Maths at Claycots

Claycots Primary School





## Maths team

### Ms O'Connor is our Maths Leader at Claycots





### The vision for Maths

At Claycots we aim for all pupils to develop a positive and resilient attitude towards mathematics. We ensure that every pupil is given a broad, balanced, engaging and relevant curriculum that considers the requirements of the National Curriculum and any other guidance documents.

We aim to equip children with the skills of calculation, reasoning and problem solving that they need in life, within the school day and beyond, developing an ability in the children to express themselves fluently. We want all children to experience the beauty, power and enjoyment of mathematics and develop.



## Subject Intent

At Claycots, we are committed to ensuring that all children are challenged through a rich Maths curriculum, with a high emphasis on securing understanding by carefully sequencing learning to develop pupils' fluency, mathematical reasoning and ability to solve increasingly sophisticated problems. Our maths curriculum aims to help our pupils recognise that mathematics is an interconnected subject in which we want them to be able to move fluently between different representations of mathematical ideas as well as applying their maths knowledge to science and other subjects.



## Subject Implementation

At Claycots School, we use a mastery approach focusing on the teaching of: representation & structure, mathematical thinking, variation, fluency and coherence. As a school, our mastery approach is developing each year through our involvement in a number of projects run by the BBO Maths Hub. Lessons are planned and sequenced so that new knowledge and skills build on what has previously been taught. Teachers use White Rose Maths, NCETM and other resources to support their planning and we develop termly overviews to ensure careful sequencing of learning.

Throughout the school, teachers use pedagogical approaches which aim to ensure that all children to view mistakes and misconceptions as an important part of learning. As part of our approach to developing mathematic fluency, in each lesson, children have a times tables focus to give the opportunity to practice and improve rapid recalls of tables linked to their stage of learning. Children work towards the weekly challenge of improving their time and score and have access to their personal account of 'Times Tables Rockstar' which allows them to practice in an engaging and interactive way using an electronic device both at school and at home.

In addition to this, in each lesson, children are given the opportunity to develop their mental Maths skills to improve their efficiency in solving quick calculations. We use our school calculation policy, to ensure a consistent approach in teaching formal methods and use of the CPA approach. Our pupils are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols.

- Concrete children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.
- Pictorial children then build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.
- Abstract With the foundations firmly laid, children can move to an abstract approach using numbers and key concepts with confidence. We ensure that the curriculum is tailored to meet the needs of each child while developing their skills and understanding at an appropriate level. Where possible, links are made with other subjects across the curriculum for children to understand the application of Maths in everyday life.



## Maths progression map

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	•count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	-count in multiples of 6, 7, 9, 25 and 1000 -find 1000 more or less than a given number count backwards through zero to include negative numbers	-count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000  -interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	<ul> <li>use negative numbers in context, and calculate intervals across zero</li> </ul>
Place Value		recognise the place value of each digit in a two-digit number     compare and order numbers from 0 up to 100; use <, > and = signs	recognise the place value of each digit in a three-digit number     compare and order numbers up to 1000	recognise the place value of each digit in a four-digit number     order and compare numbers beyond 1000     round any number to the nearest 10, 100 or 1000	read, write, order and compare numbers up to 1 000 000 and determine the value of each digit     round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit     round any whole number to a required degree of accuracy
Representing number	identify and represent numbers using objects and pictorial representations including the number line, & use language of: equal to, more than, less than (fewer), most, least read and write numbers from 1 to 20 in numerals and words read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	identify, represent and estimate numbers using different representations, including the number line     read and write numbers to at least 100 in numerals and in words	identify, represent and estimate numbers using different representations read and write numbers up to 1000 in numerals and in words	identify, represent and estimate numbers using different representations     read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	-read Roman numerals to 1000 (M) and recognise years written in Roman numerals -recognise and use square numbers and cube numbers, and the notation for squared (*) and cubed (*)	
Number facts (+/-)	• given a number, identify one more and one less • represent and use number bonds and related subtraction facts within 20	•use place value and number facts to solve problems recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
Mental +/-	-add and subtract one-digit and two- digit numbers to 20, including zero	<ul> <li>add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U</li> <li>show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</li> </ul>	-add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H		-add and subtract numbers mentally with increasingly large numbers	<ul> <li>-perform mental calculations, including with mixed operations and large numbers</li> </ul>



### How we measure progress

At Claycots we use termly assessments where appropriate to help teachers gather a deeper understanding of their pupil's existing and developing knowledge and skills. This is used by teachers as a diagnostic tool to adapt teaching to meet the needs of all children.

