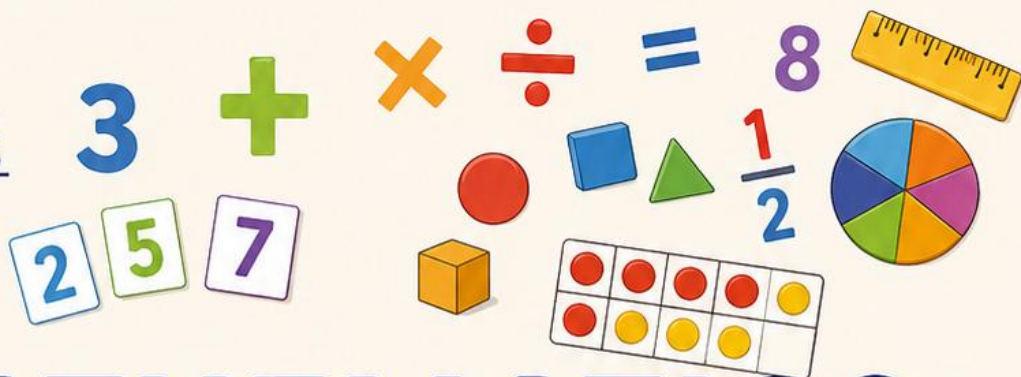




MATHEMATICS

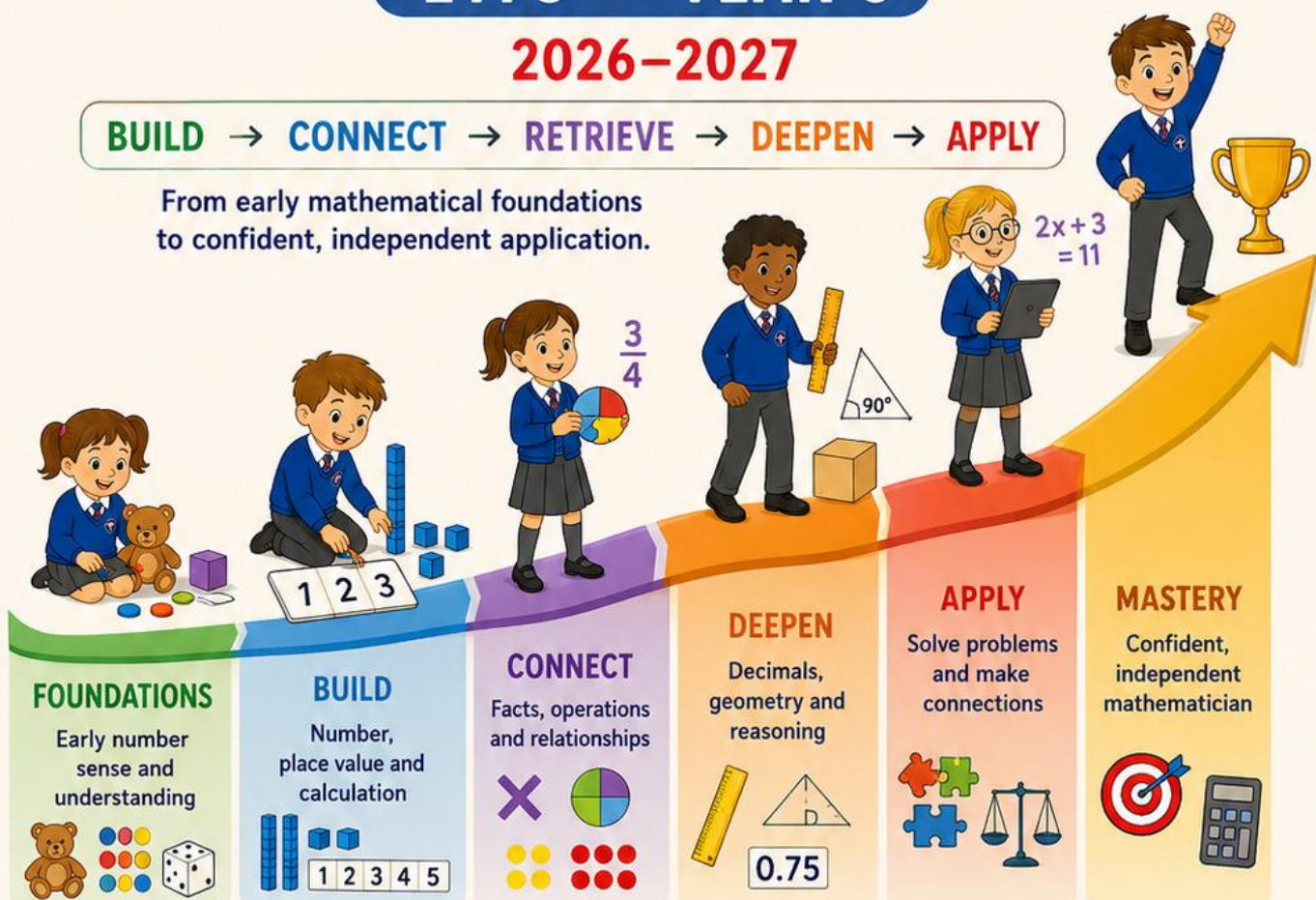
PROGRESSION OF KNOWLEDGE & SKILLS

EYFS → YEAR 6

2026–2027

BUILD → **CONNECT** → **RETRIEVE** → **DEEPEN** → **APPLY**

From early mathematical foundations
to confident, independent application.



EVERY CHILD • EVERY CHANCE • EVERY DAY



COMPASSION



AMBITION



REJOICE



EXCELLENCE

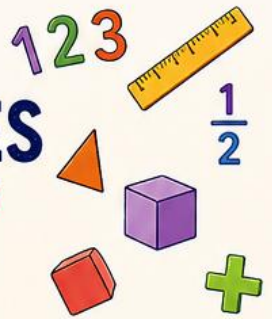


SERVICE

HOW MATHEMATICAL KNOWLEDGE PROGRESSES

Build • Connect • Retrieve • Deepen • Apply

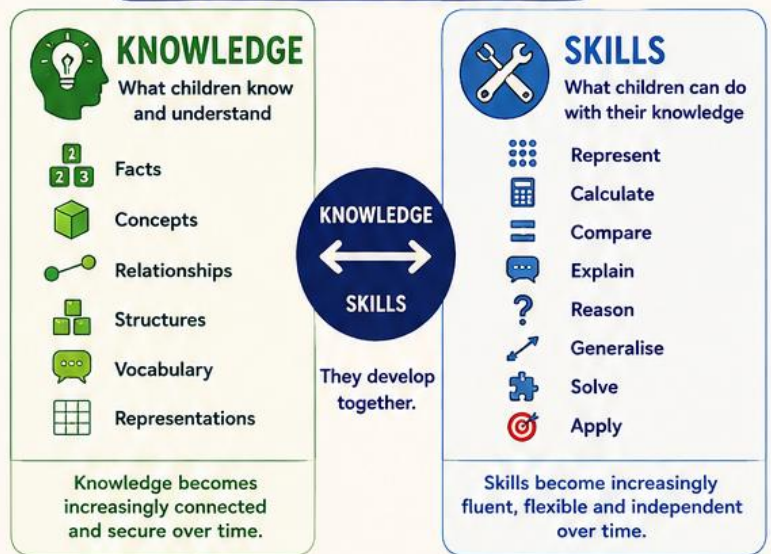
Progress in mathematics is not simply about encountering bigger numbers or harder calculations. Children make progress when new knowledge builds securely on what they already know, connections are made between mathematical ideas, important knowledge is retrieved over time and pupils become increasingly able to reason and apply mathematics independently.



