

Maths Workshop

Year 3

Aims of the session

- To explain the concrete, pictorial and abstract approaches in maths
- What is a mastery approach
- To discuss the written calculation policy and how maths is taught at Wood Fold.
- Suggestions and ideas to support your child at home.

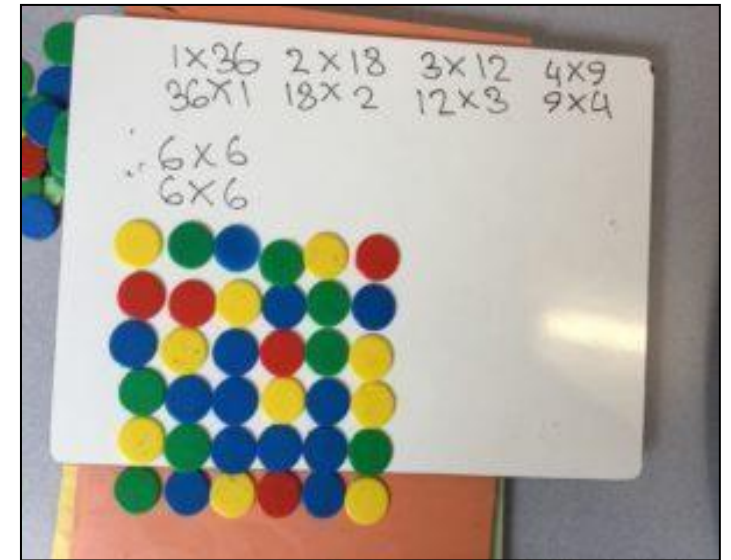
CPA Approach: Concrete, Pictorial and abstract

- Concrete – Doing the maths

E.g. money, counters.



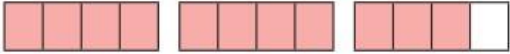
Hundreds	Tens	Ones
<div>100 100 100</div> <div>3</div>	<div>10 10 10</div> <div>10 10</div> <div>5</div>	<div>1 1 1</div> <div>1 1 1</div> <div>1</div>
<div>100 100 100</div> <div>4</div>	<div>10 10 10</div> <div>10 10 10</div> <div>10</div> <div>7</div>	<div>1 1 1</div> <div>1 1 1</div>




- **Pictorial: Seeing the maths**
- Making connections between the concrete and the pictorial representations and the pictorial and the abstract. E.g. part whole models, bar models, ten frames.

1 What mixed number is shown by each bar model?

a)



b)



1 Complete the calculations.
Use the place value charts to help you.

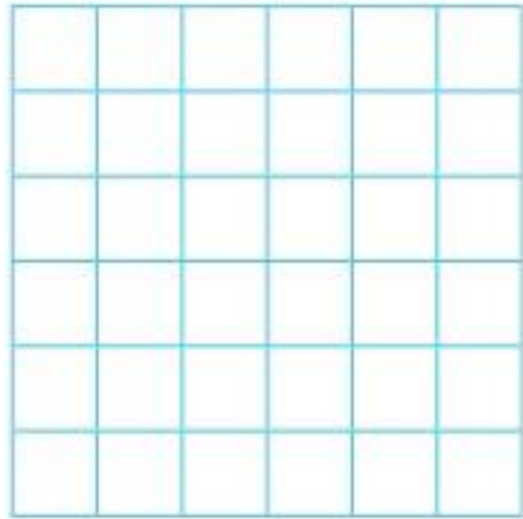
a) $3,117 + 2,542 =$

Th	H	T	O
<div style="display: flex; justify-content: space-around;"> <div>1,000</div> <div>1,000</div> </div> <div>1,000</div>	100	10	<div style="display: grid; grid-template-columns: repeat(2, 1fr); gap: 2px;"> <div>1</div><div>1</div> <div>1</div><div>1</div> <div>1</div><div>1</div> <div>1</div> </div>
<div style="display: flex; justify-content: space-around;"> <div>1,000</div> <div>1,000</div> </div>	<div style="display: grid; grid-template-columns: repeat(2, 1fr); gap: 2px;"> <div>100</div><div>100</div> <div>100</div><div>100</div> <div>100</div> </div>	<div style="display: grid; grid-template-columns: repeat(2, 1fr); gap: 2px;"> <div>10</div><div>10</div> <div>10</div><div>10</div> </div>	<div style="display: grid; grid-template-columns: repeat(2, 1fr); gap: 2px;"> <div>1</div><div>1</div> </div>

