

Year 5 & 6 Maths Parent Workshop

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Aims of the today's session:

- Look at our calculation policy with a focus on the four operations (addition, subtraction, multiplication and division)
- Discuss how mathematics is taught through a CPA approach (Concrete-Pictorial- Abstract)
- Look at the the concrete resources that we use at school to support mathematical teaching and learning
- Discuss the importance of oracy in maths and mathematical language
- An insight into the 'teaching for mastery' approach to mathematics
- How to support children in adopting a growth mindset in maths so they can achieve their potential.
- How to support your children at home with their maths learning

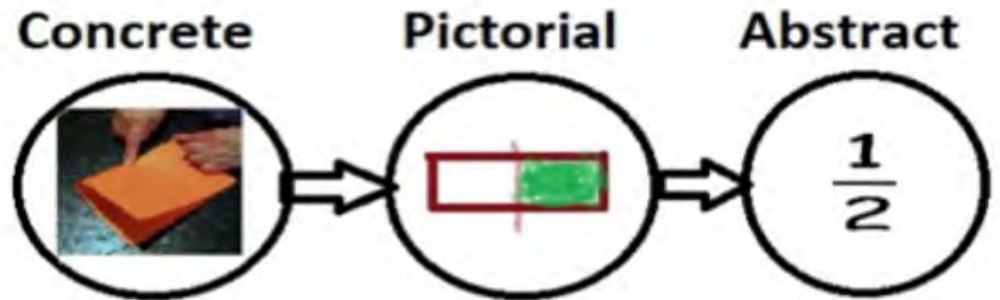
CPA Approach: Concrete Pictorial Abstract

- **Concrete:** 'doing' the maths- introducing real objects that can be manipulated to bring the problem to life. Eg: money, counters.
- **Pictorial:** 'seeing the maths'- making connections between the concrete and the pictorial representations and the pictorial and the abstract. Eg: part whole models, bar models, ten frames.
- **Abstract:** the ultimate goal 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.

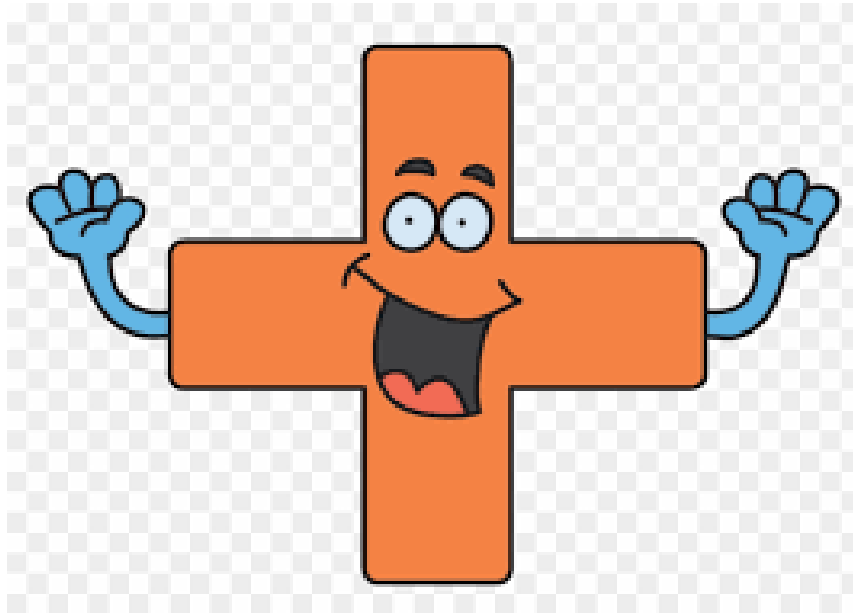


The CPA Approach

Maths should be practical for all ages and the CPA approach used at any time and with any age to support understanding



Addition in Year 5 & 6




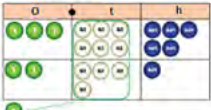
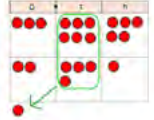
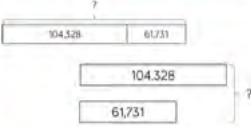
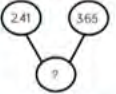
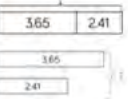
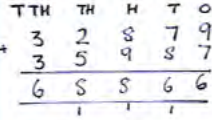
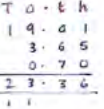
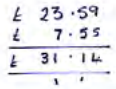
Calculation policy

Year 5 - Addition

Addition with up to 6 six digit numbers.

Column formal addition for adding decimals with tenths and hundredths.

Column addition of money.

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> Use of Base 10 and place value counters for addition up to 6 digits  <ul style="list-style-type: none"> Use of place value counters for decimal addition using tenths and hundredths  	<ul style="list-style-type: none"> Bar Models (Part Of Whole and Comparison)  Part Of Whole Model for Decimal Addition  Bar Models (Part Of Whole and Comparison) for Decimal Addition  	<ul style="list-style-type: none"> Columnar Formal Addition up to 6 digits  Columnar Addition for Decimal Addition up to Tenths and Hundredths  Columnar Addition of Money 

Oracy Sentence Stems:

The most efficient way to add these numbers is by _____ because _____.

_____ tenths add the _____ we already have, gives us _____.

The calculation tells me I need to add the numbers.

If the column total is equal to ten or more we must exchange.

I will exchange one hundred for ten tens, _____ thousands and _____ hundreds & equal to _____.

