Mathematics Policy

June 2023

To be read in conjunction with the Calculation Policy

Brookhurst Primary School
A place to think and grow

MATHEMATICS POLICY

Intent

The 2014 National Curriculum for mathematics aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

Brookhurst provides a high-quality mathematics education that builds a foundation for understanding the world and provides children with the ability to use their mathematical skills and knowledge confidently in their lives in a range of different contexts. We aim to develop independent problem solvers who take risks in their learning who challenge themselves and experience success in mathematics whilst harnessing a sense of enjoyment and curiosity about the subject.

As subject leaders we strive to adopt and construct a curriculum that is ambitious and aspirational; designed to give all learners and groups of learners, including the most disadvantaged and those with SEND and higher levels of needs, the knowledge and cultural capital they need to succeed in their future lives.

We continually strive to make adaptations and reasonable adjustments to enable all our pupils to access our school curriculum and we aim to provide a range of enhancement opportunities to engage all children in their learning.

We recognise that all pupils are entitled to a quality of provision that will enable them to achieve their full academic and personal potential.

We firmly believe that childhood should be a happy, investigative and enquiring time in our lives where there are no limits to curiosity and where all children are exposed to new experiences and knowledge through a varied curriculum regardless of barriers to learning.

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Implementation

At Brookhurst, we adopt a 'Teaching for Mastery' approach. Planning is based on the National Curriculum mathematics programmes of study, broken down into blocks of learning taught in small steps. A clear skills and knowledge progression, ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children.

Children are taught mathematics for approximately 1 hour daily, in mixed ability classes. Lessons include explicit connections with previous learning, a hook, the activation of new learning, time to practice and a chance to record. Plenaries will be used throughout the session to assess progress and develop children's thinking. Support is determined during each lesson to ensure secure understanding based on the needs of the child.

The main aim of all lessons is to develop children's knowledge, understanding and skills, applying these to a variety of contexts. We focus not only on the mathematical methods but also focus on mathematical vocabulary. We aim for each child to be confident in each yearly objective and develop their ability to use this knowledge to develop greater fluency as well as problem solving and reasoning skills.

We employ a variety of teaching styles and opportunities for children to learn and develop their mathematical skills and competencies, both individually and collaboratively. Each lesson plans for mastery, fluency, problem solving and reasoning.

We use White Rose Maths throughout the school as our main online resource. Staff also refer to other textbooks and online resources for 'low stakes, high ceiling' tasks and the Calculation Policy when teaching formal methods, understanding that sometimes children find their own efficient methods along the way.

Each week a Times Tables focus is planned through the '6 or 3 minute club' to give children the opportunity to practise and improve their rapid recall skills with facts up to 12x12. Children enjoy the weekly challenge and strive to improve their score each week.

Multiplication tables check

From the 2019/20 academic year onwards, schools in England have been required to administer an online multiplication tables check (MTC) to year 4 pupils. The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided. To support the children with their multiplication practice we use 'Times Tables Rock Stars' and 'Mathletics' as online and fun learning platforms which also offer resources to be used in the classroom.

Impact

We foster a positive mathematics environment where it is OK to be 'wrong' because the journey to finding an answer is most important. Our children have a growth mindset and are resilient towards problem solving and reasoning.

- All pupils, regardless of their abilities, will be able to succeed in all mathematics lessons because of the small step mastery approach and level of support they will receive
- Pupils will demonstrate a quick recall of facts and procedures
- Pupils will demonstrate a flexibility and fluidity to move between different contexts and representations of mathematics
- Pupils will have an ability to recognise relationships and make connections in mathematics
- Pupils will have an understanding of a wide range of mathematical vocabulary
- Pupils will leave Brookhurst being able to effectively apply mathematical knowledge they have been taught
- The % of pupils working at ARE within each year group will be at least in line with national averages.
- The % of pupils working at Greater Depth within each year group will be at least in line with national averages
- There will be no significant gaps in the progress of different groups of pupils (e.g. disadvantaged vs non-disadvantaged)

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Aims of National Curriculum

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

EYFS

All children in the Early Years Foundation Stage have daily opportunities to develop their mathematical understanding, primarily through play, to meet the needs of Development Matters. The two strands of mathematics taught in the EYFS are Numbers and Numerical Patterns. We continually observe and assess children against these areas using their age-related objectives and plan the next steps in their mathematical development through a topic-based curriculum.

