Year 5-6 Parents' Workshop

How We Teach Calculation at Christ the King

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Aims

○ Understand how children in Years 5 and 6 learn and use written methods for calculation

○ See the progression of methods through the NCETM approach

○ Try some of the strategies children use in class

○ Explore how to support learning at home

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Our Approach to Maths

- Fluency – Reasoning – Problem Solving
- Concrete → Pictorial → Abstract
- Deep understanding, not tricks or shortcuts

FLUENCY   REASONING   PROBLEM SOLVING

CONCRETE ⟶ PICTORIAL ⟶ ABSTRACT

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Place Value – The Foundation

- Understanding the value of each digit
- Exchange, not borrow
- Regrouping across columns

Example: 45,628 = 40,000 + 5,000 + 600 + 20 + 8
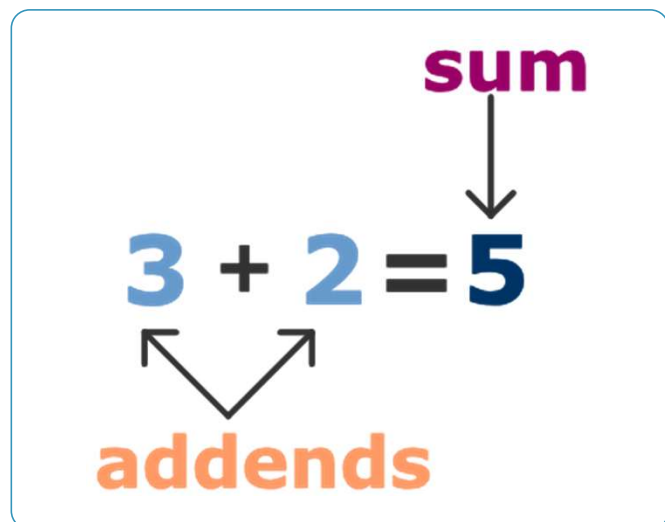
Hundreds	Tens	Ones

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Place Value

Year	Place Value Focus
Y1	Tens and ones – numbers to 100
Y2	Hundreds, tens and ones – numbers to 1,000
Y3	Deepen understanding of 1,000 – secure use of hundreds, tens and ones
Y4	Thousands – numbers to 10,000
Y5	Hundreds of thousands – numbers to 1,000,000
Y6	Millions – numbers to 10,000,000 and decimals to 3 d.p.

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Addition Vocabulary

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Addition

o 245 + 198 = ?

o Step 1: Partition each number

245 = 200 + 40 + 5

198 = 100 + 90 + 8

o Step 2: Add each column → (200 + 100) + (40 + 90) + (5 + 8)

o Step 3: Recombine → 300 + 130 + 13 = 443

Regroup the 130 (100 + 30) to see the pattern towards column addition
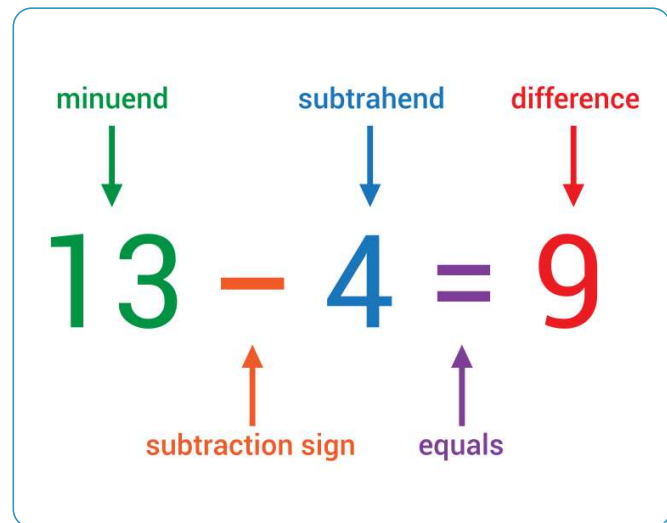
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Addition – Formal Column Method

- Estimate an approximate answer
- Line up digits by place value
- Start from the right
- One digit in each column (more than 9, we exchange [not borrow])
- Check

		3	3	8	6	1
+			9	0	8	3
		4	2	9	4	4
			1		1	

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Subtraction Vocabulary

minuend   subtrahend   difference
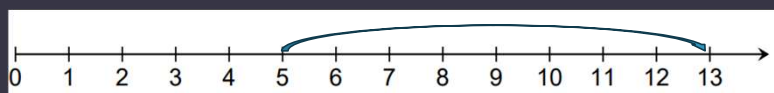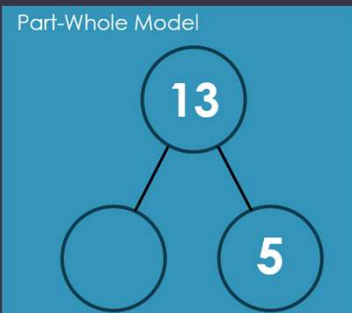
$$13 - 4 = 9$$

subtraction sign   equals

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Understanding Subtraction

- We use the word subtraction

- We also say minus

- Subtraction can mean:

- Taking away – "How much is left?"

