

NUMERACY AT GOSDEN HOUSE

Why is the development of Numeracy skills essential for our Gosden learners and future graduates?

Purpose of study:

Mathematics is a creative and highly inter-connected discipline developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life and for independence, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding and accessing the world, the ability to reason mathematically, an appreciation of and sense of enjoyment in mathematics and curiosity about the subject.

*For reference, mathematics is interchangeable with numeracy throughout this document.

Aims: (adapted from the National Curriculum 2014)

The curriculum for numeracy aims to ensure that all pupils:

- become fluent across all topic strands, through varied and frequent practice with increasingly complex problems over time. Pupils develop conceptual understanding and the ability to recall and apply knowledge confidently and independently.
- reason mathematically through discussion, the use of stem sentences and confident using subject specific vocabulary.
- can solve problems by applying their numeracy to a variety of enquiry and investigative child-led learning opportunities to encourage perseverance, seeking solutions and communicate justifications.

Mathematics is an interconnected subject in which pupils need to be able to fluently use mathematical ideas and apply to everyday situations.

Progress forward is always based on the security of pupils' understanding and their readiness to progress to the next stage, regardless of their chronological age and peers.

Teaching and learning plans for learners' deepening understanding, ensuring concepts are secure and encouraging flexibility of thought.

Gosden Learners:

At Gosden House we believe that mathematics is fundamental to our learners' everyday encounters, helping them to participate in experiences in school and their wider community. As a school, we are aiming for learners to develop positive attitudes to maths, identify, use and manipulate numbers, amounts, measurements and shapes and to talk about the language and symbols. The Early Years Foundation Stage and National Curriculum are adapted to provide learners with the means and opportunity to support them in using their knowledge, skills and understanding purposefully and functionally in the wider world. This approach supports and strengthens all pupils' 'Learning Habits / Muscles', our identified skills for life.

How do we develop, stretch and nurture our Gosden learners' Numeracy skills?

Gosden House uses a multi-sensory approach to children's mathematical learning that focuses on three essential elements, doing mathematics, communicating mathematically and exploring relationships to enable generalisation. We aim to facilitate learners' deepening understanding and enjoyment of mathematics through using concrete and visual imagery to support comprehension of abstract mathematical ideas. Individuals' learning experience progresses from concrete through pictorial to abstract, as appropriate, often with learners returning to the use of concrete materials when developing their understanding of a new concept.

Through our Mathematics curriculum, adapted from the Early Years Foundation Stage and National Curriculum:

Learning Power Vision: To nurture in all our learners a lifelong love of learning. Our whole school curriculum will build resilience and grit in our learners, so when they leave Gosden House they are better equipped to face life's challenges in a world that is forever changing.



- Primary Learners are taught the key content, in a creative, cross-curricular way with significant practical activity, allowing children to work at a level appropriate to their ability rather than their age, to improve outcomes and raise standards of achievement.
- Secondary learners are taught numeracy in discrete lessons, in addition to its application across the curriculum. Students are supported to be cognisant in the purpose of mathematics in their everyday lives, through the 'Secondary Toolkit'.
- Learners are encouraged to develop the use of mathematical language and use 'talk' to support thinking mathematically, recognising the importance of dialogue, between both pupils and teachers and between peers, in making meaning.
- Learners have the opportunity to use concrete resources, images and structured apparatus such as Numicon, to help discover patterns and make generalisations, of often-abstract concepts, supporting development of conceptual understanding alongside procedural competence.
- Gosden promotes child-led and enquiry based learning approaches both in and outside of the classroom utilising the extensive grounds and outdoor classroom. Encouraging learners to take the lead in their learning provides the opportunity for deepening their understanding.
- Learners have the confidence and opportunity to discuss how they will, and have learned, through reference to and reflecting on our 'Learning Habits/ Muscles'.

A variety of teaching styles and approaches are used which ensure:

- ❖ The curriculum is frequently reviewed and is logically sequenced, ordered into small achievable steps.
- ❖ Teaching and learning adapts to the needs of the learner(s), being organised as one to one, pairs, small group or whole class lessons. Within Primary classes, both ability and mixed ability groups are planned for and within KS3 learners are grouped across the key stage by ability, for discrete maths lessons.
- ❖ Teaching and learning activities are individualised through the provision of diverse resources, contexts, opportunities for independence and challenge, through which staff scaffold learners' progress.
- ❖ A focus on vocabulary, use of both visual and physical resources and Makaton support comprehension of language in the mathematics classroom.
- ❖ Use of ICT supports independent learning activity, of particular importance within the Secondary School.
- ❖ Teachers and Learning Assistants are exposed to appropriate high quality CPD ensuring confidence in the skills and knowledge that they are required as all adults are leaders of learning. All staff are encouraged to raise questions, seek support and request further training if needed in order to ensure everyone is confident in what they teach.

Pupil Learning Journey

Learners across the school access a rich mathematical experience, covering Number, Geometry, Measure and Statistics.

Learning is targeted at individuals' next steps, with our attainment system within school supporting planning for small steps in progress. However, we are currently developing our Numeracy curriculum, please see the draft 'Maths Curriculum Progression Map' document below, to ensure that teaching and learning is not only well targeted but that it follows a logical, progressive sequence in learning, for learners from EYFS to KS3. This curriculum is based on the EYFS framework 2021, DfE Development Matters, Birth to 5 matters, NCETM documents and DfE NC statutory KS1- 2 programmes of study. We aim to ensure a cohesive, appropriate learning journey for every learner. Before adoption, we will agree how this curriculum is implemented and arranged across key stages, as part of this ongoing development. The use of 'stages' is suggested as potential language to describe progress through the curriculum but this again will be agreed within the school community.

Maths Curriculum Progression Map - EYFS to KS3

Learning Power Vision: To nurture in all our learners a lifelong love of learning. Our whole school curriculum will build resilience and grit in our learners, so when they leave Gosden House they are better equipped to face life's challenges in a world that is forever changing.



