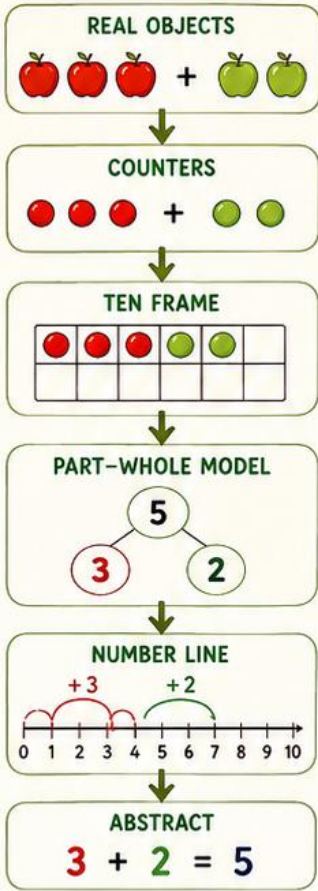


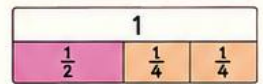
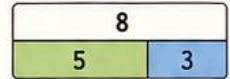
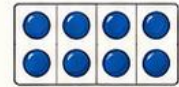
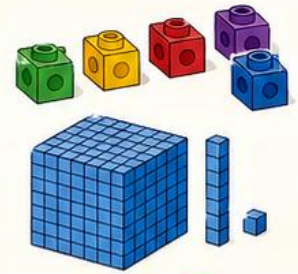


MATHEMATICS

CALCULATION & REPRESENTATION PROGRESSION

EYFS → YEAR 6

⇒ 2026-2027 ⇐



Th	H	T	O
4	3	2	6

$$4,326 \div 6$$

UNDERSTAND

REPRESENT

CALCULATE

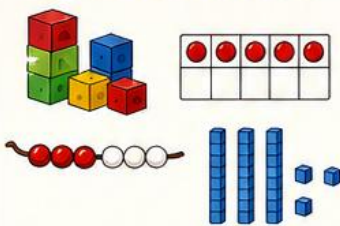
SELECT

APPLY

★ ★ Building understanding before procedure. ★

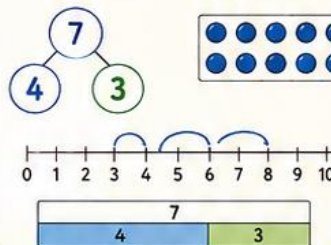
CONCRETE

Touch it • Move it • Build it



PICTORIAL

See it • Draw it • Represent it



ABSTRACT

Record it • Calculate it • Generalise it

$$4 + 3 = 7$$

$$10 - 7 = 3$$

$$3 \times 4 = 12$$



Which representation will help me?



REPRESENTATIONS ARE TOOLS FOR THINKING

Children use representations to expose mathematical structure, make connections and develop increasingly efficient and independent calculation.



UNDERSTAND → REPRESENT → CALCULATE → SELECT → APPLY

Secure understanding. Connected representations. Efficient calculation.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.

OUR APPROACH TO CALCULATION & REPRESENTATION

Understanding first • Representation with purpose • Increasing independence

At St Stephen's, calculation is built upon secure conceptual understanding. Children use carefully chosen representations and manipulatives to expose mathematical structure, make connections and explain their thinking. As understanding develops, pupils become increasingly fluent, flexible and independent in selecting efficient calculation strategies.

UNDERSTAND

REPRESENT

CONNECT

CALCULATE

SELECT

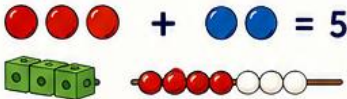
APPLY

CONCRETE

Touch it • Move it • Build it

Children manipulate mathematical objects:

Counters • Cubes • Rekenreks •
Base 10 • Place-value counters •
Fraction pieces

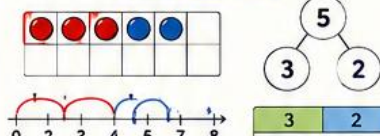


PICTORIAL

See it • Draw it • Represent it

Children see the same structure through:

Ten frames • Part-whole models •
Arrays • Number lines • Bar models •
Place-value charts



ABSTRACT

Record it • Calculate it • Generalise it

Children connect representations to mathematical notation:

$$3 + 2 = 5$$

CONCRETE ↔ PICTORIAL ↔ ABSTRACT

CPA IS NOT A ONE-WAY LADDER.

Children move flexibly between representations whenever this strengthens understanding.

REPRESENTATION WITH PURPOSE



EXPOSE STRUCTURE

Representations help children see the mathematics.



MAKE CONNECTIONS

Children connect different representations of the same mathematical idea.



SUPPORT EXPLANATION

Representations give children something to reason with and talk about.

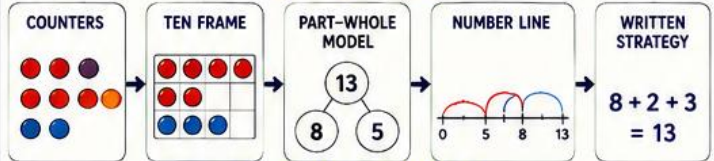


DEVELOP INDEPENDENCE

Over time, children increasingly decide which representation or strategy will help them.

SAME MATHEMATICS – DIFFERENT REPRESENTATIONS

$$8 + 5 = 13$$



THE REPRESENTATION CHANGES.
THE MATHEMATICAL STRUCTURE DOES NOT.

WHEN DO WE MOVE TOWARDS ABSTRACTION?

✓ WHEN UNDERSTANDING IS SECURE

Children can:

- explain what the representation shows;
- connect it to mathematical notation;
- use known facts and relationships;
- calculate accurately;
- explain why a strategy works;
- choose an increasingly efficient approach.

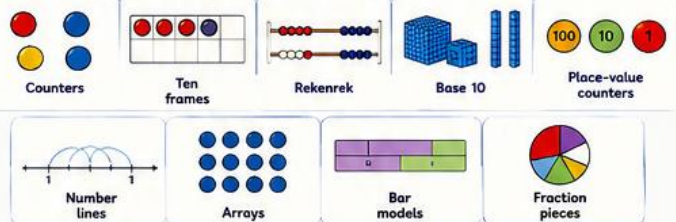
✗ NOT BECAUSE...

- they have reached a particular year group;
- other children have stopped using manipulatives;
- a written method looks more advanced;
- we want them to work faster.



ABSTRACT DOES NOT AUTOMATICALLY MEAN MORE ADVANCED.

MANIPULATIVES ARE TOOLS FOR THINKING



THE RIGHT TOOL DEPENDS ON THE MATHEMATICS – NOT THE CHILD'S AGE.
Manipulatives remain available throughout school whenever they help expose structure, address a misconception or support reasoning.

REPRESENTATION ≠ DECORATION

✗ NOT:

Use some counters because this child is struggling.



✓ INSTEAD:

Which representation will make this mathematical structure visible?



OUR CALCULATION PRINCIPLES

1 UNDERSTAND



Build the concept.

2 REPRESENT



Make the structure visible.

3 CONNECT



Link representations and known knowledge.

4 CALCULATE



Develop accurate and efficient strategies.

5 SELECT & APPLY



Choose mathematics independently.

FLUENCY DOESN'T MEAN SPEED

⚡ FLUENCY = ACCURACY + EFFICIENCY + FLEXIBILITY

A fluent mathematician can:



retrieve known facts

derive unknown facts

choose efficient strategies

adapt when necessary

Not simply answer quickly.

ADAPTIVE TEACHING

KEEP THE MATHEMATICS AMBITIOUS

When pupils need additional support, we can adapt:

Representation

Scaffolding

Language

Chunking

Practice

Adult support

without unnecessarily reducing the mathematical goal.