PROGRESSION = KNOWING MORE • REMEMBERING MORE • DOING MORE WITH WHAT YOU KNOW

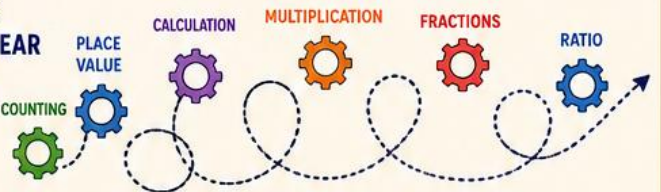
OUR PROGRESSION MODEL

TWO SIDES OF PROGRESSION



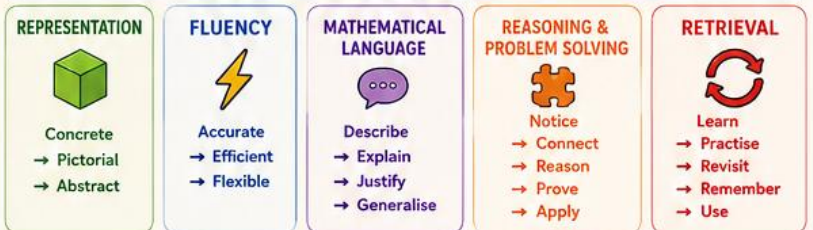
PROGRESSION IS NOT ALWAYS LINEAR

Children regularly revisit earlier mathematical knowledge as new learning develops.



New learning doesn't replace previous learning – it depends upon it.

THE GOLDEN THREADS



HOW TO READ THIS DOCUMENT

EYFS → Y1 → Y2 → Y3 → Y4 → Y5 → Y6

KNOWLEDGE What children should increasingly know and understand.

SKILLS What children should increasingly be able to do with that knowledge.

↔ Read horizontally to see progression across school.

↕ Read vertically within a year group to understand the increasing expectations for knowledge and application.

DEPTH BEFORE ACCELERATION

Progression does not mean rushing children into content from the next year group.

Secure understanding, flexible application and increasingly sophisticated reasoning demonstrate mathematical progress.

BUILD IT → CONNECT IT → RETRIEVE IT → DEEPEN IT → APPLY IT

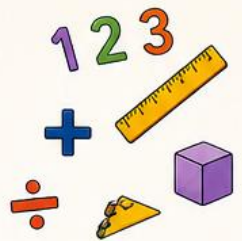
Strong foundations. Connected knowledge. Independent mathematicians.



NUMBER & PLACE VALUE

From early number sense to a secure understanding of our number system

Children's understanding of number develops from recognising and representing small quantities to understanding the structure of increasingly large numbers. Across school, pupils develop secure knowledge of place value, magnitude, comparison and the relationships between numbers.



SUBITISE → COUNT → COMPOSE → REPRESENT → PARTITION → COMPARE → GENERALISE

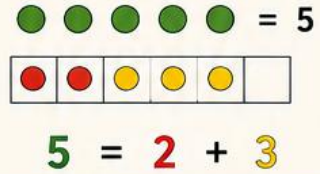
EYFS BUILDING NUMBER SENSE

KNOWLEDGE

- numbers represent quantities
- the final number counted tells us how many
- quantities can be recognised without counting – subitising
- numbers are composed of smaller numbers
- quantities can be compared
- numbers have an order

SKILLS

- match number to quantity
- subitise small quantities
- count accurately using one-to-one correspondence
- compare groups
- represent numbers in different ways
- explore composition through practical resources



YEAR 1 SECURING PLACE VALUE

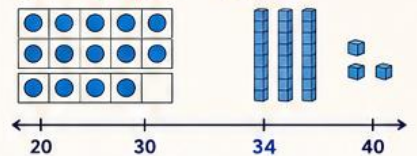
KNOWLEDGE

- numbers to 100
- tens and ones
- one more / one less
- number order and magnitude
- counting in 2s, 5s and 10s

SKILLS

- Count • Read • Write • Represent
Compare • Order
- Children begin to partition numbers into tens and ones and use representations such as number lines, ten frames and Base 10.

$$34 = 3 \text{ tens} + 4 \text{ ones}$$



YEAR 2 DEEPENING TWO-DIGIT NUMBER

KNOWLEDGE

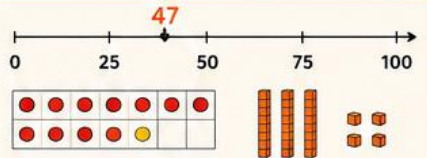
- secure place value within 100
- tens and ones relationships
- multiples of 2, 5 and 10
- position of numbers on number lines
- comparison and ordering

SKILLS

- Partition flexibly • Estimate
Compare • Reason about magnitude

$$47 = 40 + 7$$

but also $47 = 30 + 17$



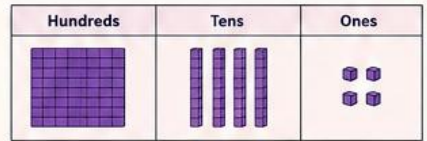
YEAR 3 EXTENDING TO 1,000

KNOWLEDGE

- hundreds, tens and ones
- numbers to 1,000
- 10 and 100 more/less
- magnitude and number relationships

SKILLS

- Represent • Partition • Recombine
Compare • Order • Estimate
- $$426 = 400 + 20 + 6$$
- and flexibly
- $$426 = 300 + 120 + 6$$



YEAR 4 EXTENDING THE NUMBER SYSTEM

KNOWLEDGE

- numbers beyond 1,000
- place-value relationships
- powers-of-ten structure
- negative numbers in context
- Roman numerals

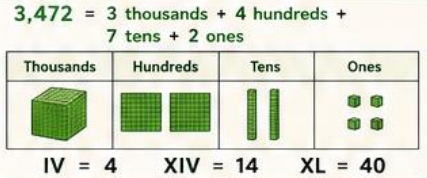
SKILLS

- Read • Write • Partition • Compare
Order • Round • Reason

$$10 \text{ ones} = 1 \text{ ten}$$

$$10 \text{ tens} = 1 \text{ hundred}$$

$$10 \text{ hundreds} = 1 \text{ thousand}$$



YEAR 5 LARGE NUMBERS & GENERALISATION

KNOWLEDGE

- numbers to 1,000,000
- powers of 10
- increasingly large place-value relationships
- negative numbers
- rounding

SKILLS

- Generalise • Estimate • Round
Compare • Justify

$$10 \times 4,326 = 43,260$$

$$\div 10 \rightarrow \text{digits shift one place in value}$$



YEAR 6 SECURE & APPLY

KNOWLEDGE

- numbers to 10,000,000
- positive and negative integers
- place-value relationships across the number system
- rounding to different degrees of accuracy

SKILLS

- Reason • Generalise • Select
Apply • Prove
- Children use place-value knowledge flexibly within:
- Calculation • Fractions • Decimals
Measures • Algebra • Problem solving



THE NUMBERS GET BIGGER – THE THINKING GETS DEEPER.

Progression isn't simply $5 \rightarrow 50 \rightarrow 500 \rightarrow 5,000$. It is about understanding structure and using mathematics with confidence.

THE PROGRESSION IN ONE GLANCE



Understanding by number four models provided provides a foundation for all future mathematics.

REPRESENTATION PROGRESSION



Representations remain available whenever they expose mathematical structure.

