# 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.

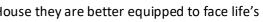
# How do we develop, stretch and nurture our Gosden learners' Numeracy skills?

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 oftenabstract 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





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Place Value and Counting	Addition and Subtraction	Multiplication and Division	Fractions, Decimals and Percentages	Ratio and Proportions	Algebra	Statistics	Measure	Geon	hetry
								Properties of Shape	Position and Direction
Reacts to changes					Pattern		• Responds to size,	Shape	Spatial Awareness
of amount when					<ul> <li>Shows</li> </ul>		reacting to very	Explores	Explores space
those amounts are					interest in		big or very small	differently sized	when they are
significant (more					patterned		items that they	and shaped	free to move,
than double)					songs and		see or try to pick	objects	roll and stretch
					rhymes,		up	<ul> <li>Beginning to put</li> </ul>	Developing an
					perhaps with			objects of similar	awareness of
					repeated actions			shapes inside	their own bodies,
					Experiences			others and take	that their body has different parts
					patterned			them out again	and where these
					objects and				are in relation to
					images				each other
					<ul> <li>Begins to</li> </ul>				
					predict what				
					happens				
					next in				
					predictable				
					situations				
May be aware of	Looks for things				Pattern		• Shows an interest	Shape	Spatial Awareness
number names through					• Joins in with		in objects of	<ul> <li>Stacks objects</li> </ul>	<ul> <li>Explores space</li> </ul>
their enjoyment of	moved out of				repeated		contrasting sizes	using flat surfaces	around them and
action rhymes and songs that relate to	sight				actions in		in meaningful contexts	– combine objects	engages with
numbers					songs and stories		contexts	like stacking blocks and cups	position and
numbers					stories		Gets to know	Responds to	direction, such as pointing to
					<ul> <li>Initiates and</li> </ul>		and enjoys	changes of	where they
					continues		daily routine	shape	would like to go
					repeated		,	• Attempts,	
					actions		Shows an	sometimes	
							interest in	successfully, to	
							emptying	match shapes	
							containers	with spaces on	
			-		T			inset puzzles	<u>г</u>
Says some counting					Pattern		<ul> <li>Shows an</li> </ul>	Shape	Spatial Awareness
words					<ul> <li>Becoming</li> </ul>		interest in size	<ul> <li>Pushes objects</li> </ul>	<ul> <li>Enjoys</li> </ul>
May engage in					familiarwith		and weight	through different	filling and
counting-like					patterns in		<ul> <li>Explores</li> </ul>	shaped holes, and	emptying
behaviour, making sounds and pointing or					daily routines		capacity by	attempts to fit	containers
saying some numbers					<ul> <li>Joins in with</li> </ul>		selecting, filling	shapes into	<ul> <li>Investigates</li> </ul>
in sequence					and predicts		and emptying	spaces on inset	fitting
Uses number words,					what comes	1	containers,	boards orpuzzles	themselves





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<ul> <li>like one or two and sometimes responds accurately when asked to give one or two things</li> <li>Responds to words like lots or more</li> </ul>			next in a story or rhyme • Beginning to arrange items in own patterns, e.g. lining up toys	<ul> <li>e.g. fitting toys in a pram</li> <li>Beginning to understand that things might happen now or at another time, in routines</li> <li>Money</li> <li>Exchange object of reference</li> </ul>	<ul> <li>Beginning to select a shape for a specific space</li> <li>Enjoys using blocks to create their own simple structures and arrangements</li> </ul>	inside and moving through spaces

Begins to say numbers			Pattern	Explores	Shape	Spatial Awareness
in order, some of			<ul> <li>Joins in and</li> </ul>	differences in	<ul> <li>Chooses puzzle</li> </ul>	Moves their
which are in the right			anticipates	size, length,	pieces and tries	bodies and toys
order (ordinality)			repeated	weight and	to fit them in	around objects
<ul> <li>sometimes skips</li> </ul>			sounds and	capacity		and explores
numbers			action		<ul> <li>Recognises that</li> </ul>	fitting into
'1-2-3-5'			patterns	<ul> <li>Beginning to</li> </ul>	two objects have	spaces
Beginning to count on				understand some	the same shape	Begins to
their fingers			<ul> <li>Is interested in</li> </ul>	talk about		remember
<ul> <li>Beginning to</li> </ul>			what happens	immediate past	Makes	their way
compare and			next using the	and future	simple	around
recognise changes in			pattern of		constructions	familiar
numbers of things,			everyday	<ul> <li>Beginning to</li> </ul>		environments
using words like			routines	anticipate times		Responds to
more, lots or				of the day such		some spatial and
'same'				as mealtimes or		positional
• In everyday situations,				hometime		language
takes or gives two or				Money		Explores how
three objects from a				Begin exchanging		things look from
group				a photo for the		different
<ul> <li>Beginning to</li> </ul>				object.		viewpoints
notice						including things
numerals						that are near or
(number symbols)						far away