Place Value and Counting	Addition and Subtraction	Multiplication and Division	Fractions, Decimals and Percentages	Ratio and Proportions	Algebra	Statistics	Measure	Geometry	
								Properties of Shape	Position and Direction
<ul style="list-style-type: none"> Reacts to changes of amount when those amounts are significant (more than double) 					Pattern <ul style="list-style-type: none"> Shows interest in patterned songs and rhymes, perhaps with repeated actions Experiences patterned objects and images Begins to predict what happens next in predictable situations 		<ul style="list-style-type: none"> Responds to size, reacting to very big or very small items that they see or try to pick up 	Shape <ul style="list-style-type: none"> Explores differently sized and shaped objects Beginning to put objects of similar shapes inside others and take them out again 	Spatial Awareness <ul style="list-style-type: none"> Explores space when they are free to move, roll and stretch Developing an awareness of their own bodies, that their body has different parts and where these are in relation to each other
<ul style="list-style-type: none"> May be aware of number names through their enjoyment of action rhymes and songs that relate to numbers 	<ul style="list-style-type: none"> Looks for things which have moved out of sight 				Pattern <ul style="list-style-type: none"> Joins in with repeated actions in songs and stories Initiates and continues repeated actions 		<ul style="list-style-type: none"> Shows an interest in objects of contrasting sizes in meaningful contexts Gets to know and enjoys daily routine Shows an interest in emptying containers 	Shape <ul style="list-style-type: none"> Stacks objects using flat surfaces – combine objects like stacking blocks and cups Responds to changes of shape Attempts, sometimes successfully, to match shapes with spaces on inset puzzles 	Spatial Awareness <ul style="list-style-type: none"> Explores space around them and engages with position and direction, such as pointing to where they would like to go
<ul style="list-style-type: none"> Says some counting words May engage in counting-like behaviour, making sounds and pointing or saying some numbers in sequence Uses number words, 					Pattern <ul style="list-style-type: none"> Becoming familiar with patterns in daily routines Joins in with and predicts what comes 		<ul style="list-style-type: none"> Shows an interest in size and weight Explores capacity by selecting, filling and emptying containers, 	Shape <ul style="list-style-type: none"> Pushes objects through different shaped holes, and attempts to fit shapes into spaces on inset boards or puzzles 	Spatial Awareness <ul style="list-style-type: none"> Enjoys filling and emptying containers Investigates fitting themselves

like one or two and sometimes responds accurately when asked to give one or two things • Responds to words like lots or more					next in a story or rhyme • Beginning to arrange items in own patterns, e.g. lining up toys		e.g. fitting toys in a pram • Beginning to understand that things might happen now or at another time, in routines Money • Exchange object of reference	• Beginning to select a shape for a specific space • Enjoys using blocks to create their own simple structures and arrangements	inside and moving through spaces
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• Begins to say numbers in order, some of which are in the right order (ordinality) • sometimes skips numbers '1-2-3-5' • Beginning to count on their fingers • Beginning to compare and recognise changes in numbers of things, using words like more, lots or 'same' • In everyday situations, takes or gives two or three objects from a group • Beginning to notice numerals (number symbols)					Pattern • Joins in and anticipates repeated sounds and action patterns • Is interested in what happens next using the pattern of everyday routines		• Explores differences in size, length, weight and capacity • Beginning to understand some talk about immediate past and future • Beginning to anticipate times of the day such as mealtimes or hometime Money Begin exchanging a photo for the object.	Shape • Chooses puzzle pieces and tries to fit them in • Recognises that two objects have the same shape • Makes simple constructions	Spatial Awareness • Moves their bodies and toys around objects and explores fitting into spaces • Begins to remember their way around familiar environments • Responds to some spatial and positional language • Explores how things look from different viewpoints including things that are near or far away
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<ul style="list-style-type: none"> • May enjoy counting verbally as far as they can go • Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same • Points or touches (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5. • Uses some number names and number language within play, and may show fascination with large numbers • Begin to recognise numerals 0 to 10 • Subitises one, two and three objects (without counting) • Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle) • Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g. You've got two, I've got two. Same! (Use language such as 'more than' and 'fewer than') 	<ul style="list-style-type: none"> • Beginning to recognise that each counting number is one more than the one before (copied from place value) • Explore the composition of the numbers 2, 3, 4 and 5 (begin exploring relation to numbers between 0-5) 	<ul style="list-style-type: none"> • Explore finding pairs using visual models (e.g. snap, dominoes, 6 shown as 2 dice on 3) 			Pattern <ul style="list-style-type: none"> • Creates their own spatial patterns showing some organisation or regularity • Explores and adds to simple linear patterns of two or three repeating items, e.g. stick, leaf (AB) or stick, leaf, stone (ABC) • Joins in with simple patterns in sounds, objects, games and stories dance and movement, predicting what comes next 		<ul style="list-style-type: none"> • In meaningful contexts, finds the longer or shorter, heavier or lighter and more/less full of two items • Recalls a sequence of events in everyday life and stories Money <ul style="list-style-type: none"> • Begin exchanging symbols for objects. 	Shape <ul style="list-style-type: none"> • Chooses items based on their shape which are appropriate for the child's purpose • Responds to both informal language and common shape names • Shows awareness of shape similarities and differences between objects • Enjoys partitioning and combining shapes to make new shapes with 2D and 3D shapes • Attempts to create arches and enclosures when building, using trial and improvement to select blocks 	Spatial Awareness <ul style="list-style-type: none"> • Responds to and uses language of position and direction • Predicts, moves and rotates objects to fit the space or create the shape they would like
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<ul style="list-style-type: none"> Links numerals with amounts up to 5 and maybe beyond Explores using a range of their own marks and signs to which they ascribe mathematical meanings Through play and exploration, beginning to learn that numbers are made up (composed) of smaller numbers Beginning to use understanding of number to solve practical problems in play and meaningful activities Solve real world mathematical problems with numbers up to 5. 									
<ul style="list-style-type: none"> Recite numbers past 5 Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0 Increasingly confident at putting numerals in order 0 to 10 (ordinality) Uses number names and symbols when comparing numbers, showing interest in large numbers Estimates of numbers of things Engages in subitising numbers to four and 	<ul style="list-style-type: none"> In practical activities, adds one and subtracts one with numbers to 10 Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and “+” or “-” Explores the composition of numbers to 10 	<ul style="list-style-type: none"> Recognise some doubles and halves facts up to 10 (highest is $5 + 5 = 10$) 			Pattern <ul style="list-style-type: none"> Spots pattern in the environment, beginning to identify the pattern ‘rule’ Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat 		<ul style="list-style-type: none"> Enjoys tackling problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy Becomes familiar with measuring tools in everyday experiences and play Is increasingly able to order and 	Shape <ul style="list-style-type: none"> Uses informal language and analogies, (eg heart- shaped and hand- shaped leaves), as well as mathematical terms to describe shapes Enjoys composing and decomposing shapes, learning which shapes combine to make other shapes Uses own ideas to make models of 	Spatial Awareness <ul style="list-style-type: none"> Uses spatial language, including following and giving directions, using relative terms and describing what they see from different viewpoints Investigates turning and flipping objects in order to make shapes fit and create

