

# How do we teach Maths at Middleforth?

PARENTS WORKSHOP  
MONDAY 5<sup>TH</sup> DECEMBER 2022

# There are 3 main strands in the Maths National Curriculum

- ▶ Fluency
- ▶ Reasoning
- ▶ Problem solving

The curriculum is designed so that pupils explore mathematical ideas **in depth**.

- Number – number and place value
- Number – addition and subtraction
- Number – Multiplication and division
- Number – fractions
- Measurement
- Geometry: properties of shape
- Geometry – position and direction
- Statistics (Year 2 only)

- ▶ Our lessons aim to involve all 3 skills every single lesson.
- ▶ Maths is so much more than providing the correct answer!

# Our Maths Curriculum

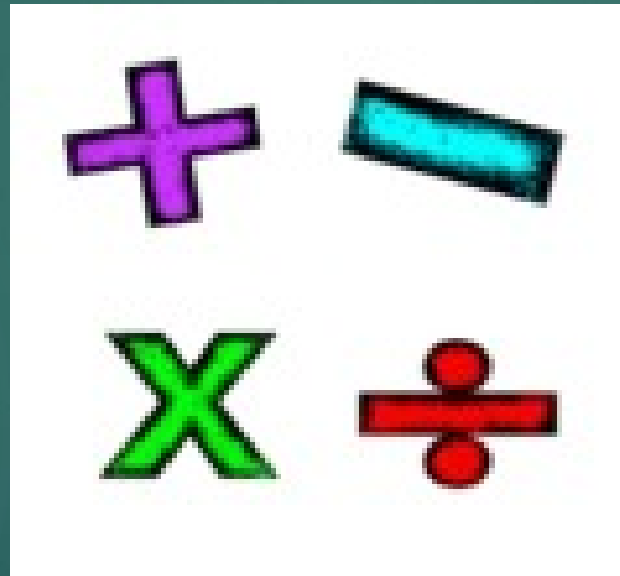
- ▶ Where can we find it?
- ▶ We follow the Mastery approach (inspired by the Maths taught in Singapore)
- ▶ We use 'White Rose' to help us to sequence and plan our lessons.

# The mastery approach:

- ▶ Everyone can succeed at Maths!
- ▶ We break down concepts into 'small steps.'
- ▶ We explain Maths concepts using visuals and equipment.
- ▶ We give the children lots of short tasks 'the ping pong approach.'
- ▶ We provide the children with 'stem sentences.'
- ▶ We ask them to repeat phrases 'I say, you say'
- ▶ We constantly assess the children in every lesson and fill any gaps.

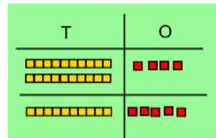
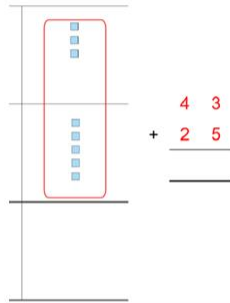
# Calculation policy

- ▶ The calculation policy for each year group can be found on the Math page on the website.



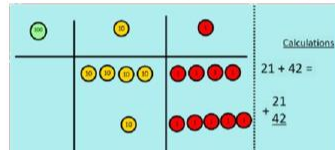
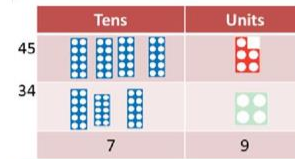
Column Addition—no regrouping (friendly numbers)

Add two or three 2 or 3digit numbers.



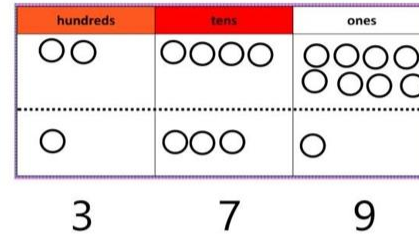
Model using Dienes or numicon

Add together the ones first, then the tens.