UNDERSTAND → REPRESENT → CONNECT → CALCULATE → SELECT → APPLY

Representations are not something children need to "grow out of".
They are mathematical tools that support thinking at every stage.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.

+

ADDITION

+

From combining and composing to flexible, efficient calculation

Addition develops from children's understanding of combining quantities and part-whole relationships. Through carefully chosen representations, pupils connect number composition, known facts and place value to increasingly efficient mental and written strategies.

COMBINE

COMPOSE

PARTITION

BRIDGE

EXCHANGE

CALCULATE

SELECT

EYFS

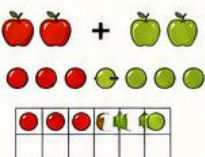
COMBINE & COMPOSE

UNDERSTANDING

- Children experience addition through:
- combining two groups
 - finding how many altogether
 - exploring part-whole relationships
 - finding one more
 - composing numbers in different ways

REPRESENTATIONS

Real objects • Counters
Five/ten frames • Part-whole models • Fingers



KEY LANGUAGE

part • whole • altogether
more • make • add

- ★ Children understand the action of combining before relying on symbols.

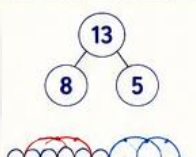
YEAR 1

CONNECTING ADDITION TO NUMBER

UNDERSTANDING

- Children connect:
- addition within 20
 - number bonds
 - part-whole relationships
 - commutativity
 - counting on
 - bridging through 10

$$8 + 5$$



$$8 + 2 + 3 = 13$$

$$10 + 3 = 13$$

$$3 + 7 = 7 + 3$$

Addition is commutative.



YEAR 2

PARTITION & RECOMBINE

UNDERSTANDING

Children use secure place value and known facts to add within and across 100.

REPRESENTATIONS

Base 10 • Place-value charts • Number lines
Part-whole / bar models

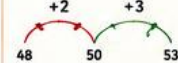
$$46 + 27$$



Tens	Ones
40	20
6	7

$$60 + 13 = 73$$

$$48 + 5$$



COUNT → KNOWN FACT
→ PARTITION → BRIDGE

YEAR 3

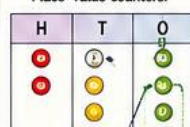
INTRODUCING FORMAL WRITTEN ADDITION

UNDERSTANDING

Children add 3-digit numbers using place value. They exchange (regroup) when needed.

CONCRETE

Place-value counters:



13 ones exchange for 1 ten.

PICTORIAL

Place-value chart:



ABSTRACT

Aligned column calculation:

$$\begin{array}{r} 247 \\ + 186 \\ \hline 433 \end{array}$$

- ★ EXCHANGE – DON'T "CARRY". Understand what is being exchanged and why.

YEAR 4

SECURING & CHOOSING

UNDERSTANDING

Children add increasingly large whole numbers by:

- correct alignment
- multiple exchanges
- estimation
- inverse checking
- mental and written strategies

$$3,999 + 246$$

OPTION 1 – WRITTEN

$$\begin{array}{r} 111 \\ 3999 \\ + 246 \\ \hline 4245 \end{array}$$

OPTION 2 – MENTAL

$$4,000 + 246 - 1 = 4,245$$

- ★ WHICH IS MORE EFFICIENT? WHY?

YEAR 5

EXTENDING TO DECIMALS

UNDERSTANDING

Children apply place-value understanding to:

- larger integers
- decimal addition
- money and measure
- multi-step calculations

$$£12.75 + £4.80$$

PLACE-VALUE CHART

Tens	Ones	Tenths	Hths
1	2	7	5
0	4	8	0
1	7	5	5

ABSTRACT

$$\begin{array}{r} 12.75 \\ + 4.80 \\ \hline 17.55 \end{array}$$

- ★ ALIGN THE PLACE VALUES – NOT JUST THE DIGITS.

- ★ The decimal point does not move.

YEAR 6 – FLEXIBLE & INDEPENDENT

UNDERSTANDING

Children confidently select between:

- ✓ Mental strategies
- ✓ Formal written methods
- ✓ Known and derived facts
- ✓ Representations where useful



Which strategy will help me?

EXAMPLE 1

$$19,999 + 3,426$$

Efficient mental approach:

$$\begin{array}{r} 20,000 + 3,426 - 1 \\ = 23,426 - 1 \\ = 23,425 \end{array}$$

EXAMPLE 2

$$37.68 + 14.57$$

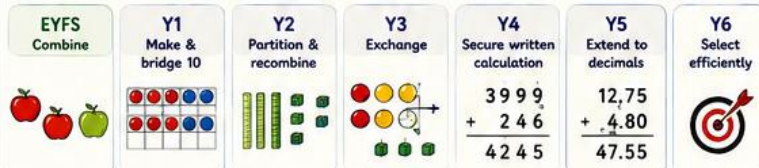
Formal written method may be most efficient.

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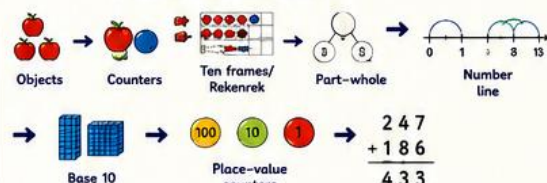
CHILDREN THINK MATHEMATICALLY

- 1 What do I know?
- 2 Can I calculate mentally?
- 3 Would a representation help?
- 4 Would a written method be more efficient?
- 5 Is my answer reasonable?

THE ADDITION JOURNEY



REPRESENTATION JOURNEY



Representations can be used flexibly in both directions.

LANGUAGE MATTERS

- ✓ USE
add / addition
sum / total
parts / whole
partition
recombine
exchange
regroup
- ✗ AVOID AS THE TEACHING EXPLANATION
"Carry the one."
- ✓ INSTEAD
10 ones are exchanged for 1 ten.



COMMON MISCONCEPTIONS

- ⚠ Counting everything rather than counting on
- ⚠ Poor recall of number bonds
- ⚠ Misaligned place values
- ⚠ Treating exchange as a memorised procedure
- ⚠ Assuming column addition is always the best strategy
- ⚠ Misaligning decimal places



OUR END POINT

By Year 6, children should be able to:

- ★ UNDERSTAND – additive structure
- ★ REPRESENT – using multiple models
- ★ CALCULATE – accurately and efficiently
- ★ EXPLAIN – their thinking clearly
- ★ SELECT – the most efficient strategy
- ★ APPLY – in a range of contexts



COMBINE → CONNECT → CALCULATE → SELECT

Understanding the structure makes calculation meaningful.



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PARTITION

BRIDGE

EXCHANGE

CALCULATE

SELECT

EYFS

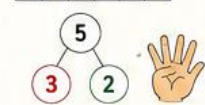
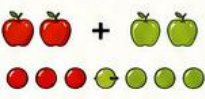
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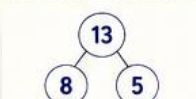
YEAR 1

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UNDERSTANDING

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 - commutativity
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$$8 + 5$$



$$8 + 2 + 3 = 13$$

$$10 + 3 = 13$$

$$3 + 7 = 7 + 3$$

Addition is commutative.



YEAR 2

PARTITION & RECOMBINE

UNDERSTANDING

- Children use secure place value and known facts to add within and across 100.