Addition using place value counters

Place value counters representing the numbers 26524 and 15426. The counters are arranged in columns: 10,000 (green), 1,000 (yellow), 100 (orange), 10 (pink), and 1 (blue). A pink sticky note shows the addition problem:

Ten	Th	H	T	O
2	6	5	2	4
+ 1	5	4	2	6
<hr/>				

The same board as the left image, but with a pink sticky note placed over the hundreds and tens columns. The sticky note shows the addition problem with the result 1950 written below the line:

Ten	Th	H	T	O
2	6	5	2	4
+ 1	5	4	2	6
<hr/>				
		1	9	5
			0	

Addition using bar modelling

$$\boxed{530,542} - 346,221 = 184,321$$



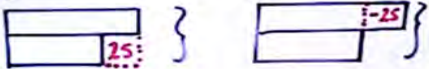
Part + part = whole

		Hth	TTh	Th	H	T	O	
		3	4	6	2	2	1	
	+	1	8	4	3	2	1	
		5	3	0	5	4	2	
		1	1					

Whole - part = part

Calculation Policy

Year 6 - Addition

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> Bar Models for Increasingly Complex Multi-Step Problems <p>Two numbers when added together total 71. The difference between the two numbers is 25. What are the two numbers?</p>  <p>* add the difference.</p> <p>* subtract the difference.</p>	<ul style="list-style-type: none"> Add several numbers of increasing complexity using Formal Columnar Addition <p>T O . E h th</p> $\begin{array}{r} 2361 \\ + 9080 \\ + 9770 \\ + 1300 \\ \hline 93511 \\ - 212 \\ \hline \end{array}$ <p>11th 11th 11th 11th 11th</p> $\begin{array}{r} 81059 \\ + 3668 \\ + 15301 \\ + 20551 \\ \hline 120579 \\ \hline \end{array}$ <p>Oracy Sentence Stems:</p> <p>The most efficient way to add these numbers is by _____ because _____.</p> <p>The calculation tells me I need to add the numbers.</p> <p>If the column total is equal to <u>ten or more</u> we must exchange.</p> <p>_____ million add _____ million is equal to _____.</p> <p>When there are no brackets, division is completed before addition and subtraction.</p>

Subtraction in Year 5 & 6

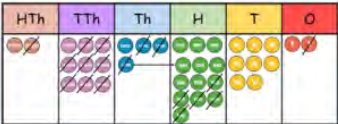
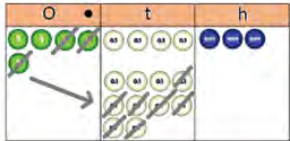
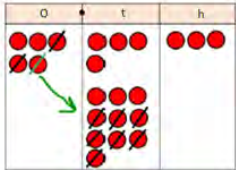
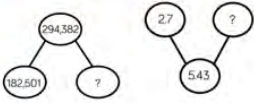
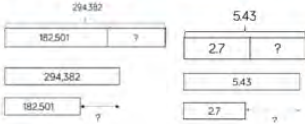


Calculation policy

Formal column subtraction
with up to 6 digit numbers.

Formal column subtraction
With decimals with up to 2
decimal places.

Year 5 Subtraction

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> Place Value Counters up to 6 digits with multiple exchanges  <ul style="list-style-type: none"> Place Value Counters up to 2dp  	<ul style="list-style-type: none"> Part Part Whole Models  <ul style="list-style-type: none"> Bar Models (Part Part Whole and Comparison) 	<ul style="list-style-type: none"> Formal Columnar Subtraction <p>6 Digit with multiple exchanges</p> $\begin{array}{r} \text{HTh} \quad \text{TTh} \quad \text{Th} \quad \text{H} \quad \text{T} \quad \text{O} \\ 294,382 \\ - 2128 \\ \hline 28928 \end{array}$ $\begin{array}{r} \text{HTh} \quad \text{TTh} \quad \text{Th} \quad \text{H} \quad \text{T} \quad \text{O} \\ 294,382 \\ - 2128 \\ \hline 28928 \end{array}$ <p>Decimal up to 2dp</p> $\begin{array}{r} \text{Th} \quad \text{H} \quad \text{T} \quad \text{O} \cdot \text{t} \quad \text{h} \\ 294,382 \\ - 2128 \\ \hline 28928 \end{array}$
<p>Oracy Sentence Stems:</p> <p>To subtract ___ from ___ I can partition ___ into ___</p> <p>The calculation tells me I need to subtract the numbers: ___</p> <p>if the column total is equal to ten or more we must exchange.</p> <p>Whole subtract a part is equal to the difference.</p> <p>I will exchange one hundred for ten tens</p> <p>___ thousandths subtract ___ thousandths is equal to ___</p>		

Supporting understanding using manipulatives

The image shows base ten blocks representing the number 2,232.4. The blocks are arranged in columns: two green blocks for 10,000, two yellow blocks for 1,000, three orange blocks for 100, two pink blocks for 10, and four blue blocks for 1. To the right, a yellow sticky note displays a subtraction problem with place value labels: TTh, Th, H, T, O. The problem is $2,232.4 - 1,125.8$.

TTh	Th	H	T	O	
2	2	3	2	4	
-	1	1	2	5	8
<hr/>					
<hr/>					

The image shows base ten blocks representing the number 2,232. The blocks are arranged as follows:

- Two green blocks labeled "10,000"
- Two yellow blocks labeled "1,000"
- Three orange blocks labeled "100"
- One pink block labeled "10"
- Two blue blocks labeled "1"

To the right of the blocks is a yellow sticky note with a subtraction problem written on it:

	Th	Th	H	T	O
	2	2	3	2	4
-	1	1	2	5	8
<hr/>					
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The image shows base ten blocks representing the number 22,324 and a subtraction problem on a yellow sticky note. The blocks are arranged as follows:

- Two green blocks labeled "10,000"
- Two yellow blocks labeled "1,000"
- Three orange blocks labeled "100"
- One pink block labeled "10"
- Four light blue blocks labeled "1"

The subtraction problem on the sticky note is:

	TH	T	H	T	O
	2	2	3	2	4
-	1	1	2	5	8
<hr/>					6
<hr/>					

The image shows base ten blocks and a subtraction problem. The blocks are arranged as follows:

- Two green blocks labeled 10,000.
- Two yellow blocks labeled 1,000.
- Two orange blocks labeled 100.
- Two purple blocks labeled 10.
- Two blue blocks labeled 1.

Below these are two more rows of blocks:

- Two orange blocks labeled 100.
- Two yellow blocks labeled 1,000.
- Two green blocks labeled 10,000.
- A stack of five purple blocks labeled 10.
- Two blue blocks labeled 1.
- Two blue blocks labeled 1.
- Two blue blocks labeled 1.