QUANTITY → PLACE → VALUE → MAGNITUDE → RELATIONSHIP → GENERALISATION

Understanding the number system provides the foundation for all future mathematics.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.

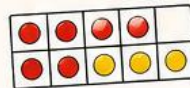


ADDITION & SUBTRACTION

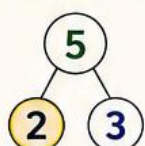
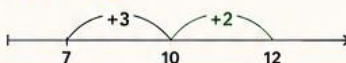
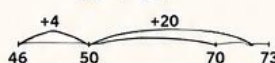


From combining and separating quantities to efficient, flexible calculation

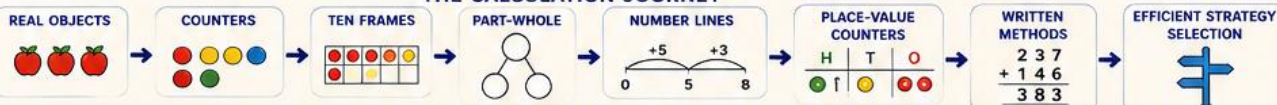
Children develop addition and subtraction through a secure understanding of number, composition and part-whole relationships. Over time, they connect concrete experiences and representations to mental and written strategies, becoming increasingly able to select efficient methods and reason about additive relationships.



COMBINE → SEPARATE → REPRESENT → CALCULATE → SELECT → GENERALISE

LEVEL	KNOWLEDGE	SKILLS	EXAMPLES								
EYFS COMBINING & SEPARATING	Children understand that: - a whole can be composed of smaller parts - quantities can be combined - quantities can be separated - adding changes a quantity by making it larger - taking away changes a quantity by making it smaller - numbers have relationships with other numbers	Children: - combine groups practically - separate groups - find how many altogether - explore how many are left - find one more and one fewer - represent number composition in different ways	$3 + 2 = 5$  $5 = 2 + 3$								
YEAR 1 BUILDING ADDITIVE UNDERSTANDING	- addition and subtraction within 20 - number bonds within and to 10 - related addition and subtraction facts - addition can be completed in any order; subtraction cannot - the relationship between parts and wholes	Represent • Combine • Partition • Add • Subtract • Explain Children use: counters • ten frames • part-whole models • number lines	$7 + 5 = 12$ $7 + 3 + 2 = 12$ $10 + 2 = 12$ 								
YEAR 2 DEVELOPING EFFICIENT STRATEGIES	- addition and subtraction across and within 100 - number bonds and related facts - tens-and-ones structure - inverse relationships - addition and subtraction fact families	SKILLS Partition • Bridge through 10 • Recombine • Check • Select $46 + 27 = 73$ 	$46 + 27 = 73$ $40 + 20 = 60$ $6 + 7 = 13$ $60 + 13 = 73$ $73 - 27 = 46$ $20 + 7 = 27$ $70 - 27 = 43$ $43 + 3 = 46$ Inverse operations!								
YEAR 3 SECURING WRITTEN CALCULATION	- addition and subtraction with increasingly large numbers - place value within calculation - exchange / regrouping - inverse operations - estimation as a checking strategy	SKILLS Represent → Calculate → Exchange → Estimate → Check <table border="1"> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> <tr> <td>● ●</td> <td>● ● ● ●</td> <td>● ● ● ●</td> </tr> </table>	Hundreds	Tens	Ones	● ●	● ● ● ●	● ● ● ●	$247 + 186 = 433$ $247 + 186 = 433$ THE WRITTEN METHOD REPRESENTS THE MATHEMATICS CHILDREN ALREADY UNDERSTAND.		
Hundreds	Tens	Ones									
● ●	● ● ● ●	● ● ● ●									
YEAR 4 BECOMING EFFICIENT & FLEXIBLE	- addition and subtraction with increasingly beyond 1,000 - multiple exchanges - inverse relationships - estimation and rounding - mental versus written calculation	SKILLS Calculate • Estimate • Select • Explain • Justify $3,999 + 246$ Which strategy is most efficient? Formal written method vs $4,000 + 246 - 1 = 4,245$	<table border="1"> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> <tr> <td>● ●</td> <td>● ● ●</td> <td>● ● ● ●</td> <td>● ● ● ●</td> </tr> </table> $3,999 + 246 = 4,245$ Choose the most efficient strategy and explain your choice.	Thousands	Hundreds	Tens	Ones	● ●	● ● ●	● ● ● ●	● ● ● ●
Thousands	Hundreds	Tens	Ones								
● ●	● ● ●	● ● ● ●	● ● ● ●								
YEAR 5 APPLYING CALCULATION FLEXIBLY	- addition and subtraction with numbers beyond 1,000,000 - decimal place value within calculation - efficient mental strategies - multi-step additive structures	SKILLS Select • Calculate • Estimate • Justify • Solve Choose the most appropriate strategy. Mental calculation → Written calculation → Known / derived facts	$£20 - £7.99 = £12.01$ $£7.99 + £0.01 + £12 = £20$ Therefore, $£20 - £7.99 = £12.01$ ✓ Not column subtraction! ✗								
YEAR 6 SELECTING & GENERALISING	Children have secure understanding of: - additive structures - place value - inverse operations - mental and written calculation - estimation and approximation - calculations involving integers and decimals	SKILLS Select → Calculate → Reason → Prove → Apply Children independently decide: - What do I know? - What operation is required? - What is the most efficient strategy? - Is my answer reasonable?	APPLY ACROSS MATHEMATICS Measure Money Statistics Algebra Multi-step problems $2x + 5$ Additive skills are applied confidently across a range of contexts and increasingly complex problems.								

THE CALCULATION JOURNEY



REPRESENTATIONS EXPLAIN THE MATHEMATICS – THEY ARE NOT JUST A STEP TO GET RID OF.



FLUENCY CONNECTION

KNOWN FACTS UNLOCK CALCULATION

$7 + 3 = 10$ helps us know:

$70 + 30 = 100$ $700 + 300 = 1,000$ $0.7 + 0.3 = 1$

Fluent recall of number facts supports efficient calculation.

THE PROGRESSION IN ONE GLANCE

EYFS

Combine & separate

Y1-2

Build additive relationships

Y3-4

Secure calculation strategies

Y5-6

Select, reason & apply



ADDITIVE FLUENCY BUILDS FROM UNDERSTANDING, PRACTICE AND FLEXIBLE APPLICATION OVER TIME. IT IS THE FOUNDATION FOR FUTURE MATHEMATICS.

UNDERSTAND → REPRESENT → CALCULATE → SELECT → APPLY

Efficient calculation grows from secure understanding – not memorising a procedure.

EVERY CHILD. • EVERY CHANCE. • EVERY DAY.

GROUP → SHARE → REPRESENT → RELATE → RETRIEVE → GENERALISE → APPLY

FRACTIONS, DECIMALS & PERCENTAGES

From recognising parts and wholes to understanding equivalence and proportional relationships

Understanding fractions begins with children's experiences of wholes, equal parts, sharing and grouping. Across school, pupils develop increasingly sophisticated understanding of fractions as numbers, connect fractions to division and place value, and later recognise and use relationships between fractions, decimals and percentages.