Key Stage 1 (Years 1 and 2)

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Upper Key Stage 2 – Years 5 and 6

The principal focus of mathematics teaching in Upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

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Coverage within the mathematics national curriculum

	Number and place value	Addition and subtraction	Multiplication and division	Addition, subtraction, multiplication and division	Fractions	Fractions, including decimals	Fractions, including decimals and percentages	Ratio and proportion	Algebra	Measurement	Geometry – properties of shape	Geometry – position and direction	Statistics
Yr 1	x	x	x		x					x	x	x	
Yr 2	x	x	x	x	x					x	x	x	x
Yr 3	x	x	x		x					x	x		x
Yr 4	x	x	x			x				x	x	x	x
Yr 5	x	x	x				x			x	x	x	x
Yr 6	x			x		x	x	x	x	x	x	x	x

Vocabulary

The charts below outline the key vocabulary for each year group, with the words/terms in bold/highlighted in blue, being those that are specifically taught and used. The charts are cumulative and therefore teachers revisit and require children to use the vocabulary learned in earlier year groups.

Number – Number and Place Value					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Count	Count	Count	Count	Count	Count
	Count in steps	Count in steps	Count in steps	Count in steps	Count in steps
		Count in multiples	Count in multiples	Count in multiples	Count in multiples
			Count backwards	Count backwards	Count backwards
				Negative numbers	Negative numbers
					Calculate intervals
					Whole number
Forwards	Forwards	Forwards	Forwards	Forwards	Forwards
Backwards	Backwards	Backwards	Backwards	Backwards	Backwards
Numerals	Numerals	Numerals	Numerals	Numerals	Numerals
Multiples	Multiples	Multiples	Multiples	Multiples	Multiples
One more	One more	One more	One more	One more	One more
One less	One less	One less	One less	One less	One less
		10 or 100 more	10 or 100 more	10 or 100 more	10 or 100 more
		10 or 100 less	10 or 100 less	10 or 100 less	10 or 100 less
			1000 more	1000 more	1000 more
			1000 less	1000 less	1000 less
Equal to	Equal to	Equal to	Equal to	Equal to	Equal to
More than	More than	More than	More than	More than	More than
Less than (fewer)	Less than (fewer)	Less than (fewer)	Less than (fewer)	Less than (fewer)	Less than (fewer)
	Place value	Place value	Place value	Place value	Place value

	Digit	Digit	Digit	Digit	Digit
	Two digit	Two digit	Two digit	Two digit	Two digit
		Three digit	Three digit	Three digit	Three digit
			Four digit	Four digit	Four digit
	Estimate	Estimate	Estimate	Estimate	Estimate
	Compare	Compare	Compare	Compare	Compare
			Round	Round	Round
			Roman numerals	Roman numerals	Roman numerals
				Powers of	Powers of

Number – Addition and Subtraction

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Add	Add	Add	Add	Add	Add
Subtract	Subtract	Subtract	Subtract	Subtract	Subtract
Equals	Equals	Equals	Equals	Equals	Equals
Number bonds	Number bonds	Number bonds	Number bonds	Number bonds	Number bonds
	Facts	Facts	Facts	Facts	Facts
Problems	Problems	Problems	Problems	Problems	Problems
Missing number problems	Missing number problems	Missing number problems	Missing number problems	Missing number problems	Missing number problems
	2 digit number	2 digit number	2 digit number	2 digit number	2 digit number
		3 digit number	3 digit number	3 digit number	3 digit number
			4 digit number	4 digit number	4 digit number
	Commutative	Commutative	Commutative	Commutative	Commutative
	Inverse	Inverse	Inverse	Inverse	Inverse
		Columnar addition	Columnar addition	Columnar addition	Columnar addition
		Columnar subtraction	Columnar subtraction	Columnar subtraction	Columnar subtraction
		Estimate	Estimate	Estimate	Estimate
			Operations	Operations	Operations
			Methods	Methods	Methods
				Rounding	Rounding
					Accuracy