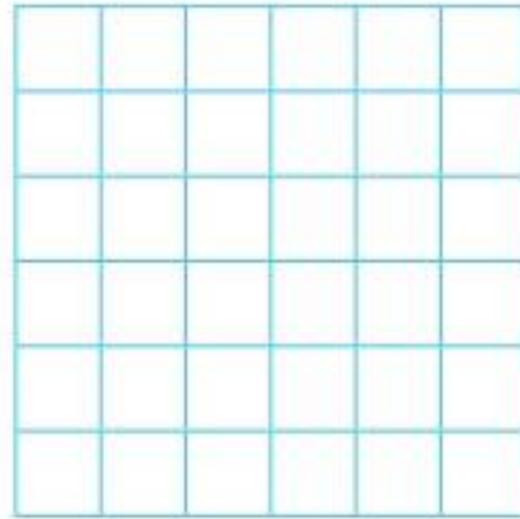
+

- **Abstract:** The final stage is for children to **understand abstract mathematical concepts, signs and notation**. When a child demonstrates with concrete models and pictorial representations that they have grasped a concept, we can be confident that they are ready to explore the abstract. At this stage, pupils are expected to have a depth of knowledge, which can now be applied without the need for physical or visual support strategies.

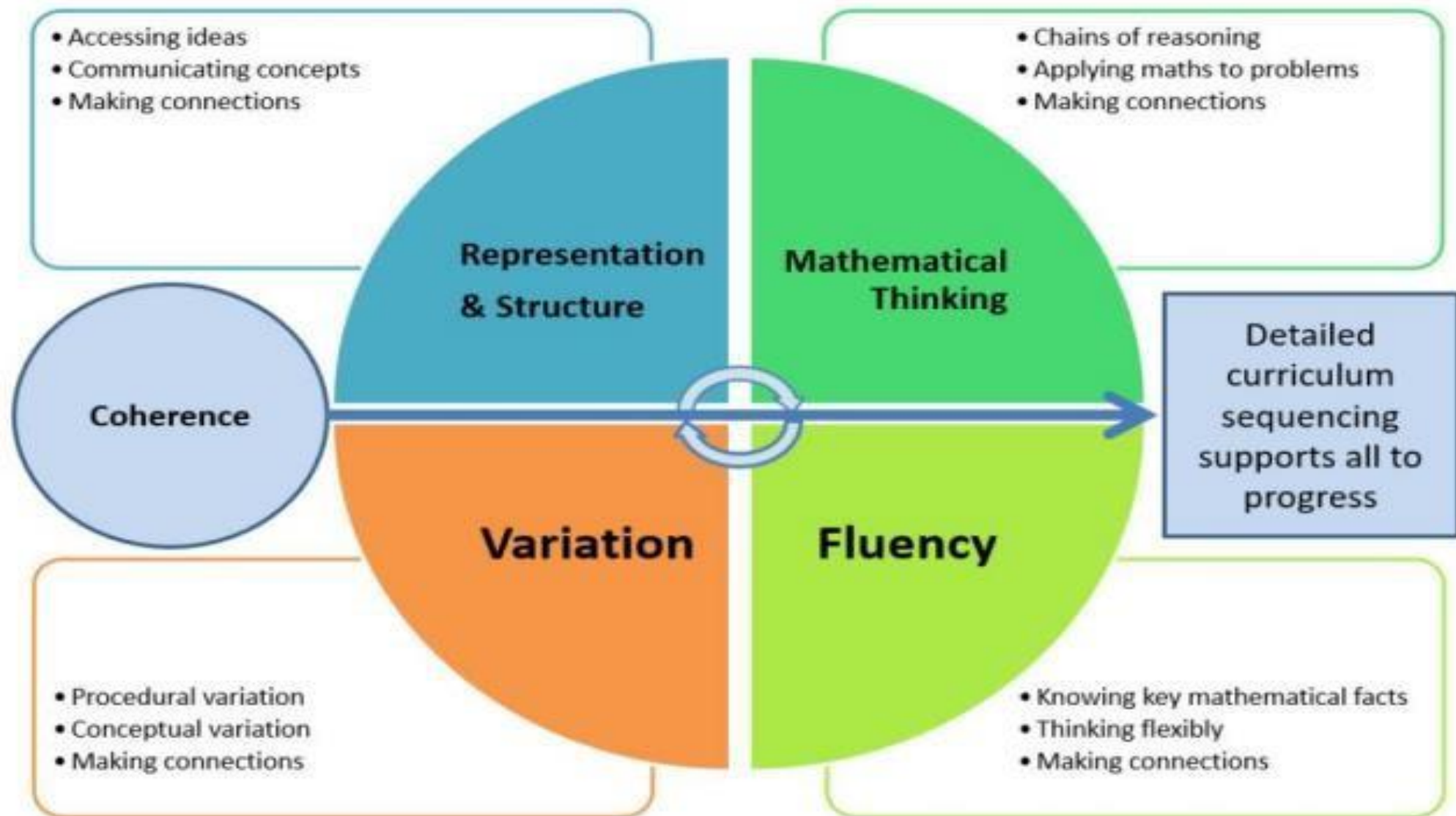
e) 3×240



f) 7×131



Teaching for Mastery




The Mastery Approach

- Mathematic teaching for mastery assumes **everyone can learn and enjoy mathematics.**
- Mathematical learning behaviours are developed such that pupils focus and engage as learners who reason and seek to **make connections.**
- Lesson design links **to prior learning** to ensure all can access the new learning and identifies **carefully sequenced steps** in progression to build secure understanding.
- **Practice and revisiting previous learning** is a vital part of our maths lessons.

- Pupils are taught through whole-class interactive teaching enabling all to master the concepts.
- In a typical lesson, the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion, enabling pupils to think, reason and apply their knowledge to solve problems.
- Use of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively.
- Key number facts are learnt to automaticity, and other key mathematical facts are learned deeply and practised regularly, to avoid cognitive overload in working memory and enable pupils to focus on new learning.

We use White Rose resources across the school as the main resources to deliver lessons