maybe five • Counts out up to 10 objects from a larger group • Matches the numeral with a group of items to show how many there are (up to 10) • Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects • Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three	• Automatic recall of number bonds for numbers 0-5 and some to 10 • Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects (copied from place value) • Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three (copied from place value)				• Verbally count beyond 20, recognising the pattern of the counting system • Explore and represent patterns within numbers up to 10, including odds and evens.		sequence events using everyday language related to time • Beginning to experience measuring time with timers and calendars Money • Begin exploring coins	increasing complexity, selecting blocks needed, solving problems and visualising what they will build • Talk about and explore 2D and 3D shapes eg circles, rectangles, triangles. • Include shapes, corners, sides, flat, round	models; predicting and visualising how they all look (spatial reasoning) • May enjoy making simple maps of familiar and imaginative environments, with landmarks
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Place Value and Counting	Addition and Subtraction	Multiplication and Division	Fractions, Decimals and Percentages	Ratio and Proportion	Algebra	Statistics	Measure	Geometry	
								Properties of Shape	Position and Direction
Counting • count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less	Number bonds: • represent and use number bonds and related subtraction facts within 20 Mental Calculations: • add and subtract one digit and two-digit numbers to 20, including zero	Mental Calculation: • Know doubles and halves facts up to 20 (highest is $10 + 10 = 20$) Problem Solving: • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects,	Recognising fractions • recognise, find and name a half as one 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		Equations • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representation and missing number problems such as $7 = \square - 9$		Comparing and Estimating compare, describe and solve practical problems for: • lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] • mass/weight [e.g. heavy/light,	Identifying shapes and their properties recognise and name common 2-D and 3-D shapes, including: • 2-D shapes [e.g. rectangles (including squares), circles and triangles] • 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	Position, direction & movement • describe position, direction and movement, including half, quarter and three-quarter turns.

<p>Comparing Numbers</p> <ul style="list-style-type: none"> use the language of: equal to, more than, less than (fewer), most, least <p>Identifying, representing and estimating</p> <ul style="list-style-type: none"> identify and represent numbers using objects and pictorial representations including the number line <p>Reading and Writing Numbers</p> <ul style="list-style-type: none"> read and write numbers from 1 to 20 in numerals and words. 	<ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods) <p>Written Methods:</p> <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation) <p>Problem Solving:</p> <ul style="list-style-type: none"> solve one-step problems that involve addition and subtraction, using concrete objects pictorial representations and missing number problems e.g. $7 = ? - 9$ 	<p>pictorial representations and arrays with the support of the teacher</p>			<p><i>(copied from addition and Subtraction)</i></p> <ul style="list-style-type: none"> represent and use number bonds and related subtraction facts within 20 <i>(copied from Addition and Subtraction)</i> <p>Sequences</p> <ul style="list-style-type: none"> sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening <i>(copied from M/ment)</i> 		<p>heavier than, lighter than]</p> <ul style="list-style-type: none"> capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] time [e.g. quicker, slower, earlier, later] <p>Measuring and Calculating</p> <p>measure and begin to record the following:</p> <ul style="list-style-type: none"> lengths and heights mass/weight capacity and volume time (hours, minutes, seconds) <p>Money</p> <ul style="list-style-type: none"> recognise and know the value of different denominations of coins and notes <p>Telling the time</p> <ul style="list-style-type: none"> tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. recognise and use language relating to dates, including days of the week, weeks, 		
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							months and years (sequences)		
Counting <ul style="list-style-type: none">count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward Comparing numbers <ul style="list-style-type: none">compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs Identifying, representing and estimating <ul style="list-style-type: none">identify, represent and estimate numbers using different representations, including the number line Reading and Writing Numbers <ul style="list-style-type: none">read and write numbers to at least 100 in numerals and in words Understanding place value <ul style="list-style-type: none">recognise the place value of each digit in a two-digit number (tens, ones)	Number bonds <ul style="list-style-type: none">recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Mental Calculation: add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none">a two-digit number and onesa two-digit number and tenstwo two-digit numbersadding three one digit numbersshow that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Inverse Operations, Estimating and Checking Answers <ul style="list-style-type: none">recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing	Multiplication & Division facts <ul style="list-style-type: none">Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Mental Calculation <ul style="list-style-type: none">show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Written calculation <ul style="list-style-type: none">calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs Problem Solving <ul style="list-style-type: none">solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and	Counting in fractional steps <ul style="list-style-type: none">Pupils should count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line (Non-Statutory Guidance) Recognising fractions <ul style="list-style-type: none">recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity Equivalence <ul style="list-style-type: none">write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$		Equations <ul style="list-style-type: none">Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. (copied from Addition and Subtraction)recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction) Sequences <ul style="list-style-type: none">compare and sequence intervals of time (copied from Measurement)order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and	Interpreting, constructing and presenting data: <ul style="list-style-type: none">interpret and construct simple pictograms, tally charts, block diagrams and simple tablesask and answer simple questions by counting the number of objects in each category and sorting the categories by quantityask and answer questions about totaling and comparing categorical data	Comparing, Estimating <ul style="list-style-type: none">compare and order lengths mass, volume/capacity and record the results using $>$, $<$ and $=$compare and sequence intervals of time Measuring, Calculating <ul style="list-style-type: none">choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels Money <ul style="list-style-type: none">recognise and use symbols for pounds (£) and pence (p); combine	Identifying shapes and their properties <ul style="list-style-type: none">Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical lineIdentify and describe the properties of 3D shapes, including the number of edges, vertices and facesIdentify 2D shapes on the surface of 3D shapes, [for example, circle on a cylinder and a triangle on a pyramid] Comparing & classifying <ul style="list-style-type: none">Compare and sort common 2D and 3D shapes and everyday objects	Position, direction & movement <ul style="list-style-type: none">Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ turns (clockwise and anticlockwise) Pattern <ul style="list-style-type: none">order and arrange combinations of mathematical objects in patterns