We measure pupil progress on a termly basis and at the end of the year, the expectation is that children achieve Age Related Expectations (ARE) for their year group. Some children may have progressed further and achieve Greater Depth (GD). Those pupils who have been identified as having gaps in their knowledge receive appropriate support and intervention where possible, inside and outside of the usual classroom Maths lesson.

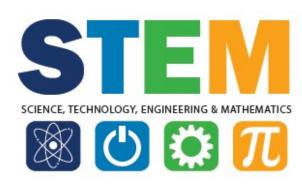
By the end of Year 6, children will have developed a range of efficient skills that can be used to calculate effectively, they will be fluent in the fundamentals of Maths with a conceptual understanding and he ability to recall and apply key facts accurately.



### Visits and experiences



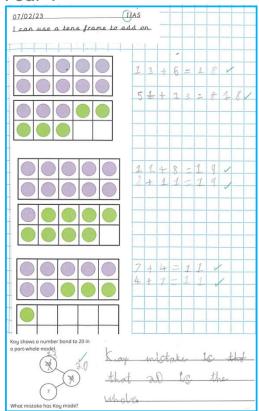
Educational Financial lessons (EYFS, KS1 & KS2)



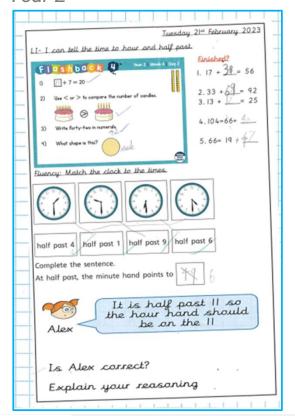
STEM Lego Workshop (Key Stage 2)