REPRESENTATIONS

Base 10 • Place-value charts • Number lines
Part-whole / bar models

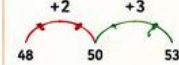
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YEAR 3

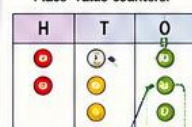
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YEAR 5

EXTENDING TO DECIMALS

UNDERSTANDING

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$$£12.75 + £4.80$$

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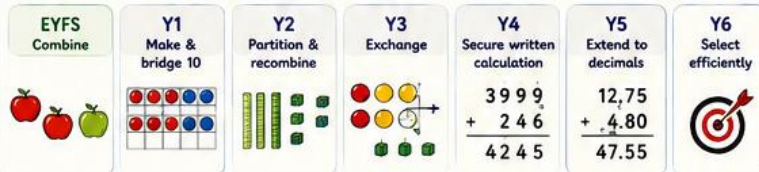
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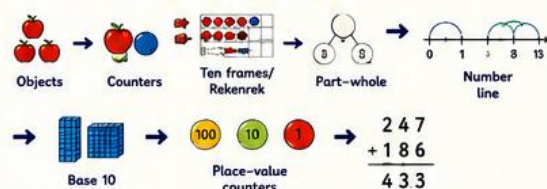
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COMBINE → CONNECT → CALCULATE → SELECT

Understanding the structure makes calculation meaningful.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.

SUBTRACTION

From separating and finding difference to flexible, efficient calculation

Subtraction develops through children's understanding of part-whole relationships, separating quantities and finding the difference between quantities. Through carefully chosen representations, pupils connect subtraction to addition, place value and known facts before developing increasingly efficient mental and written strategies.

SEPARATE

COMPARE

CONNECT

BRIDGE

EXCHANGE

CALCULATE

SELECT

EYFS

SEPARATE & COMPARE

UNDERSTANDING

Children experience subtraction through:

- taking objects away
- finding how many are left
- separating a whole into parts
- finding one fewer
- comparing two quantities
- noticing the difference between groups

REPRESENTATIONS

Real objects • Counters
Five/ten frames • Part-whole models • Fingers



take away



The difference is 2



KEY LANGUAGE

subtract • take away • fewer
left • difference • part • whole

★ SUBTRACTION CAN MEAN
TAKING AWAY OR FINDING
THE DIFFERENCE.

YEAR 1

CONNECTING TO NUMBER

UNDERSTANDING

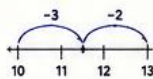
Children connect:

- subtraction within 20
- number bonds
- part-whole relationships
- counting back
- finding the difference
- inverse relationships
- bridging through 10

$$13 - 5$$

Partition 5:

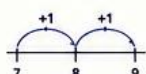
$$13 - 3 - 2$$



$$10 - 2 = 8$$

FINDING THE DIFFERENCE

$$9 - 7$$



$$9 - 7 = 2$$

★ Addition and subtraction
are inverse.

YEAR 2

PARTITION, BRIDGE & DIFFERENCE

UNDERSTANDING

Children use place value and
known facts to subtract within
and across 100.

REPRESENTATIONS

Base 10 • Number lines
Part-whole/bar models
Place-value charts

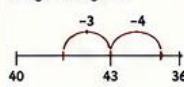
$$63 - 27$$

Partition:

$$63 - 20 = 43$$

$$43 - 7 = ?$$

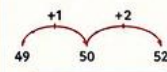
Bridge through 40:



$$63 - 27 = 36$$

FINDING THE DIFFERENCE

$$52 - 49$$



$$52 - 49 = 3$$

★ TAKE AWAY OR FIND
THE DIFFERENCE?

YEAR 3

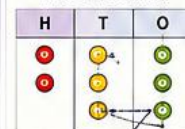
INTRODUCING FORMAL WRITTEN SUBTRACTION

UNDERSTANDING

Children subtract 3-digit
numbers using place value.
They exchange (regroup)
when needed.

CONCRETE

Place-value counters:



We cannot take 8 ones from
2 ones. 1 ten is exchanged for
10 ones.

PICTORIAL

Place-value chart:



ABSTRACT

Aligned column subtraction:

$$\begin{array}{r} 432 \\ - 178 \\ \hline 254 \end{array}$$

EXCHANGE - DON'T "BORROW".

1 ten is exchanged for
10 ones (the value is
being regrouped).



YEAR 4

SECURING & CHOOSING

UNDERSTANDING

Children subtract increasingly
large whole numbers using:

- secure place-value
- exchanges across columns
- estimation
- inverse checking
- mental and written
calculation

$$5,002 - 2,998$$

OPTION 1 - WRITTEN

$$\begin{array}{r} 5002 \\ - 2998 \\ \hline 2004 \end{array}$$

OPTION 2 - DIFFERENCE

2,998 → 3,000 = 2
3,000 → 5,000 = 2,000
5,000 → 5,002 = 2
Difference = 2,004

★ WHICH METHOD IS MORE
EFFICIENT? WHY?

YEAR 5

EXTENDING TO DECIMALS

UNDERSTANDING

Children apply subtraction to:

- larger integers
- decimals
- money
- measure
- multi-step contexts

$$£20.00 - £7.85$$

WRITTEN

$$\begin{array}{r} 20.00 \\ - 7.85 \\ \hline 12.15 \end{array}$$

MENTAL / DIFFERENCE

£7.85 → £8.00 = 15p

£8 → £20 = £12

Total = £12.15

★ Align place values -
not merely digits.
★ The most formal method
isn't always the most
efficient.

YEAR 6

FLEXIBLE & INDEPENDENT

UNDERSTANDING

Children confidently select
between:

- mental strategies
- formal written methods
- known/derived facts
- number-line/difference
strategies
- representations
when useful

EXAMPLE 1
20,000 - 19,997

19,997 → 20,000 = 3

EXAMPLE 2
52.73 - 18.46

Formal written method
is likely more efficient.

CHILDREN ASK:

- ✓ Am I taking away
or comparing?
- ✓ Are the numbers
close together?
- ✓ Can I use a known fact?
- ✓ Would counting up be
more efficient?
- ✓ Would a written
method help?
- ✓ Is my answer
reasonable?

THE THREE STRUCTURES OF SUBTRACTION

1 TAKE AWAY

$$8 - 3$$



5 remain

2 PART-WHOLE / MISSING PART

$$8 = 3 + ?$$



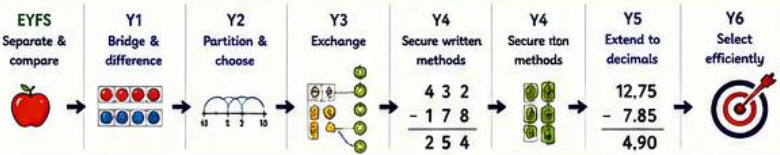
3 DIFFERENCE / COMPARISON



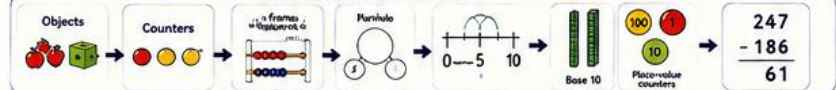
The difference
between 8 and 3 is 5.

SAME CALCULATION - DIFFERENT STRUCTURES

THE SUBTRACTION JOURNEY



REPRESENTATION JOURNEY



← Representations can be used flexibly in both directions. →

ADDITION ↔ SUBTRACTION

$$\begin{array}{l} 8 + 5 = 13 \\ 5 + 8 = 13 \\ 13 - 5 = 8 \\ 13 - 8 = 5 \end{array}$$

INVERSE RELATIONSHIPS
SUPPORT CALCULATION AND CHECKING.

LANGUAGE MATTERS

USE

- ✓ subtract / subtraction
- ✓ take away
- ✓ difference
- ✓ fewer
- ✓ part / whole
- ✓ partition
- ✓ exchange / regroup
- ✓ left
- ✓ minus

AVOID

- ✗ "Borrow from next door."
- ✗ "Knock on the neighbour."
- ✗ "Take away the bigger number."
- ✗ "Cross out and remove."

✓ INSTEAD: 1 ten is exchanged for 10 ones.