<p>Problem Solving</p> <ul style="list-style-type: none"> • Use place value and number facts to solve problems 	<p>number problems.</p> <p>Problem Solving</p> <p>solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> • using concrete objects and pictorial representations, including those involving numbers, quantities and measures • applying their increasing knowledge of mental and written methods • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change <i>(copied from Measurement)</i> 	<p>division facts, including problems in contexts</p>			<p>direction)</p>		<p>amounts to make a particular value</p> <ul style="list-style-type: none"> • find different combinations of coins that equal the same amounts of money • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change <p>Time</p> <ul style="list-style-type: none"> • tell and write the time to five minutes, including quarter past/to the hour 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. 		
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<p>Counting</p> <ul style="list-style-type: none"> count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number <p>Comparing numbers</p> <ul style="list-style-type: none"> compare and order numbers up to 1000 <p>Identifying, representing and estimating</p> <ul style="list-style-type: none"> identify, represent and estimate numbers using different representations <p>Reading and writing numbers</p> <ul style="list-style-type: none"> read and write numbers up to 1000 in numerals and in words <p>Understanding place value</p> <ul style="list-style-type: none"> recognise the place value of each digit in a three digit number (hundreds, tens, ones) <p>Problem Solving</p> <ul style="list-style-type: none"> solve number problems and practical problems involving these ideas 	<p>Mental Calculation</p> <ul style="list-style-type: none"> add and subtract numbers mentally, including: a three digit number and ones a three-digit number and tens] a three-digit number and hundreds <p>Written Methods</p> <ul style="list-style-type: none"> add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction <p>Inverse Operations, Estimating and Checking Answers</p> <ul style="list-style-type: none"> estimate the answer to a calculation and use inverse operations to check answers <p>Problem Solving</p> <ul style="list-style-type: none"> solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction 	<p>Multiplication and Division Facts</p> <ul style="list-style-type: none"> recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables <p>Mental Calculation</p> <ul style="list-style-type: none"> write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one digit numbers, using mental and progressing to formal written methods (appears also in Written Methods) <p>Written Calculation</p> <ul style="list-style-type: none"> write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods) <p>Problem Solving</p> <ul style="list-style-type: none"> solve problems, including missing number problems, involving multiplication 	<p>Counting in fractional steps</p> <ul style="list-style-type: none"> count up and down in tenths <p>Recognising fractions</p> <ul style="list-style-type: none"> Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10. recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators <p>Comparing fractions</p> <ul style="list-style-type: none"> compare and order unit fractions, and fractions with the same denominators <p>Equivalence</p> <ul style="list-style-type: none"> Recognise and show, using diagrams, equivalent 	<p>Equations</p> <ul style="list-style-type: none"> solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction) solve problems, including missing number problems, involving multiplication and division, including integer scaling • (copied from Multiplication and Division) 	<p>Interpreting, constructing and presenting data</p> <ul style="list-style-type: none"> interpret and present data using bar charts, pictograms and tables <p>Problem Solving</p> <ul style="list-style-type: none"> solve one-step and two step questions [e.g. ‘How many more?’ and ‘How many fewer?’] using information presented in scaled bar charts and pictograms and tables. 	<p>Comparing, Estimating</p> <ul style="list-style-type: none"> compare durations of events, for example to calculate the time taken by particular events or tasks estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o’clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight <p>Measuring, Calculating</p> <p>measure, compare, add and subtract:</p> <ul style="list-style-type: none"> lengths (m/cm/mm) mass (kg/g); volume measure the perimeter of simple 2- D shapes capacity (l/ml) <p>Money</p> <ul style="list-style-type: none"> add and subtract amounts of money to give change, using 	<p>Drawing & constructing</p> <ul style="list-style-type: none"> draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them <p>Angles</p> <ul style="list-style-type: none"> 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 	
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		and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	fractions with small denominators Add and subtract fractions <ul style="list-style-type: none"> add and subtract fractions with the same denominator within one whole (e.g. $5/7 + 1/7 = 6/7$) Problem Solving <ul style="list-style-type: none"> solve problems that involve all of the above 				both £ and p in practical contexts Telling the time <ul style="list-style-type: none"> tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Converting <ul style="list-style-type: none"> know the number of seconds in a minute and the number of days in each month, year and leap year 		
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Counting <ul style="list-style-type: none"> count backwards through zero to include negative numbers count in multiples of 6, 7, 9, 25 and 1000 find 1000 more or less than a given number Comparing numbers <ul style="list-style-type: none"> order and compare numbers beyond 1000 Identifying,	Written Methods <ul style="list-style-type: none"> add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate Inverse Operations, Estimating and Checking Answers <ul style="list-style-type: none"> estimate and use inverse operations to check answers to a calculation Problem Solving	Multiplication and Division Facts <ul style="list-style-type: none"> Recall multiplication and division facts for multiplication tables up to 12×12 Mental Calculation <ul style="list-style-type: none"> use place value, 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 and commutativity in 	Counting in fractional steps <ul style="list-style-type: none"> count up and down in hundredths Recognising fractions <ul style="list-style-type: none"> recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten Comparing fractions <ul style="list-style-type: none"> compare numbers with the same number of decimal places up to two decimal places 		Formulae <ul style="list-style-type: none"> Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit. (Copied from NSG measurement) 	Interpreting, constructing and presenting data <ul style="list-style-type: none"> interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs Problem Solving: <ul style="list-style-type: none"> solve comparison, sum and difference 	Comparing and Estimating <ul style="list-style-type: none"> estimate, compare and calculate different measures, including money in pounds and pence Measuring and Calculating <ul style="list-style-type: none"> measure and calculate the perimeter of a rectilinear figure (including squares) in 	Identifying shapes and their properties <ul style="list-style-type: none"> identify lines of symmetry in 2-D shapes presented in different orientations Drawing & constructing <ul style="list-style-type: none"> complete a simple symmetric figure with respect to a specific line of symmetry Comparing & classifying <ul style="list-style-type: none"> compare and classify geometric shapes, including 	Position, direction & movement <ul style="list-style-type: none"> 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
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<p>representing and estimating</p> <ul style="list-style-type: none"> identify, represent and estimate numbers using different representations <p>Reading and writing numbers</p> <ul style="list-style-type: none"> know the numeral system changed to include the concept of zero and place value <p>Understanding place value</p> <ul style="list-style-type: none"> recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) <p>Rounding</p> <ul style="list-style-type: none"> round any number to the nearest 10, 100 or 1 000 <p>Problem Solving</p> <ul style="list-style-type: none"> solve number and practical problems that involve all of the above and with increasingly large positive numbers 	<ul style="list-style-type: none"> solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why 	<p>mental calculations (appears also in Properties of Numbers)</p> <p>Written Calculation</p> <ul style="list-style-type: none"> multiply two-digit and three-digit numbers by a one digit number using formal written layout <p>Properties of numbers</p> <ul style="list-style-type: none"> multiples, factors, primes, square and cube numbers recognise and use factor pairs and commutativity in mental calculations (repeated) <p>Problem Solving</p> <ul style="list-style-type: none"> 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 	<p>Rounding</p> <ul style="list-style-type: none"> round decimals with one decimal place to the nearest whole number <p>Equivalence</p> <ul style="list-style-type: none"> 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 $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$ <p>Adding and subtracting fractions</p> <ul style="list-style-type: none"> add and subtract fractions with the same denominator <p>Multiplication and division of decimals</p> <ul style="list-style-type: none"> 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 <p>Problem solving</p> <ul style="list-style-type: none"> solve problems involving increasingly harder fractions 			<p>problems using information presented in bar charts, pictograms, tables and other graphs.</p>	<p>centimetres and metres</p> <ul style="list-style-type: none"> find the area of rectilinear shapes by counting squares <p>Telling the time</p> <ul style="list-style-type: none"> 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 <p>Converting</p> <ul style="list-style-type: none"> convert between different units of measure (e.g. kilometre to metre; hour to minute) read, write and convert time between analogue and digital 12 and 24-hour clocks 	<p>quadrilaterals and triangles, based on their properties and sizes</p> <p>Angles</p> <ul style="list-style-type: none"> identify acute and obtuse angles and compare and order angles up to two right angles by size 	<p>complete a given polygon</p>
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			<p>to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number</p> <ul style="list-style-type: none"> solve simple measure and money problems involving fractions and decimals to two decimal places 						
<p>Counting</p> <ul style="list-style-type: none"> interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 <p>Comparing numbers/ Reading and writing numbers</p> <ul style="list-style-type: none"> read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit <p>Rounding</p> <ul style="list-style-type: none"> round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 	<p>Mental Calculation</p> <ul style="list-style-type: none"> add and subtract numbers mentally with increasingly large numbers <p>Written Methods</p> <ul style="list-style-type: none"> add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) <p>Inverse Operations, Estimating and Checking Answers</p> <ul style="list-style-type: none"> use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy <p>Problem Solving</p> <ul style="list-style-type: none"> solve addition and subtraction multi-step problems in 	<p>Mental Calculation</p> <ul style="list-style-type: none"> multiply and divide numbers mentally drawing upon known facts multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 <p>Written Calculation</p> <ul style="list-style-type: none"> 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 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 <p>Properties of numbers,</p>	<p>Recognising Fractions</p> <ul style="list-style-type: none"> recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents <p>Comparing Fractions</p> <ul style="list-style-type: none"> compare and order fractions whose denominators are all multiples of the same number <p>Comparing Decimals</p> <ul style="list-style-type: none"> read, write, order and compare numbers with up to three decimal places <p>Rounding including decimals</p> <ul style="list-style-type: none"> round decimals with two decimal places to the nearest whole 		<p>Equations</p> <ul style="list-style-type: none"> use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes) 	<p>Interpreting, constructing and presenting data:</p> <ul style="list-style-type: none"> complete, read and interpret information in tables, including timetables <p>Problem Solving:</p> <ul style="list-style-type: none"> complete, read and interpret information in tables, including timetables 	<p>Comparing, Estimating</p> <ul style="list-style-type: none"> calculate and compare the area of squares and rectangles including using standard units, sq centimetres (cm²) and sq metres (m²) and estimate the area of irregular shapes estimate volume (e.g. using 1cm³ blocks to build cubes and cuboids) and capacity (e.g. using water) <p>Measuring, Calculating</p> <ul style="list-style-type: none"> use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal 	<p>Identifying shapes and their properties</p> <ul style="list-style-type: none"> identify 3-D shapes, including cubes and other cuboids, from 2D representations <p>Drawing & constructing</p> <ul style="list-style-type: none"> draw given angles, and measure them in degrees (o) <p>Comparing & classifying</p> <ul style="list-style-type: none"> use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles <p>Angles</p> <ul style="list-style-type: none"> know angles are measured in degrees: estimate and compare acute, obtuse and 	<p>Position, direction & movement</p> <ul style="list-style-type: none"> 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