Move to using place value counters

Children move to drawing the counters using a ten and one frame.

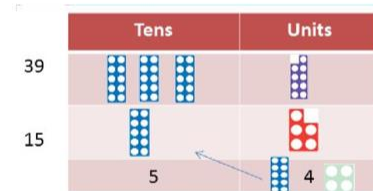


$$\begin{array}{r} 248 \\ + 131 \\ \hline 379 \end{array}$$

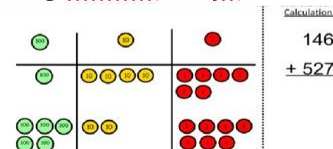
Add the ones first, then the tens, then the hundreds.

Column Addition with regrouping.

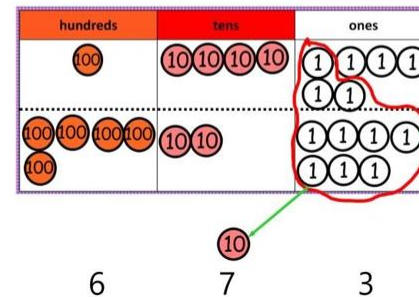
Use language of 'take and make' to describe carrying



Exchange ten ones for a ten. Model using numicon and py counters.



Children can draw a representation of the grid to further support their understanding, carrying the ten underneath the line



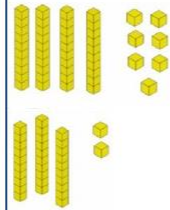
Use expanded method ONLYWHEN NEEDED

$$\begin{array}{r} 20 + 5 \\ 40 + 8 \\ 60 + 13 = 73 \end{array}$$

Start by partitioning the numbers before formal column to show the exchange.

$$\begin{array}{r} 536 \\ + 85 \\ \hline 621 \\ 11 \end{array}$$

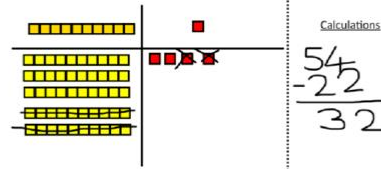
Column subtraction without regrouping (friendly numbers)



$$47 - 32$$

—

Use base 10 or Numicon to model

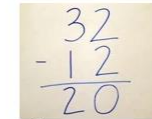


Draw representations to support understanding

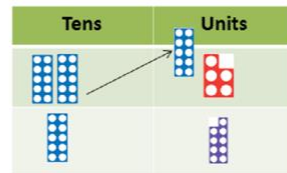
$$47 - 24 = 23$$

$$\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$$

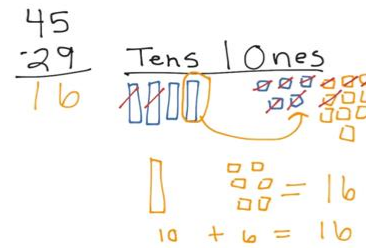
Intermediate step may be needed to lead to clear subtraction understanding.



Column subtraction with regrouping



Begin with base 10 or Numicon. Move to py counters, modelling the exchange of a ten into ten ones. Use the phrase 'take and make' for exchange.



Children may draw base ten or PV counters and cross off.

$$836 - 254 = 582$$

$$\begin{array}{r} \text{h} \quad \text{t} \quad \text{u} \\ 800 \quad 30 \quad 6 \\ - 200 \quad 50 \quad 4 \\ \hline 500 \quad 80 \quad 2 \end{array}$$

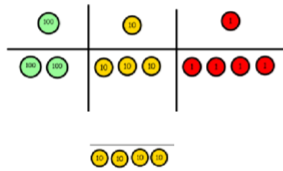
Begin by partitioning into py columns

$$728 - 582 = 146$$

$$\begin{array}{r} \text{h} \quad \text{t} \quad \text{u} \\ 700 \quad 20 \quad 8 \\ - 500 \quad 80 \quad 2 \\ \hline 100 \quad 40 \quad 6 \end{array}$$

Then move to formal method.

$$234 - 179$$



Model process of exchange using Numicon, base ten and then move to PV counters.