# Examples of learning KS1

#### Year 1



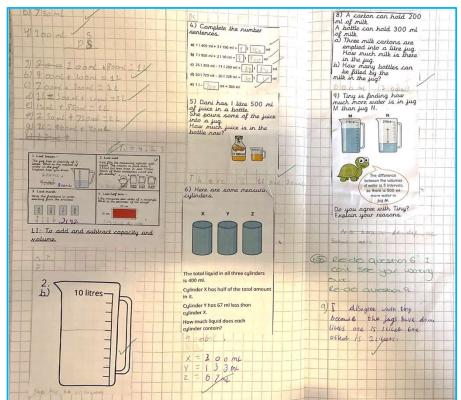
#### Year 2





# Examples of learning Lower KS2

### Year 3



#### Year 4

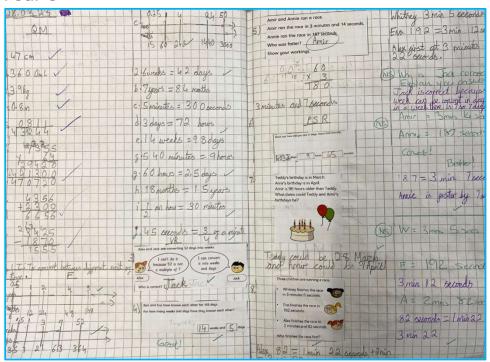




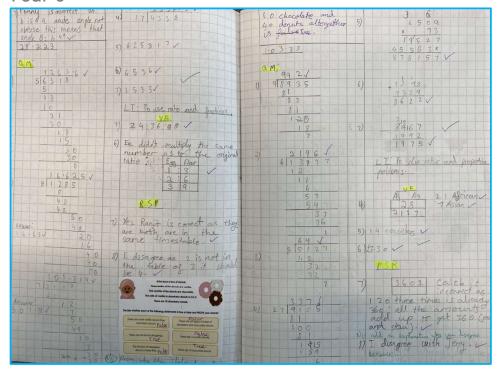
# Examples of learning Upper KS2

# TOTS SCHOOL

#### Year 5



#### Year 6

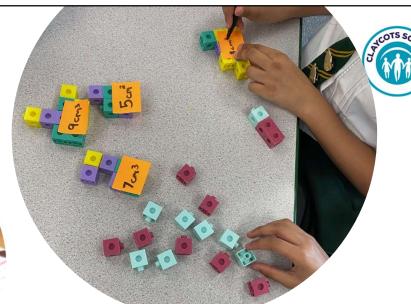


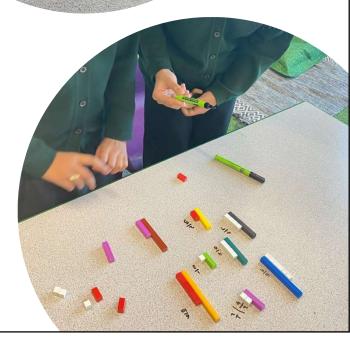
## Practical learning!











## Pupil voice

I love using the numicon and cubes to help me count up to 50.
It's so fun.
-Year 1, Town Hall

I work with my friends, and we help each other solve difficult problems.

-Year 4, Britwell

Maths in Year 5 is challenging, and it is very fun because we get to learn from our mistakes and use lots of different equipment.

-Year 5, Town Hall

The teachers help us because they explain things very clearly.

-Year 3, Britwell

Maths is really fun in Claycots because it's like a puzzle and we learn a lot about it in greater detail.

-Year 6, Town Hall

I like adding. When questions get hard, I try to use a different method.