<ul> <li>May enjoy counting verbally as fat they recognise that as they recognise that the there or four objects one before (copied in different ways, beginning to recognise that the that its ways that its wa</li></ul>				T	1		1	T
can gocounting number is one before (copid a)counting number is in different ways, beginning on a before (copid a)own so 2 dice on showing some or lighter and more/liss till of a)own so 2 dice on showing some or lighter and more/liss till of and storiesown so 2 dice on showing some or lighter and more/liss till of two itemsthe longer or showing some or lighter and more/liss till of two itemsthe lighter and more/liss till of two itemsPoints or touches (tags) each item, sing on and the some and item is some of lighter the some number lighter and number lighter and more/lighter and more regulatingtwo itemstwo itemsPoints or touches (tags) each item, sing on and tags to and mumber lighter achieves the some number in somationtwo itemstwo itemsPoints or touches (tags) rames and number lighter achieves tou and the some numberstwo itemstwo itemstwo itemsPoints or touches (tags) rames and number lighter achieves the lighter and mumber lighter achieves the lighter achieves the lighter achieves the lighter achieves the lighter achieves the lighter achieves the li								-
<ul> <li>Separates a group of three or four objects in different way, beginning to recognise that the total still the same on the numbers 2, 3, 4 and 5 (togin exploring relation number of cach then, using the stable order of 1,2,3,4,5.</li> <li>Uses some number names and number facanization that has showing same on umber of cach then, using the stable order of 1,2,3,4,5.</li> <li>Uses some number names and number facanization that has showing same exploring relation numbers of to 10</li> <li>Subtites one, two and three objects (without counting)</li> <li>Counts up to five (cardinal principle)</li> <li>Counts up to five items since exploring relation numbers sind represents the total counted so far (cardinal principle)</li> <li>Compares two small groups of up to five objects, saying when names and functional the tastes and stories</li> <li>Subtites one, two and three objects (without counting)</li> <li>Counts up to five items since exploring relation numbers for a counting symbols for</li> <li>Counts up to five items since exploring relation numbers and numbers and stories</li> <li>Begin to recognise numbers and numers of to 10</li> <li>Subtites one, two and three objects (without counting)</li> <li>Counts up to five items since and stories</li> <li>Counts up to five items since and stories</li> <li>Counts up to five objects, saying when number of objects in each group, e.g.</li> <li>Counts up to five objects, saying when number of objects in each group, e.g.</li> <li>Counts up to five objects, saying when number of objects in each group, e.g.</li> <li>Counts up to five objects, saying when number of objects in each group, e.g.</li> <li>Counts up to five objects, saying when number of objects in each group, e.g.</li> <li>Counts up to five objects, saying when number of objects in each group, e.g.</li> </ul>	verbally as far as they	-	l c			<ul> <li>Creates their</li> </ul>		
three or four objects       one before (copied in different ways, beginning to trouglassion of the numbers 2, 3, Points or touches (tags)       3)       showing some organisation or regularity       or lighter and more/less full of two items         Points or touches (tags)       4 and 5 (begin each item, syning one number for each item, using the stable order in 1,2,3,4,5.       4 and 5 (begin to numbers between 0-5)       Periode item to numbers       Periode item to number       Periode item to n		-				own spatial		-
in different ways, beginning to recognise that the tatil is still the same omposition of the numbers 2, 3, and 5 begin each item, saying one using the stable order of 1,2,2,4,5.or regularity two items sequence of adds to simple linear everyday life and stories to numbers on stories (tag) to numbers hames and number fascination with large numers of to some number fascination with sign subtives one, two and three objects (without counting)or regularity two items sequence of everyday life and stories to numbers or stick, leaf (AB) or stick, leaf, stone objects, same and some number fascination with large numers to 10or stick, leaf, stone objects, leaf (ABC) somed, somed, somed, and may how fascination with large numers to 10Money everyday life everyday life and stories somed, <br< td=""><td></td><td></td><td></td><td></td><td></td><td>· ·</td><td></td><td>-</td></br<>						· ·		-
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fascination with large numbers       simple       patterns in sounds, objects, games         Begin to recognise numerals 0 to 10       sounds, objects, games       and stories         Subitises one, two and three objects (without counting)       dance and movement, predicting items, recognising that the last number said represents the total counted so far (cardinal principle)       predicting what comes next         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, 've got two. Same! (Use language such as       and below the support of the table to the support of the the support of the the support of the objects in each group, e.g.       and below the support of the the support the support of the the support	language within play,					(ABC)		
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<ul> <li>Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle)</li> <li>Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g.</li> <li>You've got two, I've got two. Same! (Use language such as</li> </ul>	three objects (without					dance and		
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	counting)					movement,		
the last number said       next         represents the total       next         counted so far       incardinal principle)         • Compares two small       incardinal principle)         • Digits in       incardinal principle)         • Digits in       incardinal principle)         • Number of objects in       incardinal principle)         • You've got two, I've       incardinal principle)         • You've got two, I've       incardinal principle)         • Janguage such as       incardinal principle)	Counts up to five					predicting		
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	items, recognising that					what comes		
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	the last number said					next		
(cardinal principle)       (cardinal principle)         • Compares two small       groups of up to five         groups of up to five       (cardinal principle)         objects, saying when       (cardinal principle)         there are the same       (cardinal principle)         number of objects in       (cardinal principle)         each group, e.g.       (cardinal principle)         You've got two, I've       (cardinal principle)         got two. Same! (Use       (cardinal principle)         language such as       (cardinal principle)	represents the total							
<ul> <li>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</li> </ul>	counted so far							
groups of up to five       objects, saying when         objects, saying when       intere are the same         number of objects in       intere are the same         each group, e.g.       intere are the same!         You've got two, I've       intere are the same!         indugte such as       intere are the same	(cardinal principle)							
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	Compares two small							
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	groups of up to five							
number of objects in       each group, e.g.         each group, e.g.       You've got two, I've         got two. Same! (Use       Inguage such as	objects, saying when							
each group, e.g.         You've got two, I've         got two. Same! (Use         language such as	there are the same							
You've got two, I've       Image: Some i constraints         got two. Same! (Use       Image: Some i constraints         language such as       Image: Some i constraints	number of objects in							
got two. Same! (Use language such as	each group, e.g.							
language such as	You've got two, I've							
	got two. Same! (Use							
(more than' and (fewer	language such as							
	'more than' and 'fewer							
than')	than')							



5

### Shape

- 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**  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



							TATION TOULS
Links numerals with							
amounts up to 5 and							
maybe beyond							
<ul> <li>Explores using a</li> </ul>							
range of their own							
marks and signs to							
which they ascribe							
mathematical							
meanings							
<ul> <li>Through play and</li> </ul>							
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.							
Recite numbers past 5	<ul> <li>In practical activities,</li> </ul>	Recognise some		Pattern	<ul> <li>Enjoys tackling</li> </ul>	Shape	Spatial Awareness
Enjoys reciting	adds one and	doubles and halves		Spots pattern	problems	Uses informal	<ul> <li>Uses spatial</li> </ul>
numbers from 0 to	subtracts one with	facts up to 10		in the	involving	language and	language,
10 (and beyond) and	numbers to 10	(highest is 5 + 5 = 10)		environment,	prediction and	analogies, (eg	including
back from 10 to 0	Begins to explore	(11811001100 207		beginning to	discussion of	heart-shaped and	following and
Increasingly confident	and work out			identify the	comparisons of	hand- shaped	giving
at putting numerals in	mathematical			pattern 'rule'	length, weight or	leaves), as well as	directions, using
order 0 to 10	problems, using			Chooses	capacity, paying	mathematical terms	relative terms
(ordinality)	signs and strategies			familiar objects	attention to	to describe shapes	and describing
Uses number names	of their own choice,			to create and	fairness and	• Enjoys	what they see
and symbols when	including (when			recreate	accuracy	composing and	from different
comparing numbers,	appropriate)			repeating	<ul> <li>Becomes familiar</li> </ul>	decomposing	viewpoints
showing interest in	standard numerals,			patterns	with measuring	shapes, learning	<ul> <li>Investigates</li> </ul>
large numbers	tallies and "+" or "-"			beyond AB	tools in everyday	which shapes	turning and
Estimates of	Explores the			, patterns and	experiences and	combine to make	flipping objects
numbers of things	composition			begins to	play	other shapes	in order to
<ul> <li>Engages in subitising</li> </ul>	of numbers			identify the	<ul> <li>Is increasingly able</li> </ul>	Uses own ideas to	make shapes fit
numbers to four and	to 10			unit of repeat	to order and	make models of	and create

20	HOOL	GOSDE
HOUS		HOUS
NAUS	05. 10	OHOS



maybe five	Automatic recall of		Verbally	sequence events
Counts out up to 10	number bonds for		count	using everyday
objects from a larger	numbers 0-5 and		beyond 20,	language related
group	some to 10		recognising	to time
Matches the numeral	<ul> <li>Shows awareness</li> </ul>		the pattern	<ul> <li>Beginning to</li> </ul>
with a group of items to	that numbers are		of the	experience
show how many there	made up		counting	measuring time
are (up to 10)	(composed) of		system	with timers and
Shows awareness	smaller numbers,		<ul> <li>Explore and</li> </ul>	calendars
that numbers are	exploring		represent	
made up	partitioning in		patterns within	Money
(composed) of	different ways with		numbers up to	Begin exploring
smaller numbers,	a wide range of		10, including	coins
exploring	objects (copied from		odds and	
partitioning in	place value)		evens.	
different ways with a	<ul> <li>Begins to</li> </ul>			
wide range of	conceptually subitise			
objects	larger numbers by			
<ul> <li>Begins to conceptually</li> </ul>	subitising smaller			
subitise larger numbers	groups within the			
by subitising smaller	number, e.g. sees six			
groups within the	raisins on a plate as			
number, e.g. sees six	three and three			
raisins on a plate as	(copied from place			
three and three	value)			