To the right is a yellow sticky note with a subtraction problem:

Th	Th	H	T	O
2	2	3	2	4
- 1	1	2	5	8
<hr/>				
6				

The image shows base ten blocks representing the number 2,232 and a subtraction problem on a yellow sticky note. The blocks are arranged as follows:

- Two green blocks labeled "10,000"
- Two yellow blocks labeled "1,000"
- Two orange blocks labeled "100"
- Two pink blocks labeled "10"
- Two light blue blocks labeled "1"

The subtraction problem on the sticky note is:

	Th	H	T	O
2	2	3	2	4
-	1	1	2	5
				8
				<hr/>
				6
				<hr/>
				6

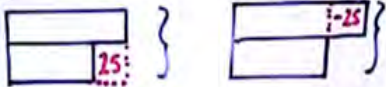
The image shows base ten blocks and a subtraction problem. On the left, there are two large blocks labeled '10,000' (green) and '1,000' (yellow). In the center, there are several smaller blocks: five pink blocks labeled '10' and five light blue blocks labeled '1'. To the right, a yellow sticky note contains a subtraction problem:

	T th	T ^h	H th	T ^o	O
	2	2	3	2	4
-	1	1	2	5	8
<hr/>					
	1	1	0	6	6
<hr/>					

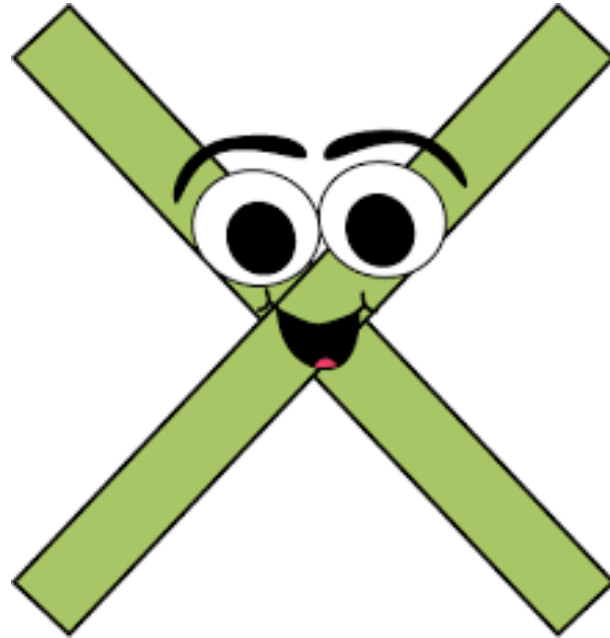
Calculation policy

Year 6 – Subtraction

Formal column
Subtraction with up to
7 digit numbers.

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> As Above 	<ul style="list-style-type: none"> Bar Models for Increasingly Complex Multi-Step Problems <p>Two numbers when added together total 71. The difference between the two numbers is 25. What are the two numbers?</p>  <p>* add the difference.</p> <p>* subtract the difference.</p>	<ul style="list-style-type: none"> Formal Columnar <u>Subtraction</u> up 7 digits $ \begin{array}{r} \text{H}^{\text{th}} \text{ } \text{T}^{\text{h}} \text{ } \text{O}^{\text{th}} \text{ } \text{t}^{\text{h}} \text{ } \text{t}^{\text{h}} \\ + 50^{\text{th}} \text{ } 5^{\text{th}} \text{ } 4^{\text{th}} \text{ } 1^{\text{th}} \text{ } 9 \\ - 36^{\text{th}} \text{ } 08^{\text{th}} \text{ } 0 \\ \hline 69^{\text{th}} \text{ } 33^{\text{th}} \text{ } 9 \end{array} $ <p>Oracy Sentence Stems:</p> <p>When there are no brackets, division is completed before addition and subtraction.</p> <p>The most efficient way to subtract these numbers is by _____ because _____.</p> <p>The calculation tells me I need to subtract the numbers.</p> <p>If the column total is equal to <u>ten or more</u> we must exchange.</p> <p>_____ million <u>subtract</u> _____ million is equal to _____.</p>

Multiplication in Year 5 & 6



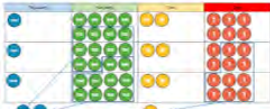
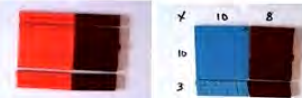

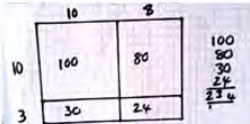
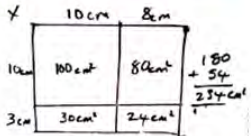
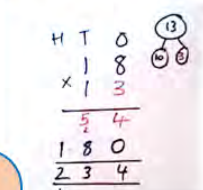
Calculation policy

Year 5 – Multiplication

Grid method for up to 3 by 2 digit multiplication

Area model for 2 by 2 digit multiplication

Moving onto formal column method

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> Place Value counters for 4 digits by 1 digit eg, $1826 \times 3 = 5478$  <ul style="list-style-type: none"> Cuisenaire Rods and Base 10 for Area method: 3 digits by 2 digits eg, 13×18  <ul style="list-style-type: none"> Place Value Counters for Grid Method: 3 digits by 2 digits eg, 234×32 	<ul style="list-style-type: none"> Area Method for 2 digits by 2 digits (draw round Cuisenaire eg, 23×18  <ul style="list-style-type: none"> Grid Method for 2 digits by 2 digits (not to scale) 	<ul style="list-style-type: none"> Formal Columnar Multiplication <p>3 digit by 1 digit</p> $\begin{array}{r} \text{TH H T O} \\ \times 225 \\ \hline 1125 \end{array}$ <p>4 digit by 1 digit</p> $\begin{array}{r} \text{TH TH H T O} \\ \times 2976 \\ \hline 14994 \end{array}$ <p>3 digit by 2 digit</p> 

Oracy Sentence Stems:

_____ is a factor/multiple of _____ because _____ x _____ = _____

_____ is a factor/multiple of _____ because _____ ÷ _____ = _____

Numbers that have more than two factors are composite numbers.

Numbers that have only two factors are called prime numbers.