-Year 2, Britwell



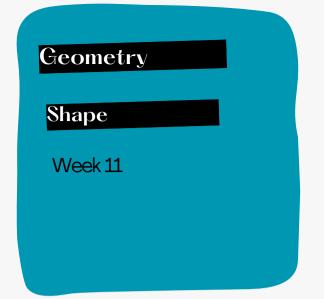
## Maths Overviews



## Long term planning









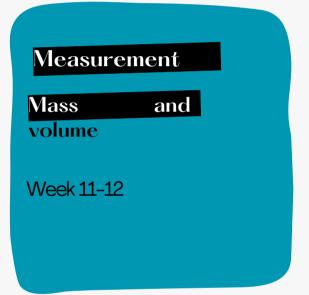












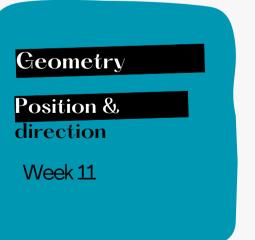














Week 1-3

Addition

Subtraction

&

Number

Measurement

Money

Week 9-10

Number

Multiplication & divison

Week 11

Consolidation Week 12



Number

Multiplication & divison

Week 1-4

Spring

Statistics

Statistics

Week 5-6

Geometry

Properties

of shape

Week 7-9

Number

Fractions

Week 10-12

Measurement

Length & height

Week 1-2

Caulminer

Geometry

Position & direction

Week 3-4

Consolidation & problem solving Week 5-6

Measurement

Time

Week 7-8

Measurement

Mass, capacity

& temperature

Week 9-11

Consolidation Week 12



Number
Place Value
Week 1-3

Autump

Addition & Subtraction

Week 4-8

Multiplic divison

Week 9-1

Multiplication & divison

Week 9-12

Multiplication & divison

Week 1-3

Charing

Measurement

Length & perimeter

Week 4-6

Number
Fractions
Week 7-9

Measurement

Mass & capacity

Week 10-12

Number
Fractions
Week 1-2

Guhher

Measurement
Money
Week 3-4

Measurement
Time
Week 5-7

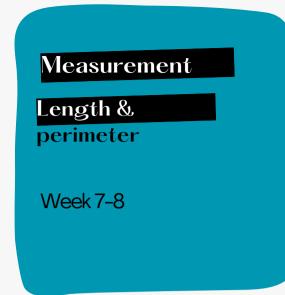
Shape
Week 8-9

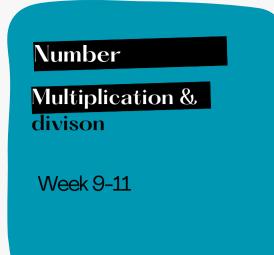
Statistics
Statistics
Week 11

Consolidation Week 12







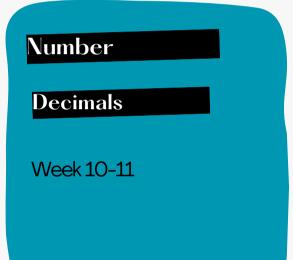




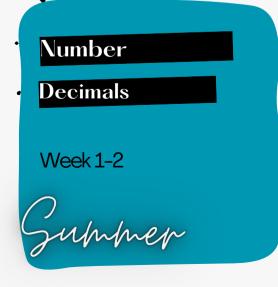




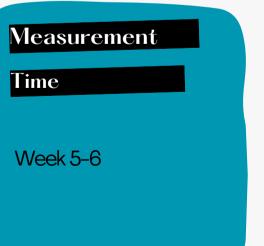




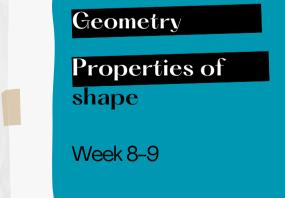




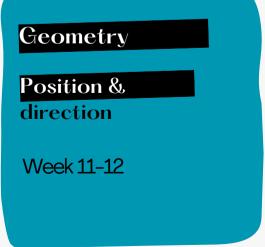








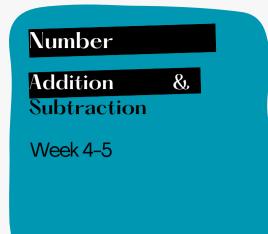






## Long term planning





Number

Multiplication & divison

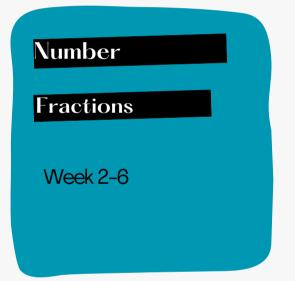
Week 6-8

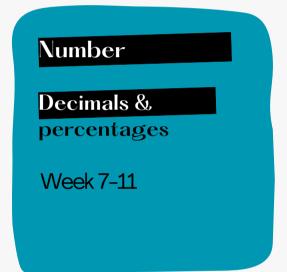
Measurement
Perimeter &
Area
Week 9-10

Statistics
Statistics
Week 11-12



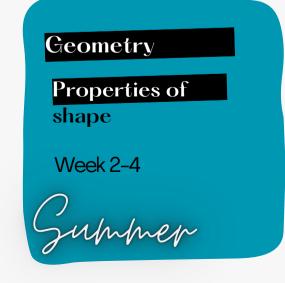


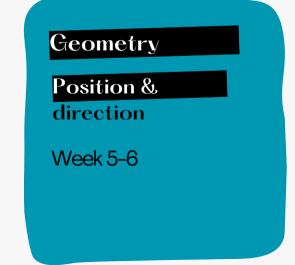


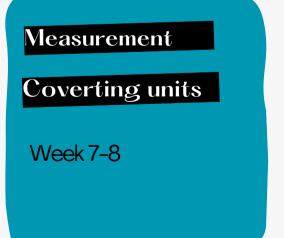


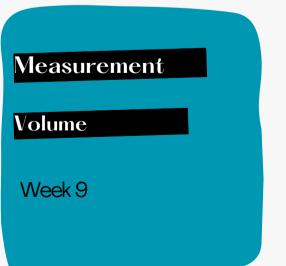


Consolidation Week 1











## Year 6

## Long term planning



Addition, subtraction, multiplication & divison

Week 3-6

Number
Fractions
Week 7-9

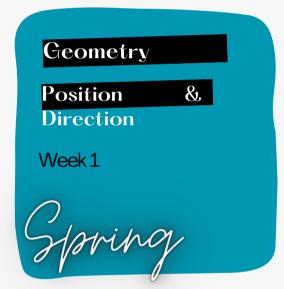
Measure

Converting
Units

Week 10

Number
Ratio
Week 11-12





Number
Algebra
Week 2-3

Number
Decimals
Week 4-6

Fractions, decimals and percentages
Week 7-8

Perimeter, area & volume
Week 9-10

Statistics
Statistics
Week 11-12

Shape

Week 1-2

Summer

Consolidation and revision
Week 3-4

SATS

Consolidation, problem solving and themed projects
Week 7-12



### Maths Vocabulary Progression Map Claycots School



PLACE VALUE, NUMBERS AND COUNTING							