COMMON MISCONCEPTIONS

- Thinking subtraction always means taking away
- Always counting backwards
- Not recognising when finding the difference is more efficient
- Weak inverse relationships
- Misaligned place values
- Treating exchange as a trick
- Assuming column subtraction is always best
- Decimal misalignment



THE GOAL ISN'T "CAN THEY DO COLUMN SUBTRACTION?"

The goal is: "Can they recognise
the structure and choose an
efficient way to solve it?"



UNDERSTAND

the different
subtraction
structures

REPRESENT

them
appropriately

CALCULATE

accurately

CONNECT

addition and
subtraction

SELECT

an efficient
strategy

APPLY

subtraction
independently

SEPARATE → COMPARE → CONNECT → CALCULATE → SELECT

Understanding the structure determines the strategy.



EVERY CHILD.



EVERY CHANCE.

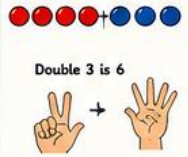
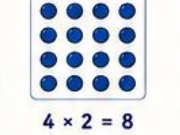
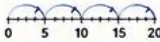
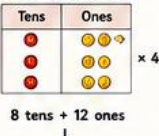


EVERY DAY.

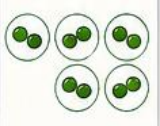
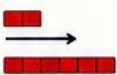
MULTIPLICATION

From equal groups and arrays to flexible, efficient multiplicative calculation

Multiplication develops from children's understanding of equal groups, repeated quantities and pattern. Through carefully chosen representations, pupils connect grouping, arrays and known multiplication facts to place value, partitioning and increasingly efficient mental and written strategies.

GROUP	REPRESENT	RELATE	RETRIEVE	PARTITION	CALCULATE	SELECT																
EYFS EQUAL GROUPS & DOUBLING UNDERSTANDING - equal and unequal groups - making equal groups - repeated quantities - doubling - sharing - patterns REPRESENTATIONS Real objects • Counters Cubes • Ten frames • Fingers  3 equal groups of 2  Double 3 is 6 KEY LANGUAGE equal • groups • each altogether • double • same ★ The concept of equal groups comes before the × symbol.	YEAR 1 BUILDING MULTIPLICATIVE STRUCTURE UNDERSTANDING - equal groups - repeated addition - counting in 2s, 5s and 10s - doubling - arrays REPRESENTATIONS Counters • Cubes • Ten frames • Number lines • Arrays 4 groups of 2  2 + 2 + 2 + 2 = 8  4 × 2 = 8  Counting in 2s ★ Notation is attached to something children already understand.	YEAR 2 CONNECTING FACTS & FAMILIES UNDERSTANDING Secure understanding of $\times 2$ • $\times 5$ • $\times 10$ and related division facts. REPRESENTATIONS Arrays • Bar models • Number lines 4 × 5 array  4 × 5 = 20 $5 \times 4 = 20$ $20 \div 5 = 4$ $20 \div 4 = 5$  ★ MULTIPLICATION IS COMMUTATIVE. The context still matters. 4 groups of 5  5 groups of 4 	YEAR 3 BUILDING FLUENCY & DERIVING FACTS UNDERSTANDING Focus on secure knowledge of $\times 3$ • $\times 4$ • $\times 8$ alongside $\times 2$, $\times 5$ and $\times 10$. REPRESENTATIONS Arrays • Bar models • Number lines • Place-value counters 4 × 8 = 32  8 × 4 = 32 $32 \div 4 = 8$ $32 \div 8 = 4$ Derived fact: If $4 \times 8 = 32$ then $4 \times 80 = 320$  ★ KNOWN FACT → DERIVED FACT Not learning every calculation as something new.	YEAR 4 SECURING FACTS & WRITTEN MULTIPLICATION UNDERSTANDING Secure multiplication facts up to 12×12 and apply them using written methods. 23 × 4 CONCRETE Place-value counters:  8 tens + 12 ones Exchange: 12 ones = 1 ten + 2 ones 9 tens + 2 ones = 92 PICTORIAL Place-value chart:  ABSTRACT Short multiplication: $\begin{array}{r} 23 \\ \times 4 \\ \hline 92 \end{array}$ ★ The written method represents partitioning and place value.	YEAR 5 EXTENDING WRITTEN MULTIPLICATION UNDERSTANDING Multiply larger numbers including up to 4 digits by 2 digits, and numbers involving powers of 10. 326 × 24 Partition 24 = 20 + 4 326 × 20 = 6,520 <table border="1"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr> <tr><td>6</td><td>5</td><td>2</td><td>0</td></tr> </table> 326 × 4 = 1,304 <table border="1"> <tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr> <tr><td>1</td><td>3</td><td>0</td><td>4</td></tr> </table> Add the partial products: $\begin{array}{r} 6,520 \\ + 1,304 \\ \hline 7,824 \end{array}$ ★ 24 = 20 + 4 Two partial products are needed. ★ The compact method records the same structure.	Th	H	T	O	6	5	2	0	Th	H	T	O	1	3	0	4	YEAR 6 FLEXIBLE & INDEPENDENT UNDERSTANDING Confidently select the most efficient strategy using: ✓ known/derived facts ✓ place-value relationships ✓ formal written methods ✓ partitioning ✓ representations where useful EXAMPLE 1 25×16 $25 \times 16 = 25 \times (10 + 6)$ $= 25 \times 10 + 25 \times 6$ $= 250 + 150$ $= 400$ EXAMPLE 2 $4,326 \times 37$ Formal written method is likely more efficient. WHICH STRATEGY FITS THE NUMBERS? 
Th	H	T	O																			
6	5	2	0																			
Th	H	T	O																			
1	3	0	4																			

THE MULTIPLICATION STRUCTURES

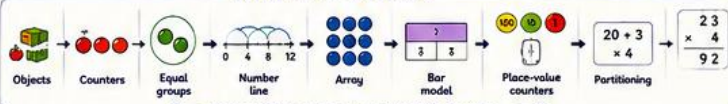
1 EQUAL GROUPS 4 groups of 3 	2 ARRAY  4 rows of 3 3 columns of 4	3 SCALING 3 times as long 	4 CORRESPONDENCE 3 shirts × 2 trousers = 6 combinations 
--	---	--	--

Multiplication has different structures, not just repeated addition.

THE MULTIPLICATION JOURNEY

EYFS Equal groups & doubling 	Y1 Repeated groups & arrays 	Y2 $\times 2, \times 5, \times 10$ 	Y3 $\times 3, \times 4, \times 8$ & derived facts 	Y4 12×12 & written multiplication 	Y5 Multi-digit multiplication 	Y6 Select efficiently 
---	--	---	---	---	--	--

REPRESENTATION JOURNEY



Representations remain available in both directions.

TIMES TABLES → CALCULATION

$60 \times 7 = 420$ $600 \times 7 = 4,200$ $6 \times 70 = 420$	$6 \times 7 = 42$	$42 \div 6 = 7$ $42 \div 7 = 6$
--	-------------------	------------------------------------

Later supports: fractions • ratio • area • algebra

TIMES-TABLE KNOWLEDGE UNLOCKS MATHEMATICS.