1 Complete the sentences.

a) 

There are equal groups of

+ + + + + =

× =

b) 

There are equal groups of


= + + +

= ×

9 Dora and Amir are trying to convert 1.05 metres into millimetres.

Dora: You can multiply 1.05 by 100 to convert it into centimetres, then multiply the product by 10 to convert it into millimetres.

Amir: You can just multiply 1.05 by 1,000!

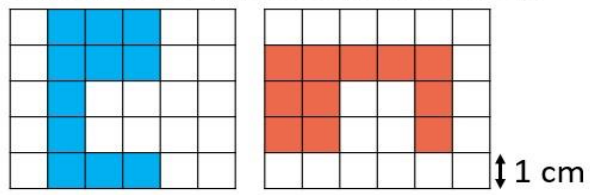


Flashback 4 Year 4 | Week 1 | Day 3

1) $7 \times 12 = 7 \times \square \times 2 = \square \times 2$

2) $12 \times 8 \bigcirc 8 \times 10 + 8 \times 2$

3) Which shape has the smallest area?



4) $\text{LXIII} \xrightarrow{+10} \square$

White Rose Maths

Addition

- Vocabulary

Add, addition, more,
plus, increase sum, total,
altogether, how many
more to make...?

addend

The diagram illustrates the components of an addition equation. It shows the equation $5 + 3 = 8$ in orange. Above the number 5 is the word "Addend" in blue, with a black arrow pointing down to the 5. Above the number 3 is the word "Addend" in blue, with a black arrow pointing down to the 3. Above the number 8 is the word "Sum" in blue, with a black arrow pointing down to the 8. The plus sign and equals sign are in black.

Addend		Addend		Sum
↑		↑		↑
5	+	3	=	8

Y3 Objectives

Adding 2 and 3-digit numbers

Finding change

Duration of time

Finding the perimeter

Adding fractions

Adding mass and capacity

Partitioning with the Part-Whole Model

Addition in Year 3

Column Addition

Add numbers up to 3 digits.





Use of compact column method.

Add the ones first, carry numbers underneath the bottom line, remind pupils of actual value eg, 3 tens add 7 tens.