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Numbers 0-20 Ones Count to Count for Count from Number More, less Odd, even Few Pattern Size Big Small Ordinal numbers (1 <sup>st)</sup> Before, after, next between Part Whole Digit	Counting Ones Tens One more One less Equal to More than Less than Fewer Most Least Ordering Odd, even Numbers one – twenty Forwards Backwards Value Number bonds Column Twos Fives Tens	Numbers 20 to 100 count in steps of Twos Fives Tens Threes Compare Order < less than > more than = equal to Increasing, decreasing identify Represent Representation Estimate Partition Number facts Sequence Two-digit number Greatest value Least value Greatest	Numbers up to 1000 Count in multiples of Fours Eights Fifties Three-digit number hundreds Hundreds block Hundreds column Roman numerals I to xii Consecutive Ascending order descending order	Negative number Positive number above/below zero Minus 1 etc. Decimal number Decimal place Tenths column Hundredths column decimal point One decimal place Two decimal places I to c Thousands Four-digit number thousands column integer Numbers up to 10,000	Count across zero Numbers up to 1 million Five-digit number Six-digit number Tens of thousands Hundreds of thousand Three decimal places thousandths column C to m Powers of 10 Millions	Calculate intervals across zero Numbers up to 10 million Seven-digit number Millions	
			ESTIMATING AND ROUNDING				
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Guess how many Estimate Nearly Close to About the same as Just over Just under Too many Too few Enough Not enough	Roughly	Exact Exactly Near to Nearer to Closer to	Approximate Approximately	Round Rounding round up Round down Nearest 10 Nearest 100 Nearest 1000 Nearest whole number	Nearest 10,000 Nearest 100,000 Nearest tenth To one decimal place	Nearest million Nearest hundredth To two decimal places Degree of accuracy	
			ADDITION AND SUBTRACTION	N			
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Add More Make Total Altogether Double One more Two more How many more to How many more is Take away Less How many are left How many have gone One Less Two less How many fewer is	+ sign Addition Put together Sum Near double Is the same as Missing number Number bonds = equals sign Number sentence Sign Operation Total Subtraction Take away Distance between Equals More than Greater than Less than Zero Counting forwards	Method Exchange Combined Calculate Solve Calculation Sums Inverse Equal to each other Strategy Number line Jumps Tens Ones Product Smaller Greater	Carrying Exchanging Expanded Compact Commutative law Find the difference Column addition column subtraction inverse operations Mental operations	Near multiple Distributive law Column addition column subtraction inverse operations mental operations two-step problem	Column addition column subtraction inverse operations mental operations rounding Accuracy Multi-step problems	Four operations	