LANGUAGE MATTERS

USE ✓ equal groups ✓ groups of ✓ each ✓ times as many ✓ multiply / product ✓ factor ✓ multiple ✓ partition ✓ exchange	BE CAREFUL WITH ⚠ "lots of" Useful informally, but we want children progressing towards precise multiplicative language. AVOID "Add a zero when multiplying by 10." INSTEAD: ✓ The value of each digit becomes 10 times greater.
--	---

COMMON MISCONCEPTIONS

- ⚠ Thinking multiplication is only repeated addition
- ⚠ Confusing number of groups with group size
- ⚠ Weak multiplication/division fact families
- ⚠ Treating × as "make bigger"
- ⚠ Believing multiplying always increases a number
- ⚠ "Adding a zero" for $\times 10$
- ⚠ Losing place value within written methods
- ⚠ Using long multiplication when a mental strategy is more efficient



ADDITION ↔ SUBTRACTION ↔ MULTIPLICATION

$+$ combine add altogether	$\leftrightarrow$	$\times$ groups of times as many repeated	$\leftrightarrow$	$-$ take away compare difference
-------------------------------------	-------------------	--	-------------------	---

FACT FAMILIES

$4 \times 6 = 24$
 $6 \times 4 = 24$
 $24 \div 6 = 4$
 $24 \div 4 = 6$

Inverse relationships support calculation and checking.

OUR END POINT

By Year 6 children should:

- ★ UNDERSTAND multiplicative structures
- ★ REPRESENT relationships appropriately
- ★ RETRIEVE important multiplication facts
- ★ DERIVE new facts from known facts
- ★ CALCULATE accurately
- ★ SELECT efficient strategies
- ★ APPLY multiplication across mathematics

THE GOAL ISN'T JUST "DO THEY KNOW THEIR TABLES?"

It is whether they can use multiplicative knowledge flexibly to solve mathematics.

÷ DIVISION ÷

From sharing and grouping to flexible, efficient division

Division develops from children's understanding of sharing equally and making equal groups. Through carefully chosen representations, pupils connect division to multiplication, place value and known facts before developing increasingly efficient mental and written strategies.

SHARE

GROUP

RELATE

PARTITION

EXCHANGE

CALCULATE

SELECT

EYFS

SHARING & GROUPING

UNDERSTANDING

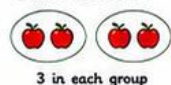
- sharing objects fairly
- making equal groups
- recognising equal and unequal groups
- finding how many in each group
- finding how many groups can be made

REPRESENTATIONS

Real objects • Counters
Cubes • Plates/hoops
Ten frames

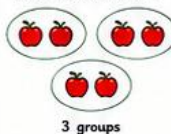
SHARING

6 shared between 2



GROUPING

6 put into groups of 2



KEY LANGUAGE

- share = equally • groups
- each • how many groups?
- how many in each?

- ★ Same calculation. Different structure.

YEAR 1

MAKING EQUAL GROUPS

UNDERSTANDING

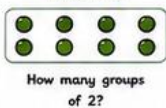
- equal groups
- repeated groups
- counting in 2s, 5s and 10s
- arrays
- sharing
- grouping

REPRESENTATIONS

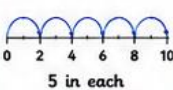
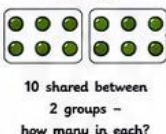
Counters • Arrays
Ten frames • Number lines

$$10 \div 2$$

GROUPING



SHARING



- ★ Division connects to repeated addition and multiplication.

YEAR 2

CONNECTING FACTS & FAMILIES

UNDERSTANDING

Use secure $\times 2$, $\times 5$ and $\times 10$ knowledge to derive division facts.

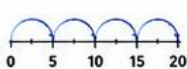
$$4 \times 5 = 20$$



$$5 \times 4 = 20$$

$$20 \div 5 = 4$$

$$20 \div 4 = 5$$



KEY CONCEPT
DIVISION IS THE
INVERSE OF
MULTIPLICATION.
The context still matters.

YEAR 3

KNOWN FACTS & REMAINDERS

UNDERSTANDING

Use known facts to divide and derive new facts. Understand and express remainders.

REPRESENTATIONS

Arrays • Bar models
Number lines • Place-value counters

$$32 \div 4 = 8$$



Because

$$4 \times 8 = 32$$

Derived fact:

$$320 \div 4 = 80$$

(32 tens $\div$ 4 = 8 tens)

$$14 \div 4$$



3 groups with
2 remaining

$$14 \div 4 = 3 \text{ r } 2$$

- ★ Remainders must be understood using representations.

YEAR 4

PARTITIONING FOR DIVISION

UNDERSTANDING

Use known facts and partitioning to divide larger numbers.

$$84 \div 4$$

Partition:

$$80 \div 4 = 20$$

$$4 \div 4 = 1$$

$$20 + 1 = 21$$

84	
80	4
20	1

21

$$96 \div 4$$

Partition flexibly:

$$40 + 40 + 16$$

$$40 \div 4 = 10$$

$$40 \div 4 = 10$$

$$16 \div 4 = 4$$

$$10 + 10 + 4 = 24$$

$$96 \div 4 = 24$$

- ★ PARTITION INTO NUMBERS THAT ARE EASY TO DIVIDE.

YEAR 5

SHORT DIVISION

UNDERSTANDING

Use place value and exchange to divide up to 4 digits by 1 digit.

$$432 \div 4$$

CONCRETE

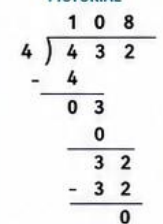
H	T	O
4	3	2
4	3	2

3 tens cannot be shared equally between 4 groups.

EXCHANGE 3 TENS FOR 30 ONES.

H	T	O
4	3	2
4	3	2

PICTORIAL



- ★ Digits are not "carried". Their place value is being exchanged.

YEAR 6

LONG DIVISION & SELECTION

UNDERSTANDING

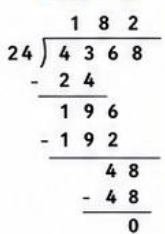
Confidently select the most efficient strategy and interpret remainders in context.

$$4,368 \div 24$$

REASONING FIRST

$24 \times 100 = 2,400$
 $24 \times 80 = 1,920$
 $2,400 + 1,920 = 4,320$
 48 remaining
 $24 \times 2 = 48$
 So, $100 + 80 + 2 = 182$
 $4,368 \div 24 = 182$

LONG DIVISION



- ★ Context determines if and how we use the remainder.

THE TWO STRUCTURES OF DIVISION

1 SHARING - PARTITIVE DIVISION

$$12 \div 3$$

12 shared between 3 groups.
How many are in each group?



4 in each

2 GROUPING - QUOTITIVE DIVISION

$$12 \div 3$$

12 arranged into groups of 3.
How many groups are there?



SAME CALCULATION. DIFFERENT STRUCTURE.

MULTIPLICATION ↔ DIVISION

$$7 \times 6 = 42$$

$$6 \times 7 = 42$$

$$42 \div 7 = 6$$

$$420 \div 7 = 60$$

$$4,200 \div 7 = 600$$

KNOWN MULTIPLICATION
FACTS DRIVE EFFICIENT DIVISION.

WHAT DOES THE REMAINDER MEAN?

CONTEXT 1 - HOW MANY GROUPS?

17 children travel in cars that hold 4 children.



$$17 \div 4 = 4 \text{ r } 1$$

But the answer is: 5 CARS

CONTEXT 2 - HOW MANY IN EACH?

17 sweets shared between 4 children.

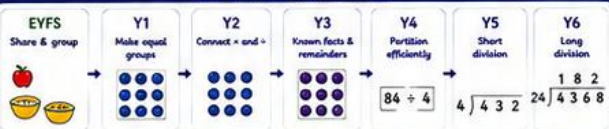


$$17 \div 4 = 4 \text{ r } 1$$

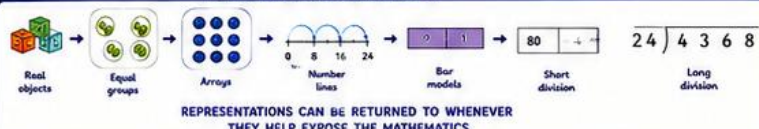
4 each with 1 left over.

THE CONTEXT DETERMINES
WHAT WE DO WITH THE REMAINDER.