100 000 Problem Solving <ul style="list-style-type: none"> solve number problems and practical problems that involve all of the above 	contexts, deciding which operations and methods to use and why	multiples, factors, primes, square and cube numbers <ul style="list-style-type: none"> 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 factors and composite (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) Problem solving <ul style="list-style-type: none"> solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign solve problems involving multiplication and division, including scaling by simple fractions and problems 	number and to one decimal place Equivalence <ul style="list-style-type: none"> identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths read and write decimal numbers as fractions (e.g. $0.71 = 71 / 100$) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents recognise the percent symbol (%) and understand that percent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100 as a decimal fraction Addition and Subtraction of fractions <ul style="list-style-type: none"> add and subtract fractions with the same denominator and multiples of the same number 				Notation, including scaling. <ul style="list-style-type: none"> measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of squares and rectangles including using standard units, sq centimetres (cm²) and sq metres (m²) and estimate the area of irregular shapes Telling the time <ul style="list-style-type: none"> solve problems involving converting between units of time 	reflex angles identify: <ul style="list-style-type: none"> angles at a point and one whole turn (total 360o) angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180o) other multiples of 90o 	
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		involving simple rates.	<ul style="list-style-type: none"> Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$) 						
			Multiplication and Division of fractions <ul style="list-style-type: none"> multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams Problem Solving <ul style="list-style-type: none"> solve problems involving numbers up to three decimal places solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those with a denominator of a multiple of 10 or 25 				Converting <ul style="list-style-type: none"> convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) solve problems involving converting between units of time understand and use equivalences between metric units and common imperial units such as inches, pounds and pints 		