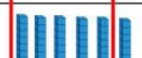
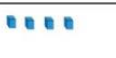
236

+ 73

309

Tens	Ones
	
	

$$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$$

Hundreds	Tens	Ones
		
		

$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$$

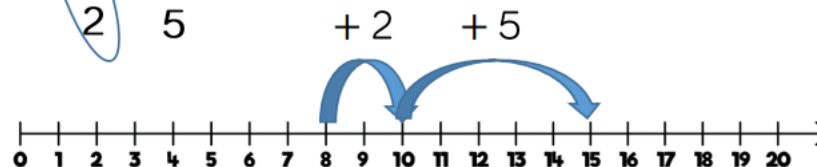
Number lines

$$5 + 3 = 8$$

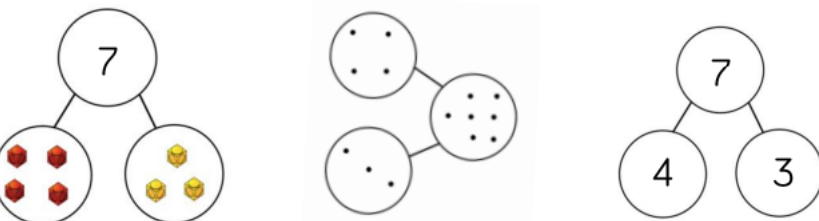
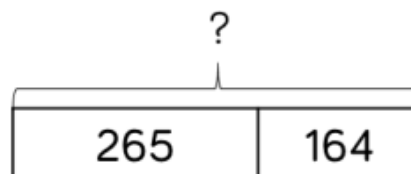


$$8 + 7 = 15$$

$$\begin{array}{l} 8 \\ + 7 \\ \hline 15 \end{array}$$



Bar Model

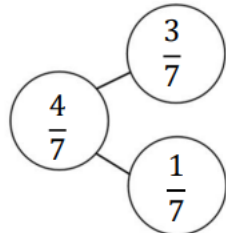
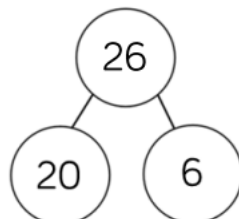
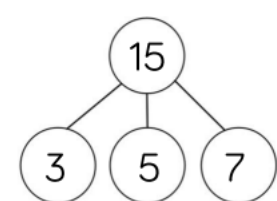


$$7 = 4 + 3$$

$$7 = 3 + 4$$

$$7 - 3 = 4$$

$$7 - 4 = 3$$



Subtraction

- Vocabulary
- Subtract, subtraction, take (away), minus, decrease, how many are left/leftover? Difference, how many more/fewer is... than...? Subtrahend, minuend,

The diagram illustrates the components of the subtraction equation $6 - 2 = 4$. Each part of the equation is labeled with a term and an arrow pointing to it:

- 6**: Minuend (indicated by a teal arrow)
- : Minus Sign (indicated by an orange arrow)
- 2**: Subtrahend (indicated by a teal arrow)
- =**: Equal Sign (indicated by an orange arrow)
- 4**: Difference (indicated by a teal arrow)

Y3 Objectives

Subtracting 2 and 3-digit numbers

Finding change

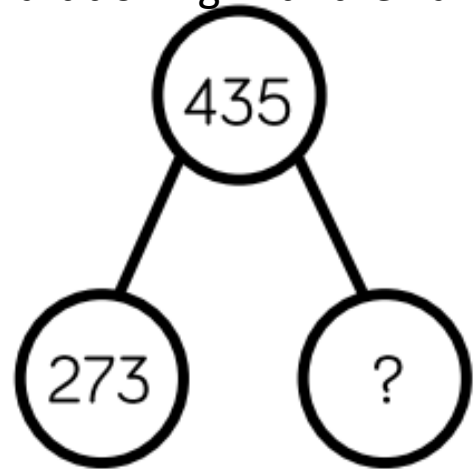
Finding the perimeter

Subtracting fractions

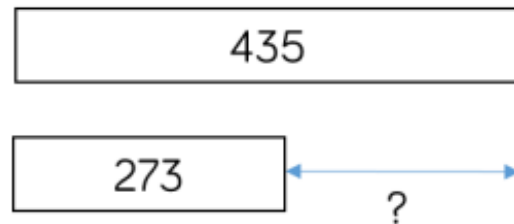
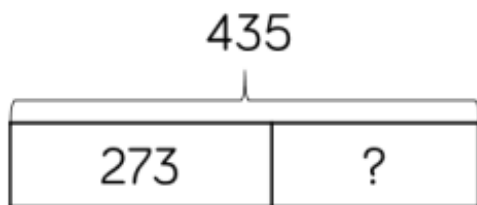
Subtracting mass and capacity