THE DIVISION JOURNEY



REPRESENTATION JOURNEY



LANGUAGE MATTERS

USE

- ✓ divide / division
- ✓ share equally
- ✓ group
- ✓ each
- ✓ dividend
- ✓ divisor
- ✓ quotient
- ✓ remainder
- ✓ exchange

AVOID

- ✗ "Bus stop method" as the mathematical explanation.
- ✗ "Move the number over."



COMMON MISCONCEPTIONS

- ✗ Sharing and grouping are the same.
- ✗ Division is always sharing.
- ✗ Weak multiplication facts don't affect division.
- ✗ +10 means remove a zero.
- ✗ Remainders are always written as h...
- ✗ The remainder can be ignored.
- ✗ Digits are "carried" in short division.
- ✗ Formal division is always the most efficient strategy.



OUR END POINT

By Year 6, children should be able to:

- ★ UNDERSTAND sharing and grouping structures
- ★ RELATE division to multiplication
- ★ RETRIEVE facts efficiently
- ★ PARTITION flexibly
- ★ CALCULATE accurately
- ★ INTERPRET remainders in context
- ★ SELECT an efficient strategy
- ★ APPLY division independently

THE GOAL ISN'T JUST "CAN THEY DO SHORT OR LONG DIVISION?"

It is whether they understand the multiplicative structure and can choose, use and explain an efficient strategy.

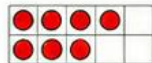
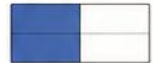
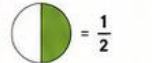
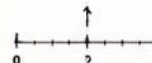
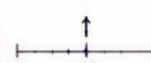
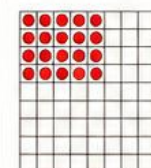
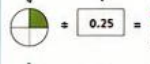


SHARE → GROUP → RELATE → CALCULATE → SELECT
Secure multiplication knowledge makes division increasingly efficient and flexible.

÷ DECIMALS & PERCENTAGES ÷

From part-whole understanding to connected fractional and proportional thinking

Decimal and percentage understanding grows from secure knowledge of fractions, place value and division. Children learn that fractions, decimals and percentages can represent the same quantity in different ways and use these connections to compare, calculate and solve increasingly complex problems.

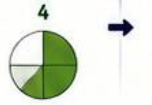
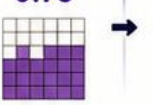
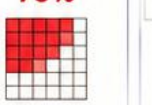
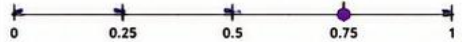
PART	PLACE	REPRESENT	CONNECT	EQUIVALENCE	CALCULATE	APPLY										
EYFS FOUNDATIONS FOUNDATIONS FOR LATER LEARNING • whole and part • equal and unequal sharing • half of an object or quantity • number composition • ten as a complete unit REPRESENTATIONS Objects • Counters Ten frames • Sharing Shapes   10 ONES MAKE A COMPLETE TEN Secure part-whole and place-value understanding provides the foundation for later decimal and percentage learning.	YEAR 1 PARTS OF A WHOLE UNDERSTANDING • halves and quarters • equal sharing • sharing quantities equally • place-value structure REPRESENTATIONS Counters • Shapes Ten frames • Sharing  2 out of 4 equal parts  Share 6 between 2  10 ones = 1 ten We build understanding of parts of a whole and place value.	YEAR 2 FRACTION CONNECTIONS UNDERSTANDING • half, quarter, three-quarters • thirds • equivalence (e.g. $\frac{1}{2} = \frac{2}{4}$) • recognising equal parts REPRESENTATIONS Fraction shapes • Bar models Number lines • Equal groups  $\frac{1}{2} = \frac{2}{4}$  $\frac{1}{2} = \frac{2}{4}$  FRACTIONS WILL BECOME ONE WAY OF UNDERSTANDING DECIMALS AND PERCENTAGES.	YEAR 3 TENTHS UNDERSTANDING • tenths as equal parts • count in tenths • connect tenths to place value • write decimals REPRESENTATIONS Tenths grids • Number lines Place-value charts  $\frac{3}{10}$ <table border="1" data-bbox="591 743 739 826"><tr><th>Ones</th><th>Tenths</th></tr><tr><td>0</td><td>3</td></tr></table> 0.3 = 3 tenths  THE DECIMAL POINT MARKS THE PLACE-VALUE BOUNDARY.	Ones	Tenths	0	3	YEAR 4 TENTHS, HUNDREDTHS & EQUIVALENCE UNDERSTANDING • tenths and hundredths • decimal notation • divide by 10 and 100 • decimal number lines • fraction-decimal equivalence • compare decimals REPRESENTATIONS Hundred squares • Place-value charts • Number lines  $\frac{25}{100} = 0.25$ <table border="1" data-bbox="783 878 932 961"><tr><th>Ones</th><th>Tenths</th><th>Hundredths</th></tr><tr><td>0</td><td>2</td><td>5</td></tr></table> 0.25 $\times 10 / \div 10$ DOES NOT MEAN "MOVE THE DECIMAL POINT". The digits change place because their value becomes 10 times greater or smaller.	Ones	Tenths	Hundredths	0	2	5	YEAR 5 CONNECTING FDP UNDERSTANDING • fraction-decimal-percentage equivalence • convert FDP • compare FDP • thousandths • round decimals • calculate with decimals • percentage of amounts FRACTION - DECIMAL - PERCENTAGE  $\frac{1}{4} = 0.25 = 25\%$  $\frac{2}{10} = 0.2 = 20\%$  $\frac{25}{100} = 0.25 = 25\%$  $\frac{1}{10} = 0.1 = 10\%$ PERCENT MEANS "OUT OF 100".	YEAR 6 FLEXIBLE FDP THINKING UNDERSTANDING • convert FDP flexibly • compare values • calculate percentages of amounts • use decimal $\times$ and $\div$ • ratio and proportion • multi-step problems EXAMPLE 35% of £240 METHOD 1 - USING PERCENTAGE FACTS 10% = £24 30% = £72 5% = £12 35% = £84 METHOD 2 - USING DECIMALS 35% = 0.35 $0.35 \times 240 = £84$ WHICH REPRESENTATION MAKES THE CALCULATION EASIER? 
Ones	Tenths															
0	3															
Ones	Tenths	Hundredths														
0	2	5														

SAME VALUE - THREE REPRESENTATIONS

FRACTION: $\frac{3}{4}$

DECIMAL: 0.75

PERCENTAGE: 75%

THE VALUE HASN'T CHANGED - ONLY THE REPRESENTATION HAS.

PLACE VALUE BEYOND THE DECIMAL POINT

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		4	3	7	5

4.375

10 tenths = 1 one

10 hundredths = 1 tenth

10 thousandths = 1 hundredth

DECIMAL PLACE VALUE FOLLOWS THE SAME BASE-10 STRUCTURE.

BUILDING PERCENTAGES FROM KNOWN FACTS

50% = $\frac{1}{2}$

25% = $\frac{1}{4}$

75% = $\frac{3}{4}$

10% = $\frac{1}{10}$

1% = $\frac{1}{100}$

5% = half of 10%

20% = double 10%

15% = 10% + 5%

35% = 30% + 5%

PERCENTAGE CALCULATION IS BUILT FROM RELATIONSHIPS, NOT TRICKS.

