaling and simple ratio)
Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	• Can use a formal written method to divide TU by U • Can use a formal written method to divide HTU by U • Can use a formal written method to divide ThHTU by U • Can explain what a remainder is • Understands the meaning of a remainder in a context and interpret appropriately	
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000		• Understand the effect of multiplying by 10, 100 and 1000 • Understand the effect of dividing by 10, 100 and 1000	
Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})		• Understand how to square a number and the notation for squared • Can recognise square numbers • Can link knowledge of square numbers to area • Understands how to cube a number and the notation for cubed • Can recognise cube numbers	

		• Can link knowledge of cube numbers to volume	
Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes		• Can solve problems that link children's understanding of prime numbers, composite numbers, factors and multiples *e.g. complete partial multiplication pyramid using knowledge of factors and multiples* • Can solve multiplication and division problems linked to measurement using children's knowledge of squared and cubed numbers	
Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign		• Can decide on which operations and methods are needed to solve a given problem • Can use appropriate strategies to solve a problem • Can recognise the equals sign as a balancing symbol *e.g. 3 x 8 = 5 + ?*	
Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple ratio.		• Can solve problems that involve scaling *e.g. reducing a recipe for more/less people* • Can solve simple ratio problems e.*g. making paint to a given formula*	

Blocks 4 and 5			
Fractions			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**

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Compare and order fractions whose denominators are all multiples of the same number		• Can convert fractions using multiples to have the same denominator. • Understands the effect of a denominator increasing in multiples. • Compare and order mixed and improper fractions	*Recap the language of fractions and representations of fractions * Use a fractions wall to establish some simple equivalences *Explore the relationships between fractions that are equivalent *Use multiplication to find a family of equivalent fractions when given a starting fraction Substantial problem -nRich linked chains * Order and compare fractions where the denominators are all multiples of each other – applying equivalent fractions understanding *Calculating non unit fraction of quantities * Explore mixed numbers and improper fractions by continuing a fraction count across 2 fraction walls or a number line that extends beyond 1 (so a count could be one third, two thirds, three thirds, four thirds, five thirds or one third, two thirds, one whole, one whole and one third, one whole and two thirds) *Position mixed numbers and improper fractions on a number line * Look at converting improper fractions to mixed numbers (using a part whole model initially) *Convert mixed numbers into improper fractions * Add and subtract fractions where denominators are multiples of the same number (applying equivalent fractions understanding)
Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	F–2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	• Understands that numbers can have a different representation but have generally the same meaning.	
Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number		• Understands a fraction can be more than one • Understands that when the numerator is more than the denominator it is more than one whole. • Understands fractions can be represented as a mixed number and an improper fraction.	
Add and subtract fractions with the same denominator and denominators that are multiples of the same number		• Can use common multiples to convert fractions to have the same denominator. • Can add and subtract fractions • Can convert answers using mixed and improper fractions. • Can mentally add and subtract $\frac{1}{10}$s	

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			*Add and subtract fractions where one fraction is a mixed number, and one is an improper fraction *Multiply proper fractions by a whole number using models and images to support (bar modelling)
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams		• Can multiply together fractions with common denominators • Can use a number line to represent multiplying a fraction as repeated addition. • Understands when multiplying by a fraction the answer is smaller.	
	5F–1 Find non-unit fractions of quantities		

Block 6			
Measure – Time			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**
Solve problems involving converting between units of time	NPV–5 Convert between units of measure, including using common decimals and fractions.	• Can use all four operations in problems involving time, including conversions	*Discuss units of time and conversions • Years to months/weeks • Weeks to days • Days to hours • Hours to minutes • Minutes to seconds *Children to solve questions around converting units of time using efficient calculation strategies