- Finding the difference – "How far apart?"

Part-Whole Model

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0 1 2 3 4 5 6 7 8 9 10 11 12 13

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Subtraction – Formal Column Method

- Estimate an approximate answer
- Line up digits by place value
- Start from the right
- Exchange from the next column if the top digit is smaller
- Check by adding

	5	¹3	
	6̶	4̶	¹3
-	2	7	8
	3	6	5

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Multiplication vocabulary

3	×	2	=	6
factor	×	factor	=	product

Groups of, lots of, repeated addition, multiply

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Multiplication Facts

- Children are expected to learn:
- 2s, 5s and 10s in Year 2
- 4s, 8s and 3s in Year 3
- The rest in Year 4

By Years 5 & 6:
- Recall to 12 × 12 should be fluent
- Used confidently in all areas of maths

Times tables are the building blocks of maths

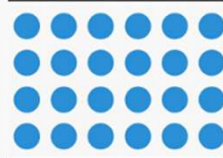| x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	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

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Multiplication: Building understanding

- Repeated addition → equal groups → arrays → formal methods
- Key ideas: commutativity, place value, partitioning

$$4 \times 6 \longrightarrow 6 \times 4$$

equal groups → array
$$6 + 6 + 6 + 6$$
$$4 + 4 + 4 + 4 + 4 + 4$$

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Formal Written Methods – Short Multiplication

- For multiplying by a single-digit number

Steps to Success:

- Multiply the ones
- Multiply the tens
- Multiply the hundreds

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Formal Written Methods – Long Multiplication

- For multiplying by a two-digit number

Steps to Success:

- Multiply by the ones (6)
- Add place value holder (0)
- Multiply by the tens (30)
- Add both partial products

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Division Vocabulary

30	÷	5	=	6
dividend	÷	divisor	=	quotient

Share by, equal groups of, divide

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Division: Building understanding

Division means:

○ Sharing equally (e.g. 12 sweets between 4 friends)

○ Grouping (e.g. How many 4s in 12?)

Division is the inverse of multiplication:

$3 \times 4 = 12$ so $12 \div 4 = 3$

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Formal Written Methods – Short Division

○ For dividing by a single-digit number

Steps to Success:

○ Divide each digit from left to right

○ Exchange remainders into the next place value

○ Write the quotient above the line

			1	2	7	
		4	4	6	²8	

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Formal Written Methods – Long Division (horizontal)

○ For dividing by a two-digit number

Steps to Success:

○ Write out multiples of 35 (35, 70, 105, 140, …, 350) – Lovely List

○ Divide hundreds, tens, then ones

○ Subtract as you go along each step

○ Calculate in one row, just like short division

				2	8	r7
	3	5	9	8	²⁸7	

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Formal Written Methods – Long Division (vertical)

O For dividing by a two-digit number

Steps to Success:

o First thing is divide

o Then you multiply (lovely list)

o Then subtract

o Then you bring it down,

o Last thing that you do is check

				0	2	8	2
	3	5	9	8	7	.	0
				7	0		
				2	8	7	
				2	8	0	
				0	0	7	0
						7	0
							0

Division: Remainders

Remainders can be shown as:

O A remainder: 28 r7

O A fraction: 28 ⅕

O A decimal: 28.2

In SATs, children should write answers as required by the question – remainder, fraction or decimal.

Division in Context

Children use division to:

○ Share or group quantities

○ Scale amounts up or down

○ Work with measure, rate and money

○ Solve fraction and ratio problems

In SATs, children may need to decide whether to show a remainder, round up or down, or give a decimal answer depending on the context.

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Helping at Home

○ Encourage your child to explain their thinking

○ Practise times tables little and often

○ Use real-life maths (shopping, cooking, travel)

○ Focus on understanding, not speed

○ Let your child show you how they do it!

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Useful Resources

Resource	Link	Description
Primary video example lessons	Link (NCETM)	Free short video lessons (15-20 minutes) for primary pupils, useful for home reinforcement.
In the Classroom – Materials and Guidance	Link (NCETM)	Collection of resources including guidance, progression maps and videos; parents can explore to understand methods used in school.
Oak National Academy – Parent Information	Link (Oak Academy) – Parent Info Link (Oak Academy) – Maths resources	Free resources created by Oak National Academy based on the NCETM resources used in school – video lessons for each small step.
Maths with Michael	Link (White Rose) – Maths with Michael	White Rose Maths have teamed up with TV presenter, teacher and parent Michael Underwood to bring you a mini-series called Maths with Michael which shows how Maths has changed since he was at school.

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Thank You

Your support makes a huge difference.
Any questions before we finish?
Please complete the feedback sheets before you go.

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