<p>Counting</p> <ul style="list-style-type: none"> use negative numbers in context, and calculate intervals across zero <p>Comparing numbers/ Reading and writing numbers</p> <ul style="list-style-type: none"> read, write, order and compare numbers up to 10 000000 and determine the value of each digit <p>Rounding</p> <ul style="list-style-type: none"> round any whole number to a required degree of accuracy <p>Problem Solving</p> <ul style="list-style-type: none"> solve number and practical problems that involve all of the above 	<p>Mental Calculations</p> <ul style="list-style-type: none"> 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 <p>Inverse Operations, Estimating and Checking Answers</p> <ul style="list-style-type: none"> estimate the answer to a calculation and use inverse operations to check answers <p>Problem Solving</p> <ul style="list-style-type: none"> solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition, subtraction, multiplication and division 	<p>Mental Calculations</p> <ul style="list-style-type: none"> perform mental calculations, including with mixed operations and large numbers associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) (copied from Fractions) <p>Written Calculations</p> <ul style="list-style-type: none"> multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. Use written division methods in cases where the answer has up to two decimal places (copied from 	<p>Comparing Fractions</p> <ul style="list-style-type: none"> compare and order fractions, including fractions >1 <p>Comparing Decimals</p> <ul style="list-style-type: none"> identify the value of each digit in numbers given to three decimal places <p>Rounding including decimals</p> <ul style="list-style-type: none"> solve problems which require answers to be rounded to specified degrees of accuracy <p>Equivalence (Fractions, decimals and percentages)</p> <ul style="list-style-type: none"> use common factors to simplify fractions; use common multiples to express fractions in the same denominatio associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) recall and use equivalences between simple 	<p>Problem Solving (mixed strands)</p> <ul style="list-style-type: none"> solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplicati on and division facts solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison solve problems involving similar shapes where the scale factor is known or can be found solve problems 	<p>Equations</p> <ul style="list-style-type: none"> express missing number problems algebraically find pairs of numbers that satisfy number sentences involving two unknowns (enumerate all possibilities of combinations of two variables) <p>Formulae</p> <ul style="list-style-type: none"> Use simple formulae <p>Sequences</p> <ul style="list-style-type: none"> Generate and describe linear number sequences 	<p>interpreting, constructing & presenting data</p> <ul style="list-style-type: none"> interpret and construct pie charts and line graphs and use these to solve problems <p>Problem Solving:</p> <ul style="list-style-type: none"> calculate and interpret the mean as an average 	<p>Comparing and Estimating</p> <ul style="list-style-type: none"> Estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³ <p>Measuring and Calculating</p> <ul style="list-style-type: none"> solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate calculate volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³ recognise 	<p>Identifying shapes and their properties</p> <ul style="list-style-type: none"> recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing) illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius <p>Drawing & constructing</p> <ul style="list-style-type: none"> draw 2-D shapes using given dimensions and angles recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying shapes and their properties) <p>Comparing & classifying</p> <ul style="list-style-type: none"> compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons <p>Angles</p> <p>recognise angles where they meet at a point, are on a straight line, or are vertically</p>	<p>Position, direction & movement</p> <ul style="list-style-type: none"> 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.
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		<p>Fractions (including decimals)</p> <p>Properties of Numbers: Multiples, Factors Primes, Square and Cube Numbers</p> <ul style="list-style-type: none"> identify common factors, common multiples and prime numbers use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions) 	<p>fractions, decimals and percentages, including in different contexts.</p> <p>Addition & Subtraction of fractions</p> <ul style="list-style-type: none"> Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions 	<p>involving unequal sharing and grouping using knowledge of fractions and multiples.</p> <ul style="list-style-type: none"> solve problems involving similar shapes where the scale factor is known or can be found 			<p>that shapes with the same areas can have different perimeters and vice versa</p> <ul style="list-style-type: none"> calculate the area of parallelograms and triangles recognise when it is possible to use formulae for area and volume of shapes 	<p>opposite, and find missing angles</p>	
		<ul style="list-style-type: none"> calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³ (copied from Measures) <p>Order of Operations</p> <ul style="list-style-type: none"> use their knowledge of the order of operations to carry out calculations involving the four operations <p>Inverse operations, Estimating and Checking Answers</p>	<p>Multiplication & division of fractions</p> <ul style="list-style-type: none"> multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $1/4 \times 1/2 = 1/8$) multiply one-digit numbers with up to two decimal places by whole numbers divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$) <p>Multiplication & division of decimals</p> <ul style="list-style-type: none"> multiply one-digit numbers with up to two decimal places by 				<p>Converting</p> <ul style="list-style-type: none"> use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places solve problems involving the calculation and conversion of units of measure, using 		