Children to draw px counters and show their exchange—see Y3

$$\begin{array}{r} 2\overset{6}{\cancel{7}}54 \\ - 1562 \\ \hline 1192 \end{array}$$

Use the phrase 'take and make' for exchange

As Year 4

Children to draw px counters and show their exchange—see Y3

$$\begin{array}{r} \overset{2}{\cancel{2}}\overset{10}{\cancel{1}}\overset{0}{\cancel{0}}\overset{6}{\cancel{6}} \\ - 2128 \\ \hline 28928 \end{array}$$

Use zeros for

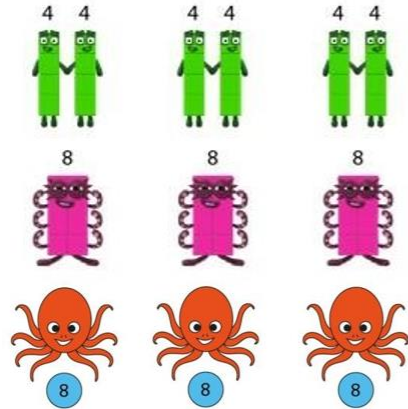
$$\begin{array}{r} \overset{6}{\cancel{7}}\overset{10}{\cancel{6}}\overset{8}{\cancel{8}}\overset{0}{\cancel{0}} \\ - 372.5 \\ \hline 6796.5 \end{array}$$

placeholders.

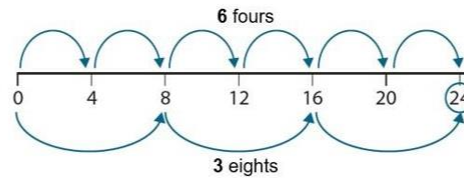


Understand the 8 times table

We can double our 4 times table to get the 8 times table



24					
4	4	4	4	4	4
8		8		8	



$$6 \times 4 = 24$$

$$3 \times 8 = 24$$

Multiply 3 digit numbers by 1 digit. (with exchange)

224 x 3

hundreds	tens	ones
100 100	10 10	1 1 1 1 1
100 100	10 10	1 1 1 1 1
100 100	10 10	1 1 1 1 1

Regroup ten ones to make a new ten.

hundreds	tens	ones
100 100	10 10	1 1 1 1 1
100 100	10 10	1 1 1 1 1
100 100	10 10	1 1 1 1 1

We can take 10 ones to make a new ten.

$$600 + 70 + 2 = 672$$

261 x 2

H	T	O
00	000000	0
00	000000	0

H	T	O
00	000000	0
00	000000	0

500 + 20 + 2 = 522

$$\begin{array}{r} 241 \\ \times 4 \\ \hline 964 \\ 1 \end{array}$$

4 times 1 ones is 4 ones

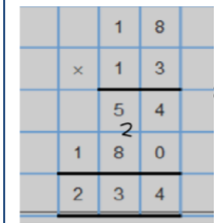
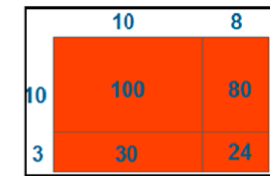
4 times 4 tens is 16 tens. I put 6 tens down and carry ten tens which is now a hundred.

4 times 2 hundreds is 8 hundreds. I add the hundred I have carried to make 9 hundreds.

Manipulatives may still be used with the corresponding long multiplication modelled alongside.

Begin with teen number x teen number.

Progress to any 2 -4 digit number x 2 digit.