	Counting backwards					
			MULTIPLICATION AND DIVIS	ION		
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Double Half Halve Pair Sharing Share out Groups	Grouping Sharing multiplying dividing Doubling Arrays Number patterns count in twos count in fives count in tens	Lots of X sign Multiplying Dividing ÷ sign Share equally Equal groups Odd Even Multiple of Once, twice, three times, ten times Repeated addition Row Column Multiplication fact Calculate Solve Product Calculation Commutative Arrays Mental methods inverse operations	Partitioning Column method Short multiplication Short division Expanded Scaling Correspondence Commutative law Mental method integers Divisor Left over	Factor pair Commutativity Short multiplication Short division Distributive law Mental method inverse operations Integers Short division Short multiplication Factor Factor of Dividend Divisible by	Long multiplication expanded Long multiplication compact Square number Squared, x² Cube number Cubed, x³ Square root Cube root Multiples Factors Factor pairs Common factors Prime numbers Prime factors Composite (nonprime) numbers Rates	Order of operations Common multiples Scale factor Factor pairs Common factors Prime numbers Prime factors Composite (nonprime) numbers Remainders Common multiples Brackets
			TIONS, DECIMALS AND PERC			
EYFS Half	Year 1 A half	Year 2 A half	Year 3 Tenths	Year 4 Tenths	Year 5 Unit fractions	Year 6 Unit fractions
Part Whole	Equal parts A quarter A whole	A quarter A whole Equal parts A third Two quarters Three quarters Equivalence	Equal parts Fractions Unit fractions Non -unit fractions Denominator Numerator A half A quarter A whole Equal parts A third Two quarters Three quarters Equivalence	Hundredths Equal parts Fractions Unit fractions Non -unit fractions Denominator Numerator Equivalence Equivalent fractions Decimal number Decimal point	Non -unit fractions Mixed number fractions Improper fractions Proper fractions Proper fractions Denominator Numerator Equivalence Equivalent fractions Decimal number Decimal point Per cent Percentage	Non -unit fractions Mixed number fractions Improper fractions Proper fractions Proper fractions Denominator Numerator Equivalence Equivalent fractions Decimal number Decimal point Per cent Percentage
				OLUME, MONEY, TEMPERATURE		
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Compare Guess Estimate Enough/Not enough Too much/Too little Too many/Too few Tall/Taller/Tallest Long/Longer/Longest Short/Shorter/Shortest Time Days of the week Morning Afternoon Evening Night Times of the day Today, yesterday, today Hour Watch Clock	Compare Long Short Longer Shorter Tall Double Half Mass Weight Heavy Light Heavier than Lighter than Capacity Volume Full Empty Half full Quarter full Time	Height Meters Centimetres Mass Kilograms Grams Temperature Capacity Litres Millilitres Rulers Scales Thermometers Measuring vessels Compare Order Volume Pounds Pence Coins	Length Height Meters Centimetres Millimetres Mass Kilograms Grams Temperature Capacity Litres Millilitres Rulers Scales Thermometers Measuring vessels Compare Order Volume Pounds	Length Height Meters Centimetres Millimetres Mass Kilograms Grams Temperature Capacity Litres Millilitres Millilitres Rulers Scales Thermometers Measuring vessels Converting measurements Perimete Rectilinear figure Area Pounds	Scales Thermometers Measuring vessels	Metric measurements Imperial units Inches Pounds Pints Miles Length Height Meters Centimetres Millimetres Mass Kilograms Grams Temperature Capacity Litres Millilitres Rulers Scales
Hands O'Clock Weight Balances	Quicker Slower Earlier Later	Money Change Sequence Time	Pence Coins Money Change	Pence Analogue clocks Digital clocks Hours	Converting Measurements Perimeter Rectilinear figure	Thermometers Converting measurements Perimeter Rectilinear figure Irregular shapes



Heavy/Heaviest/Heavier Light/Lightest/Lighter Full/Half full Empty Container Money Coin Penny Notes Pence Pounds	Hours Minutes Seconds Coins Notes Money Before After Next First Today	Clock Five minutes Minutes Quarter past Quarter to Half past O'clock Hour Day	Analogue clock Roman Numerals Seconds Minutes Hours O'clock A.M P.M Morning Afternoon Noon Midnight	Minutes Seconds Years Months Weeks Days	Irregular shapes Area Pounds Pence Analogue clocks Digital clocks Hours Minutes Seconds Years Months	Area Pounds Pence Analogue clocks Digital clocks Hours Minutes Seconds Years Months Weeks
Price/cost/sell/buy/spent	Yesterday Tomorrow Morning Afternoon Evening Ruler Weighing scales Days of the week Months of the year Hour O'clock Half past		Leap year Each month of the year		Weeks Days Scaling	Days Scaling
			GEOMETRY: GENERAL			
EYFS Shape	Year 1 Point	Year 2 Symmetry	Year 3 Parallel	Year 4 Construct	Year 5	Year 6
Pattern Hollow Solid Size Bigger, Larger, Smaller, Symmetrical Pattern Repeating Pattern	Pointed Identify	Symmetrical Mirror Line Reflection Fold Horizontal Vertical Diagonal	Perpendicular	Draw Complete Classify		
EYFS	Year 1	GE Year 2	OMETRY: POSITION AND DIRECT Year 3	ION Year 4	Year 5	Year 6
Position Over Under Above Below Top Bottom Side On In Outside Inside Around In Front Behind Front Back Before After Beside Next To Opposite Left Right Up Down Forwards Sideways Across Towards	Whole turn Half turn Quarter turn Left Right Top Middle Bottom On top of In front of Above Between Around Near Close	Patterns Sequences Straight line Rotation Turn Right angles Position Direction Movement Whole turn Half turn Quarter turn Left Right		Coordinates Quadrant Left Right Up Down Axes X-Axis Y-Axis Axes Translation Translate Units Plot Points Vertices Vertex	Coordinates Quadrants Vertices Vertex Left Right Up Down Axes X-Axis Y-Axis Translation Translate Reflection Horizontal Vertical Translation Plot Points Vertices Vertex	Coordinates Coordinate plane Quadrant Left Right Up Down Axes Reflection Translation Opposite