Place Value and	Addition and	Multiplication and	Fractions,	Ratio and	Algebra	Statistics	Measure	Geome	etry
Counting	Subtraction	Division	Decimals and Percentages	Proportion				Properties of Shape	Position and Direction
<ul> <li>Counting</li> <li>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</li> <li>given a number, identify one more and one less</li> </ul>	<ul> <li>Number bonds:</li> <li>represent and use number bonds and related subtraction facts within 20</li> <li>Mental Calculations:</li> <li>add and subtract onedigit and two- digit numbers to 20, including zero</li> </ul>	<ul> <li>Mental Calculation:</li> <li>Know doubles and halves facts up to 20 (highest is 10 + 10 = 20)</li> <li>Problem Solving:</li> <li>solve one-step problemsinvolving multiplication and division, by calculating the answer using concrete objects,</li> </ul>	<ul> <li>Recognising fractions</li> <li>recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</li> </ul>		Equations • solve one-step problems that involve additionand subtraction, using concrete objects and pictorial representation and missing number problems such as 7 = -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,	<ul> <li>Identifying shapes and their properties recognise and name common 2-D and 3-D shapes, including:</li> <li>2-D shapes [e.g. rectangles (including squares), circles and triangles]</li> <li>3-D shapes [e.g. cuboids (including cubes),pyramids and spheres].</li> </ul>	<ul> <li>Position, direction</li> <li>&amp; movement</li> <li>describe position direction and movement, including half, quarter and three-quarter turns.</li> </ul>



increasing complexity, selecting blocks needed, solving problems and visualising what they will build

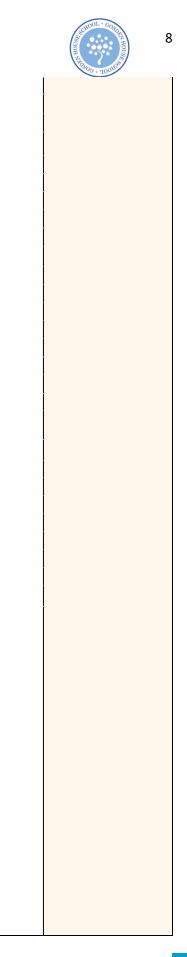
- Talk about and explore 2D and 3D shapes eg circles, rectangles, triangles.
- Include shapes, corners, sides, flat, round

models; predicting and visualising how they all look (spatial reasoning)

 May enjoy making simple maps of familiar and imaginative environments, with landmarks



			I		
		pictorial representations		(copied from	heavier than,
<b>Comparing Numbers</b>	<ul> <li>read, write and</li> </ul>	and arrays with the		addition and	lighter than]
<ul> <li>use the language of:</li> </ul>	interpret mathematical	support of the teacher		Subtraction)	<ul> <li>capacity and</li> </ul>
equalto, more than,	statements involving addition (+), subtraction			<ul> <li>represent and</li> </ul>	volume [e.g.
less than (fewer),	(-) and equals (=)			use number	full/empty,
most, least	signs (appears also in			bonds and	more than, less
	Written Methods)			related	than, half, half
Identifying, representing	,			subtraction	full, quarter]
and estimating	Written Methods:			factswithin 20	• time [e.g.
<ul> <li>identify and represent</li> </ul>	<ul> <li>read, write and</li> </ul>			(copied from	quicker,
numbers using objects	interpret			Addition and	slower,
and pictorial	mathematical			Subtraction)	earlier, later]
representations	statements involving				Measuring and
including the number	addition (+),			Sequences	Calculating
line	subtraction (-) and equals (=) signs			<ul> <li>sequence</li> </ul>	measure and
	(appears also in Mental			events in	begin to record
Reading and	Calculation)			chronological	the following:
Writing Numbers				order using	<ul> <li>lengths and</li> </ul>
•	Duchlam Cabring			language such	heights
<ul> <li>read and write</li> </ul>	Problem Solving:			as:before and	<ul> <li>mass/weight</li> </ul>
numbers from 1 to	solve one-step			after, next,	<ul> <li>capacity and</li> </ul>
20 in numerals and	problems that involve			first, today,	volume
words.	addition and			yesterday,	<ul> <li>time (hours,</li> </ul>
	subtraction, using			tomorrow,	minutes,
	concrete objects			morning,	seconds)
	pictorial representations			afternoon and	Money
	and missing number			evening	<ul> <li>recognise and</li> </ul>
	missing number			(copied from	know the value
	problems e.g. 7 = ? - 9			M/ment)	
					of different
					denominations
					of coins and
					notes
					Telling the time
					<ul> <li>tell the time to</li> </ul>
					the hourand half
					past the hour
					and draw the
					hands on a clock
					face to show
					these times.
					<ul> <li>recognise and</li> </ul>
					use language
					relating to
					dates, including
					days of the
					week, weeks,





			months and years (sequences)