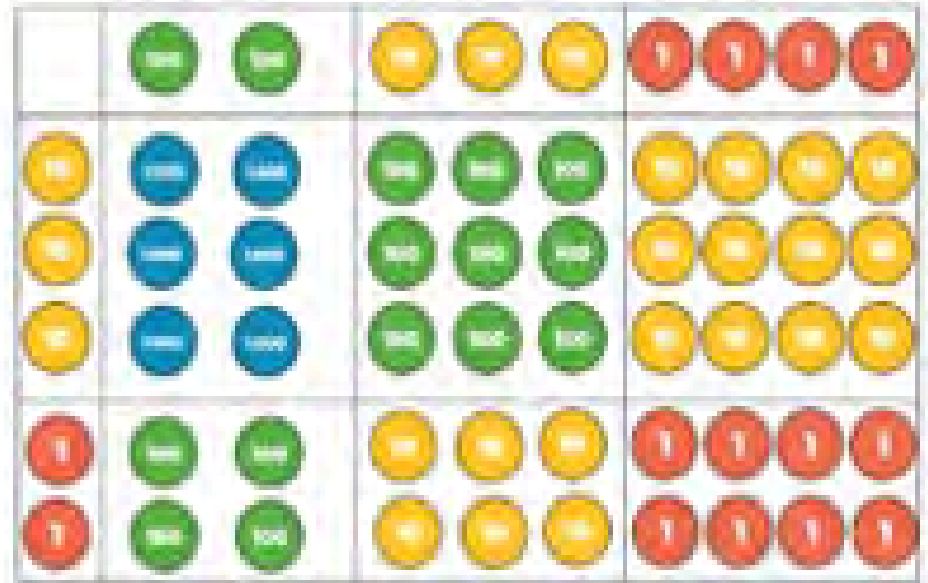
_____ is not prime because it has the factors _____

_____ is prime because it only has two factors: 1 and itself.

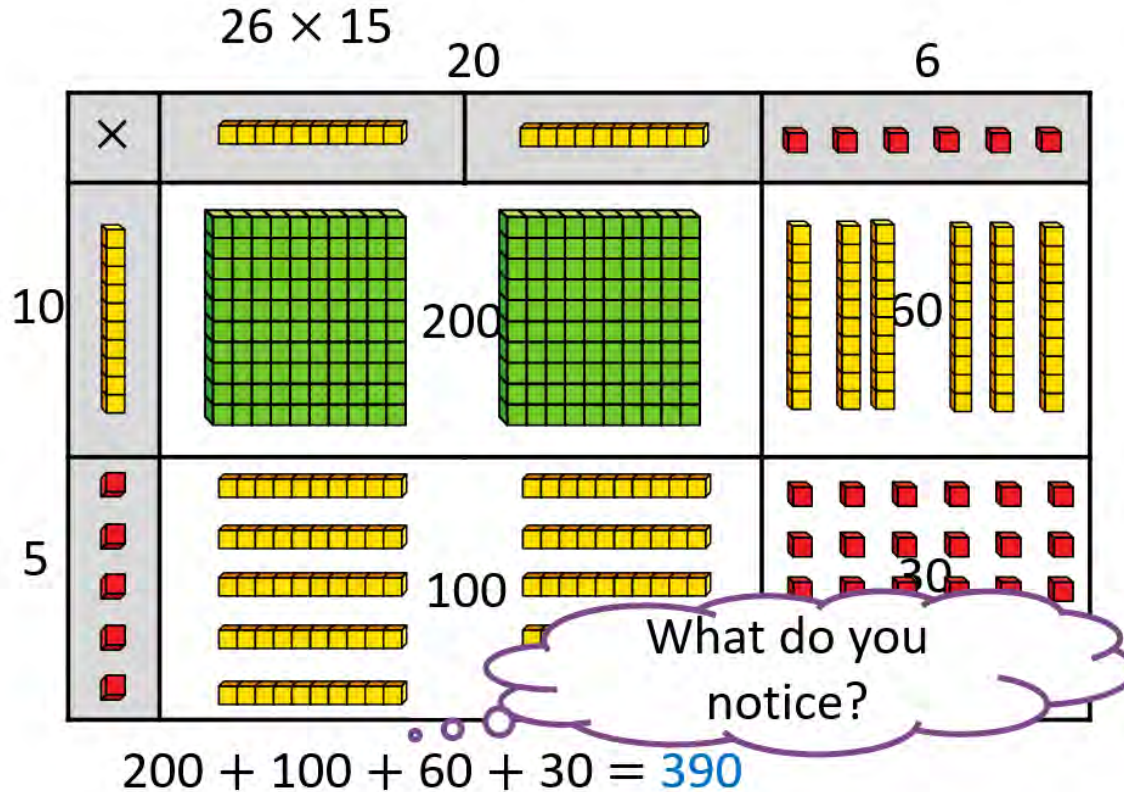
_____ squared is _____. The square root of _____ is _____

Place value counters for grid method

234 x 32



Area model



Formal column multiplication

	TTh	Th	H	T	O
		2	3	4	2
×				2	1
		2	3	4	2
+	4	6	8	4	0
	4	9	1	8	2

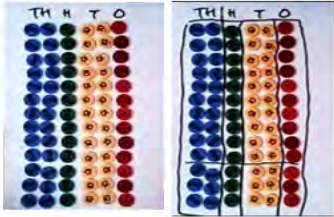
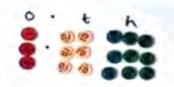
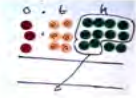

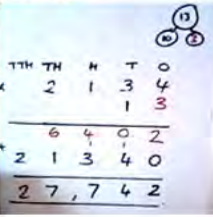
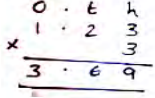
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Calculation policy

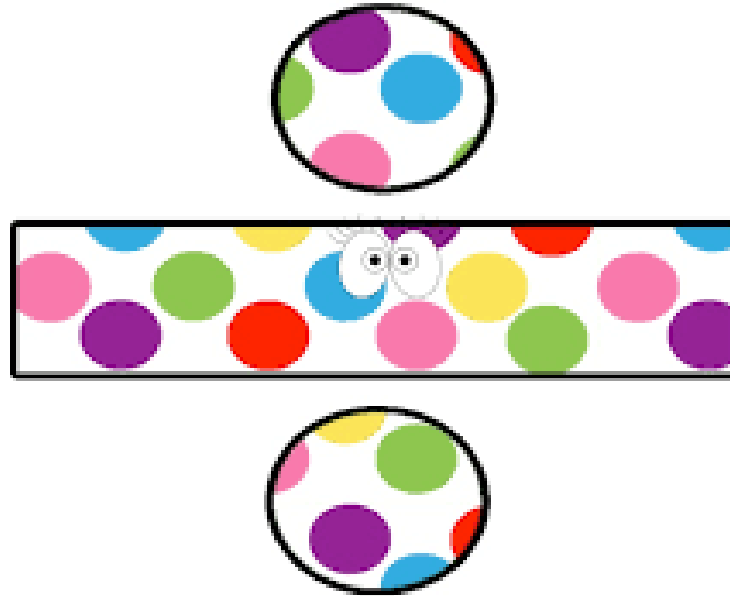
Grid method for up to 4 by 2 digit multiplication