Number – Multiplication and Division					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication	Multiplication	Multiplication	Multiplication	Multiplication	Multiplication
Division	Division	Division	Division	Division	Division
Arrays	Arrays	Arrays	Arrays	Arrays	Arrays
	Multiplication tables	Multiplication tables	Multiplication tables	Multiplication tables	Multiplication tables
	Odd numbers	Odd numbers	Odd numbers	Odd numbers	Odd numbers
	Even numbers	Even numbers	Even numbers	Even numbers	Even numbers
	Commutative	Commutative	Commutative	Commutative	Commutative
	Repeated addition	Repeated addition	Repeated addition	Repeated addition	Repeated addition
		Mathematical statements	Mathematical statements	Mathematical statements	Mathematical statements
		Missing number problems	Missing number problems	Missing number problems	Missing number problems
		Integer scaling problems	Integer scaling problems	Integer scaling problems	Integer scaling problems
		Correspondence problems	Correspondence problems	Correspondence problems	Correspondence problems
		n objects	n objects	n objects	n objects
			Place value	Place value	Place value
			Derived facts	Derived facts	Derived facts
			Factor pairs	Factor pairs	Factor pairs
			Formal written layout	Formal written layout	Formal written layout
			Distributive law	Distributive law	Distributive law
				Multiples	Multiples
				Factors	Factors
				Prime numbers	Prime numbers
				Short division	Short division
				Remainders	Remainders
				Decimals	Decimals
					Multi digit numbers

					Long multiplication
					Long division
Number – Fractions (including decimals and percentages)					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Half	Half	Half	Half	Half	Half
Quarter	Quarter	Quarter	Quarter	Quarter	Quarter
	Three quarters	Three quarters	Three quarters	Three quarters	Three quarters
	Third	Third	Third	Third	Third
				Fifth	Fifth
Equal parts	Equal parts	Equal parts	Equal parts	Equal parts	Equal parts
	Equivalence	Equivalence	Equivalence	Equivalence	Equivalence
			Decimal equivalence	Decimal equivalence	Decimal equivalence
		Tenths	Tenths	Tenths	Tenths
			Hundredths	Hundredths	Hundredths
				Thousandths	Thousandths
		Unit fractions	Unit fractions	Unit fractions	Unit fractions
		Non unit fractions	Non unit fractions	Non unit fractions	Non unit fractions
		Denominators	Denominators	Denominators	Denominators
		Equivalent fractions	Equivalent fractions	Equivalent fractions	Equivalent fractions
		One whole	One whole	One whole	One whole
				Convert	Convert
				Proper fractions	Proper fractions
				Mixed numbers	Mixed numbers
				Per cent %	Per cent %
					Factors
Ratio and Proportion					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
					Relative size
					Missing values
					Integer multiplication
					Percentages

					Scale factor
					Unequal sharing & grouping
Algebra					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
					Formulae
					Linear number sequences
					Algebraically
					Equation
					Unknowns
					Combinations
					Variables
Measurement 1					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Measure	Measure	Measure	Measure	Measure	Measure
	Standard units	Standard units	Standard units	Standard units	Standard units
	Estimate	Estimate	Estimate	Estimate	Estimate
	Measure	Measure	Measure	Measure	Measure
	Compare	Compare	Compare	Compare	Compare
	Order	Order	Order	Order	Order
	Record results	Record results	Record results	Record results	Record results
				Decimal notation	Decimal notation
				Scaling	Scaling
				Metric units	Metric units
				Imperial units	Imperial units
				Inches	Inches
				Pounds	Pounds
				Pints	Pints
					Conversion
Length	Length	Length	Length	Length	Length