Subtraction in Year 3

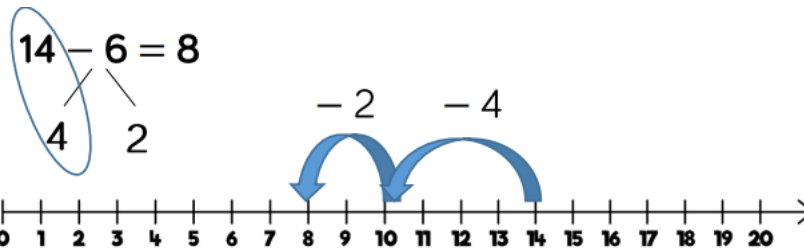
Partitioning with the Part-Whole Model



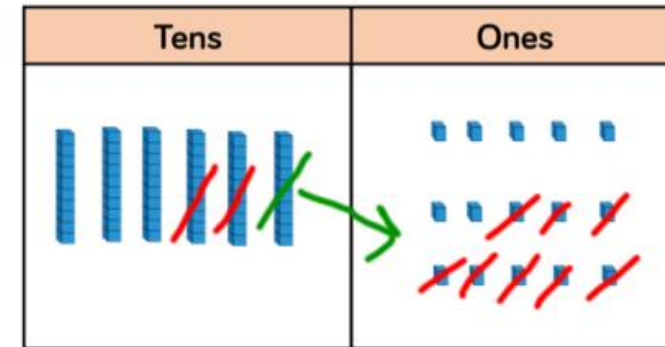
Bar Model



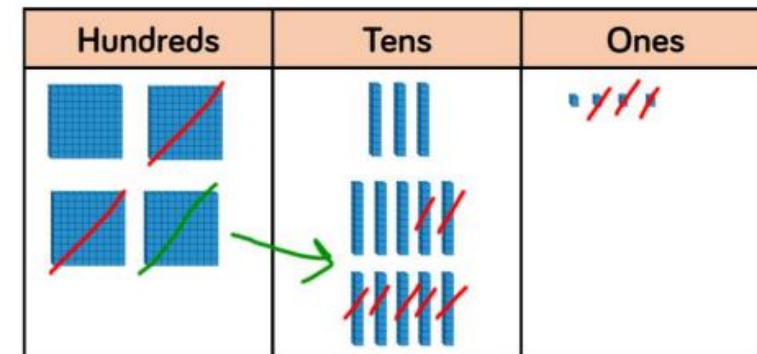
Number lines



Column Subtraction



$$\begin{array}{r} 5 1 \\ 65 \\ - 28 \\ \hline 37 \end{array}$$



$$\begin{array}{r} 3 1 \\ 435 \\ - 273 \\ \hline 262 \end{array}$$

Multiplication

- Vocabulary
- Lots of, groups of, multiply, multiplication, multiplied by, multiple of, product, factors

Factors

The diagram illustrates the components of a multiplication equation: $8 \times 11 = 88$. The number 8 is red and labeled 'multiplicand' with a red arrow. The number 11 is blue and labeled 'multiplier' with a blue arrow. The equals sign is black. The result 88 is green and labeled 'product' with a green arrow.

$$\text{multiplicand} \quad 8 \times 11 \quad \text{multiplier} \quad = \quad \text{product} \quad 88$$

Y3 Objectives

Focus:

3, 4 and 8 Times tables

Finding Perimeter

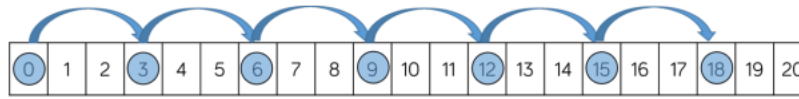
Multiply 2-digit by 1-digit

Mass and Capacity

Statistics

Multiplication in Year 3

Number tracks

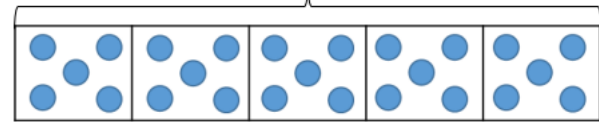


$$6 \times 3 = 18$$

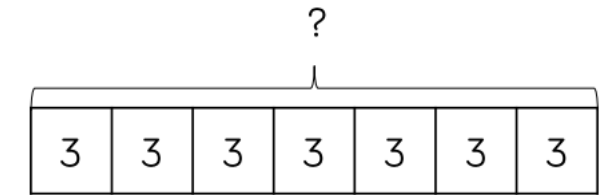
$$3 \times 6 = 18$$

$$\begin{array}{c} 2 \quad \times \quad 4 \quad = \quad 8 \\ \swarrow \quad \searrow \quad \downarrow \\ \text{Factors} \quad \text{Product} \end{array}$$