THE FDP JOURNEY

EYFS: Whole & part

Y1: Equal parts

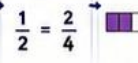
Y2: Fraction relationships

Y3: Tenths

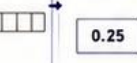
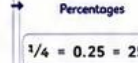
Y4: Tenths & hundredths

Y5: Fractions → Decimals → Percentages

Y6: Convert • Calculate • Apply

$\frac{1}{2} = \frac{2}{4}$

0.25

$\frac{1}{4} = 0.25 = 25\%$

REPRESENTATION JOURNEY

Objects → Fraction shapes → Bar models → Ten frames → Fraction strips → Number lines → Hundred squares → Place-value counters → FDP notation










0.25

REPRESENTATIONS REMAIN AVAILABLE WHENEVER THEY HELP CHILDREN SEE THE RELATIONSHIP.

LANGUAGE MATTERS

USE

- whole / part
- equal parts
- tenth / hundredth / thousandth
- decimal point
- equivalent
- percent / percentage
- out of 100
- place value

AVOID AS THE EXPLANATION

- "Move the decimal point."
- "Add a zero."
- "Percent just means put it over 100."

EXPLAIN THROUGH PLACE VALUE AND EQUIVALENCE.



COMMON MISCONCEPTIONS

- Thinking 0.35 is greater than 0.4 because $35 > 4$
- Reading 0.6 as "zero point six" without understanding six tenths
- Believing more decimal places means a larger number
- Treating fractions, decimals and percentages as separate topics
- Moving the decimal point rather than understanding place-value change
- Thinking percentages must be less than 100%
- Applying memorised percentage tricks without understanding



OUR END POINT

By Year 6 children should be able to:

- UNDERSTAND decimal place value
- REPRESENT fractional quantities
- CONNECT fractions, decimals and percentages
- CONVERT flexibly
- CALCULATE accurately
- SELECT useful representations and strategies
- APPLY FDP knowledge independently

THE GOAL ISN'T THREE SEPARATE METHODS.

Children understand fractions, decimals and percentages as connected representations of quantity.



REPRESENT → CONNECT → EQUIVALENCE → CALCULATE → APPLY

Same quantity. Different representation. Connected mathematics.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.



OUR REPRESENTATION TOOLKIT



Choosing the right representation to make mathematical structure visible

At St Stephen's, manipulatives and representations are mathematical tools for all learners. They are selected deliberately to expose structure, support connections and enable pupils to explain their thinking. Children move flexibly between representations as their understanding develops.

CHOOSE

REPRESENT

CONNECT

EXPLAIN

GENERALISE

1 TEN FRAMES

BEST FOR

Number sense • Subitising
Composition • Number bonds
Bridging through 10



$$8 = 5 + 3$$

$$8 + 5 \rightarrow \text{make } 10 \rightarrow 10 + 3$$

EXPOSES: the structure of 5 and 10 rather than relying on counting by ones.

2 REKENREK

BEST FOR

Subitising • Number relationships
Bonds • Doubles • Near doubles
Addition & subtraction



$$7 \text{ as } 5 + 2$$

$$7 + 6$$

$$\rightarrow \text{double } 6 + 1$$

$$\rightarrow 13$$

EXPOSES: 5-structure • 10-structure • relationships between numbers.

3 COUNTERS

BEST FOR

Counting • Composition • Equal groups
Arrays • Sharing • Fractions • Ratio

$$3 \text{ red} + 2 \text{ blue} = 5$$

$$3 + 2 = 5$$



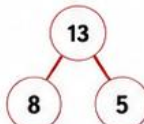
3 groups of 2

COUNTERS ARE SIMPLE – BUT MATHEMATICALLY POWERFUL.

4 PART-WHOLE MODELS

BEST FOR

Composition • Addition • Subtraction
Missing parts • Fractions



$$8 + 5 = 13$$

$$13 - 8 = 5$$

$$13 - 5 = 8$$

EXPOSES: the relationship between parts and the whole.

5 BASE 10

BEST FOR

Place value • Addition • Subtraction
Exchange • $\times/\div$ by powers of 10



$$134 = 1 \text{ hundred} + 3 \text{ tens} + 4 \text{ ones}$$

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

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

EXPOSES: the base-10 structure of our number system.

6 PLACE-VALUE COUNTERS

BEST FOR

Place value • Exchange
Four operations • Decimals



$$123.2$$

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

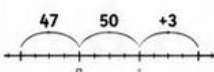
$$10 \text{ tenths} \leftrightarrow 1 \text{ one}$$

EXPOSES: the value of digits and how exchange works within calculation.

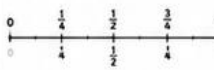
7 NUMBER LINES

BEST FOR

Magnitude • Counting • Addition
Subtraction • Difference
Fractions • Decimals



$$53 - 47 = 6$$



EXPOSES: number as magnitude and the distance between values.

8 ARRAYS

BEST FOR

Multiplication • Division • Commutativity • Factors • Area



$$3 \times 4 = 12$$

$$4 \times 3 = 12$$

$$12 \div 3 = 4 \quad 12 \div 4 = 3$$

EXPOSES: multiplicative relationships and fact families.

9 BAR MODELS

BEST FOR

Additive structures • Multiplicative structures • Fractions • Ratio
Comparison • Multi-step problems

Whole = 35



$$12 + ? = 35$$



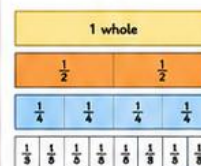
$$4 \times 6 = 24$$

THE BAR MODEL REPRESENTS THE RELATIONSHIP – IT DOESN'T SOLVE THE PROBLEM FOR THE CHILD.

10 FRACTION BARS / STRIPS

BEST FOR

Equal parts • Equivalence • Comparison
Addition/subtraction of fractions
FDP



$$1/2 = 2/4 = 4/8$$

EXPOSES: equivalent quantities and relative size.

11 HUNDRED SQUARES / GRIDS

BEST FOR

Place value • Number patterns
Fractions • Decimals • Percentages



$$25/100 = 0.25 = 25\%$$

EXPOSES: connections between fraction, decimal and percentage.

12 CUBES & PRACTICAL OBJECTS

BEST FOR

Early number • Composition
Pattern • Equal groups
Measure • Volume



$$3 \times 4 = 12$$



$$3 \times 4 \times 5 = 60 \text{ cubic units}$$

EXPOSES: structure in 2D and 3D, early to advanced.

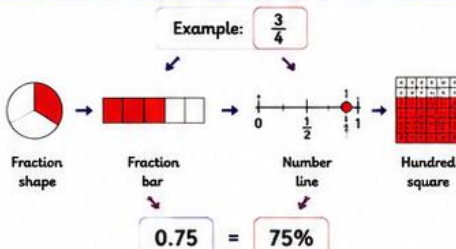
WHICH REPRESENTATION?

Instead of "What resource does Year 3 use?" we ask:

WHAT MATHEMATICAL STRUCTURE DO I WANT CHILDREN TO SEE?

- ✓ Number composition? → Ten frame / Rekenrek / Part-whole
- ✓ Place value? → Base 10 / Place-value counters
- ✓ Difference? → Number line / Bar model
- ✓ Multiplicative structure? → Equal groups / Array / Bar model
- ✓ Fraction equivalence? → Fraction strips / Number line
- ✓ FDP relationship? → Hundred square / Bar / Number line

ONE IDEA – MULTIPLE REPRESENTATIONS

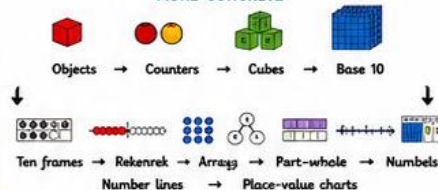


$$0.75 = 75\%$$

THE VALUE HASN'T CHANGED – ONLY THE REPRESENTATION HAS. CONNECTING REPRESENTATIONS BUILDS CONNECTED KNOWLEDGE.