Counting	Number bonds	Multiplication &	Counting in fractional		Equations	Interpreting,	Comparing,
• count in steps of 2, 3,	<ul> <li>recall and use</li> </ul>	Divisionfacts	steps		<ul> <li>Recognise and</li> </ul>	constructing	Estimating
and 5 from 0, and in	addition and	Recall and use	Pupils should		use the inverse	and	<ul> <li>compare and</li> </ul>
tens from any	subtraction facts to	multiplication and	count in fractions		relationship	presenting	order lengths
number, forward or	20 fluently, and	division facts for the 2,	up to 10, starting		between	data:	mass,
backward	derive and use	5and 10 multiplication	from any number		addition and	<ul> <li>interpret</li> </ul>	volume/capacity
	related facts up to	tables, including	and using the 1/2		subtraction and	and	and record the
Comparing numbers	100	recognising odd and	and 2/4		use this to check	construct	results using
<ul> <li>compare and</li> </ul>	Mental Calculation:	even numbers	equivalence on		calculations and	simple	>, < and =
order numbers	add and subtract		the number line		missing number	pictograms,	<ul> <li>compare and</li> </ul>
from 0 up to 100;	numbers using	Mental Calculation	(Non-Statutory		problems.	tally charts,	sequence
use <, > and	concrete objects,	<ul> <li>show that</li> </ul>	Guidance)		(copied from	block	intervals of time
= signs	pictorial	multiplication of two			Addition and	diagrams	Measuring,
	representations, and	numbers can be done	Recognising fractions		Subtraction)	and simple	Calculating
Identifying,	mentally, including:	in any order	<ul> <li>recognise, find,</li> </ul>		<ul> <li>recall and use</li> </ul>	tables	<ul> <li>choose and</li> </ul>
representingand	<ul> <li>a two-digit number</li> </ul>	(commutative) and	name and write		addition and	<ul> <li>ask and</li> </ul>	use
estimating	and ones	division of one	fractions 1 / 3,		subtraction facts	answer	appropriate
<ul> <li>identify, represent</li> </ul>	<ul> <li>a two-digit number</li> </ul>	number by another	1 / 4 , 2 / 4 and		to 20 fluently,	simple	standardunits
and estimate numbers	and tens	cannot	3 / 4 of a length,		and derive and	questions	to estimate
using different	• two two-digit numbers		shape, set of		use related facts	by counting	andmeasure
representations,	<ul> <li>adding three one</li> </ul>	Written calculation	objects or		up to	the number	length/height
including the number	digitnumbers	calculate	quantity		100 (copied from	of objects	in any
line	<ul> <li>show that</li> </ul>	mathematical			Addition and	in each	direction
inte	addition of two	statements for	Equivalence		Subtraction)	category	(m/cm); mass
	numbers can be	multiplication and	write simple			and sorting	(kg/g);
	done in any order	division within the	fractions		Sequences	the	temperature
	(commutative)	multiplication tables	e.g. 1 / 2 of 6 = 3		<ul> <li>compare and</li> </ul>	categories	(°C); capacity
Deading and Writing	and subtraction of	and write them using	and recognise		sequence	by quantity	(litres/ml) to
Reading and Writing Numbers	one number from	the multiplication (×),	the equivalence		intervals of time	<ul> <li>ask and</li> </ul>	the nearest
<ul> <li>read and write</li> </ul>	another cannot	division (÷) and equals	of 2 / 4 and 1 / 2		(copied from	answer	appropriate
numbers to at least	Inverse Operations,	(=) signs			Measurement)	questions	unit, using
100in numerals and	Estimating and					about	rulers, scales, thermometers
in words	Checking Answers	Problem Solving			<ul> <li>order and</li> </ul>	totaling and	
in words	<ul> <li>recognise and use</li> </ul>	<ul> <li>solve problems</li> </ul>			arrange	comparing	and measuring vessels
Understanding place	the inverse	involving			combinations of	categorical	Money
value	relationship	multiplication and			mathematical	data	-
	between addition	division, using			objects in		<ul> <li>recognise and</li> </ul>
<ul> <li>recognise the place</li> <li>value of each digit</li> </ul>	and subtraction and	materials, arrays,			patterns		use symbols for
value of each digit in a two-digit	use this to check	repeated addition,			(copied from		pounds (£) and
number (tens,ones)	calculations and	mental methods, and			Geometry:		pence (p);
	solve missing	multiplication and			position and		combine
				1		1	



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### Identifying shapes and their properties

- Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line
- Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces
- Identify 2D shapes on the surface of 3D shapes, [for example, circle on a cylinder anda triangle on a pyramid]

### Comparing & classifying

 Compare and sort common 2D and 3D shapes and everyday objects

### Position, direction & movement

• 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 ¼ ½ and ¾ turns (clockwise and anticlockwise)

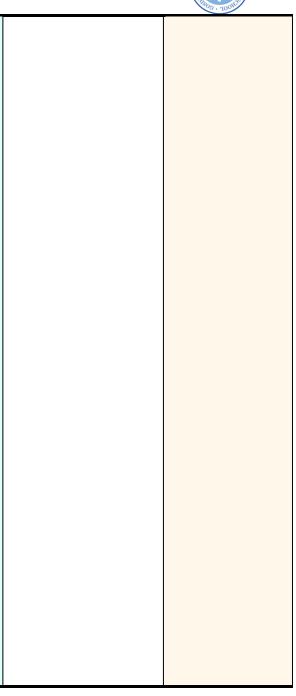
### Pattern

• order and arrange combinations of mathematical objects in patterns



	number problems.	division facts,		direction)	amounts to
Problem Solving	Problem Solving	including problems in			make a
Use place value	solve problems with	contexts			particular value
and number facts	addition and				<ul> <li>find different</li> </ul>
to solveproblems	subtraction:				combinations
to solvepi oblems	<ul> <li>using concrete</li> </ul>				of coins that
	objects and pictorial				equal the same
	representations,				amounts of
	including those				money
	involving numbers,				solve simple
	quantities and				problems in a
	measures				practical
	<ul> <li>applying their</li> </ul>				context
	increasing knowledge				involving
	of mental and written				addition and
	methods				subtraction of
					money of the
	solve simple				, same unit,
	problems in a				including
	practical context				giving change
	involving addition				Time
	and subtraction of				<ul> <li>tell and write</li> </ul>
	money of the same				the time to five
	unit, including giving				minutes,
	change				including
	(copied from				quarter past/to
	Measurement)				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.







			r			
Counting	Mental Calculation	Multiplication and	<b>Counting in fractional</b>	Equations	Interpreting,	Comparing,
• count from 0 in	<ul> <li>add and</li> </ul>	Division Facts	steps	<ul> <li>solve problems,</li> </ul>	constructing	Estimating
multiples of 4, 8, 50	subtract	<ul> <li>recall and use</li> </ul>	<ul> <li>count up and</li> </ul>	including missing	and	<ul> <li>compare</li> </ul>
and 100;	numbers	multiplication and	down in	number	presenting	durations of
• find 10 or 100 more	mentally,	division facts for the 3,	tenths	problems, using	data	events, for
or less than a given	including:	4 and 8 multiplication		number facts,	<ul> <li>interpret and</li> </ul>	example to
number	a three digit number and	tables	Recognising fractions	place value, and	present data	calculate the
	ones		<ul> <li>Recognise, find</li> </ul>	more complex	using bar	time taken by
Comparing numbers	a three-digit number and	Mental Calculation	and write fractions	addition and	charts,	particular events
	tens]	<ul> <li>write and calculate</li> </ul>	of a discrete set of	subtraction.	pictograms	or tasks
compare and	a three-digit number and	mathematical	objects: unit	(copied from	and tables	<ul> <li>estimate and</li> </ul>
order numbers up to 1000	hundreds	statements for	fractions and non-	Addition and		read time with
up to 1000		multiplication and	unit fractions with	Subtraction)	Problem	increasing
	Writton Mathada	division using the	small		Solving	accuracy to the
Identifying,	Written Methods	multiplication tables	denominators	<ul> <li>solve problems,</li> </ul>	<ul> <li>solve one-</li> </ul>	nearest minute;
representing and	add and subtract	that they know,	<ul> <li>recognise that</li> </ul>	including missing	step and	record and
estimating	numbers with up to	including for two-digit	tenths arise from	number	two step	compare time in terms of
<ul> <li>identify, represent</li> </ul>	three digits, using	numbers times one	dividing an object	problems,	questions	seconds,
and estimate	formal written		into 10 equal	involving	[e.g. 'How	minutes, hours
numbers using	methods of columnar addition	digit numbers, using	parts and in	multiplication	many	and o'clock; use
different	and subtraction	mental and progressing	dividing one –	and division,	more?' and	vocabulary such
representations		to formal written	digit numbers or	including integer	'How many	as a.m./p.m.,
		methods (appears also	quantities by 10.	scaling • (copied from	fewer?']	morning,
Reading and writing	Inverse Operations,	in Written Methods)		Multiplication	using	afternoon, noon
numbers	Estimating and Checking		<ul> <li>recognise and use</li> </ul>	and Division)	information	and midnight
<ul> <li>read and write</li> </ul>	Answers	Written Calculation	fractions as		presented in	
numbers up to 1000	<ul> <li>estimate the</li> </ul>	<ul> <li>write and calculate</li> </ul>	numbers:		scaled bar	Measuring,
in numerals and in	answer to a	mathematical	unit fractions and		charts and	Calculating
words	calculation and use	statements for	non-unit fractions		pictograms	measure, compare,
	inverse operations	multiplication and	with small		and tables.	add and subtract:
	to check answers	division using the	denominators			<ul> <li>lengths</li> </ul>
Understanding place		multiplication tables	denominators			(m/cm/mm)
value	Problem Solving	that they know,				<ul> <li>mass (kg/g);</li> </ul>
<ul> <li>recognise the place</li> </ul>	<ul> <li>solve problems,</li> </ul>	including for two-digit	Comparing fractions			• volume
value of each digit in	including missing	numbers times one	<ul> <li>compare and</li> </ul>			<ul> <li>measure the</li> </ul>
a three digit number	number problems,	digit numbers, using	order unit			perimeter of
(hundreds, tens,	using number facts,	mental and progressing	fractions, and			simple 2- D
ones)	place value, and	to formal written	fractions with			shapes capacity
	more complex	methods (appears also	the same			(l/ml)
Problem Solving	addition and	in Mental Methods)	denominators			
<ul> <li>solve number</li> </ul>	subtraction					Money
problems and		Problem Solving	Equivalence			<ul> <li>add and</li> </ul>
practical problems		-	<ul> <li>Recognise and</li> </ul>			subtract
involving these		<ul> <li>solve problems,</li> <li>including missing</li> </ul>	show, using			amounts of
ideas		including missing	diagrams,			money to give
		number problems,	equivalent			change, using
		involving multiplication				chunge, using