Bar Model



$$5 \times 5 = 25$$



$$3 \times 7 = 21$$

$$7 \times 3 = 21$$

Column Addition

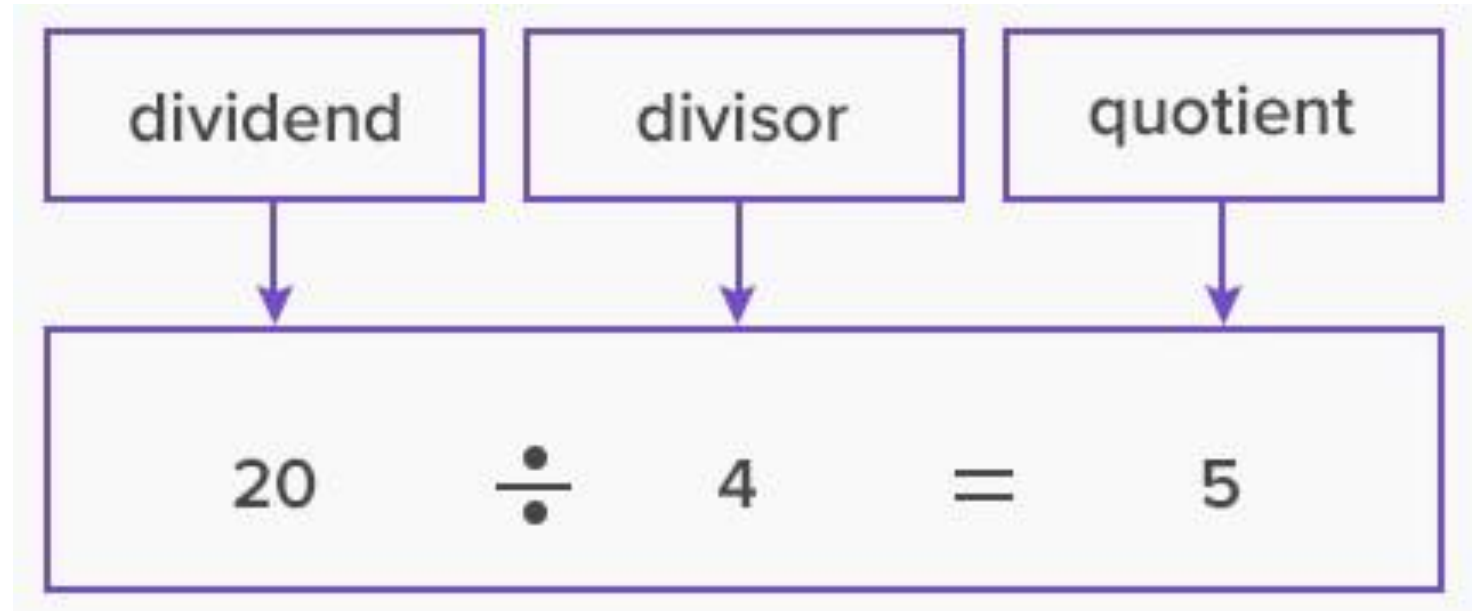
Hundreds	Tens	Ones
		...
		...
		...

A green box highlights the three dots in the Ones column. A green arrow points from the box to the Tens column, indicating a carry of 1.

