Maths booklet for parents - Year 3

The 4 operations

Falcon Junior School

2021

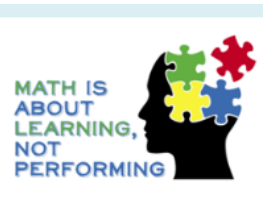
The maths curriculum

Falcon follows the National curriculum.
The national curriculum (2014) for mathematics aims to ensure that all pupils:

- Become **fluent** in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

- **Reason mathematically** by following a line of enquiry, guessing relationships and generalisations and developing an argument, justification or proof using mathematical language.

- **Solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.



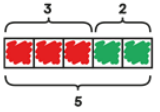
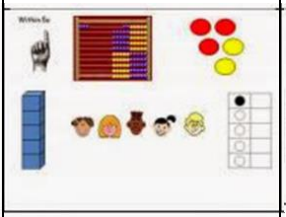
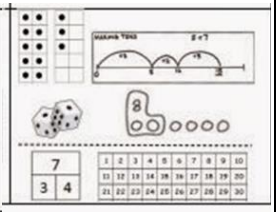
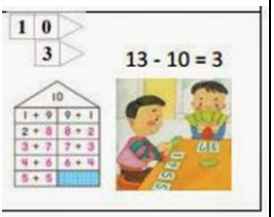
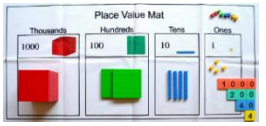
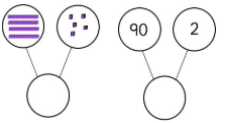
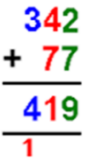
Year 3 objectives

The following table shows the expectations for the end of Year 3 for place value and the four operations.

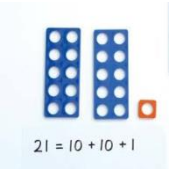
place value	count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
	compare and order numbers up to 1000
	identify, represent and estimate numbers using different representations
	read and write numbers up to 1000 in numerals and in words
	solve number problems and practical problems involving these ideas.
Addition /subtraction	add and subtract numbers mentally, including:
	a three-digit number using ones and tens
	a three-digit number and hundreds
	add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
	estimate the answer to a calculation and use inverse operations to check answers
	solve problems, including missing number problems,
Multiplication/division	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

How we teach

Children (and adults!) can find maths difficult because it is abstract. Therefore, we build on children's existing knowledge by introducing abstract concepts in a physical and hands on way (concrete). We then move to drawing it (pictorial) before moving to recording it as numbers and symbols (abstract). We will also go back and forth between each stage to reinforce concepts.

Concrete	Pictorial	Abstract
		$3 + 2 = \boxed{5}$
Children use hands-on, concrete materials	Children draw and look at diagrams	Children use and interpret numbers and mathematical symbols
		
		

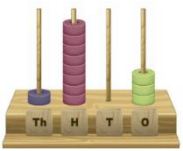
Place value

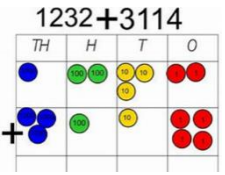


Place value is at the heart of the number system. Children need to understand this Base-10 system. It has 10 digits to show all numbers 0,1,2,3,4,5,6,7,8,9 and uses place value and a decimal point to separate whole numbers from decimal fractions. Each place is 10 times larger than the place to its right.

Whole numbers					Decimal fraction	
Thousands	Hundreds	Tens	Ones	Decimal point	Tenths	Hundredths
1	2	4	5	.	6	3

A secure understanding of this will enable children to see the relationship between the columns. Therefore, it is important that before we move to formal column methods of calculation we secure the understanding of place value.