REPRESENTATIONS ACROSS SCHOOL

MORE CONCRETE



MORE ABSTRACT

$$123 + 45 = 168$$

Symbols → Expressions → Equations

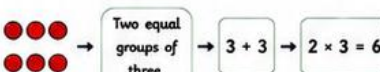
★ THIS IS NOT A ONE-WAY JOURNEY.

A Year 6 pupil may need concrete resources. An EYFS pupil can reason abstractly about a relationship they understand. ★

REPRESENTATION + LANGUAGE

Don't just put the resource on the table. Teachers explicitly connect:

ACTION → IMAGE → LANGUAGE → SYMBOL



This makes the representation meaningful.

REPRESENTATION PITFALLS – AVOID:

- ✗ Using manipulatives as an activity rather than a teaching tool
- ✗ Giving children lots of representations without connecting them
- ✗ Removing resources because children are "too old"
- ✗ Assuming concrete = lower ability
- ✗ Using a representation that hides rather than exposes the structure
- ✗ Teaching children to copy a bar model without understanding it
- ✗ Changing representations too quickly



OUR NON-NEGOTIABLE

THE REPRESENTATION IS CHOSEN FOR THE MATHEMATICS – NOT THE YEAR GROUP.

Children should increasingly be able to ask themselves:

- ✓ What do I need to understand?
- ✓ What do I already know?
- ✓ Which representation could help me see the relationship?
- ✓ Can I connect it to another representation?
- ✓ Can I now explain it without the representation?

SEE IT → REPRESENT IT → CONNECT IT → EXPLAIN IT → USE IT
Representations make mathematical structure visible.



EVERY CHILD.



EVERY CHANCE.



EVERY DAY.

★ FROM REPRESENTATION TO INDEPENDENCE ★

Understanding • Flexibility • Efficiency • Confidence

Our goal is for every child to develop secure conceptual understanding and become an increasingly independent mathematician. Representations, manipulatives, mental strategies and written methods all support this journey. Progress is seen when pupils can make connections, explain their thinking and independently select an efficient approach.

UNDERSTAND

REPRESENT

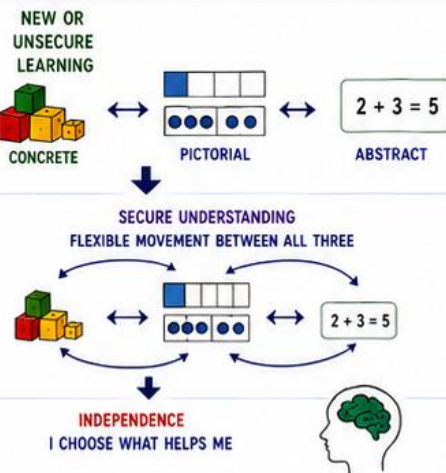
CONNECT

CALCULATE

SELECT

APPLY

REPRESENTATION IS A TOOL – NOT A DESTINATION



PROGRESS DOES NOT MEAN REMOVING THE MANIPULATIVE.
Progress means needing less external direction and making increasingly purposeful mathematical choices.

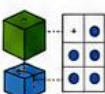
WHAT INDEPENDENCE LOOKS LIKE

UNDERSTAND



I know what the mathematics means.

REPRESENT



I can show the mathematics in different ways.

CONNECT



I can connect this to what I already know.

CALCULATE



I can calculate accurately and efficiently.

SELECT



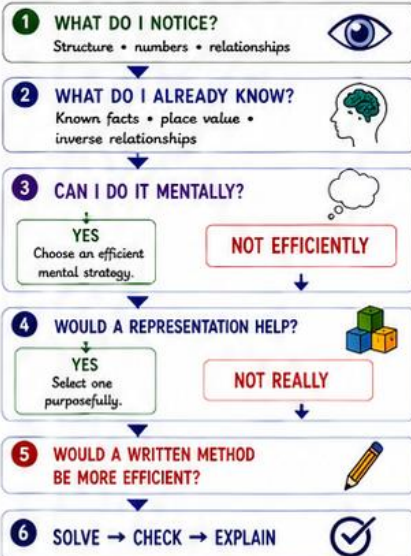
I can choose an appropriate strategy or representation.

APPLY



I can use my knowledge in unfamiliar contexts.

THE CALCULATION DECISION



SAME OPERATION – DIFFERENT STRATEGY

$$+ 3,999 + 246$$

MENTAL:

$$4,000 + 246 - 1 = 4,246 - 1 = 4,245$$

$$- 5,002 - 2,998$$

DIFFERENCE:
Count up from 2,998

$$2,998 \xrightarrow{+2} 3,000 \xrightarrow{+1} 3,001 \xrightarrow{+1} 3,002$$

$$= 2 + 1 + 1 = 4$$

$$\times 25 \times 16$$

KNOTTIONED STRATEGY:

Th	H	T	O
4	3	6	8

$$25 \times 100 = 2,400$$

$$24 \times 80 = 1,920$$

$$\text{So } 2 \times 48 = 96$$

$$\text{Total} = 182 \rightarrow 4,368 + 24 = 4,392$$

★ EFFICIENCY DEPENDS ON THE NUMBERS – NOT JUST THE OPERATION.

WHEN IS A FORMAL METHOD APPROPRIATE?

- ✓ **USE IT WHEN...**
- numbers make mental calculation inefficient
 - it provides an accurate and efficient route
 - conceptual understanding is secure
 - the pupil understands the place value involved
 - the pupil can explain what each stage represents
- ✗ **DON'T USE IT JUST BECAUSE...**
- it is the method associated with the year group
 - it looks more sophisticated
 - it has been practised most recently
 - "that's how we always do it"
- FORMAL ≠ AUTOMATICALLY EFFICIENT

WHAT DOES FLUENCY LOOK LIKE?

- ACCURATE**
I get reliable answers.
 - EFFICIENT**
I don't use unnecessary steps.
 - FLEXIBLE**
I can adapt my approach.
 - CONNECTED**
I use what I already know.
- ✗ FASTEST CHILD WINS

ADAPTATION WITHOUT LOWERING AMBITION

THE MATHEMATICAL GOAL STAYS AMBITIOUS.

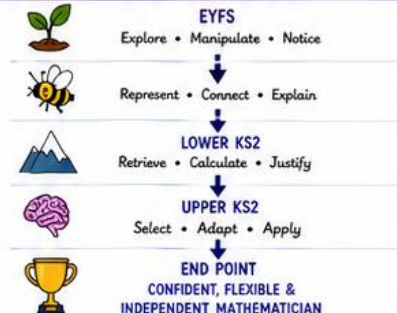


SCAFFOLD THE ACCESS – NOT THE THINKING.

OUR CALCULATION NON-NEGOTIABLES

- ✓ Understanding before procedure
- ✓ Mathematical structure made visible
- ✓ Representations selected purposefully
- ✓ Precise mathematical language
- ✓ Known facts explicitly connected to new learning
- ✓ Mental calculation remains important
- ✓ Formal methods are taught conceptually
- ✓ Exchange is explained through place value
- ✓ Children explain and justify strategies
- ✓ Children increasingly select methods independently
- ✓ Manipulatives remain available throughout school
- ✓ Efficiency, not formality, determines the best strategy

FROM EYFS → YEAR 6



THE CHILD'S VOICE



OUR MATHEMATICAL PROMISE

♥ **EVERY CHILD CAN DEVELOP MATHEMATICAL INDEPENDENCE**

We teach for understanding, provide representations that expose structure and give pupils the knowledge, language and confidence to make increasingly independent mathematical decisions.

UNDERSTAND → REPRESENT → CALCULATE → SELECT → APPLY



THE GOAL IS NOT A METHOD. THE GOAL IS UNDERSTANDING.

Secure understanding • Connected representations • Efficient calculation • Independent mathematicians

♥ EVERY CHILD. ★ EVERY CHANCE. ÷ EVERY DAY.