	Centimetre cm	Centimetre cm	Centimetre cm	Centimetre cm	Centimetre cm
	Metre m	Metre m	Metre m	Metre m	Metre m
		Millimetre mm	Millimetre mm	Millimetre mm	Millimetre mm
		Perimeter	Perimeter	Perimeter	Perimeter
					Miles
					Kilometres km
			Rectilinear figure	Rectilinear figure	Rectilinear figure
			Area	Area	Area
				Composite rectilinear shape	Composite rectilinear shape
				Irregular shapes	Irregular shapes
				Square centimetres	Square centimetres
				Square metres	Square metres
					Formulae
					Parallelograms
					Triangles

Measurement 2

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Height	Height	Height	Height	Height	Height
Long(er)/short(er)	Long(er)/short(er)	Long(er)/short(er)	Long(er)/short(er)	Long(er)/short(er)	Long(er)/short(er)
Tall(er)/short(er)	Tall(er)/short(er)	Tall(er)/short(er)	Tall(er)/short(er)	Tall(er)/short(er)	Tall(er)/short(er)
Double/half	Double/half	Double/half	Double/half	Double/half	Double/half
Mass	Mass	Mass	Mass	Mass	Mass
Weight	Weight	Weight	Weight	Weight	Weight
Heavy/light	Heavy/light	Heavy/light	Heavy/light	Heavy/light	Heavy/light
Heavier than	Heavier than	Heavier than	Heavier than	Heavier than	Heavier than
Lighter than	Lighter than	Lighter than	Lighter than	Lighter than	Lighter than
	Kilogram kg	Kilogram kg	Kilogram kg	Kilogram kg	Kilogram kg
	Gram g	Gram g	Gram g	Gram g	Gram g
Capacity	Capacity	Capacity	Capacity	Capacity	Capacity
Volume	Volume	Volume	Volume	Volume	Volume

Full/empty	Full/empty	Full/empty	Full/empty	Full/empty	Full/empty
More than	More than	More than	More than	More than	More than
Less than	Less than	Less than	Less than	Less than	Less than
Half/half full/quarter	Half/half full/quarter	Half/half full/quarter	Half/half full/quarter	Half/half full/quarter	Half/half full/quarter
	Litres l	Litres l	Litres l	Litres l	Litres l
	Millilitres ml	Millilitres ml	Millilitres ml	Millilitres ml	Millilitres ml
				Volume	Volume
				Cubic centimetre	Cubic centimetre
					Cubic metre
					Cubic millimetre
					Cubic kilometre
	Temperature	Temperature	Temperature	Temperature	Temperature
	Celsius	Celsius	Celsius	Celsius	Celsius

Measurement 3

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Time	Time	Time	Time	Time	Time
Quicker	Quicker	Quicker	Quicker	Quicker	Quicker
Slower	Slower	Slower	Slower	Slower	Slower
Earlier	Earlier	Earlier	Earlier	Earlier	Earlier
Later	Later	Later	Later	Later	Later
Chronological order	Chronological order	Chronological order	Chronological order	Chronological order	Chronological order
Before	Before	Before	Before	Before	Before
After	After	After	After	After	After
First	First	First	First	First	First
Next	Next	Next	Next	Next	Next
Today	Today	Today	Today	Today	Today
Yesterday	Yesterday	Yesterday	Yesterday	Yesterday	Yesterday
Tomorrow	Tomorrow	Tomorrow	Tomorrow	Tomorrow	Tomorrow
Morning	Morning	Morning	Morning	Morning	Morning
Afternoon	Afternoon	Afternoon	Afternoon	Afternoon	Afternoon
Evening	Evening	Evening	Evening	Evening	Evening