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### Drawing & constructing

• draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them

### Angles

- 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



and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects       fractions with small denominators       both £ and p in practical contexts         • add and subtract fractions       • add and subtract fractions with the same denominator       • add and subtract       • tell and write the time from an analogue clock, including using Roman numerals (e.g. 5/7+1/7=6/7)         • Problem Solving       • Fredem Solving       • Fredem Solving       • other solving
• solve problems that involve all of the above • know the number of seconds in a minute and the number of days in each month, year and leap

<ul> <li>Counting</li> <li>count backwards through zero to include negative numbers</li> <li>count in multiplesof 6, 7, 9, 25 and 1000</li> <li>find 1000 more orless than a given number</li> <li>Comparing numbers</li> <li>order and comparenumbers beyond 1000</li> <li>Identifying,</li> </ul>	<ul> <li>Written Methods</li> <li>add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</li> <li>Inverse Operations, Estimating and Checking Answers</li> <li>estimate and use inverse operations to check answers to a calculation</li> <li>Problem Solving</li> </ul>	<ul> <li>Multiplication and Division</li> <li>Facts</li> <li>Recall multiplication and division facts for multiplication tables up to12 × 12</li> <li>Mental Calculation</li> <li>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</li> <li>recognise and use factor pairs and commutativity in</li> </ul>	Counting in fractional steps • count up and down in hundredths Recognising fractions • recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten Comparing fractions • compare numbers with the same number of decimal places up to two decimal places		<ul> <li>Formulae</li> <li>Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)</li> </ul>	Interpreting, constructing and presenting data • interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs <b>Problem Solving:</b> • solve comparison, sum and difference	Comparing and Estimating • estimate, compare and calculate different measures, including money in pounds and pence Measuring and Calculating • measure and calculate the perimeter of a rectilinear figure (including squares) in
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Identifying shapes and
their properties

 identify lines of symmetry in 2-D shapes presented in different orientations

### Drawing & constructing

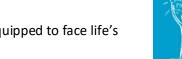
 complete a simple symmetric figure with respect to a specific line of symmetry

### Comparing & classifying

 compare and classify geometric shapes, including

# Position, direction & movement

- 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





representing	<ul> <li>solve addition and</li> </ul>	mental calculations	Rounding	problems	centimetres and	Γ
and estimating	subtraction two-step	(appears also in	• round	using	metres	
• identify,	problems in contexts,	Properties of Numbers)	decimals with	information	<ul> <li>find the area of</li> </ul>	
representand	deciding which		one decimal	presented in	rectilinear	
estimate	operations and	Written Calculation	place to the	bar charts,	shapes by	
numbers using	methods to use and	multiply two-digit	nearest whole	pictograms,	counting	
different		and three-digit	number	tables and	squares	
representations	why	numbers by aone	Equivalence	other		
		digit number using	<ul> <li>recognise and</li> </ul>	graphs.	Telling the time	
Reading and		formal written layout	show, using		<ul> <li>read, write and</li> </ul>	
writingnumbers			diagrams,		convert time	
<ul> <li>know the numeral</li> </ul>		Properties of numbers	families of		between	
			common		analogueand	
system changed to include the concept		<ul> <li>multiples, factors, primes, square and</li> </ul>	equivalent		digital 12 and	
of zero and place		cube numbers	fractions		24-hour clocks	
value		cube numbers	<ul> <li>recognise and</li> </ul>		<ul> <li>solve problems</li> </ul>	
value			write decimal		involving	
I had a water a divers		<ul> <li>recognise and use</li> </ul>	equivalents of any		converting from	
Understanding		factor pairs and	number of tenths		hours to	
place value		commutativity in	or hundredths		minutes;	
<ul> <li>recognise the place</li> </ul>		mental calculations	<ul> <li>recognise and</li> </ul>		minutes to	
value of each digit		(repeated)	write decimal		seconds; years	
ina four-digit			equivalents to		to months;	
number		Problem Solving	1/4;1/2;3/4		weeks to days	
(thousands,		<ul> <li>solve problems</li> </ul>	Adding and			
hundreds, tens,		involving multiplying	subtracting		Converting	
and ones		and adding, including	fractions		<ul> <li>convert</li> </ul>	
Rounding		using the distributive	<ul> <li>add and subtract</li> </ul>		between	
round any number		law to multiplytwo	fractions with the		different units	
tothe nearest 10,		digit numbers by one	same		ofmeasure	
100 or 1 000		digit, integer scaling	denominator		(e.g. kilometre	
Problem Solving		problems and harder	Multiplication and		to metre; hour	
solve number and		correspondence	division of decimals		to minute)	
practical problems		problems such as n	<ul> <li>find the effect of</li> </ul>		<ul> <li>read, write and</li> </ul>	
that involve all of		objects are connected to m objects			convert time	
theabove and with		to mobjects	dividing a one- or two-digit number		between	
increasingly large			by10 and 100,		analogueand	
positive numbers			identifying the		digital 12 and	
numbers			value of the digits		24-hour clocks	
			in the answer as			
			ones, tenths and			
			hundredths			
			Problem solving			
			<ul> <li>solve problems</li> </ul>			
			involving			
			increasingly			
			harder fractions			
		l		I		4