Moving onto formal column method and multiplication of decimals

Year 6 – Multiplication

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> Place Value Counters for Grid Method: 4 digits by 2 digits eg. 2121 x 13  <ul style="list-style-type: none"> Place Value Counters for Grid Method: Decimals eg. 1.23 x 3 (no exchange)  <p>eg. 1.24 x 4 (exchange)</p> 	<ul style="list-style-type: none"> Grid Method eg. 2134 x 13  <p>Oracy Sentence Stems:</p> <p>If ___% of my number is ____, then I need to multiply it by ____ to find the full amount.</p> <p>When a number is multiplied by ____ the digits move ____ places to the ____.</p> <p>When a number is multiplied by one thousand, the digits move three places to the left.</p> <p>If one factor is made ten times the size, the product will be ten times the size.</p> <p>If I double one factor, I must double the product.</p> <p>If I multiply one factor by ____, I must multiply the product by ____.</p>	<ul style="list-style-type: none"> Formal Columnar Multiplication <p>4 digit by 2 digit</p>  <p>Decimal</p> 

Division in Year 5 & 6

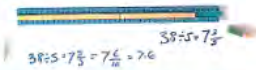
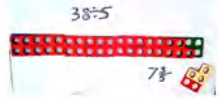


Calculation policy

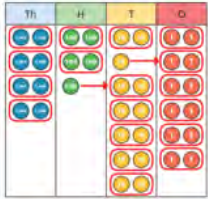
Year 5 – Division

Concrete

- Continued use of Numicon and Cuisenaire tracks to illustrate remainders bigger than 0 as whole numbers and fractions

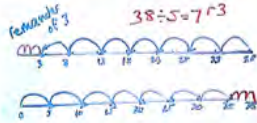


- Place Value Counters for 4 digit $\div 1$ digit
eg. $8532 \div 2$ (focus on language of grouping and exchange)

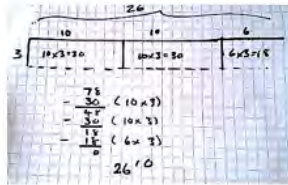


Pictorial

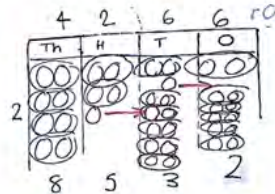
- Number lines



- Use of Area Method of Division



- Represent Place Value Counters (focus on language of grouping and exchange)



- Bar modelling for multiples



Abstract

- Formal Short Division

Consolidation of Year 4 and then moving to:

4 digit $\div 1$ (exchanging twice and a remainder of 0)

$$2 \overline{) 4266} \begin{matrix} 2133 \\ \underline{42} \\ 66 \\ \underline{66} \\ 0 \end{matrix}$$

4 digit $\div 1$ (exchanging three times and a remainder of 0)

$$4 \overline{) 0944} \begin{matrix} 2361 \\ \underline{08} \\ 14 \\ \underline{12} \\ 24 \\ \underline{20} \\ 44 \\ \underline{40} \\ 40 \\ \underline{40} \\ 0 \end{matrix}$$

Remainders greater than 0 shown as whole numbers and fractions

$$5 \overline{) 07} \begin{matrix} 1 \\ \underline{05} \\ 20 \\ \underline{15} \\ 50 \\ \underline{50} \\ 0 \end{matrix}$$

Oracy Sentence Stems:

_____ is divided into groups of ____ There are _____ groups and a remainder of _____

The remainder is always less than the divisor.

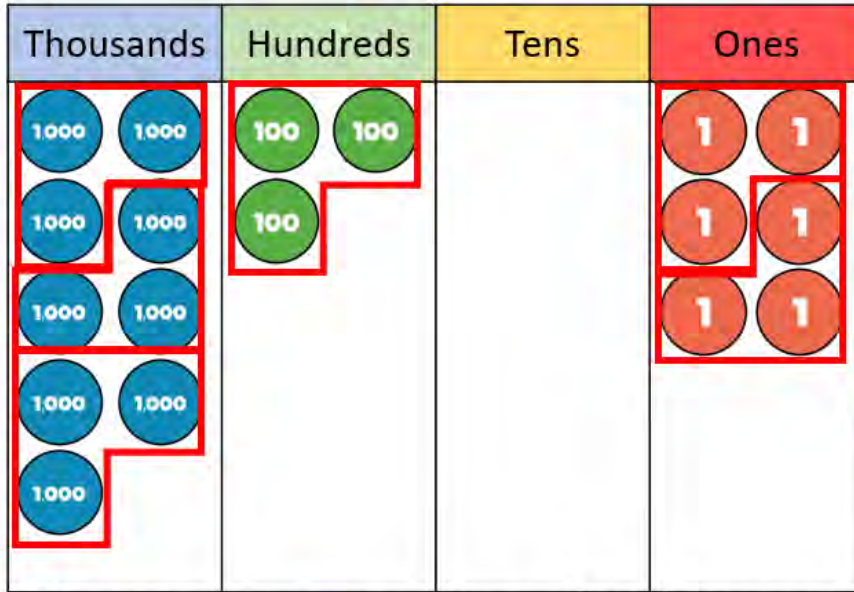
How many groups of 2 thousand are there in 8 thousand? There are 4 groups of 2 thousand in 8 thousand. How many groups of 2 hundred are there in 5 hundred? There are 2 groups of 2 hundred in 5 hundred. I will exchange the remaining 1 hundred for 10 tens. I now have 13 tens. How many groups of 2 tens are there in 13 tens? There are 6 groups of 2 tens in 13 tens. I will exchange the remaining ten for 10 ones. I now have 12 ones. How many groups of 2 ones are there in 12 ones? There are 6 groups of 2 tens in 12 tens. There is a remainder of 0.

Use number lines and place value counters to focus on language of grouping and exchange

Formal short division method.

Children interpret remainders as fractions and decimals.

Division using place value counters



		3	1	0	2
3	9	3	0	6	

There are 3 groups of 3 thousands.

There is 1 group of 3 hundreds.

There are 0 groups of 3 tens.

There are 2 groups of 3 ones.