Days of the week	*Days of the week*	*Days of the week*	*Days of the week*	*Days of the week*	*Days of the week*
Months of the year	*Months of the year*	*Months of the year*	*Months of the year*	*Months of the year*	*Months of the year*
Day	Day	Day	Day	Day	Day
Week	Week	Week	Week	Week	Week
Month	Month	Month	Month	Month	Month
Year	Year	Year	Year	Year	Year
O'clock	O'clock	O'clock	O'clock	O'clock	O'clock
Half past	Half past	Half past	Half past	Half past	Half past
Minute	Minute	Minute	Minute	Minute	Minute
Measurement 4					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	Intervals of time	Intervals of time	Intervals of time	Intervals of time	Intervals of time
	Quarter past/to	Quarter past/to	Quarter past/to	Quarter past/to	Quarter past/to
		Analogue clock	Analogue clock	Analogue clock	Analogue clock
		Roman numerals	Roman numerals	Roman numerals	Roman numerals
		12-hour clock	12-hour clock	12-hour clock	12-hour clock
		24-hour clock	24-hour clock	24-hour clock	24-hour clock
		a.m./p.m.	a.m./p.m.	a.m./p.m.	a.m./p.m.
		Noon	Noon	Noon	Noon
		Midnight	Midnight	Midnight	Midnight
		Leap year	Leap year	Leap year	Leap year
		Duration	Duration	Duration	Duration
			Digital	Digital	Digital
			Convert	Convert	Convert
Money	Money	Money	Money	Money	Money
Coins	Coins	Coins	Coins	Coins	Coins
Notes	Notes	Notes	Notes	Notes	Notes
Chronological order	Chronological order	Chronological order	Chronological order	Chronological order	Chronological order
	Pounds £	Pounds £	Pounds £	Pounds £	Pounds £
	Pence p	Pence p	Pence p	Pence p	Pence p
	Value	Value	Value	Value	Value

	Change	Change	Change	Change	Change
	Combinations	Combinations	Combinations	Combinations	Combinations
Geometry – Properties of shape 1					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
2-D shapes	2-D shapes	2-D shapes	2-D shapes	2-D shapes	2-D shapes
Rectangle	Rectangle	Rectangle	Rectangle	Rectangle	Rectangle
Square	Square	Square	Square	Square	Square
Circle	Circle	Circle	Circle	Circle	Circle
Triangle	Triangle	Triangle	Triangle	Triangle	Triangle
	Sides	Sides	Sides	Sides	Sides
	Lines of symmetry	Lines of symmetry	Lines of symmetry	Lines of symmetry	Lines of symmetry
			Geometric shapes	**Geometric shapes**	**Geometric shapes**
			Quadrilaterals	**Quadrilaterals**	**Quadrilaterals**
			Properties	**Properties**	**Properties**
3-D shapes	3-D shapes	3-D shapes	3-D shapes	3-D shapes	3-D shapes
Cuboids	Cuboids	Cuboids	Cuboids	Cuboids	Cuboids
Cubes	Cubes	Cubes	Cubes	Cubes	Cubes
Pyramids	Pyramids	Pyramids	Pyramids	Pyramids	Pyramids
Spheres	Spheres	Spheres	Spheres	Spheres	Spheres
	Cylinder	Cylinder	Cylinder	Cylinder	Cylinder
	Pyramid	Pyramid	Pyramid	Pyramid	Pyramid
	Edges	Edges	Edges	Edges	Edges
	Vertices	Vertices	Vertices	Vertices	Vertices
	Faces	Faces	Faces	Faces	Faces
					Radius
					Diameter
					Circumference
				Regular polygon	Regular polygon
				Irregular polygon	Irregular polygon
					Quadrilateral
					Dimensions

					Net
Geometry – Properties of shape 2					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
		Orientations	Orientations	Orientations	Orientations
		Angles	Angles	Angles	Angles
			Acute angle	Acute angle	Acute angle
			Obtuse angle	Obtuse angle	Obtuse angle
				Reflex angles	Reflex angles
				Degrees	Degrees
				One whole turn	One whole turn
				Angles on straight line	Angles on straight line
					Vertically opposite
					Missing angles
		Turn	Turn	Turn	Turn
		Right angles	Right angles	Right angles	Right angles
		Half turn	Half turn	Half turn	Half turn
		Three quarters of a turn	Three quarters of a turn	Three quarters of a turn	Three quarters of a turn
		Greater than right angle	Greater than right angle	Greater than right angle	Greater than right angle
		Less than right angle	Less than right angle	Less than right angle	Less than right angle
		Horizontal lines	Horizontal lines	Horizontal lines	Horizontal lines
		Vertical lines	Vertical lines	Vertical lines	Vertical lines
		Perpendicular lines	Perpendicular lines	Perpendicular lines	Perpendicular lines
		Parallel lines	Parallel lines	Parallel lines	Parallel lines
Geometry – Position and direction					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Position	Position	Position	Position	Position	Position
Direction	Direction	Direction	Direction	Direction	Direction
Movement	Movement	Movement	Movement	Movement	Movement
Whole turn	Whole turn	Whole turn	Whole turn	Whole turn	Whole turn