WHOLE → PART → EQUAL PARTS → FRACTION → EQUIVALENCE → DECIMAL → PERCENTAGE → APPLY

EYFS PARTS & WHOLE 	KNOWLEDGE Children begin to understand: - a whole can be made from smaller parts - parts can be combined to make a whole - quantities can be shared - equal means the same amount - doubles involve two equal parts	SKILLS Children: - share - split - combine - compare - notice through practical experiences with objects, food, shapes and quantities.	WHOLE → two equal pieces	WHOLE → PARTS → WHOLE
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YEAR 1 RECOGNISING EQUAL PARTS 	KNOWLEDGE - whole and part - equal and unequal parts 1/2 of objects, shapes and quantities 1/4 of objects, shapes and quantities - relationship between halves and quarters	SKILLS Recognise • Find • Share • Represent • Explain	1 whole $\frac{1}{2} + \frac{1}{2} = 1$	$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$	The denominator tells us how many equal parts the whole has been divided into.
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YEAR 2 DEVELOPING FRACTION KNOWLEDGE 	KNOWLEDGE Children develop understanding of: 1/2, 1/4, 1/3 and 3/4 - unit and non-unit fractions - fractions of shapes - fractions of quantities - equivalent relationships such as $\frac{2}{4} = \frac{1}{2}$ - connection between fractions and sharing	SKILLS Recognise • Represent • Find • Compare • Connect	$\frac{1}{2}$ of 12 = 6 share equally into 2 groups	$\frac{2}{4} = \frac{1}{2}$ two quarters are the same as one half	one third
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YEAR 3 FRACTIONS AS NUMBERS 	KNOWLEDGE - unit and non-unit fractions - numerator and denominator - fractions on a number line - equivalent fractions - comparing and ordering fractions - adding and subtracting fractions with the same denominator	SKILLS Represent • Locate • Compare • Equivalent • Calculate		$\frac{2}{4} = \frac{1}{2} = 0.5$ Fractions can be equivalent and have the same value.
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YEAR 4 CONNECTING FRACTIONS & DECIMALS 	KNOWLEDGE - equivalent fractions - fractions greater than one - mixed numbers - addition and subtraction of fractions - tenths and hundredths - decimal place value - fraction-decimal relationships	SKILLS Convert • Compare • Calculate • Connect • Reason	$\frac{3}{10} = 0.3$ three tenths	$\frac{25}{100} = 0.25$ twenty five hundredths	<table border="1"> <thead> <tr> <th>Ones</th> <th>Tenths</th> <th>Hundredths</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2</td> <td>5</td> </tr> </tbody> </table> 0.25	Ones	Tenths	Hundredths	0	2	5
Ones	Tenths	Hundredths									
0	2	5									

YEAR 5 CONNECTING FRACTIONS, DECIMALS & PERCENTAGES 	KNOWLEDGE - equivalent fractions - improper fractions and mixed numbers - addition and subtraction of fractions - multiplication of fractions - decimal place value - thousandths - percentages - fraction-decimal-percentage equivalence	SKILLS Convert • Calculate • Compare • Generalise • Apply	<table border="1"> <thead> <tr> <th>FRACTION</th> <th>DECIMAL</th> <th>PERCENTAGE</th> </tr> </thead> <tbody> <tr> <td>$\frac{1}{2}$</td> <td>= 0.5</td> <td>= 50%</td> </tr> <tr> <td>$\frac{1}{4}$</td> <td>= 0.25</td> <td>= 25%</td> </tr> <tr> <td>$\frac{3}{4}$</td> <td>= 0.75</td> <td>= 75%</td> </tr> </tbody> </table>	FRACTION	DECIMAL	PERCENTAGE	$\frac{1}{2}$	= 0.5	= 50%	$\frac{1}{4}$	= 0.25	= 25%	$\frac{3}{4}$	= 0.75	= 75%	Different representations show the same value. Choosing the most helpful representation supports understanding and calculation.
FRACTION	DECIMAL	PERCENTAGE														
$\frac{1}{2}$	= 0.5	= 50%														
$\frac{1}{4}$	= 0.25	= 25%														
$\frac{3}{4}$	= 0.75	= 75%														

YEAR 6 FLEXIBLE RATIONAL NUMBER 	KNOWLEDGE Children deepen understanding of: - simplifying fractions - common factors & multiples - comparing and ordering fractions - four operations involving fractions - decimals and percentages - FDP equivalence - fractions within ratio and proportion	SKILLS Convert • Select • Calculate • Reason • Generalise • Apply Children choose the most useful representation.	$\frac{3}{5} \leftrightarrow 0.6 \leftrightarrow 60\%$ What is 60% of £45? 10% of £45 = £4.50 → 6 × 10% = £27 Answer = £27	Multiplicative relationships help solve problems efficiently.
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THE CONCEPTUAL JOURNEY					
EYFS Parts & wholes 	Y1-2 Equal parts & simple fractions 	Y3 Fractions as numbers 	Y4 Fractions ↔ decimals 	Y5 Fractions ↔ decimals ↔ percentages $\frac{1}{2} = 0.5 = 50\%$	Y6 Flexible application

REAL OBJECTS 	FRACTION SHAPES 	FRACTION BARS 	NUMBER LINES 	PLACE-VALUE GRIDS 	DOUBLE NUMBER LINES 	ABSTRACT NOTATION $\frac{2}{3}$	Representations expose relationships and remain available when they support understanding.	KEY PRINCIPLE EQUIVALENCE IS THE GOLDEN THREAD Fractions, decimals and percentages are not separate pieces of mathematics. They are different ways of expressing relationships.
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PART → FRACTION → EQUIVALENCE → DECIMAL → PERCENTAGE → APPLY

Children progress from seeing parts to reasoning flexibly about rational number.

EVERY CHILD • EVERY CHANCE • EVERY DAY

RATIO, PROPORTION & ALGEBRA



From noticing patterns and relationships to generalising mathematical structure

The foundations of ratio, proportion and algebra develop long before pupils encounter the formal terminology. Through pattern, comparison, equality, scaling and missing-number problems, children learn to notice relationships and describe mathematical structure. These foundations develop into formal ratio, proportion and algebraic reasoning in Year 6.

