

<u>Maths</u>

Skills taught from EYFS - Y6 at The Grange

Place Value

EYFS	• Say the total number in the	from a larger group. different ways. ical objects.	umber they have said is the total in t	
Year One	 Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count numbers to 100 in numerals; count in multiples of twos, fives and tens. 	 Represent Identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in numerals. Read and write numbers from 1-20 in numerals and words. 	 Use PV and Compare Given a number, identify one more and one less. 	Problems & Rounding

Year Two	 Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward 	 Read and write numbers to at least 100 in numerals and in words. Identify, represent and estimate numbers using different representations, including the number line. 	 Recognise the place value of each digit in a two-digit (tens, ones). Compare and order numbers from 0 up to 100. Use <, > and = signs. 	Use place value and number facts to solve problems.
Year Three	 Count from 0 in multiples of 4, 8, 50 and 100. Find 10 or 100 more or less than a given number 	 Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words. 	 Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Compare and order numbers up to 1000. 	 Solve number problems and practical problems involving these ideas.
Year Four	 Count backwards through zero to include negative numbers count in multiples of 6, 7, 9, 25 and 1000. 	 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. 	 Find 1000 more or less than a given number. Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, ones). Order and compare numbers beyond 1000. 	 Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve all of the above and with increasingly large numbers.
Year Five		 Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. 	• Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.	 Interpret negative numbers in context. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Solve number problems and practical problems that involve all of the above.
Year Six		 Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. 	 Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. 	 Round any whole number to a required degree of accuracy.

		•	Use negative numbers in
			context and calculate intervals
			across zero.
		•	Solve number and practical
			problems that involve all of the
			above.

Addition & Subtraction

EYFS	 Sorts into groups. Finds one more and one less within Combines two groups (up to 10) to f Finds number bonds to 10 using obje Add by counting on. Take away by counting back. Finds number bonds to 5. 	ind the whole.	
	Recall, Represent, Use	Calculations	Solve Problems
Year One	 Read, write and interpret mathematical statements involving addition, subtraction and equals signs. Represent and use number bonds and related subtraction facts within 20. 	 Add and subtract 1-digit and 2-digit numbers to 20, including zero. 	 Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems.
Year Two	 Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100. Show that addition of two numbers in any order (commuatitve) and subtraction of one number from another cannot. 	 Add and subtract numbers using concrete objects, pictorial representations and mentally, including: A 2-digit number and ones. A 2-digit number and tens. 2-digit numbers. Adding three 1-digit numbers. 	 Solve problems with addition and subtraction: Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Applying their increasing knowledge of mental and written methods.

	 Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. 		
Year Three	• Estimate the answer to a calculation and use inverse operations to check answers.	 Add and subtract numbers mentally, including: 3-digit number and ones. 3-digit number and tens. 3-digit number and hundreds Add and subtract numbers with up to 3-digits, using formal written methods of columnar addition and subtraction. 	 Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction.
Year Four	• Estimate and use inverse operations to check answers to a calculation.	 Add and subtract numbers with up to 4 digits sding the formal written methods of columnar addition and subtraction where appropriate. 	 Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
Year Five	 Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. 	 Add and subtract whole numbers with more than 4 digits, including using formal written methods. Add and subtract numbers mentally with increasingly large numbers. 	 Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
Year Six		 Perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of operations to carry out calculations involving the four operations. 	 Solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why.

EYFS	 Finds doubles. Halves and shares. Identifies odds and evens. Solve problems including doubling 	_		
Year One	Recall, Represent, Use	Calculations	 Solve Problems Solve one step problems involving multiplication and division using objects, pictures and arrays, with support from the teacher. 	Combined Operations
Year Two	 Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. 	 Calculate mathematical statements for multiplication and division within the x tables and write them using the correct signs. 	 Solve problems involving multiplication and division using objects, arrays, repeated addition, mental methods, facts. 	
Year Three	 Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. 	• Write and calculate mathematical statements for multiplication and division using the x tables that they know, including for 2-digit numbers x 1-digit numbers, using mental and progressing to formal written methods.	 Solve problems including missing number problems involving multiplication and division, integer scaling and correspondence problems. 	
Year Four	Recall multiplication and division facts for multiplication tables up to 12 x 12.	• Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout.	 Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit by 1- digit, integer scaling problems 	