Half turn	Half turn	Half turn	Half turn	Half turn	Half turn
Three quarter turn	Three quarter turn	Three quarter turn	Three quarter turn	Three quarter turn	Three quarter turn
	Straight line	Straight line	Straight line	Straight line	Straight line
	Rotation	Rotation	Rotation	Rotation	Rotation
	Order	Order	Order	Order	Order
	Arrange	Arrange	Arrange	Arrange	Arrange
	Patterns	Patterns	Patterns	Patterns	Patterns
	Sequences	Sequences	Sequences	Sequences	Sequences
			Co-ordinates	Co-ordinates	Co-ordinates
			First quadrant	First quadrant	First quadrant
					Four quadrants
			Translation	Translation	Translation
			Plot	Plot	Plot
			Polygon	Polygon	Polygon
				Reflection	Reflection
					Co-ordinate plane
					Axes

Statistics

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Pictograms	Pictograms	Pictograms	Pictograms	Pictograms
	Tally chart	Tally chart	Tally chart	Tally chart	Tally chart
	Block diagram	Block diagram	Block diagram	Block diagram	Block diagram
	Simple table	Simple table	Simple table	Simple table	Simple table
		Table	Table	Table	Table
				Timetable	Timetable
		Bar chart	Bar chart	Bar chart	Bar chart
			Time graph	Time graph	Time graph
			Discrete data	Discrete data	Discrete data
			Continuous data	Continuous data	Continuous data
				Line graph	Line graph
					Pie chart

	Category	Category	Category	Category	Category
	Sorting	Sorting	Sorting	Sorting	Sorting
	Totalling	Totalling	Totalling	Totalling	Totalling
	Comparing	Comparing	Comparing	Comparing	Comparing
			Comparison problems	Comparison problems	Comparison problems
			Sum problem	Sum problem	Sum problem
			Difference problem	Difference problem	Difference problem
		One step problem	One step problem	One step problem	One step problem
		Two step problem	Two step problem	Two step problem	Two step problem
					Calculate
					Interpret
					Mean as an average

Appendix A – further vocabulary

Number		
Number	Numeral	Zero
One, two, three……	Teens numbers	Twenty-one, twenty-two
One hundred, two hundred etc	One thousand, ten thousand etc	Hundred thousand, million
None	How many……?	Count, count (up) to, count on(from, to) count back (from, to)
Forwards	Backwards	Count in ones, twos etc
Equal to	Equivalent to	Is the same as
More, less	Most, least	Tally
Many	Odd, even	Multiple of, factor of
Factor pair	Sequence	Continue
Predict	Few	Pattern
Pair, rule	Relationship	Next, consecutive
> greater than	< less than	≥greater than or equal to
≤ less than or equal to	Roman numerals	Integer, positive, negative
Above/below zero, minus	Negative numbers	Formula
Divisibility	Square number	Prime number
Ascending / descending order	Factorise	Prime factor
Digit total		
Place Value		
Ones	Tens, hundreds	Digit
One-two or three digit number	Place, place value	Stands for, represents
Exchange	The same number as, as many as	More, larger, bigger, greater
Fewer, smaller, less	Fewest, smallest, least	Most, biggest, largest, greatest
One more, ten more, one hundred more, one thousand more	One less, ten less, one hundred less, one thousand less	Equal to
Compare	Order	Size