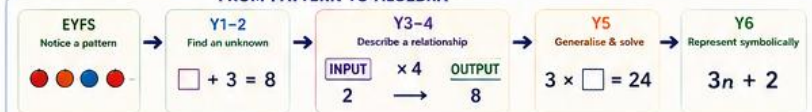


$$\times + \square = 10$$

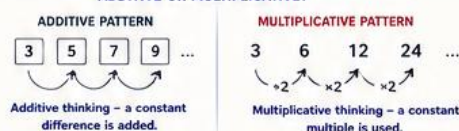
NOTICE → PATTERN → RELATE → SCALE → GENERALISE → REPRESENT → SOLVE

EYFS NOTICE PATTERN & RELATIONSHIP	KNOWLEDGE Children begin to understand: • patterns repeat according to a rule • quantities can be the same or different • quantities can be compared • objects can be sorted according to attributes • relationships can be described	SKILLS Children: • notice • copy • continue • create • compare • describe what they notice	COPY AND CONTINUE PATTERNS What comes next?	EXPLORE RELATIONSHIPS WHAT DO YOU NOTICE?						
YEAR 1 FINDING & DESCRIBING RELATIONSHIPS	KNOWLEDGE Children develop understanding of: • repeating and numerical patterns • equality • comparison • number relationships • missing-number structures	SKILLS Continue • Compare • Complete • Explain	COMPLETE MISSING NUMBERS $7 + \square = 10$ $3 + \square = 8$	UNDERSTANDING EQUALITY $5 + 3 = 4 + 4$ = MEANS EQUAL TO NOT "THE ANSWER"						
YEAR 2 USING RELATIONSHIPS	KNOWLEDGE • equality and equivalence • fact families • commutativity • inverse relationships • repeated groups • simple scaling relationships	SKILLS Relate • Derive • Complete • Explain • Predict	SCALING RELATIONSHIPS $4 + 6 = 10$ Therefore: $40 + 60 = 100$ If one quantity doubles, what happens to the other?	REPEATED GROUPS 3 groups of 4 = 12 6 groups of 4 = 24						
YEAR 3 EXPLORING MULTIPLICATIVE RELATIONSHIPS	KNOWLEDGE Children increasingly understand: • correspondence between quantities • multiplication as scaling • related multiplication and division • equivalence • patterns within multiplication • unknown values	SKILLS Represent • Scale • Predict • Connect • Reason	SCALING SITUATIONS = 4 apples 2 bags = 8 apples 3 bags = 12 apples 5 bags = ? apples	FUNCTION MACHINE 2 → 8 3 → 12 5 →						
YEAR 4 GENERALISING RELATIONSHIPS	KNOWLEDGE • multiplicative relationships • factor and multiple relationships • scaling • equivalence • number patterns • unknown quantities	SKILLS Identify • Represent • Scale • Generalise • Justify	SCALING BY POWERS OF 10 $3 \times 8 = 24$ Therefore: $30 \times 8 = 240$ $300 \times 8 = 2,400$ WHAT STAYS THE SAME? WHAT CHANGES?	NUMBER PATTERNS <table><tr><td>2</td><td>5</td><td>8</td><td>11</td><td>14</td><td>?</td></tr></table> What is the rule? Can you continue the pattern? Can you write it algebraically?	2	5	8	11	14	?
2	5	8	11	14	?					
YEAR 5 PRE-ALGEBRAIC & PROPORTIONAL REASONING	KNOWLEDGE • scaling relationships • equivalence • fractions and percentages • missing-number problems • mathematical expressions • increasingly complex number relationships	SKILLS Scale • Represent • Generalise • Reason • Solve	SCALING IN CONTEXT 1 recipe → 4 people 2 eggs → 200 ml milk 3 recipes → 12 people 6 eggs →	MISSING VALUE PROBLEMS $\square \times 7 = 56$ What is the missing number? $45 \div \square = 9$ What is the missing number? $3n$ n represents a number. If n = 5, 3n = 15						
YEAR 6 FORMAL RATIO, PROPORTION & ALGEBRA	KNOWLEDGE Children develop understanding of: RATIO & PROPORTION • ratio relationships • scale factors • unequal sharing • proportional quantities • percentages as proportional relationships • similar shapes and scaling ALGEBRA • simple formulae • linear sequences • algebraic expressions • missing values • equations with unknowns • representing generalisations symbolically SKILLS Represent • Scale • Substitute • Generalise • Solve • Prove RATIO $RED : BLUE = 2 : 3$ Double it: = 4 : 6 Ratios remain equivalent when scaled by the same amount. ALGEBRA $x + 7 = 19$ $x = 12$ If n = 6 $n + 4 = 10$ $3n + 2$ If n = 6, $3n + 2 = 20$ PROPORTION $3 : 5 = 6 : 10$ ↓ Scale factor: ×2 ↓ $12 : 20 = 18 : 30$ Use scale factors to solve problems in context.									

FROM PATTERN TO ALGEBRA



ADDITIVE OR MULTIPLICATIVE?

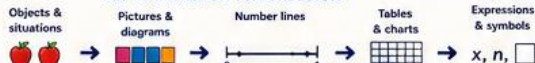


KEY PRINCIPLES

ALGEBRA IS THE LANGUAGE OF GENERALISATION.
Children are ready to use symbols when they already understand the mathematical.

RATIO IS MULTIPLICATIVE.
A ratio describes how quantities relate multiplicatively – not simply the difference between them.

REPRESENTATION PROGRESSION



NOTICE → PATTERN → RELATE → SCALE → GENERALISE → REPRESENT → SOLVE

Early pattern and relationship thinking grows into powerful algebraic and proportional reasoning.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.



MEASUREMENT

From comparing everyday quantities to measuring, converting and applying with precision

Children develop understanding of measurement through practical comparison and meaningful everyday experiences. Over time, they move from using comparative language and non-standard measures to selecting standard units, reading scales accurately, converting between units and applying measurement knowledge within increasingly complex problems.



COMPARE → ORDER → MEASURE → READ → CALCULATE → CONVERT → APPLY

EYFS

EXPLORING & COMPARING

KNOWLEDGE

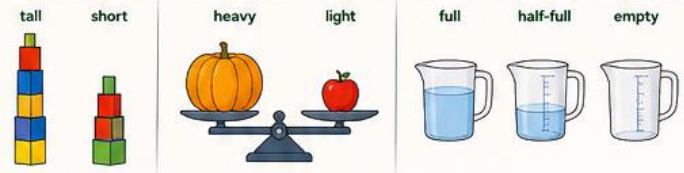
Children begin to understand that objects and events can be compared by:

- length and height
- mass
- capacity
- size
- time and sequence

Language: long • short • tall • heavy • light • full • empty • before • after

SKILLS

- compare
- order
- fill
- pour
- notice
- describe



WHICH HOLDS MORE? HOW DO YOU KNOW?

YEAR 1

BEGINNING TO MEASURE

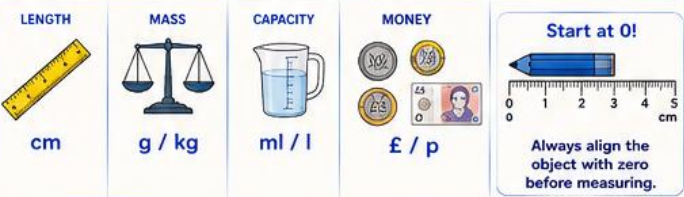
KNOWLEDGE

Children develop understanding of:

- length and height
- mass/weight
- capacity and volume
- time
- coins and notes
- standard and non-standard measurement

SKILLS

- compare
- measure
- record
- sequence
- recognise



YEAR 2

USING STANDARD UNITS

KNOWLEDGE

Children develop understanding of:

- metres and centimetres
- grams and kilograms
- millilitres and litres
- pounds and pence
- hours and minutes
- temperature in °C

SKILLS

- measure
- read
- compare
- calculate
- choose



YEAR 3

CONNECTING MEASURES

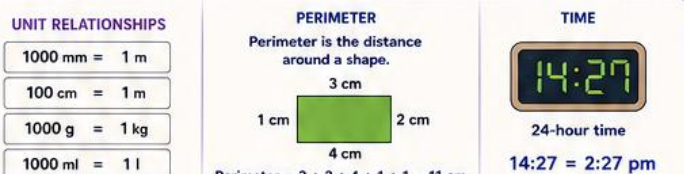
KNOWLEDGE

Children develop knowledge of:

- mm, cm and m
- g and kg
- ml and l
- money
- time to the nearest minute
- perimeter

SKILLS

- measure
- compare
- add
- subtract
- calculate
- solve



YEAR 4

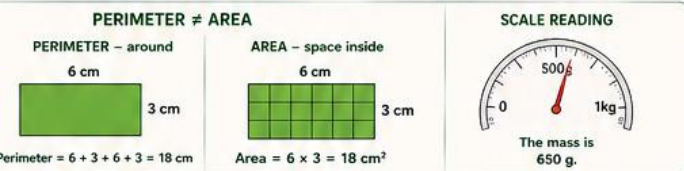
CALCULATING WITH MEASURE

KNOWLEDGE

- metric units and their relationships
- perimeter of rectilinear shapes
- area through counting squares
- money
- time
- increasingly complex scale reading