$$\begin{array}{r} 24 \\ \times 3 \\ \hline 72 \\ \hline 1 \end{array}$$

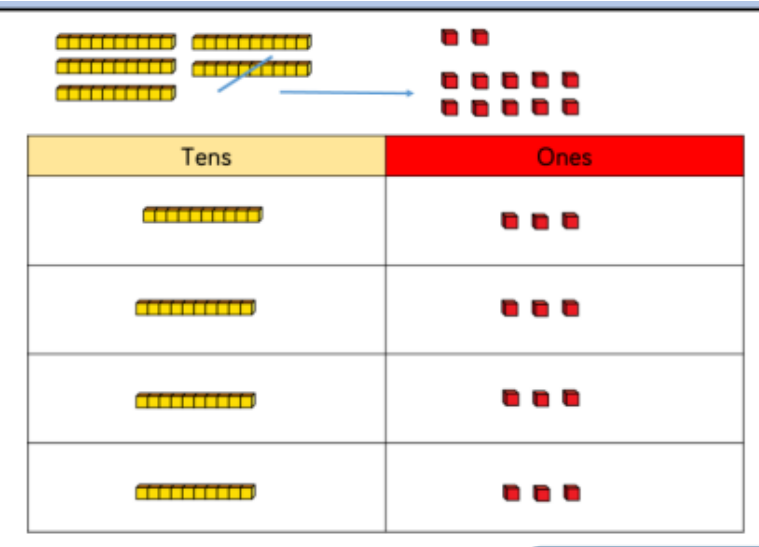
Division

- Vocabulary
- Halve, share, share equally, group in..., groups of, divide, division, dividend, divided by, divisible by, inverse, quotient

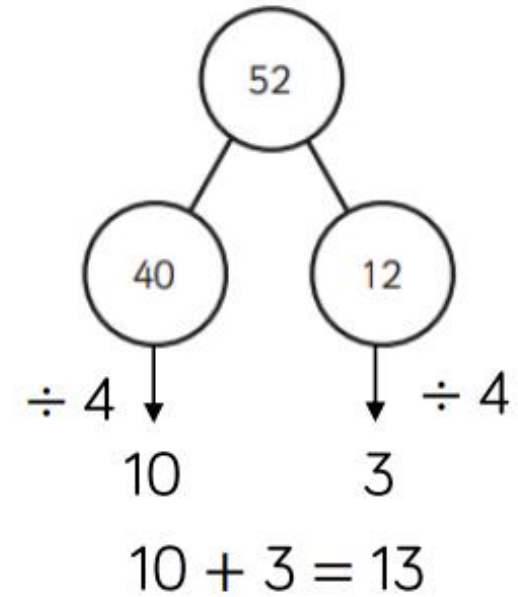


Division in Year 3

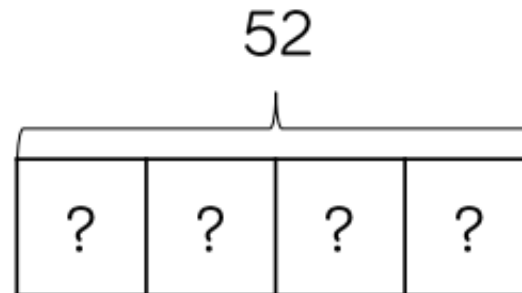
Sharing



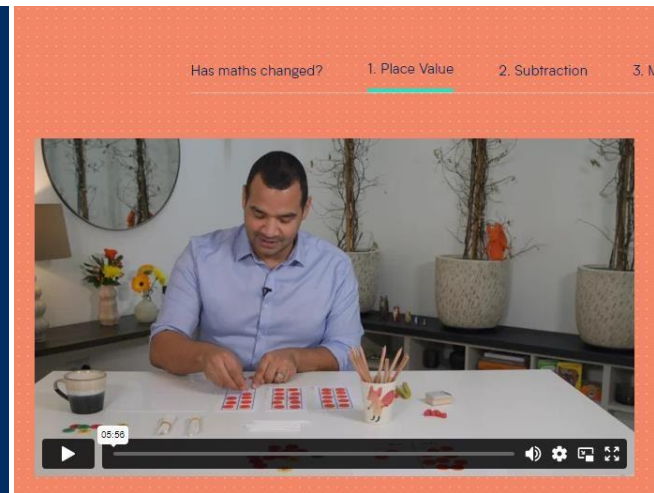
Partitioning with multiples



Bar Model



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can develop their mathematical skills to the full.

'Mathematics is not about numbers, equations, computations, or the like, but about understanding.' William Paul Thurston.

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Files to Download

Addition and Subtraction Calculation Policy

Maths Curriculum Overview

Maths Policy

Multiplication and Division Calculation Policy

White Rose Maths Pathways

Written Strategies

Community

Context for Learning

Educational Trips

Forest School

Long Term Plans

SEND

Subject

Art

Computing

Design Technology (DT)

English

Geography

History

Maths

Music