First, second, third….twentieth	Twenty-first, twenty-second….	Last, last but one
Before, after	Next	Between
Halfway between	Above, below	
Estimating		
Guess	How many….?	Estimate
Nearly	Roughly	Close to
Approximate, approximately	About the same as	Just over, just under
Exact, exactly	Too many, too few	Enough, not enough
Round, nearest, round to the nearest ten, hundred, thousand, ten thousand	Round up, round down	
Addition and Subtraction		
Addition	Add, more, and	Make, sum, total
Altogether	Double	Near double
Half, halve	One more, two more….ten more….one hundred more	How many more to make…?
How many more is….than….?	How much more is….?	Subtract
Take away	How many are/left over?	How many have gone?
One less, two less, ten less….one hundred less	How many fewer is…than…?	Difference between
Equals	Is the same as	Number bonds/pairs/facts
Missing number	Tens boundary, hundreds boundary, ones boundary, tenths boundary	inverse
Multiplication and Division		
Multiplication	Multiply	Multiplied by
Multiple, factor	Groups of	Times
Product	Once, twice, three times…..ten times	Repeated addition
Division	Dividing, divide, divided by, divided into, left, left over, remainder	Grouping
Sharing, share, share equally	One each, two each, three each…..ten each	Group in pairs, threes….tens
Equal groups of	Doubling	Halving
Array	Row, column	Number patterns
Multiplication table	Multiplication fact, division fact	Inverse
Square, squared	Cube, cubed	

Fractions (including decimals and percentages)		
Fraction, proper/improper fraction	Equivalent fraction	Mixed number
Numerator, denominator	Equivalent , reduced to , cancel	Equal part
Equal grouping	Equal sharing	Parts of a whole
Half, two halves	One of two equal parts	Quarter, two quarters, three quarters
One of four equal parts	One third, two thirds	One of three equal parts
Sixths, sevenths, eights, tenths…..hundredths, thousandths	Decimal, decimal fraction, decimal point, decimal place, decimal equivalent	Proportion, in every, for every
Percentage, per cent %	Ratio	
Algebra		
Formula, formulae	Equation	Unknown
variable		
Measurement		
Measure	Measurement	Size
Compare	Unit, standard unit	Metric unit, imperial unit
Measuring scale, division,	Guess, estimate	Enough, not enough
Too much, too little	Too many, too few	Nearly, close to, about the same as, approximately
Roughly	Just over, just under	
Length		
Millimetre, centimetre, metre, kilometre, mile	Length, height, width, depth, breadth	Long, short, tall
High, low	Wide, narrow	Thick, thin
Longer, shorter, taller, higher….and so on	Longest, shortest, tallest, highest,….and so on	Far, further, furthest, near, close
Distance apart…..between….to….from	Edge, perimeter	Area, covers
Square centimeter (cm^2), square metre (m^2), square millimetre (mm^2)	Ruler	Metre stick, tape measure
Yard, foot, feet, inch, inches	Circumference	
Weight		
Mass: big, bigger, small, smaller	Weight: heavy/light, heavier/lighter, heaviest/lightest	Kilogram, half kilogram, gram
Weigh, weighs, balances	Heavy, light	Heavier than, lighter than
Heaviest, lightest	scales	Tone, pound, ounce

Capacity and volume		
Litre, half litre, millilitre	Capacity	Volume
Full	Empty	More than
Less than	Half full	Quarter full
Holds, contains	Container, measuring cylinder	Pint, gallon
Centiliter	Cubic centimeters (cm^3) cubic metres (m^3) cubic millimeters (mm^3) cubic kilometres (km^3)	
Temperature		
Temperature	Degree	centigrade
Time		
Time	Days of the week	Months of the year
Seasons	Day, week, weekend, fortnight, year, leap year, century, millennium	Birthday, holiday
Morning, afternoon, evening, night	Bedtime, dinner time, playtime	Today, yesterday, tomorrow
Before, after	Earlier, later	Next, first, last
Noon, midnight	Calendar, date, date of birth	Now, soon, early, late, earliest, latest
Quick, quicker, quickest, quickly	Slow, slower, slowest, slowly	Old, older, oldest
New, newer, newest	Takes longer, takes less time	How long ago?
How long will it be to….?	How long will it take to….?	How often?
Always, never, often, sometimes	Usually	Once, twice
Hour, O'clock, half past, quarter past, quarter to	5, 10, 15…..minutes past	a.m. , p.m.
Clock, clock face, watch, hands	Digital/analogue clock/watch, timer	Hour hand, minute hand
Hours, minutes, seconds	Timetable, arrive, depart	Roman numerals,
12-hour clock time, 24-hour clock time	Greenwich Mean Time, British Summer Time, International date Line	
Money		
Money	Coin	Penny, pence, pound
Price, cost	Buy, bought, sell, sold	Spend, spent
Pay	Change	Dear, costs more
Cheap, costs less, cheaper	Costs the same as	How much…..?
How many….?	Total	Discount