SKILLS

- read
- calculate
- convert
- estimate
- reason



YEAR 5

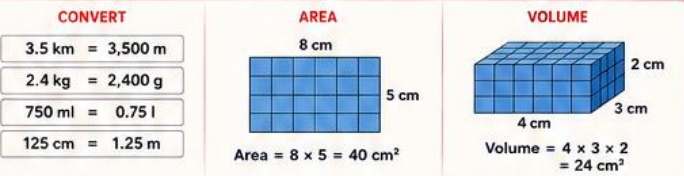
CONVERTING & APPLYING

KNOWLEDGE

- metric unit conversion
- approximate metric/imperial equivalences
- perimeter
- area
- volume
- time
- measurement within decimal contexts

SKILLS

- convert
- calculate
- estimate
- select
- apply



YEAR 6

MEASURING & CONVERTING WITH PRECISION

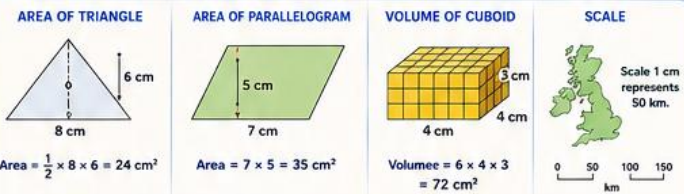
KNOWLEDGE

Children apply secure understanding of:

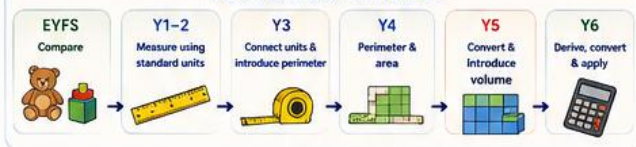
- metric conversions
- miles and kilometres
- perimeter
- area of triangles and parallelograms
- volume of cuboids
- scale
- measurement within ratio and proportion

SKILLS

- select
- convert
- calculate
- derive
- reason
- apply



THE MEASUREMENT JOURNEY



SAME ATTRIBUTE - INCREASING PRECISION



UNIT RELATIONSHIPS



DON'T JUST MEMORISE THE CONVERSION - UNDERSTAND THE RELATIONSHIP.

KEY PRINCIPLE

MEASURE IS ABOUT ATTRIBUTES - NOT JUST UNITS

Understand what is being measured before choosing a unit or calculation.



ACCURACY GROWS WITH UNDERSTANDING

Accurate measurement comes from knowing what, why and how to measure.



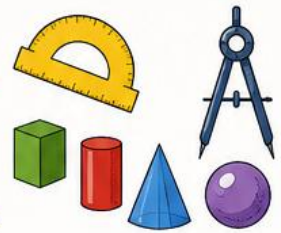
COMPARE → MEASURE → CONNECT → CONVERT → CALCULATE → APPLY

♥ EVERY CHILD. ★ EVERY CHANCE. + EVERY DAY. 🏆

GEOMETRY

From exploring shape and space to reasoning about properties, position and movement

Geometric understanding begins through children's exploration of shape, space, position and movement. Across school, pupils develop increasingly precise mathematical language, recognise and reason about properties and relationships, and use their knowledge of angles, coordinates and transformations to solve geometric problems.



EXPLORE → RECOGNISE → DESCRIBE → CLASSIFY → MEASURE → REASON → PROVE

EYFS EXPLORING SHAPE & SPACE 	KNOWLEDGE Children begin to understand: - objects have shape and spatial properties - shapes can be the same or different - shapes can be combined and separated - objects have positions relative to one another - shapes can be rotated and arranged - patterns can be created using shape	SKILLS - explore - build - match - sort - turn - describe	EXPLORING POSITION AND SPACE in under next to create and explore patterns	EVERYDAY LANGUAGE long • short • tall • heavy • light full • empty • before • after in • on • under • behind next to • between • above WHAT DO YOU NOTICE ABOUT THE SHAPE?
---	---	---	---	---

YEAR 1 RECOGNISING & NAMING SHAPES 	KNOWLEDGE Children recognise common: 2D shapes circle triangle square rectangle 3D shapes cube cuboid sphere cylinder pyramid Shapes can be different sizes and orientations.	SKILLS - recognise - name - sort - describe - create	ORIENTATION DOESN'T CHANGE THE SHAPE! IT'S STILL A TRIANGLE!	CREATE AND BUILD Use shapes to create models and patterns.
---	--	---	--	---

YEAR 2 DESCRIBING PROPERTIES 	KNOWLEDGE Children develop understanding of: - sides and vertices - faces, edges and vertices - symmetry - vertical and horizontal lines - turns and direction - increasingly varied 2D and 3D shapes How are these shapes the same? How are they different?	SKILLS - identify - describe - compare - sort - reason	2D SHAPE PROPERTIES SQUARE 4 sides 4 vertices 4 equal sides RECTANGLE 4 sides 4 vertices opposite sides equal	3D SHAPE PROPERTIES CUBE 6 faces 12 edges 8 vertices
---	--	---	---	---

YEAR 3 ANGLES, LINES & POSITION 	KNOWLEDGE Children develop knowledge of: - right angles - angles greater/less than a right angle - horizontal and vertical lines - parallel and perpendicular lines - properties of 2D and 3D shapes - turns and position	SKILLS - identify - compare - classify - describe - reason	TYPES OF ANGLES $< 90^\circ$ 90° $> 90^\circ$ less than a right angle right angle greater than a right angle	LINES parallel perpendicular ⊥
--	--	---	--	---

YEAR 4 CLASSIFYING & COORDINATES 	KNOWLEDGE - acute and obtuse angles - triangles and quadrilaterals - lines of symmetry - coordinates in the first quadrant - translation - geometric properties and classification	SKILLS - classify - plot - translate - compare - justify	COORDINATES (FIRST QUADRANT) ALONG THE CORRIDOR → UP THE STAIRS (x, y) x first (across) y second (up)	QUADRILATERALS
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YEAR 6 GEOMETRIC REASONING 	KNOWLEDGE - angle relationships - angles in triangles and quadrilaterals - vertically opposite angles - radius, diameter & circumference - coordinates in 4 quadrants - translation and reflection - properties of complex shapes	SKILLS - calculate - deduce - generalise - justify - prove - apply	ANGLES ON A STRAIGHT LINE $65^\circ + 45^\circ + ? = 180^\circ$ $? = 70^\circ$	REFLECTION radius = r diameter = 2r circumference = πd
---	--	--	--	---

THE GEOMETRY JOURNEY EYFS Explore shape & space Y1 Recognise & name Y2 Describe properties Y2 Angles & daisy Y3 Angles & lines Y4 Classify & coordinates Y5 Measure & deduce Y6 Reason & prove 	FROM SEEING → REASONING EYFS "It's a triangle." Y2 "3 sides and 3 vertices." Y4 "An isosceles triangle (two sides are equal)." Y6 "Angles are equal, so I can deduce the..."
---	---

THE GEOMETRY JOURNALS GEOMETRY IS ABOUT RELATIONSHIPS Children progress from recognising what a shape looks like to understanding why it has particular properties and using those relationships to reason and deduce.	ORIENTATION DOESN'T CHANGE PROPERTIES A square is still a square when it is turned.	POSITION & MOVEMENT PROGRESSION EYFS under • behind next to Y1-2 turn • left right • clockwise Y4 coordinates & translation Y5-6 reflection, translation & four quadrants
--	---	--

EXPLORE → DESCRIBE → CLASSIFY → MEASURE → DEDUCE → PROVE

STATISTICS

From sorting and noticing to representing, interpreting and reasoning with data

Statistical understanding begins when children sort, classify, compare and talk about information. Across school, pupils learn to organise and represent data in increasingly sophisticated ways, interpret different representations and use mathematical knowledge to answer questions, identify patterns and draw conclusions.