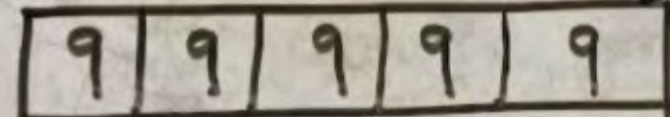
Short division

$$45 \div 5 = 9$$

$$\begin{array}{r} 09 \\ 5 \overline{) 45} \end{array}$$

Bar model representation

$$45 \div 5 = 9$$



parts

45

whole

Representing remainders as fractions and decimals

$$98 \div 4$$
$$4 \overline{) 98}$$
$$24 \text{ r } 2 = 24 \frac{1}{2}$$
$$= 24.5$$

Calculation policy

Year 6 – Division

Concrete

- Place Value counters used to consolidate the language of grouping and exchange for short and long division



Pictorial

- As above

Abstract

- Consolidation of Short Division (See Year 4 and 5)
- Formal Long Division

4 digit ÷ 1 digit (remainder of 0)

$$\begin{array}{r} 2112 \text{ r}0 \\ 4 \overline{) 8448} \\ \underline{8} \\ 0 \\ \underline{4} \\ 0 \\ \underline{4} \\ 0 \\ \underline{8} \\ 0 \end{array}$$

4 digit ÷ 1 digit (Use of 0s)

$$\begin{array}{r} 1306 \text{ r}0 \\ 4 \overline{) 5224} \\ \underline{4} \\ 12 \\ \underline{12} \\ 0 \\ \underline{2} \\ 2 \\ \underline{2} \\ 0 \end{array}$$

Remainders as fractions and decimals

$$10 \div 4 = \frac{10}{4} = 2 \frac{2}{4} = 2 \frac{1}{2}$$

$$4 \overline{) 10.0} = 2.5$$

4 digit ÷ 2 digit (Divisors greater than 12)

$$\begin{array}{r} 0197 \text{ r}0 \\ 17 \overline{) 3247} \\ \underline{0} \\ 32 \\ \underline{17} \\ 154 \\ \underline{153} \\ 17 \\ \underline{17} \\ 0 \end{array}$$

1	10	10	= 10
2	20	14	= 28
3	30	21	= 63
4	40	28	= 112
5	50	35	= 175
6	60	42	= 252
7	70	49	= 343
8	80	56	= 448
9	90	63	= 567
10	100	70	= 700

Oracy Sentence Stems:

_____ is divided into groups of _____. There are _____ groups and a remainder of _____.

The remainder is always less than the divisor.

How many groups of 4 thousand are there in 8 thousand? There are 2 groups of 2 thousand in 8 thousand. I have no thousands remaining.

How many groups of 4 hundred are there in 4 hundred? There is 1 group of 4 hundred in 4 hundred. I have no hundreds remaining.

How many groups of 4 tens are there in 4 tens? There is 1 group of 4 tens in 4 tens. I have no tens remaining.

How many groups of 4 ones are there in 8 ones? There are 2 groups of 4 ones in 8 ones. I have no ones remaining.

Formal long division.