	-		-	-		-		305 · 100h
Counting	Mental Calculation	Mental Calculation	to calculate quantities, and fractions to divide quantities, including non- unit fractions where the answer is a whole number • solve simple measure and money problems involving fractions and decimals to two decimal places • recognise and use	Equations • use the	Interpreting,	Comparing, Estimating	Identifying shapes and their properties	Position, direction & movement
interpret negative	<ul> <li>add and subtract</li> </ul>		<ul> <li>recognise and use</li> </ul>		constructing	Estimating		
numbers in context, count forwards and	numbers mentally	<ul> <li>multiply and divide</li> </ul>	thousandths and	properties of rectangles to	and presenting	<ul> <li>calculate and</li> <li>compare the area</li> </ul>	<ul> <li>identify 3-D shapes,</li> <li>including subsc and</li> </ul>	<ul> <li>identify, describe and</li> </ul>
backwards with	with increasingly large numbers	numbers mentally	relate them to tenths,	deduce related	data:	compare the area of squares and	including cubes and other cuboids, from	represent the
positive and	large numbers	drawing upon known facts	hundredths and	facts and find	<ul> <li>complete, read</li> </ul>	rectangles	2D representations	position of a
negative whole	Written Methods	<ul> <li>multiply and divide</li> </ul>	decimal equivalents	missing lengths	and	including using		shape following
numbers, including	<ul> <li>add and subtract</li> </ul>	whole numbers and		and angles	interpret	standard units,	Drawing & constructing	a reflection or
through zero	whole numbers with	those involving	Comparing Fractions	(copied from	information	sq centimetres	<ul> <li>draw given angles,</li> </ul>	translation,
• count forwards or	more than 4 digits,	decimals by 10, 100	<ul> <li>comparing ractions</li> <li>compare and</li> </ul>	Geometry: Properties of	in tables,	(cm 2) and sq	and measure them	using the appropriate
backwards in steps	including using formal	and 1000	order fractions	Shapes)	including	metres (m 2 ) and	in degrees (o)	language, and
of powers of 10 for	written methods	Written	whose	Shapesy	timetables	estimate the area of irregular		know that the
any given number up to 1 000 000	(columnar addition	Calculation	denominators are			shapes	Comparing & classifying	shape has not
	and subtraction)	• multiply numbers up to	all multiples of the		Problem	<ul> <li>estimate volume</li> </ul>	• use the properties of	changed
Comparing numbers (		4 digits by a one- or	same number		Solving:	(e.g. using 1cm 3	rectangles to deduce	
Comparing numbers/ Reading and writing	Inverse Operations,	two-digit number using			• complete,	blocks to build	related facts and find	
numbers	Estimating and Checking	a formal written	Comparing Decimals		read	cubes and	missing lengths and	
• read, write, order	Answers	method, including long multiplication for two	<ul> <li>read, write,</li> </ul>		and interpret	cuboids) and capacity (e.g.	<ul><li>angles</li><li>distinguish between</li></ul>	
and compare	<ul> <li>use rounding to check answers to</li> </ul>	digit numbers	order and		information	using water)	regular and irregular	
numbers to at least	calculations and	<ul> <li>divide numbers up to</li> </ul>	compare numbers with		in tables,	Measuring,	polygons based on	
1 000 000 and	determine, in the	4 digits by a one-digit	up to three		including	Calculating	reasoning about	
determine the	context of a	number using the	decimal places		timetables	<ul> <li>use all four</li> </ul>	equal sides and	
value of each digit	problem, levels of	formal written				operations to	angles	
Rounding	accuracy	method of short	Rounding including			solve problems	Angles	
• round any number		division and interpret remainders	decimals			involving	<ul> <li>know angles are</li> </ul>	
up to 1 000 000 to	Problem Solving	appropriately for the	<ul> <li>round decimals</li> </ul>			measure (e.g.	measured in	
the nearest 10, 100,	<ul> <li>solve addition and</li> </ul>		with two decimal			length, mass,	degrees: estimate	
100,		context				volume monoul	and compare	
• 1 000, 10 000 and	subtraction multi- step problems in	context Properties of numbers,	places to the nearest whole			volume, money) using decimal	and compare acute, obtuse and	



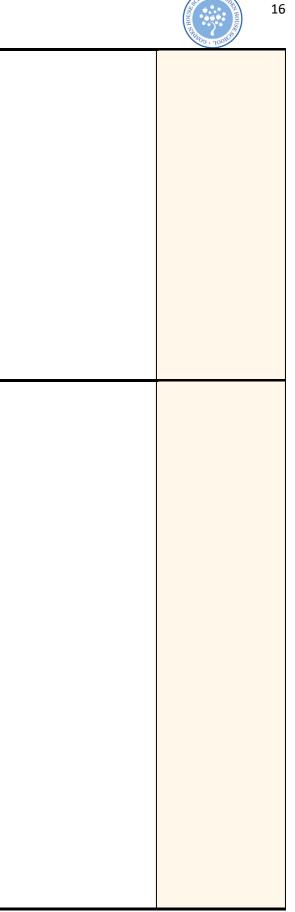
100 000	contexts, deciding	multiples, factors,	number and to		Notation,
Problem Solving	which operations and	primes, square and	one decimal		including scaling.
	methods to use and	cube numbers	place		• measure and
• solve number	why	identify multiples	Equivalence		calculate the
problems and	,	and factors,	<ul> <li>identify, name and</li> </ul>		perimeter of
practical problems		including finding all	write equivalent		composite
that involve all of		factor pairs of a	fractions of a given		rectilinear
the above		number, and	fraction,		shapes in
		common factors of	represented		centimetres and
		two numbers.	visually, including		metres
		<ul> <li>know and use the</li> </ul>	tenths and		<ul> <li>calculate and</li> </ul>
		vocabulary of prime	hundredths		compare the area
		numbers, prime	<ul> <li>read and write</li> </ul>		of squares and
		factors and composite	decimal		rectangles
		(non-prime) numbers	numbers as		including using
		establish whether a	fractions (e.g.		standard units,
		number up to 100 is	0.71 = 71 / 100)		sq centimetres
		prime and recall prime	<ul> <li>recognise and use</li> </ul>		(cm2) and sq
		numbers up to 19	thousandths and		metres (m 2 ) and
		<ul> <li>recognise and use</li> </ul>	relate them to		estimate the area
		square numbers and	tenths,		of irregular
		cube numbers, and the	hundredths and		shapes
		notation for squared	decimal		Telling the
		(2) and cubed (3)	equivalents		time
		Problem solving	<ul> <li>recognise the</li> </ul>		solve problems
			percent symbol		involving
		solve problems	(%) and		converting
		involving	understand that		between units
		multiplication and	percent relates to		of time
		division including using	"number of parts		
		their knowledge of	per hundred",		
		factors and multiples, squares and cubes	and write		
			percentages as a		
		solve problems	fraction with		
		involving addition,	denominator 100		
		subtraction,	as a decimal		
		multiplication and division and a	fraction		
		combination of these,			
			Addition and		
		including understanding the	Subtraction of		
		meaning of the equals	fractions		
		sign	<ul> <li>add and subtract</li> </ul>		
		-	fractions with the		
		solve problems     involving multiplication	same		
		involving multiplication	denominator and		
		and division, including	multiples of the		
		scaling by simple fractions and problems	same number		
			June number		



reflex angles	
-	
identify:	
• angles at a point and	
one whole turn	
(total 360o)	
• angles at a point on a	
straight line and ½ a	
turn (total 180o)	
• other multiples of	
900	



involving simple rates.	<ul> <li>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements &gt;</li> <li>1 as a mixed number (e.g. 2/5 + 4/5 = 6/5 =1 1/5</li> </ul>		
	<ul> <li>Multiplication and Division of fractions</li> <li>multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> <li>Problem Solving         <ul> <li>solve problems involving numbers up to three decimal places</li> <li>solve problems which require knowing percentage and decimal equivalents of 1/2 1/4, 1/5, 2/5, 4/5 and those with a</li> </ul> </li> </ul>		<ul> <li>Converting</li> <li>convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</li> <li>solve problems involving converting between units of time</li> <li>understand and use equivalences between metric units and common imperial units such as inches,</li> </ul>
	denominator of a multiple of 10 or 25		pints