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Blocks 8 and 13			
Decimals and Percentages			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**
Read and write decimal numbers as fractions	F–3 Recall decimal fraction equivalents for $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}$, and $\frac{1}{10}$ and for multiples of these proper fractions.	• Can convert decimals to fractions • Can explain the value of each part of a decimal and explain the fraction equivalence.	Recap year 4 decimals unit and look at counting in tenths, hundredths *Using base 10 or bead strings investigate tenths, hundredth and thousandths as a fraction and a decimal (1 out of 1000 beads is 1/1000 or 0.001 because we have 1 in the thousandths column *Looking at the powers of 10 with decimals (10 thousandths is 1 hundredth, 100 thousandths is 1 tenth, etc) *Reading, writing, composing, and decomposing numbers up to 3dp using standard and non-standard partitioning *Ordering and comparing numbers up to 3 dp using place value *Positioning decimals to 2dp on a number line *Rounding decimals with 2dp to the nearest whole number (application of number line work to aid in visualising which number to round to) * Knowing that 0.5 is 1 half, 0.25 is a quarter, 0.2 is a fifth and 0.1 is a tenth –
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	NPV–1 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.	• Can identify and calculate 1/1000 as a decimal • Can identify the pattern when finding other thousandths • Can compare thousandths to tenths and hundredths.	
Round decimals with two decimal places to the nearest whole number and to one decimal place	NPV–3 Reason about the location of any number with up to 2 decimals 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.	• Understands the rules of rounding up and down. • Can apply the rules of rounding to a whole number • Can apply the rules of rounding to 1dp. • Can identify which value is closer to a given number.	
Read, write, order and compare numbers with up to three decimal places	NPV–2 Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2	• Understands how thousandths are represented as a decimal. • Can order numbers to 3dp.	

	decimal places using standard and non-standard partitioning. NPV–4 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.		using a bead string as a concrete resource (find me 0.1 on a bead string. What fraction of the bead sting do have you found? *Apply knowledge of known fraction/decimal facts to multiples of these decimals (what fraction is the same as 0.3? 0.8?
Solve problems involving number up to three decimal places		• Can solve problems involving measure	*Problem solving using 4 operations with decimals to 3dp (link to measures) *Introduce the term percentage as 'parts per hundred'
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, and as a decimal		• Understand 1% is 1 part out of 100 • Can write the decimal equivalent to 1% • Understand percentage as a number out of 100. • Can write percentages as a fraction with denominator 100 • Can use 1% to calculate 10%, 5%, 50% and 100%	* Use a beadstring and ask children to show 1%, 5%, 67%, etc Relate percentage to decimals and fractions 'Show me 10%, what is this as a decimal and as a fraction – relate back to prior learning' *Recognise decimal equivalences for 25%, 10%, 50% 5% and 1%
Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \text{and } \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.		• Can use the pattern to calculate other multiples of known percentages. • Has a good recall of the percentage, fraction and decimal equivalence of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \text{and } \frac{4}{5}$ • Has a good recall of the percentage and decimal equivalence of fractions with a denominator of a multiple of 10 or 25.	* Apply understanding of fractions, decimals and percentages to shade in sections of 100 square using set criteria *Using and applying known facts. If we know 25% of a number, how can we find 75%? If we know 10% then how can we find 30%

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Block 9			
Measure – Perimeter and Area			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres		• Can divide a composite shape into rectangles and calculate the perimeter of each shape. • Can recombine shapes and calculate the perimeter of shapes. • Can find missing lengths of a shape if given a perimeter.	*Recap perimeter and look at the perimeter of some regular shapes *Discuss finding the perimeter of regular shapes where some information is missing * Look at finding the perimeter of a composite rectilinear shape by breaking it down into smaller shapes * Find missing lengths of a shape if given the total perimeter * Recap area and counting the squares in a shape to find its area *Understand why we use the notation cm squared when recording the area of a shape *Use the formula LxW to calculate the area of a shape using cm^2 ^use a scaled drawing to calculate the area of a shape *If given the area of a shape children can suggest what the shape might look like
Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes	G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.	• Can use the formula, L x W to calculate area. • Understands why the answer is the unit squared. • Can find shapes that have a set area. • Can calculate area from scaled drawings	