Long division

Calculate $359 \div 16 = 22 \text{ r}7$

16	32	48	64	80	96	112	128	144	160
<u> </u>									

		2	2
16	<u>3</u>	5	9
—	3	2	↓
		<u>3</u>	9
—		3	2
			7

Manipulatives- concrete resources

Dienes

Multiplication grids

Place value counters

100 squares

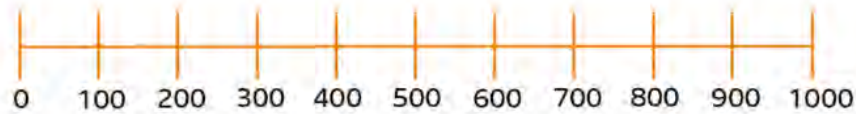
Number lines

Coins

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

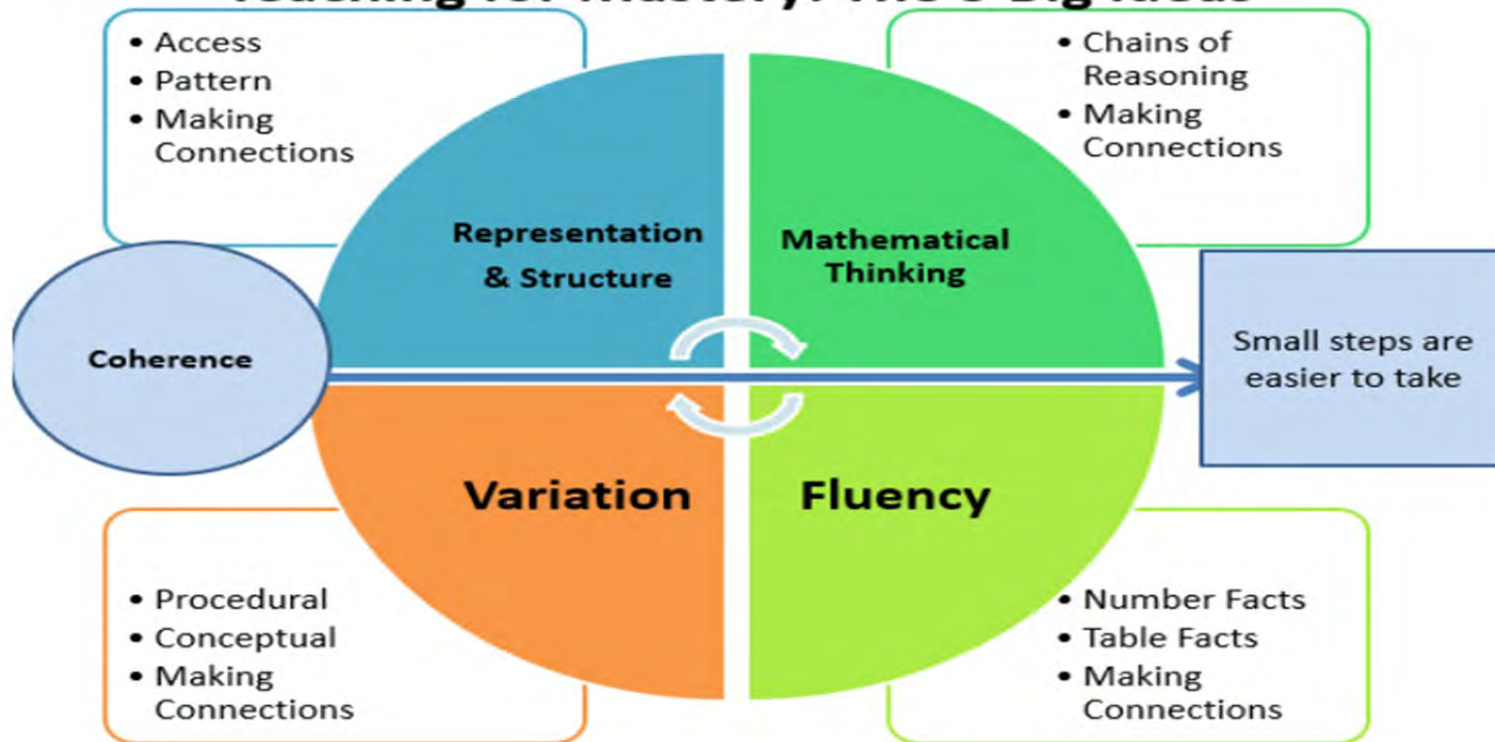


The Teaching for Mastery Approach

What does it mean to master something?

- I know how to do it
- It becomes automatic and I don't need to think about it
- I'm really good at it- painting a picture
- I can show someone else how to do it

Teaching for Mastery: The 5 Big Ideas



Making generalisations

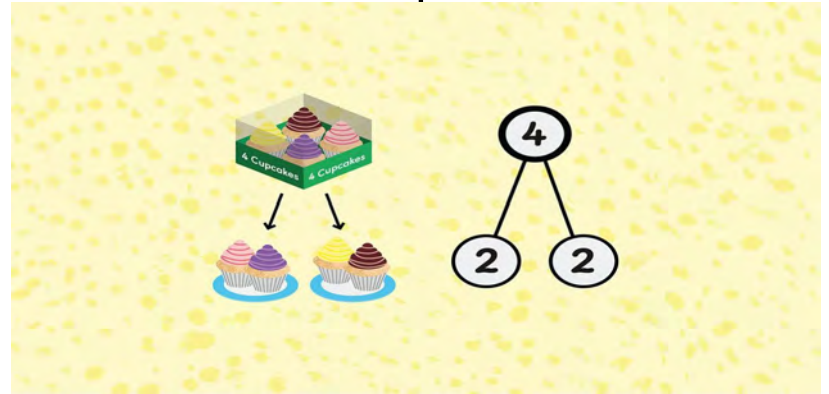
- If you change the position of the numbers in a multiplication calculation, the answer will always stay the same.

E.g. $4 \times 5 = 20$ and $5 \times 4 = 20$ (commutativity)

- All even numbers end in 0, 2, 4, 6, 8
- When counting in 10s, the ones digit always stays the same but tens digit changes

Representation and Structure

- Representations are used in lessons to expose the mathematical structure being taught.
- In essence representation refers to the wide variety of ways to capture an abstract concept or relationship.



Multiple representations of the same number.

Number		Number word	
47		Forty seven	
Draw it		Expanded form	
Tens	Ones	$40 + 7 = 47$ $7 + 40 = 47$	
		


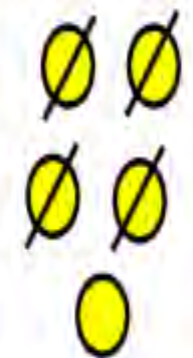
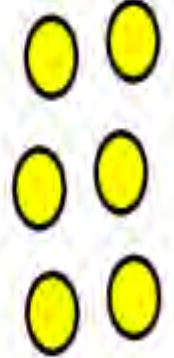
Mathematical Thinking



- If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the pupil: thought about, reasoned with and discussed with others.
- We provide lots of opportunities for peer and collaborative discussions in our daily maths lessons.
- Problem solving and reasoning opportunities in every session to embed a depth of learning

Reasoning: Spotting mistakes and misconceptions

Alex thinks the chart shows $456 - 4$
Do you agree?

Hundreds	Tens	Ones
		

Rosie completes this subtraction incorrectly.

$$\begin{array}{r} 28701 \\ - 7621 \\ \hline 21180 \end{array}$$

Explain the mistake to Rosie and correct it for her.

Reasoning: True or false?

True or False?

$$49,999 - 19,999 = 50,000 - 20,000$$



Dora

I did not need to use a written method to work this out.

Can you explain why Dora's method work?

Can you think of another example where this method could be used?

Reasoning: Always, sometimes or never true?

Always, sometimes, never

- When multiplying a two-digit number by a one-digit number, the product has 3 digits.
- When multiplying a two-digit number by 8 the product is odd.
- When multiplying a two-digit number by 7 you need to exchange.

Prove it.

The logo for 'Times Tables Rockstars' features the words 'TIMES TABLES' in blue and 'ROCKSTARS' in pink, both in a stylized, jagged font.

BETA PREVIEW

beta site is currently for teachers to play games only
children can play games to help them learn at home

Login now

Fluency



Enfield
Heights
ACADEMY

- Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics.
- Playing cards in class for times table practice
- Hit the button- Topmarks for quick fire number fact practice
- TT Rockstars- all KS2 classes set up- an exciting online resource for times table practice.
- Weekly times tables quizzes
- Number fact fluency work

Using known number facts: if we know this, what else do we know?