GEOMETRY: PROPERITES OF SHAPE								
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Cube	2D shapes	2D shapes Properties of shapes	2D shapes	2D shapes	2D shapes	2D shapes		
Sphere	Rectangle	Sides	Properties of shapes	Properties of shapes	Properties of shapes	Dimension		
Cone	Square	Line of symmetry	Sides	Sides	Sides	Properties of shapes		
Face	Circle	Vertical line	Line of symmetry	Line of symmetry	Line of symmetry	Sides		
	Triangle	3D shape	Vertical line	Vertical line	Vertical line	Line of symmetry		
Edge 3D	3D shapes	Edges	Horizontal line	Horizontal line Perpendicular line	Horizontal line Perpendicular line	Vertical line		
=	Cubes	Vertices	Perpendicular line	Parallel lines	Parallel lines	Horizontal line Perpendicular line		
Corners	Cuboids	Vertex	Parallel lines	3D shape	3D shape Edges	Parallel lines		
Circle	Pyramids	Faces Rectangle	3D shape	Edges Vertices	Vertices	3D shape Net		
Triangle	Spheres Straight	Square	Edges Vertices	Vertex	Vertex	Edges		
Square	Curved	Circle	Vertex	Faces	Faces	Vertices		
Rectangle	Flat	Triangle	Faces	Rectangle	Rectangle	Vertex		
2D	Corners	Cube	Rectangle	Square	Square	Faces		
Flat	Sides	Cuboid	Square	Circle	Circle	Rectangle Square Circle Radius		
Corners		Pyramid	Circle	Triangle	Triangle	Diameter		
Sides		Sphere	Triangle	Isosceles triangle	Isosceles triangle	Circumference		
Curved		·	Cube	Equilateral triangle	Equilateral triangle	Isosceles triangle		
Round			Cuboid	Scalene triangle	Scalene triangle	Equilateral triangle		
Pointy			Pyramid	Cube	Cube	Scalene triangle		
. 5			Sphere	Cuboid	Cuboid	Cube Cuboid		
			Angle	Pyramid	Pyramid	Pyramid Sphere		
			Right angle Acute angle	Sphere Angle	Sphere Angle	Angle Right angle		
			Obtuse angle	Right angle	Right angle	Acute angle		
			Polygon	Acute angle	Acute angle	Obtuse angle		
			1 diygon	Obtuse angle	Obtuse angle	Reflex angle		
				Protractor	Reflex angle	Protractor		
				Polygon	Protractor	Degrees		
				Quadrilateral	Degrees	Polygon		
				Parallelogram Rhombus	Polygon	Quadrilateral		
				Trapezium	Quadrilateral	Parallelogram		
				Regular polygon	Parallelogram	Rhombus		
				Irregular polygon	Rhombus	Trapezium		
					Trapezium	Regular polygon		
					Regular polygon	Irregular polygon		
					Irregular polygon Diagonal	Diagonal		
					Diagonal			
			STATISTICS					
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
	Count	Pictogram	Pictogram	Pictogram	Line graph	Pie chart		
	Sort	Tally chart	Tally chart	Tally chart	Timetables	Line graph		
	Vote	Block diagram Table	Bar charts	Bar chart		Average		
	Group		Table	Table		Mean variables		
	List		Two-way tables	Time graph Scale		Data		
			Frequency					
			AL CERRA					
EYFS	Year 1	Year 2	ALGEBRA Year 3	Year 4	Year 5	Year 6		
<u> </u>	Missing number	Inverse	Integer scaling	Express	l ear J	Formulae		
	wissing number	Arrange	integer scaling	Formula		Algebra		
		Combine				Unknown values Variable		
		Combinations				Equivalent expression		
RATIO AND PROPORTION								
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
				Proportion in every for every (linked	Scaling	Proportion		
				to fractions)	_	Ratio		
						Recipe		
						Pie chart		
						Scale drawing		
						Scale factor		