18 x 3 on the first row

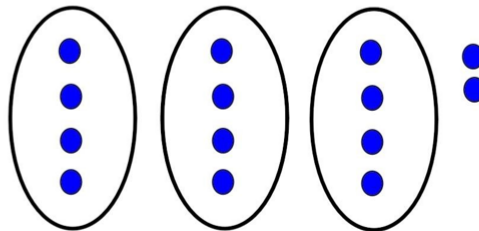
(8 x 3 = 24, carrying the 2 for 20, then 1 x 3)

18 x 10 on the 2nd row. Show multiplying by 10 by putting zero in units first

I divide 14 cakes between 3 plates. How are the cakes shared?



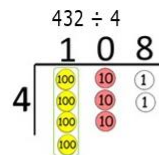
Draw dots and group them to divide an amount and clearly show a remainder.



Complete written divisions and show the remainder using r.

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

↓
↓
↓
↓  
 dividend    divisor    quotient    remainder



There is 1 group of 4 hundreds. There are no groups of 4 tens and 3 tens left over. There are 8 groups of 4 ones after exchanging the left over tens.

$$3 \overline{) 372} \quad 6 \overline{) 246}$$

Long Division

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		31 does not go into 4 (hundreds).		We combine the 4 hundreds with the tens to give 43 tens. 31 goes into 43 once which is 31, we record this underneath.		Subtract to find the remainder. 31 from 43 leaves 12.																																										

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We combine 12 with the next digit to give 124.		31 goes into 124 four times, which is 124.		We subtract to show there is no remainder																																																						

# SATS

- ▶ Tests are given to Year 6 in May.
- ▶ Children are given arithmetic and reasoning papers.
- ▶ In the exam – children will not be allowed to use any resources. However they need to use them in class first of all to support their understanding.

# Times table apps:

- ▶ Times Table Rockstars
- ▶ Hit the button
- ▶ Topmarks
- ▶ Purplemash

**Multiplication Tables Check**

2 Times Table ✓ 6 Times Table ✓ 10 Times Table ✓  
3 Times Table ✓ 7 Times Table ✓ 11 Times Table ✓  
4 Times Table ✓ 8 Times Table ✓ 12 Times Table ✓  
5 Times Table ✓ 9 Times Table ✓ Clear All

You will have  seconds to answer and there will be  questions.

Begin

The screenshot shows a digital interface for a multiplication tables check. At the top, the title 'Multiplication Tables Check' is displayed in large, bold, red letters. Below the title, there is a grid of buttons for selecting different multiplication tables. Each button is labeled with a number followed by 'Times Table' (e.g., '2 Times Table', '6 Times Table', '10 Times Table'). Each of these buttons has a green checkmark to its left, indicating that they are all selected. The 'Clear All' button is located at the bottom right of this grid. Below the grid, there is a white rectangular box with a black border containing a configuration prompt: 'You will have  seconds to answer and there will be  questions.' The numbers '6' and '25' are highlighted in red. On either side of the text in this box are small square buttons with '+' and '-' signs, used for adjusting the values. At the bottom center of the interface is a large, light grey 'Begin' button. The background of the entire interface is light blue with faint, scattered numbers.

# Arithmetic questions:

- ▶ Children are encouraged to show their working out.
- ▶ They can draw diagrams if they wish to help them to solve problems.
- ▶ **Example:**

# Reasoning questions:

- ▶ There is a big emphasis on reasoning/problem solving in the Maths curriculum.
- ▶ Children need to be able to explain their thinking. What do they know?
- ▶ We encourage children to use the correct mathematical language in their answers.
- ▶ **Examples:**

# Useful websites you can use at home:

- ▶ MyMaths
- ▶ Mathsbot (online manipulatives)
- ▶ Topmarks (different topics)
- ▶ Nrich (challenging tasks)



# Please come and see me if you have any questions!

- ▶ Feel free to message me via *sessaw* or contact the school office if you have any *Maths* related questions/queries/*MyMaths*/ *Times Table Rockstar* issues.
- ▶ ‘ PLEASE, PLEASE... NEVER say that you are bad at maths ... not anywhere within a 100-mile radius of any child you ever want to influence.’
- ▶ Thank you for coming!