6

$$60 \times 30 = 1800$$

$$600 \times 300 = 180,000$$

$$60 \times 3 = 180$$

$$6 \times 3 + 1 = 19$$

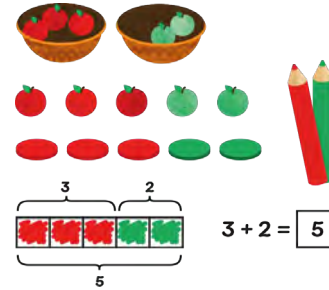
$$18 = 3 \times 6$$

$$18 \div 3 = 6$$

$$6 = 18 \div 3$$

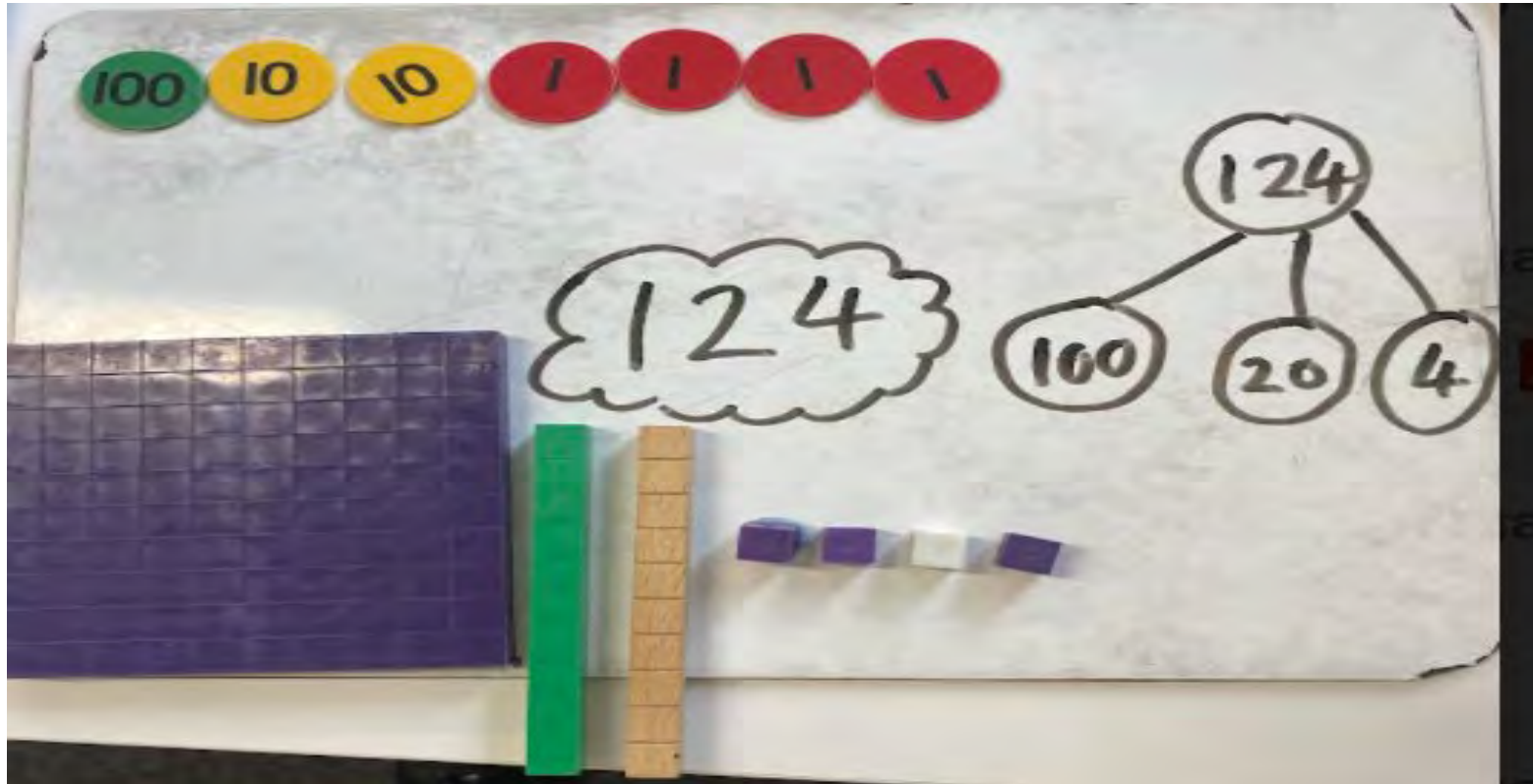
$$0.5 \times 12 = 6$$

Conceptual variation



- This is about all about how the teacher represents the concept being taught
- An opportunity to work on different representations of the same mathematical idea.
- These multiple representations will 'showcase' to pupils the different conceptual ideas that underpin a mathematical idea.

Variation helps visualisation





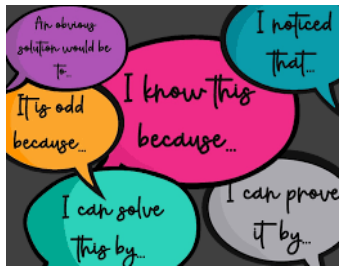
Everyone Can!



Enfield
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ACADEMY

At Enfield Heights we encourage children to develop a **growth mindset** by using these strategies:

- It's ok to get it wrong- mistakes are valuable opportunities to re think and understand more deeply. Spotting and sharing mistakes between teachers and pupils makes learning richer.
- Praising hard work- is a great motivator by focusing on effort rather than success. Children will be more willing to try harder and take risks.
- Mind your language- the language we (teachers and parents/carers) use around learners has a profound effect on their mindsets. Make a habit of using growth phrases like 'everyone can', 'mistakes can help you learn', 'just try for a little longer' and the key of them all- 'yet'. 'I just cannot solve this yet!'



Maths Talk

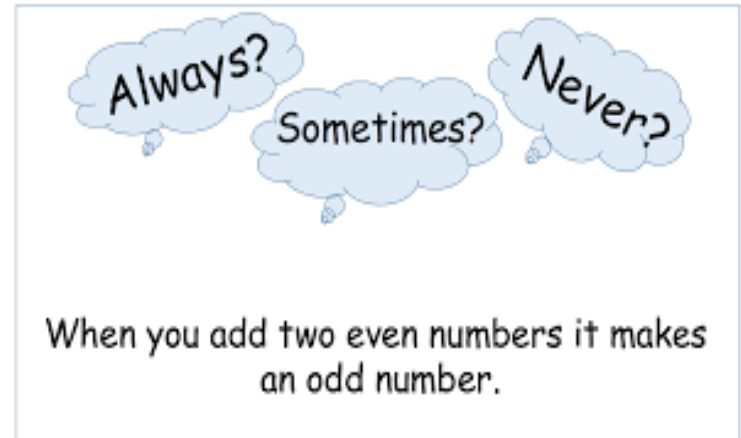
- **Key Vocabulary:** Discussing essential vocabulary
- **Full sentences:** Teachers and children need to use full sentences to explain or respond. When children use complete sentences, it both reveals their understanding and embeds their knowledge.
- **Stem sentences:** These help children express mathematical concepts accurately and scaffolds their responses.

Eg: *'4 is a part, 5 is a part, 9 is the whole.'*

- **Consistency:** all use same mathematical terms in full, i.e ones instead of units

Ways to encourage maths talk at home

- Why is that a good mistake?
- If we know this, what else do we know?
- Give me ...tell me ...show me ...
- Why is this the odd one out?
- The answer is ...what is the question?
- Give me a silly answer for ...?
- Always, sometimes, never true?



Any questions?