SORT → ORGANISE → REPRESENT → INTERPRET → COMPARE → CALCULATE → REASON

EYFS

SORTING & COMPARING

KNOWLEDGE

Children begin to understand that:

- objects can be sorted into groups
- groups can be created using different criteria
- quantities can be compared
- information can be organised
- we can talk about what we notice

SKILLS

- sort
- group
- match
- compare
- count
- notice
- describe

EXAMPLE

WHICH GROUP HAS MOST? WHICH HAS FEWEST?

EVERYDAY LANGUAGE

long • short • tall • heavy • light
full • empty • before • after
in • on • under • behind
next to • between • above

YEAR 1

FOUNDATIONS FOR STATISTICS

KNOWLEDGE

Children develop understanding that information can be:

- sorted
- counted
- compared
- organised into groups
- represented using objects and simple pictures

SKILLS

- sort
- count
- organise
- compare
- explain

EXAMPLE

Favourite fruit

How many chose apples?
How many more chose apples than pears?

KEY IDEA

Information can be organised so that it is easier to talk about and compare.

YEAR 2

REPRESENTING DATA

KNOWLEDGE

Children develop understanding of:

- tally charts
- simple tables
- block diagrams
- pictograms
- categories and totals

SKILLS

- collect
- record
- represent
- read
- compare
- answer

TALLY CHART

Favourite pets	Tally	Total
Dog		4
Cat		3
Rabbit		2

PICTOGRAM

(Key 🐶 = 2 children)

Dog	🐶 🐶
Cat	🐱 🐱 🐱
Rabbit	🐰

KEY IDEA

Check the key when reading pictograms so we know what each symbol represents.

YEAR 3

INTERPRETING & COMPARING

KNOWLEDGE

Children develop knowledge of:

- pictograms with complex scales
- tables
- bar charts
- one-step and two-step questions
- comparison of categories

SKILLS

- read
- interpret
- compare
- calculate
- explain

BAR CHART

Favourite colours

EXAMPLE QUESTIONS

- How many children altogether?
- Which colour is most popular?
- Which is least popular?
- How many more chose red than yellow?
- What is the difference between blue and green?

KEY IDEA

Different representations help us answer different questions.

YEAR 4

READING DATA ACROSS TIME

KNOWLEDGE

Children develop understanding of:

- discrete and continuous data
- bar charts
- time graphs (line graphs)
- tables
- increasingly complex scales

SKILLS

- read
- compare
- calculate
- interpret
- reason

LINE GRAPH – Temperature through the day

EXAMPLE QUESTIONS

- What was the temperature at 3pm?
- When was it hottest?
- What happened between 3pm and 6pm?
- How much did the temperature increase from 9am to 12pm?

KEY IDEA

Line graphs show how something changes over time.

YEAR 5

INTERPRETING COMPLEX DATA

KNOWLEDGE

Children deepen understanding of:

- line graphs
- tables and timetables
- comparison of data sets
- interpreting scales
- solving problems using different representations

SKILLS

- interpret
- calculate
- compare
- deduce
- justify

VISITORS TO THE ZOO (Line graph)

TRAIN TIMETABLE

Train	Depart	Arrive
A	09:10	10:25
B	11:40	12:55
C	14:15	15:45
D	16:30	17:40

EXAMPLE QUESTIONS

- On which day were the most visitors to the zoo?
- How many more visitors on Wednesday than on Monday?
- How long does Train C take?
- Which train takes the shortest time?

YEAR 6

REASONING WITH DATA

KNOWLEDGE

Children securely understand and use:

- pie charts
- line graphs
- tables
- percentages within data
- the mean as an average
- comparison and interpretation of data sets

SKILLS

- interpret
- calculate
- compare
- infer
- reason
- justify

PIE CHART – Favourite sports

MEAN (Average)

6, 8, 7, 9, 10

$$6 + 8 + 7 + 9 + 10 = 40$$

$$40 \div 5 = 8$$

Mean = 8

REASONING QUESTIONS

- What fraction and percentage chose football?
- What is the difference between netball and rugby?
- What lon you conclude from the data?
- Does the mean tell the whole story? Why/why not?

THE STATISTICAL PROCESS

- 1 COLLECT**
What information do we need?
- 2 ORGANISE**
How can we arrange it?
- 3 REPRESENT**
Which representation is appropriate?
- 4 INTERPRET**
What does it show?
- 5 REASON**
What can we conclude?

CHOOSING A REPRESENTATION

More complex doesn't always mean better. Choose the best representation for the data and question.

STATISTICS CONNECTS MATHEMATICS

KEY PRINCIPLE

★ **DATA DOESN'T SPEAK FOR ITSELF.**
Children need to read representations accurately, understand the mathematics behind them and use evidence from the data to justify conclusions.

THE STATISTICS JOURNEY

SORT → ORGANISE → REPRESENT → INTERPRET → COMPARE → CALCULATE → REASON

FLUENCY, REASONING & PROBLEM SOLVING

From noticing and exploring to selecting, generalising and proving

Fluency, reasoning and problem solving are not separate parts of mathematics. They develop together as pupils build secure knowledge, make connections and become increasingly able to use mathematics accurately, flexibly and independently.

KNOW IT → CONNECT IT → EXPLAIN IT → USE IT



FLUENCY

Know it and use it efficiently



REASONING

Explain why it works



PROBLEM SOLVING

Decide how to use it

EYFS

EXPLORE & NOTICE



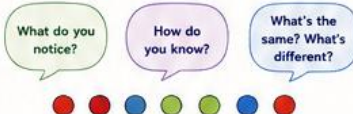
FLUENCY

- develop secure early number sense
- subitise small quantities
- recognise number patterns
- recall increasingly familiar number relationships



REASONING

Notice • Describe • Compare • Explain



PROBLEM SOLVING

Explore → Try → Change → Try again

How many ways can you make 5?



What do you notice about your answers?

YEAR 1

REPRESENT & EXPLAIN



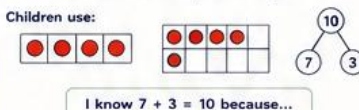
FLUENCY

Develop secure recall of key number facts and increasingly efficient counting and calculation.

$$\begin{array}{l} 7 + 3 = 10 \quad 10 - 3 = 7 \\ 6 + 4 = 10 \quad 8 - 2 = 6 \end{array}$$

REASONING

Describe → Compare → Explain



PROBLEM SOLVING

Understand → Represent → Try → Check

There are 8 apples. 3 are red and the rest are green. How many are green?



YEAR 2

CONNECT & CHOOSE



FLUENCY

Derive facts from what they already know.

$$\begin{array}{l} 7 + 3 = 10 \\ \downarrow \\ 70 + 30 = 100 \\ 700 + 300 = 1,000 \end{array}$$

REASONING

Explain → Compare → Connect
Which strategy is more efficient? Why?



PROBLEM SOLVING

Identify → Represent → Choose → Solve → Check



YEAR 3

JUSTIFY & APPLY



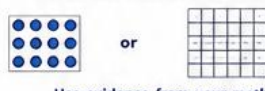
FLUENCY

Recall → Derive → Apply
Recall known facts and use them to solve calculations and problems.

$$\begin{array}{l} 4 \times 6 = 24 \\ \downarrow \\ 40 \times 6 = 240 \\ 700 \div 8 = 2,400 \end{array}$$

REASONING

Explain → Justify → Connect
I know this must be true because...