Multiplication and Division

	 Use place value, known and derived facts to multiply and divide mentally, including by 0 and 1, dividing by 1, multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations. 		and harder correspondence problems.	
Year Five	 Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime numbers, prime numbers, composite (non-prime) numbers. Establish whether a number up to 100 is prime and recall prime number up to 19. Recognise and use square numbers and cube numbers and cube numbers and use the correct notation. 	 Multiply numbers up to 4-digits by a 1-digit number using a formal written method. Multiply and divide numbers mentally drawing upon known facts. Divide numbers up to 4-digits by a 1-digit number using a formal written method and interpret remainders. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. 	 Solve problems involving multiplication and division including using their knowledge of factors, multiples, squares and cubes and solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. 	 Solve problems involving addition, subtraction, multiplication and division and a combination of these.
Year Six	 Identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations. 	 Multiply multi-digit numbers up to 4-digits by a 2-digit using a formal written method of long multiplication. Divide numbers up to 4-digits by a 2-digit whole number using long division including remainders. Divide numbers up to 4-digit by a 2-digit number using short division and interpreting remainders. 	 Solve problems involving addition, subtraction, multiplication and division. 	• Use their knowledge of the order of operations to carry out calculations involving the four operations.

Fractions

EYFS	N/A			
	Recognise and Write	Compare	Calculations	Solve Problems
Year One	 Recognise, find and name a half as pone of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. 			
Year Two	 Recognise, find, name and write fractions 1/3, ¼, 2/4, and ¾ of a length, shape, set of objects or quantity. 	 Recognise the equivalence of 2/4 and ½. 	Write simple fractions.	
Year Three	 Count up and down in tenths. Recognise that tenths arise from dividing an objects into 10 equal parts and in dividing 1-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: unit and non-unit fractions with small denominators. Recognise and use fractions as numbers: unit and non-unit fractions with small denominators. 	 Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions and fractions with the same denominators. 	Add and subtract fractions with the same denominator within one whole.	Solve problems that involve all of the above.

Year Four	 Count up and down in hundredths. Recognise that hundredths arise when dividing an object by one hundred and dividing by ten. 	 Recognise and show, using diagrams, families of common equivalent fractions. 	• Add and subtract fractions with the same denominator.	 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.
Year Five	 Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number. 	 Compare and order fractions whose denominators are all multiples of the same number. 	 Add and subtract fractions with the same denominator and denominators that are multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. 	
Year Six		 Use common factors to simplify fractions. Use common multiples to express fractions in the same denomination. Compare and order fractions, including >1. 	 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form. Divide proper fractions by whole numbers. 	

Decimals, Percentages and Algebra:

EYFS	N/A			
	Calculations & Problems (Decimals)	Fractions, Decimals and Percentages	Ratio and Proportion	Algrebra
Year One				
Year Two				
Year Three				
Year Four	 Find the effect of dividing a 1 or 2-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. 		
Year Five	 Solve problems involving number up to three decimal places. 	 Recognise the per cent symbol and understand that per cent relates to 'number of parts per whole'. Write percentages as a fraction with a denominator of 100 and as a decimal. Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25. 		
Year Six	 Multiply and divide numbers by 10, 100 and 100 giving answers up to three decimal places. Multiply 1-digit numbers with up to two decimal places by whole numbers. 	 Associate a fraction with division and calculate decimal fraction equivalents. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. 	 Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. Solve problems involving the calculation of percentages and 	 Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically.

	 Use written division methods in cases where the answers has up to two decimal places. Solve problems which require answers to be rounded to specific degrees of accuracy. 	 the use of percentages for comparison. Solve problems involving similar shapes where the scale factor is known or can be found. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. 	 Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.
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<u>Note – algebraic thinking is seen in the 'missing number' objectives from Y1 upwards.</u>

Measurement

EYFS	 Order important times in their day. Use positional language to describe when events happen. Use vocab such as yesterday, today, tomorrow to describe relative events. Measure time e.g. using timers, number of sleeps to an event. Measure length, height, distance 			
	Using Measures	Money	Time	Perimeter, Area, Volume
Year One	 Compare, describe and solve practical problems for lengths and heights, mass/weight, capacity and volume, time. Measure and begin to record length, height, mass/weight, capacity and volume and time. 	 Recognise and know the value of different denominations of coins and notes. 	 Sequence events in chronological order using language. Recognise and use language relating to dates, days, weeks, months, years. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. 	
Year Two	 Choose and use appropriate standard units to estimate and measure length/height in any direction, mass, temperature, capacity to the nearest appropriate unit using rules, scales, thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using <, > and =. 	 Recognise and use symbols for pounds and pence combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. Solve simple problems in a practical content involving addition and subtraction of money of the same unit, including giving change. 	 Compare and sequence intervals of time. Tell and write the time to five minutes, quarter past/to and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day. 	
Year Three	 Measure, compare, add and subtract lengths, mass, volume/capacity. 	 Add and subtract amounts of money to give change, using both £ and p in practical contexts. 	• Tell and write the time from an analogue clock, including Roman numerals and 24 hr clocks.	 Measure the perimeter of simple 2D shapes.