			[	<b>-</b>			
Counting	Mental Calculations	Mental	<b>Comparing Fractions</b>	Problem Solving	Equations	interpreting,	Comparing
<ul> <li>use negative</li> </ul>	<ul> <li>perform mental</li> </ul>	Calculations	<ul> <li>compare and</li> </ul>	(mixed strands)	<ul> <li>express missing</li> </ul>	constructing &	and
numbers in	calculations, including	<ul> <li>perform mental</li> </ul>	order fractions,	• solve	number	presenting data	Estimating
context, and	with mixed operations	calculations, including	including fractions	problems	problems	• interpret and	<ul> <li>Estimate and</li> </ul>
calculate intervals	and large numbers	with mixed operations	>1	involving the relative	algebraically	construct pie	compare volume
across zero	<ul> <li>use their knowledge</li> </ul>	and large numbers	<b>Comparing Decimals</b>	sizes of two		charts and	of cubes and
Comparing numbers/	of the order of	<ul> <li>associate a fraction</li> </ul>	<ul> <li>identify the</li> </ul>	quantities	<ul> <li>find pairs of</li> </ul>	line graphs	cuboids using
Reading and writing	operations to carry	with division and	value of each	where	numbers that	and use these	standard units,
numbers	out calculations	calculate decimal	digit in	missing	satisfy	to solve	including
<ul> <li>read, write,</li> </ul>	involving the four	fraction equivalents	numbers given	values can	number	problems	centimetre
order and	operations	(e.g. 0.375) for a simple	to three	be found	sentences		cubed (cm3) and
compare	Inverse Operations,	fraction (e.g. 3/8)	decimal places	by using	involving two	Problem	cubic metres
numbers up to	Estimating and Checking	(copied from Fractions)	Rounding including	integer	unknowns	Solving:	(m3), and
10 000000 and	Answers	Written	decimals	multiplicati			extending to
determine the	<ul> <li>estimate the answer</li> </ul>	Calculations	solve	on and	(enumerate all	calculate	other units such
value of each	to a calculation and		problems	division	possibilities of	and	as mm3 and km3
digit	use inverse operations	multiply multi-digit     numbers up to 4 digits	which	facts	combinations	interpret	
Rounding	to check answers	numbers up to 4 digits by a two-digit whole	require	solve	of two	the mean	Measuring
<ul> <li>round any whole</li> </ul>	Problem Solving	number using the	answers to	problems	variables)	as an	and
number to a	<ul> <li>solve addition and</li> </ul>	formal written	be rounded	involving the		average	Calculating
required degree of	subtraction multi-	method of long	to specified	calculation	Formulae		•
accuracy	step problems in	multiplication	degrees of	of	• Use		<ul> <li>solve problems</li> </ul>
Problem Solving	contexts, deciding	<ul> <li>divide numbers up to</li> </ul>	accuracy	percentages	simple		involving the
<ul> <li>solve number</li> </ul>	which operations and	4 digits by a two-digit	Equivalence	[for	formulae		calculation and
and practical	methods to use and	whole number using	(Fractions, decimals	example, of	Tormulae		conversion of
problems that	why	the formal written	and percentages)	measures,			units of
involve all of the	Solve problems	method of short	<ul> <li>use common</li> </ul>	and such as	Sequences		measure, using decimal
above	involving addition,	division where	factors to	15% of 360]	<ul> <li>Generate and</li> </ul>		notation up to
	subtraction,	appropriate for the	simplify	and the use	describe linear		three decimal
	multiplication and	context divide	fractions; use	of	number		places where
	division	numbers up to 4	common	percentages	sequences		appropriate
		digits by a two digit	multiples to	for			<ul> <li>calculate</li> </ul>
		whole number	express	comparison			volume of
		<ul> <li>using the formal</li> </ul>	fractions in				cubes and
		written method of	the same	solve			cuboids using
		long division, and	denominatio	problems			standard units,
		interpret remainders	<ul> <li>associate a</li> </ul>	involving			including
		as whole number	fraction with	similar			centimetre
		remainders, fractions,	division and	shapes			cubed (cm 3 )
		or by rounding, as	calculate decimal	where the			and cubic
		appropriate for the	fraction	scale			metres (m 3 ),
		context.	equivalents (e.g.	factor is			and extending
		Use written division	0.375) for a simple	known or			to other units
		methods in cases	fraction (e.g. 3/8)	can be			such as mm3
		where the answer has	<ul> <li>recall and use</li> </ul>	found			and km3
		up to two decimal	equivalences	solve     problems			<ul> <li>recognise</li> </ul>
		places (copied from	between simple	problems			



Position, direction

### Identifying shapes and their properties

- 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

## **Drawing & constructing**

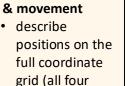
- draw 2-D shapes using given dimensions and angles
- recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying shapes and their properties)

### Comparing & classifying

 compare and classify geometric shapes based on their properties and sizes and find unknown find unknown angles in any triangles, quadrilaterals, and regular polygons

# Angles

recognise angles where they meet at a point, are on a straight line, or are vertically



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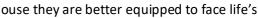
### quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes.



 			r	Τ
Fractions (including decimals) Properties of Numbers: Multiples, Factors Primes, Square and Cube Numbers • 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)	fractions, decimals and percentages, including in different contexts. Addition & Subtraction of fractions • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	<ul> <li>involving unequal sharing and grouping using knowledge of fractions and multiples.</li> <li>solve problems involving similar shapes where the scale factor is known or can be found</li> </ul>		<ul> <li>that shapes with the same areas</li> <li>can have different perimeters and vice versa</li> <li>calculate the area of parallelograms and triangles</li> <li>recognise when it is possible to use formulae for area and volume of shapes</li> </ul>
<ul> <li>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)</li> <li>Order of Operations         <ul> <li>use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul> </li> <li>Inverse operations, Estimating and Checking Answers</li> </ul>	<ul> <li>Multiplication &amp; division of fractions</li> <li>multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. 1 / 4 × 1 / 2 = 1 / 8)</li> <li>multiply one-digit numbers with up to two decimal places by whole numbers</li> <li>divide proper fractions by whole numbers</li> <li>divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6)</li> <li>Multiplication &amp; division of decimals</li> <li>multiply one-digit numbers with up to two digit numbers</li> </ul>			<ul> <li>Converting         <ul> <li>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</li> <li>solve problems involving the calculation and conversion of units of measure, using</li> </ul> </li> </ul>