		<ul style="list-style-type: none"> use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy <p>Problem Solving</p> <ul style="list-style-type: none"> solve problems involving addition, subtraction, multiplication and division 	<p>whole numbers</p> <ul style="list-style-type: none"> multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 /8) use written division methods in cases where the answer has up to two decimal places <p>Problem Solving</p> <ul style="list-style-type: none"> solve problems involving similar shapes where the scale factor is known or can be found (copied from ratio) 				<p>decimal notation up to three decimal places where appropriate</p> <ul style="list-style-type: none"> convert between miles and kilometres 		
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KS4 Coverage



Content coverage	Using numbers and the number system – whole numbers	Using common measures, shape and space	Handling information and data
KS4 E1	E1.1 Read, write, order and compare numbers up to 20 E1.2 Use whole numbers to count up to 20 items, including zero E1.3 Add numbers which total up to 20, and subtract numbers from numbers up to 20 E1.4 Recognise and interpret the symbols +, – and = appropriately	E1.5 Recognise coins and notes and write them in numbers with the correct symbols (£ & p), where these involve numbers up to 20 E1.6 Read 12-hour digital and analogue clocks in hours E1.7 Know the number of days in a week, months and seasons in a year; be able to name and sequence E1.8 Describe and make comparisons in words between measures of items including size, length, width, height, weight and capacity E1.9 Identify and recognise common 2-D and 3-D shapes, including circle, cube, rectangle (including square) and triangle E1.10 Use everyday positional vocabulary to describe position and direction, including left, right, in front, behind, under and above	E1.11 Read numerical information from lists E1.12 Sort and classify objects using a single criterion E1.13 Read and draw simple charts and diagrams, including a tally chart, block diagram/graph problems.

Content coverage	Using numbers and the number system – whole numbers, fractions and decimals	Using common measures, shape and space	Handling information and data
KS4 E2	E2.1 Count reliably up to 100 items E2.2 Read, write, order and compare numbers up to 200 E2.3 Recognise and sequence odd and even numbers up to 100 E2.4 Recognise and interpret the symbols +, –, ×, ÷ and = appropriately E2.5 Add and subtract two-digit numbers E2.6 Multiply whole numbers in the range 0 × 0 to 12 × 12 (times tables) E2.7 Know the number of hours in a day and weeks in a year; be able to name and sequence E2.8 Divide two-digit whole numbers by single-digit whole numbers and express remainders E2.9 Approximate by rounding to the nearest 10, and use this rounded answer to check results E2.10 Recognise simple fractions (halves, quarters and tenths) of whole numbers and shapes E2.11 Read, write and use decimals to one decimal place	E2.12 Calculate money with pence up to one pound and in whole pounds of multiple items and write with the correct symbols (£ or p) E2.13 Read and record time in common date formats and read time displayed on analogue clocks in hours, half hours and quarter hours, and understand hours from a 24-hour digital clock E2.14 Use metric measures of length, including millimetres, centimetres, metres and kilometres E2.15 Use measures of weight, including grams and kilograms E2.16 Use measures of capacity, including millilitres and litres E2.17 Read and compare positive temperatures E2.18 Read and use simple scales to the nearest labelled division E2.19 Recognise and name 2-D and 3-D shapes, including pentagons, hexagons, cylinders, cuboids, pyramids and spheres E2.20 Describe the properties of common 2-D and 3-D shapes, including numbers of sides, corners, edges, faces, angles and base E2.21 Use appropriate positional vocabulary to describe position and direction, including between, inside, outside, middle, below, on top, forwards and backwards	E2.22 Extract information from lists, tables, diagrams and bar charts E2.23 Make numerical comparisons from bar charts E2.24 Sort and classify objects using two criteria E2.25 Take information from one format and represent the information in another format, including use of bar charts

Content coverage	Using numbers and the number system – whole numbers, fractions and decimals	Using common measures, shape and space	Handling information and data
KS4 E3	<p>E3.1 Count, read, write, order and compare numbers up to 1000</p> <p>E3.2 Add and subtract using three-digit whole numbers</p> <p>E3.3 Divide three-digit whole numbers by single- and double-digit whole numbers and express remainders</p> <p>E3.4 Multiply two-digit whole numbers by single- and double-digit whole numbers</p> <p>E3.5 Approximate by rounding numbers less than 1000 to the nearest 10 or 100 and use this rounded answer to check results</p> <p>E3.6 Recognise and continue linear sequences of numbers up to 100</p> <p>E3.7 Read, write and understand thirds, quarters, fifths and tenths, including equivalent forms</p> <p>E3.8 Read, write and use decimals up to two decimal places</p> <p>E3.9 Recognise and continue sequences that involve decimals</p>	<p>E3.10 Calculate with money using decimal notation and express money correctly in writing in pounds and pence</p> <p>E3.11 Round amounts of money to the nearest £1 or 10p</p> <p>E3.12 Read, measure and record time using am and pm</p> <p>E3.13 Read time from analogue and 24-hour digital clocks in hours and minutes</p> <p>E3.14 Use and compare measures of length, capacity, weight and temperature using metric or imperial units to the nearest labelled or unlabelled division</p> <p>E3.15 Compare metric measures of length, including millimetres, centimetres, metres and kilometres</p> <p>E3.16 Compare measures of weight, including grams and kilograms</p> <p>E3.17 Compare measures of capacity, including millilitres and litres</p> <p>E3.18 Use a suitable instrument to measure mass and length</p> <p>E3.19 Sort 2-D and 3-D shapes using properties, including lines of symmetry, length, right angles, angles, including in rectangles and triangles</p> <p>E3.20 Use appropriate positional vocabulary to describe position and direction, including eight compass points and full/half/quarter turns</p>	<p>E3.21 Extract information from lists, tables, diagrams and charts and create frequency tables</p> <p>E3.22 Interpret information, to make comparisons and record changes, from different formats, including bar charts and simple line graphs</p> <p>E3.23 Organise and represent information in appropriate ways, including tables, diagrams, simple line graphs and bar charts</p>