Year Four	 Convert between different units of measure. Estimate, compare and calculate different measures. 	 Estimate, compare and calculate different measures, including money in pounds and pence. 	 Estimate and read time with increasing accuracy to the nearest minute. Record and compare time in terms of seconds, minutes, hours and use vocab relating to these. Know the number of seconds in a minute and the number of days in each year and leap year. Compare durations of events. Read, write and convert time between analogue and digital 12 and 24 hr clocks. Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days. 	 Measure and calculate the perimeter of rectilinear figure in cm and m. Find the area of rectilinear shapes by counting squares.
Year Five	 Convert between different units of metric measure. Understand and use approximate equivalences between metric and common imperial units. Use all four operations to solve problems involving measure using decimal notation, including scaling. 	 Use all four operations to solve problems involving measure. 	 Solve problems involving calculations converting between units of time. 	 Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Calculate and compare the area of rectangles and including using standard units, square cm, square m, and estimate the area of irregular shapes. Estimate volume and capacity.
Year Six	 Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three 		• Use, read, write and convert between standard units, converting measurements of time from a smaller unit of	 Recognise that shapes with the same areas can have different perimeters and vice versa.

decimal places where	measure to a larger unit and vice	Recognise when it is
appropriate.	versa.	possible to use formulae
 Use, read, write and convert 		for area of parallelograms
between standard units,		and triangles.
converting measurements of		• Calculate, estimate and
length, mass, volume and time		compare volume of cubes,
from a smaller unit of measure		cuboids, using standard
to a larger unit and vice versa,		units including cubic m,
using decimal notation to up to		cubic cm and extending to
three decimal places.		other units.
Convert between miles and		
km.		

Geometry

EYFS	 Here and begin to use positional language to describe how items are positions in relation to other items. Represent real places they have visited with drawings, maps, models. Explore similarities and differences between 3D shapes. Sort shapes according to what they notice. Construct their own 3D shapes in different ways. See 2D shapes on the flat surface of 3D shapes. Name some common shapes. 			
	 Compare 2D shapes, saying what is the same, what is different. Explore how shapes can be combined to make patterns or new shapes. 			
	2D shapes	3D shapes	Angles and Lines	Position and Direction
EYFS				
Year One	 Recognise and name common 2D shapes. 	 Recognise and name common 3D shapes. 		 Describe position, direction and movement including whole, half, quarter and three-quarter turns.
Year Two	 Identify and describe the properties of 2D shapes, including number of sides and symmetry in a vertical line. Identify 2D shapes on the surface of 3D shapes. 	 Recognise and name common 3D shapes. Compare and sort common 3D shapes and everyday objects. 		 Order and arrange combinations of mathematical objects in patterns and sequences. Use mathematical vocab to describe position, direction and movement.

	• Compare and sort common 2D shapes and everyday objects.			
Year Three	Draw 2D shapes.	 Make 3D shapes using modelling materials. Recognise 3D 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 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. 	
Year Four	 Compare and classify geometric shapes. Identify lines of symmetry in 2D shapes presented in different orientations. 		 Identify acute and obtuse angles and compare and order angles up to two right angles by size. Identify lines of symmetry in 2D shapes presented in different orientations. Complete a simple symmetric figure with respect to a specific line of symmetry. 	 Describe position on a 2D 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.
Year Five	 Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangle to deduce related facts and find missing lengths and angles. 	 Identify 3D shapes, including cubes and other cuboids from 2D representations. 	 Know angles are measured in degrees. Estimate and compare acute, obtuse and reflex angles. Drawn given angles and measure them in degrees. 	 Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language and know that the shape has not changed.

			• Identify angles at a point and one whole turn and other multiples of 90 degrees.	
Year Six	 Draw 2D shapes using given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes. Illustrate and name parts of circles including radius, diameter and circumference and known that diameter is twice the radius. 	 Recognise, describe and build simple 3D shapes including making nets. 	 Find unknown angles in any triangles, quadrilaterals and regular polygons. Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find missing angles. 	 Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane and reflect them in the axes.

Statistics

EYFS	N/A		
	Present and Interpret	Solve Problems	
Year One			
Year Two	 Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. 	 Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data. 	
Year Three	• Interpret and present data using bar charts, pictograms and tables.	 Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables. 	
Year Four	 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.	
Year Five	Complete, read and interpret information in tables including timetables.	• Solve comparison, sum and difference problems using information presented in a line graph.	
Year Six	 Interpret and construct pie charts and line graphs and use these to solve problems. 	Calculate and interpret the mean as an average.	