Block 10			
Statistics			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**

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Solve comparison, sum and difference problems using information presented in a line graph	No specific Ready to Progress statements for Money but use the opportunity to consolidate prior statements as appropriate e.g NPV–4 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.	• Can answer questions that involve comparing the values between two points on a line graph e.g. When does the temperature rise the quickest? • Can answer questions that involve finding the difference between two points on a line graph e.g. By how much does the temperature rise between 1 and 2pm • Can answer questions that involve finding the sum of values on a line graph e.g. How far did the lorry driver travel in total?	*Recap different types of data and graphs from the previous curriculum (recap continuous and discreet data) *Discuss the data represented on a line graph – continuous data and children can suggest types of line graphs that we could see *Give children a range of line graphs to read with a range of scales *Children to discuss and interpret data from the line graphs * Answer questions that involve comparing the values between two points on a line graph e.g. When does the temperature rise the quickest? Answer questions that involve finding the difference between two points on a line graph e.g. By how much does the temperature rise between 1 and 2pm *Answer questions that involve finding the sum of values on a line graph e.g. How far did the lorry driver travel in total? *Look at a selection of tables including timetables *Children to answer questions based on timetables such as the local bus or train timetable
Complete, read and interpret information in tables, including timetables		• Can answer questions that involve timetables e.g. How long does the journey from Chester to Northwich take on the bus? • Can answer questions linked to information presented in tables	

Blocks 11 and 12			
Geometry			
Substantive Knowledge	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning**

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National Curriculum			Detailed in Planning Overview
Identify 3-D shapes, including cubes and other cuboids, from 2-D representations		• Can name 3D shapes from pictures • Can identify the 3D shapes represented by 2D nets • Can identify nets of open and closed cubes	*Recap 2d shapes and names and 3d shapes and names *Look at the shadows of some 3d shapes -what could they be and why? * Investigate the concept of a 3D shape having a 2D net. Model drawing around the faces of a cube to create a flat representation *Given a range of nets children investigate which will and will not make a complete cube *Investigate nets of cuboids *Children to investigate making nets of shapes using interlocking tiles *Discuss angles and what angles are measured in *Define angles – acute (less than 90 degrees) Right angle (90 degrees) Obtuse (91 degrees – 180 degrees) Reflex (180 degrees to 360 degrees) *Children to estimate what type of angle an image is representing *Children to identify types of angles in shapes *Children learn how to measure angles accurately using a protractor *Children learn how to draw angles using a protractor * Recap previous learning of 90 degrees being a quarter turn, 180 degrees being a half turn and relate
Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	Can explain that angles are measured in degrees • Can identify acute, obtuse and reflex angles • Can estimate the size of acute, obtuse and reflex angles • Can compare and order a set of angles	
Draw given angles, and measure them in degrees (°)	G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	• Can use a protractor to measure angles accurately in degrees both on their own and within shapes • Can draw given angles using a protractor	
Identify: • angles at a point and one whole turn (total 360°) • angles at a point on a straight line and ½ a turn (total 180°) • other multiples of 90°		• Can recognise that angles at a point make a whole turn and total 360° • Can recognise that angles on a straight line make half a turn and total 180° • Can recognise multiples of 90° within turns • Can calculate missing angles in a range of contexts	