currency	Profit, loss	
Geometry : Properties of shape		
Shape, pattern	Flat, line	Curved, straight
Round	Hollow, solid	Sort
Make, build, construct, draw, sketch	Perimeter	Centre, radius, diameter
Surface	Angle, right-angled	Congruent
Base, square-based	Soze	Bigger, larger, smaller
Symmetry, symmetrical, symmetrical pattern	Line symmetry	Reflect, reflection
Axis of symmetry, reflective symmetry	Pattern, repeating pattern	Match
Regular, irregular	Circumference, concentric, arc	Net, open
Intersecting, intersection	plane	
2-D shape		
2-D, two-dimensional	Corner, side	Point, pointed
Rectangle (inc. square), rectangular, oblong	Rectilinear	Circle, circular
Triangle, triangular	Equilateral triangle, isosceles triangle, scalene triangle	Pentagon, pentagonal
Hexagon, hexagonal	Heptagon	Octagon, octagonal
Quadrilateral	Parallelogram, rhombus, trapezium	Polygon
Right-angled	Parallel, perpendicular	x-axis, y-axis, quadrant
Dodecahedron	Net, open, closed	
3-D shapes		
3-D, three-dimensional	Face, edge, vertex, vertices	Cube, cuboid
Pyramid	Sphere, hemisphere, spherical	Cone
Cylinder, cylindrical	Prism, triangular prism	Tetrahedron, polyhedron
Octahedron		
Position and direction		
Position	Over, under, underneath	Above, below
Top, bottom, side	On, in	Outside, inside
Around	In front, behind	Front, back
Beside, next to	Opposite	Apart
Between	Middle, edge	Centre

Corner	Direction	Journey, route
Left, right	Up, down	Higher, lower
Forwards, backwards, sideways	Across	Next to, close, near, far
Along	Through	To, from, towards, away from
Clockwise, anticlockwise	Compass point	North, South, East, West, N, S, E, W
North-East, North-West, South-East, South-West, NE, NW, SE, SW	Horizontal, vertical, diagonal	Translate, translation
Coordinate	Movement	Slide
Roll	Turn	Stretch, bend
Whole turn, half turn, quarter turn, three-quarter turn	Rotate, rotation	Angle, is a greater/smaller angle than
Degree	Right angle	Acute angle
Obtuse angle	Reflection	Straight line
Ruler, set square	Angle measurer, compass, protractor	Reflex angle
Statistics		
Count, tally, sort, vote	Survey, questionnaire, data, database	Graph, block graph, pictogram
Represent	Group, set	List, table, chart, bar chart, frequency table, bar line chart
Carroll diagram, Venn diagram	Line graph	Label, title, axis, axes
Diagram	Most popular, most common	Least proper, least common
Maximum/minimum value	outcome	Pie chart
Mean (mode, median, range as estimates for this)	Statistics, distribution	
General		
Pattern	Puzzle	Problem, problem solving
Mental, mentally	What could we try next?	How did you work it out?
Show how you…..	Explain your thinking	Explain your method
Describe the pattern	Describe the rule	Investigate
Recognise	Describe	Draw
Compare	Sort	Greatest value, least value
Mental calculation	Written calculation	Statement
Justify	Make a statement	Explain your reasoning