Use evidence from your maths.

PROBLEM SOLVING

Identify relevant information, select a strategy, solve multi-step problems and check whether answers are reasonable.



Is your answer sensible? How do you know?

YEAR 4

GENERALISE & REASON



FLUENCY

Use secure facts to derive increasingly complex facts.

$$\begin{array}{l} 6 \times 8 = 48 \\ \downarrow \\ 60 \times 8 = 480 \\ 600 \times 8 = 4,800 \end{array}$$

REASONING

Justify → Generalise → Convince



Look for patterns and relationships.

PROBLEM SOLVING

Plan → Select → Solve → Evaluate



Compare possible approaches. Which is most efficient?

YEAR 5

PROVE & EVALUATE



FLUENCY

Fluency means flexibility.
Recall • Derive • Select • Adapt

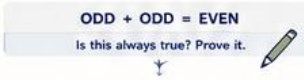
$$6 \times 7 \rightarrow 42 \rightarrow 420$$

REASONING

Generalise → Prove → Evaluate

$$\text{ODD} + \text{ODD} = \text{EVEN}$$

Is this always true? Prove it.



PROBLEM SOLVING

Interpret → Plan → Select → Solve → Evaluate → Adapt



If your first strategy doesn't work, change it and try again.

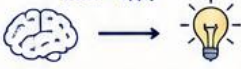
YEAR 6

INDEPENDENT THINKING



FLUENCY

Draw upon a connected body of mathematical knowledge.
Know • Retrieve • Derive
Select • Apply



REASONING

Conjecture → Generalise → Justify → Prove

I can prove that...



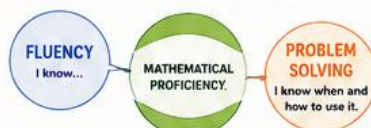
PROBLEM SOLVING

Analyse → Plan → Select → Solve → Evaluate → Refine



What mathematics do I need? Which strategy is most efficient? How can I prove my solution?

THE THREE WORK TOGETHER



Fluency supports reasoning.
Reasoning supports problem solving.
Problem solving strengthens and connects knowledge.

THE LANGUAGE OF REASONING

LEVEL	LANGUAGE OF REASONING
EYFS	I notice...
Y1	I know because...
Y2	I agree/disagree because...
Y3	This is true because...
Y4	This will always/sometimes/never...
Y5	I can prove this by...
Y6	I can generalise that...

PROBLEM-SOLVING INDEPENDENCE

- Teacher selects the representation
- Teacher supports the strategy
- Child chooses between familiar strategies
- Child selects and adapts a strategy
- Child identifies the mathematics and selects an efficient approach

DEPTH, NOT JUST DIFFICULTY

Greater depth does not mean bigger numbers. Depth comes from children being able to:

- ✓ Represent it differently
- ✓ Explain why
- ✓ Make connections
- ✓ Find another method
- ✓ Generalise
- ✓ Prove
- ✓ Apply it in an unfamiliar context

OUR FLUENCY JOURNEY



KNOW → RETRIEVE → CONNECT → EXPLAIN → JUSTIFY → GENERALISE → APPLY



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.



MATHEMATICAL END POINTS

Secure foundations • Connected knowledge • Ready for what comes next

Our mathematical end points describe the knowledge, understanding and mathematical behaviours we want pupils to have secured at key points in their journey. They are not a checklist of isolated objectives; they reflect increasingly connected, fluent and independent mathematical understanding.

EFYS

KS1

LOWER KS2
(Y3-4)

UPPER KS2
(Y5-6)

KS3

END OF EFYS READY FOR YEAR 1

CHILDREN ARE DEVELOPING...

NUMBER SENSE

- secure understanding of numbers to 10
- recognition of quantities through subitising
- understanding of number composition
- comparison of quantities
- recall of key number relationships

PATTERN & STRUCTURE



- notice, continue and create patterns
- recognise relationships between quantities
- explore equal groups, sharing and doubling

SHAPE, SPACE & MEASURE

- compare length, mass and capacity
- recognise and manipulate shapes
- use positional and comparative language

MATHEMATICAL THINKING

- notice
- describe
- compare
- explain
- explore different possibilities

READY TO REPRESENT,
CONNECT AND CALCULATE



END OF YEAR 2 READY FOR KS2

CHILDREN SHOULD SECURE...

NUMBER & CALCULATION



- secure place-value understanding within 100
- fluent recall of important additive facts
- increasingly efficient addition and subtraction
- secure understanding of $\times 2$, $\times 5$ and $\times 10$
- connection between multiplication and division

FRACTIONS



- recognise, find and represent simple fractions
- understand equal parts and simple equivalence

MEASURE & GEOMETRY



- use standard units
- tell and reason about time
- recognise and describe 2D and 3D shapes
- use positional and directional language

DATA



- organise, represent and interpret simple information

MATHEMATICAL THINKING



Represent → Explain → Compare
Choose → Check

READY TO BUILD GREATER
FLUENCY & GENERALISE



END OF YEAR 4 READY FOR UPPER KS2

CHILDREN SHOULD SECURE...

NUMBER & FLUENCY



- increasingly secure place-value understanding
- efficient addition and subtraction
- multiplication facts to 12×12 and related division facts
- ability to derive facts from known facts

RATIONAL NUMBER



- secure understanding of fractions
- recognise equivalence
- connect fractions and decimals
- understand tenths and hundredths

MEASURE & GEOMETRY



- calculate perimeter and understand area
- understand angle and line relationships
- classify shapes using properties
- use coordinates in the first quadrant

STATISTICS



- interpret bar charts, tables and time graphs
- calculate and reason from data

MATHEMATICAL THINKING



Connect → Justify → Generalise
Select → Apply

READY TO CONNECT & APPLY
ACROSS MATHEMATICS



END OF YEAR 6 READY FOR KS3

CHILDREN SHOULD LEAVE
ST STEPHEN'S ABLE TO...



KNOW

Draw upon a secure and increasingly connected body of mathematical knowledge.



RETRIEVE

Recall important number facts and mathematical relationships efficiently.



CONNECT

Recognise relationships between:

- Number
- Calculation
- Fractions
- Algebra
- Geometry
- Decimals
- Percentages
- Ratio
- Measure
- Statistics



REASON

Explain • Justify
Generalise • Prove
using accurate mathematical language.



SOLVE

Analyse problems, identify relevant mathematics and select efficient strategies.



APPLY

Use mathematical knowledge confidently in familiar and unfamiliar contexts.

THEY DON'T JUST KNOW MORE
MATHEMATICS — THEY CAN DO
MORE WITH WHAT THEY KNOW.



THE WHOLE JOURNEY



WHAT PROGRESSION LOOKS LIKE

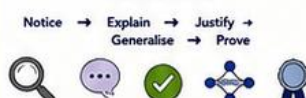
KNOWLEDGE



FLUENCY



REASONING



PROBLEM SOLVING



OUR MATHEMATICAL PROMISE

We provide every child with the opportunity to build secure mathematical foundations, experience success, develop confidence and become an increasingly independent mathematical thinker.

BUILD
Strong foundations

CONNECT
Connected knowledge

RETRIEVE
Remember more

DEEPEN
Understand more

APPLY
Do more with mathematics

Strong foundations. ★ Connected knowledge. ★ Confident mathematicians.

KNOW MORE → REMEMBER MORE → DO MORE

From first mathematical discoveries to confident, independent thinking.

EVERY CHILD. ★ EVERY CHANCE. ★ EVERY DAY.