			this to 360 degrees being a full turn and 270 being a turn of three quarters.
Use the properties of rectangles to deduce related facts and find missing lengths and angles		• Can describe that a rectangle has two pairs of equal and parallel sides • Can describe that a rectangle has four right-angles • Can explain why a square is a type of rectangle • Can find missing lengths of rectangles • Can identify the diagonals of rectangles • Can make suggestions about the size of angles formed between the parallel sides of a rectangle and its diagonals • Can use the fact that the angle sum of a quadrilateral is 360° to make suggestions about the size of the angles formed between the sides of quadrilaterals	*Children to practice turning in multiples of 90 degrees clockwise and anticlockwise *Relate turns to angles on a straight line and angles in a circle. Children to use their understanding that a straight line is 180 degrees, and a circle is 360 degrees to calculate missing angles *Nrich Problem solving – Olympic turns * Teach the children the mathematical conventions of a rectangle - Opposite sides of a rectangle are the same length (congruent). The angles of a rectangle are all congruent (the same size and measure.) *Using given information and generalisations about rectangles children state missing lengths or angles on a diagram * Identify the difference between regular and irregular shapes Regular shapes have sides that are all equal and interior (inside) angles that are all equal. Irregular shapes have sides and angles of any length and size. *Sort regular and irregular polygons * Discuss reflection and what a shape will look like after it has been reflected * Can describe the position of a shape after it has been reflected on a grid in a line that is parallel to an axis.
Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.		• Can recognise that a regular polygon has n equal sides and n equal angles • Can identify regular and irregular polygons from a set of shapes and explain why • Can identify a square as the only regular quadrilateral.	
Identify, describe and represent the position of a shape following a reflection or translation, using		• Can describe the position of a shape after it has been reflected in a line that is parallel to an axis.	

the appropriate language, and know that the shape has not changed.		• Can describe the position of a shape after it has been translated across and up. • Understand the difference between a congruent and similar shape.	*Discuss translation as being when a shape is moved from one position to another in a vertical or a horizontal direction on a grid *Children translate shapes on a grid and state the finishing coordinates of the shape after it has been translated

Blocks 15 and 16			
Measure – Length, Mass and Capacity			
Substantive Knowledge **National Curriculum**	**Ready to Progress**	**Key Performance Indicators**	**Sequence of learning** **Detailed in Planning Overview**
Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	NPV–5 Convert between units of measure, including using common decimals and fractions.	• Can use their knowledge of place value and multiplication and division by 10, 100 and 1000 to convert between standard units • Can decide on the appropriate measure to record their answer • Can understand the decimal notation of units of measure.	*Recap what is known about metric measures – how many g in a kg, ml in a l, cm in a m, etc *Practice reading a range of scales for length, capacity and weight * Use their understanding of the powers of 10 to talk about this using the language of fractions and decimals – a ml is 1/1000 the size of a litre, a g is 0.001 the size of a kg * Apply their understanding of multiplying and dividing by 10, 100 and 1000 to convert between standard measures * To be able to record measures as decimals *Children to solve problems around comparing the weight, length or capacity of 2 objects by converting units to the same system of measurement.
Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints		• Can convert between familiar imperial units of measure and metric measure ○ 1 litre is approximately 2 pints (more accurately, 1 ¾ pints)	

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		○ 4.5 litres is approximately 1 gallon or 8 pints ○ 1 kilogram is approximately 2 lb (more accurately, 2.2 lb) ○ 30 grams is approximately 1 oz ○ 8 kilometres is approximately 5 miles • Can compare imperial units to metric units of measure by converting units into the same unit of measure.	*To convert from metric measures to imperial units when given the conversions. ○ 1 litre is approximately 2 pints (more accurately, 1 ¾ pints) ○ 4.5 litres is approximately 1 gallon or 8 pints ○ 1 kilogram is approximately 2 lb (more accurately, 2.2 lb) ○ 30 grams is approximately 1 oz ○ 8 kilometres is approximately 5 miles 'If I know 8km is approximately 5 miles then how many km is 15 miles?' * Recap capacity as being the amount of liquid a container can hold but now introduce volume as being the amount of space that something can take up. We record capacity as ml, l, pints, gallons, etc but we record capacity as cm^3 *Understand why we use cm^3 as a measure of volume *Using cubes build shapes that have a volume of 12. Discuss how to record what they have made using multiplication so 2cm x 3cm x 2cm = a volume of $12cm^3$ *Children to investigate the volume of regular and irregular shapes and record the volume using cm^3 *Use all 4 operations to calculate measures problems including 2 step problems where conversations are needed to make both values into a common measure.
Estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]		• Can find volumes of regular and irregular 3D shapes using cubes. • Can identify shapes /containers with a similar volume. • Can record volume using cm^3	
Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.		• Can solve problems involving a variety of measures. • Can convert appropriately between measures to help solve the problem	