Cont coverage	Using numbers and the number system – whole numbers, fractions and decimals	Using common measures, shape and space	Handling information and data
KS4 L1	1 Read, write, order and compare large numbers (up to one million) 2 Recognise and use positive and negative numbers 3 Multiply and divide whole numbers and decimals by 10, 100, 1000 4 Use multiplication facts and make connections with division facts 5 Use simple formulae expressed in words for one or two-step operations 6 Calculate the squares of one-digit and two-digit numbers 7 Follow the order of precedence of operators 8 Read, write, order and compare common fractions and mixed numbers 9 Find fractions of whole number quantities or measurements 10 Read, write, order and compare decimals up to three decimal places 11 Add, subtract, multiply and divide decimals up to two decimal places 12 Approximate by rounding to a whole number or to one or two decimal places 13 Read, write, order and compare percentages in whole numbers 14 Calculate percentages of quantities, including simple percentage increases and decreases by 5% and multiples thereof 15 Estimate answers to calculations using fractions and decimals 16 Recognise and calculate equivalences between common fractions, percentages and decimals 17 Work with simple ratio and direct proportions	18 Calculate simple interest in multiples of 5% on amounts of money 19 Calculate discounts in multiples of 5% on amounts of money 20 Convert between units of length, weight, capacity, money and time, in the same system 21 Recognise and make use of simple scales on maps and drawings 22 Calculate the area and perimeter of simple shapes including those that are made up of a combination of rectangles 23 Calculate the volumes of cubes and cuboids 24 Draw 2-D shapes and demonstrate an understanding of line symmetry and knowledge of the relative size of angles 25 Interpret plans, elevations and nets of simple 3-D shapes 26 Use angles when describing position and direction, and measure angles in degrees	27 Represent discrete data in tables, diagrams and charts including pie charts, bar charts and line graphs 28 Group discrete data and represent grouped data graphically 29 Find the mean and range of a set of quantities 30 Understand probability on a scale from 0 (impossible) to 1 (certain) and use probabilities to compare the likelihood of events 31 Use equally likely outcomes to find the probabilities of simple events and express them as fractions

Content coverage	Using numbers and the number system – whole numbers, fractions and decimals	Using common measures, shape and space	Handling information and data
KS4 L2	1 Read, write, order and compare positive and negative numbers of any size 2 Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation 3 Evaluate expressions and make substitutions in given formulae in words and symbols 4 Identify and know the equivalence between fractions, decimals and percentages 5 Work out percentages of amounts and express one amount as a percentage of another 6 Calculate percentage change (any size increase and decrease), and original value after percentage change 7 Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers 8 Express one number as a fraction of another 9 Order, approximate and compare decimals 10 Add, subtract, multiply and divide decimals up to three decimal places 11 Understand and calculate using ratios, direct proportion and inverse proportion 12 Follow the order of precedence of operators, including indices	13 Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting 14 Convert between metric and imperial units of length, weight and capacity using a) a conversion factor and b) a conversion graph 15 Calculate using compound measures including speed, density and rates of pay 16 Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles) 17 Use formulae to find volumes and surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders) 18 Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements 19 Use coordinates in 2-D, positive and negative, to specify the positions of points 20 Understand and use common 2-D representations of 3-D objects 21 Draw 3-D shapes to include plans and elevations 22 Calculate values of angles and/or coordinates with 2-D and 3-D shapes	23 Calculate the median and mode of a set of quantities 24 Estimate the mean of a grouped frequency distribution from discrete data 25 Use the mean, median, mode and range to compare two sets of data 26 Work out the probability of combined events including the use of diagrams and tables, including two-way tables 27 Express probabilities as fractions, decimals and percentages 28 Draw and interpret scatter diagrams and recognise positive and negative correlation

How do we know our Numeracy Learners are actually learning? How do our learners know how they are doing?

- Regular formative assessment for learning – incidental pre-assessment opportunities, teaching team observation records, self and peer assessment.
- Learning Habits and Muscles are integral to the self-reflection learning journey.
- Evisense – link to B-Squared statements and opportunities to capture WOW moments/ pupil voice
- School Council – pupil voice
- B-Squared for tracking progress and attainment, assessing across levels to identify strengths and barriers to learning (spiky profile). Monitor and intervene
- Summative Assessment for Learning – Edexcel functional Skills exam (E1-3) and (L1, L2 annually and beyond as needed)
- Termly in house moderation - standardisation
- External moderation
- Staff surveys

What do we want for our future Gosden Numeracy Learners? (Gosden Graduate/ Gosden House Vision/ Gosden House Toolkit)

The impact of our mathematics curriculum is that children understand the relevance and importance of what they are learning in relation to real world concepts. Children know that maths is a vital life skill that they will rely on in many areas of their daily life. Children have a positive view of maths due to learning in an environment where maths is promoted as being an exciting and enjoyable subject in which they can investigate and ask questions; they know that it is reasonable to make mistakes because this can strengthen their learning through the journey to finding an answer. Children are confident to 'have a go' and choose the equipment they need to help them to learn along with the strategies they think are best suited to each problem. Ultimately, a Gosden House pupil will follow an individualised mathematical pathway to promote progress, attainment, functionality, independence and employment.