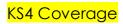


opposite, and find         missing angles		500 · 100h
missing angles	opposite and find	
missing angles	opposite, and find	
	missing angles	
	5 5	
	<u> </u>	

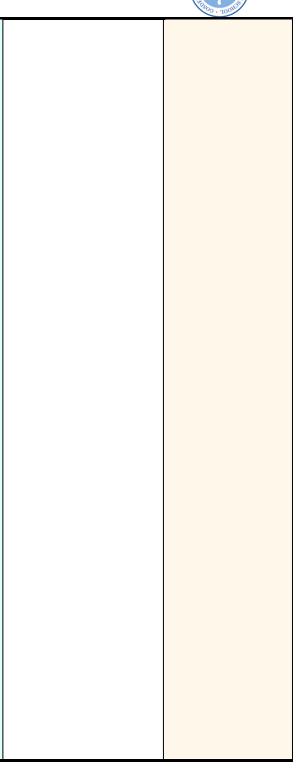




			· · · · · · · · · · · · · · · · · · ·	
•	<ul> <li>use estimation to</li> </ul>	whole numbers		decimal
	check answers to	<ul> <li>multiply and</li> </ul>		notation up to
	calculations and	divide numbers by		three decimal
	determine, in the	10, 100 and 1000		places where
	context of a	where the		appropriate
	problem, levels of	answers are up to		<ul> <li>convert</li> </ul>
	accuracy	three decimal		between miles
F	Problem	places		and kilometres
S	Solving	<ul> <li>identify the value</li> </ul>		
	<ul> <li>solve problems</li> </ul>	of each digit to		
	involving addition,	three decimal		
	subtraction,	places and		
	multiplication and	multiply and		
	division	divide numbers by		
		10, 100 and 1000		
		where the		
		answers are up to		
		three decimal		
		places		
		<ul> <li>associate a</li> </ul>		
		fraction with		
		division and		
		calculate decimal		
		fraction		
		equivalents (e.g.		
		0.375) for a simple		
		fraction (e.g. 3/8)		
		<ul> <li>use written</li> </ul>		
		division methods		
		in cases where		
		the answer has up		
		to two decimal		
		places		
		Problem Solving		
		<ul> <li>solve problems</li> </ul>		
		involving similar		
		shapes where the		
		scale factor is		
		known or can be		
		found (copied from ratio)		









Content coverage	Using numbers and the number system – whole numbers	Using common measures, shape and space	Handling information
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	<ul> <li>E1.5 Recognise coins and notes and write them in numbers with the correct symbols (£ &amp; p), where these involve numbers up to 20</li> <li>E1.6 Read 12-hour digital and analogue clocks in hours</li> <li>E1.7 Know the number of days in a week, months and seasons in a year; be able to name and sequence</li> <li>E1.8 Describe and make comparisons in words between measures of items including size, length, width, height, weight and capacity</li> <li>E1.9 Identify and recognise common 2-D and 3-D shapes, including circle, cube, rectangle (including square) and triangle</li> <li>E1.10 Use everyday positional vocabulary to describe position and direction, including left, right, in front, behind, under and above</li> </ul>	E1.11 Read numeri E1.12 Sort and class criterion E1.13 Read and dr including a tally ch problems.

Content coverage	Using numbers and the number system – whole numbers, fractions and decimals	Using common measures, shape and space	Handling informati
KS4 E2	<ul> <li>E2.1 Count reliably up to 100 items</li> <li>E2.2 Read, write, order and compare numbers up to 200</li> <li>E2.3 Recognise and sequence odd and even numbers up to 100</li> <li>E2.4 Recognise and interpret the symbols +, -, ×, ÷ and = appropriately</li> <li>E2.5 Add and subtract two-digit numbers</li> <li>E2.6 Multiply whole numbers in the range 0 × 0 to 12 × 12 (times tables)</li> <li>E2.7 Know the number of hours in a day and weeks in a year; be able to name and sequence</li> <li>E2.8 Divide two-digit whole numbers by single-digit whole numbers and express remainders</li> <li>E2.9 Approximate by rounding to the nearest 10, and use this rounded answer to check results</li> <li>E2.10 Recognise simple fractions (halves, quarters and tenths) of whole numbers and shapes</li> <li>E2.11 Read, write and use decimals to one decimal place</li> </ul>	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 inform diagrams and ban E2.23 Make nume charts E2.24 Sort and cla E2.25 Take information represent the information including use of b



### tion and data

- nerical information from lists lassify objects using a single
- draw simple charts and diagrams, chart, block diagram/graph

### ation and data

- ormation from lists, tables, oar charts nerical comparisons from bar
- classify objects using two criteria mation from one format and formation in another format, bar charts



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



### ation and data

ormation from lists, tables, harts and create frequency tables nformation, to make comparisons nges, from different formats, narts and simple line graphs and represent information in iys, including tables, diagrams, hs and bar charts



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



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screte data in tables, diagrams Jding pie charts, bar charts and

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- an and range of a set of quantities probability on a scale from 0
- l (certain) and use probabilities to elihood of events
- ikely outcomes to find the
- simple events and express them as



ontent coverage	Using numbers and the number system – whole numbers, fractions and decimals	Using common measures, shape and space	Handling information
KS4 L2	<ul> <li>1 Read, write, order and compare positive and negative numbers of any size</li> <li>2 Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation</li> <li>3 Evaluate expressions and make substitutions in given formulae in words and symbols</li> <li>4 Identify and know the equivalence between fractions, decimals and percentages</li> <li>5 Work out percentages of amounts and express one amount as a percentage of another</li> <li>6 Calculate percentage change (any size increase and decrease), and original value after percentage change</li> <li>7 Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers</li> <li>8 Express one number as a fraction of another</li> <li>9 Order, approximate and compare decimals</li> <li>10 Add, subtract, multiply and divide decimals up to three decimal places</li> <li>11 Understand and calculate using ratios, direct proportion and inverse proportion</li> <li>12 Follow the order of precedence of operators, including</li> </ul>	<ul> <li>13 Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting</li> <li>14 Convert between metric and imperial units of length, weight and capacity using <ul> <li>a) a conversion factor and b) a conversion graph</li> <li>15 Calculate using compound measures including speed, density and rates of pay</li> <li>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)</li> <li>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)</li> <li>18 Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements</li> <li>19 Use coordinates in 2-D, positive and negative, to specify the positions of points</li> <li>20 Understand and use common 2-D representations of 3-D objects</li> <li>21 Draw 3-D shapes to include plans and elevations</li> </ul> </li> </ul>	23 Calculate the r quantities 24 Estimate the me distribution from di 25 Use the mean, compare two sets 26 Work out the pr including the use of including two-way 27 Express probab percentages 28 Draw and interp recognise positive
	indices	22 Calculate values of angles and/or coordinates with 2-D and 3-D shapes	

# 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.



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- mean of a grouped frequency discrete data
- n, median, mode and range to ets of data
- probability of combined events e of diagrams and tables,
- av tables
- abilities as fractions, decimals and
- erpret scatter diagrams and e and negative correlation