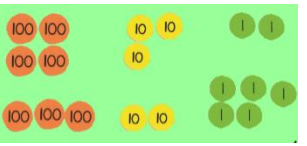




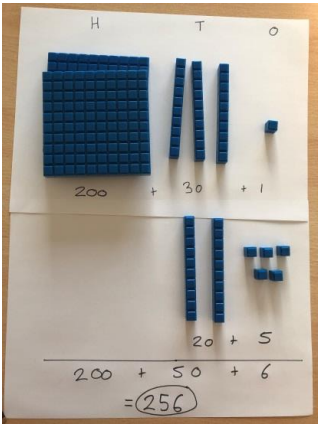
Addition

Concrete

432 + 325 =

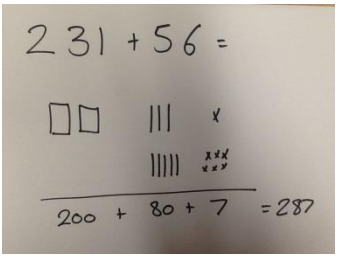


We use Base 10 and place value counters



Pictorial

We draw the Base 10 in columns.
Square = 100s
Line = 10s
Cross = 1s



Abstract

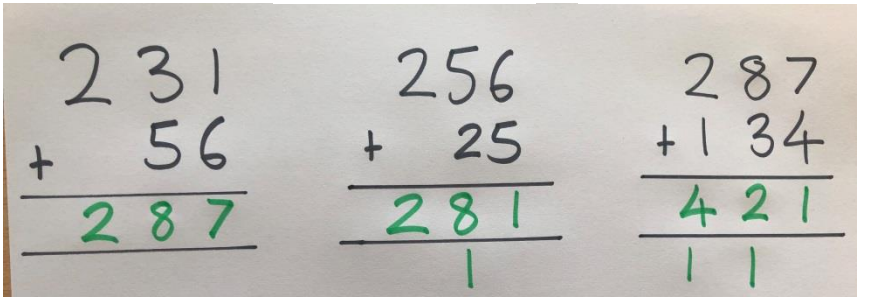
3 + 2 = 5

First, we use numbers that don't need exchanging. Then we introduce one exchange, then two exchanges.

no exchange

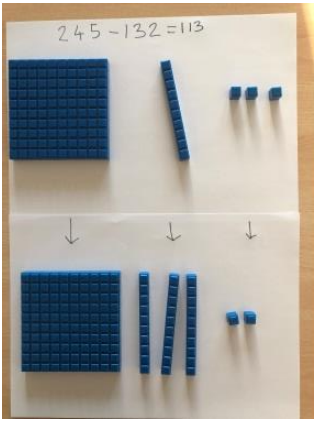
one exchange

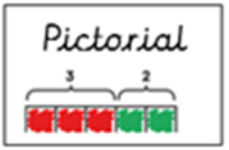
two exchanges



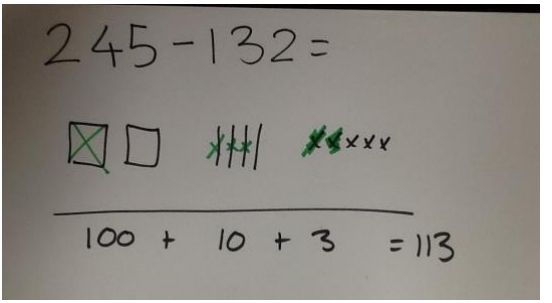
Subtraction

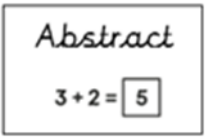
We use Base 10 and place value counters





We draw the Base Ten then cross off what is subtracted.





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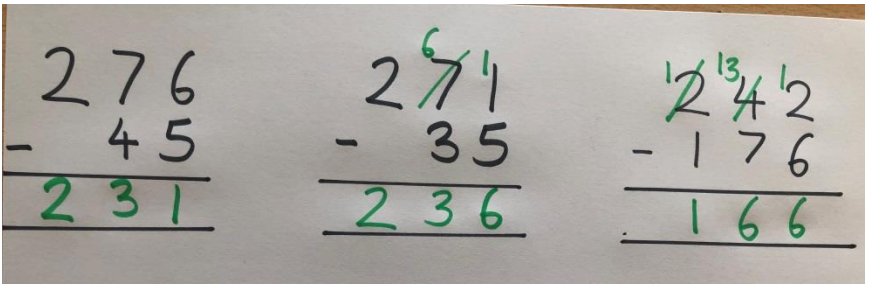
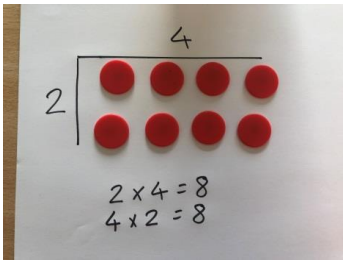
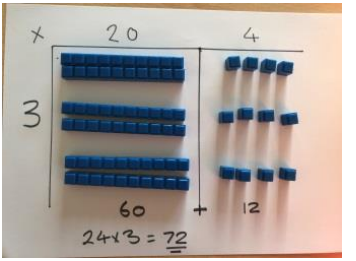


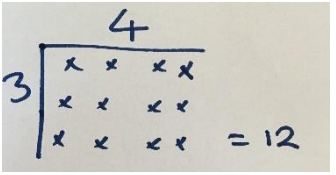
Multiplication

Concrete

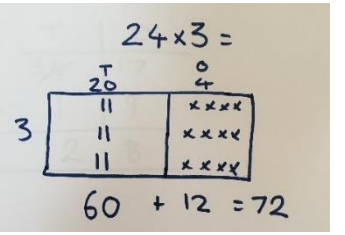




Pictorial



Draw as an array - in rows using crosses

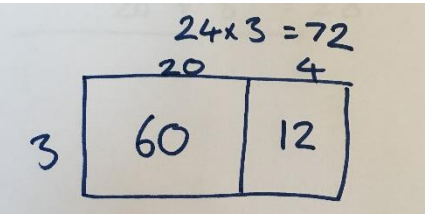


For larger numbers (2 digit by 1 digit) draw as an array separating the tens and ones

Abstract

3 + 2 = 5

Record answer in each section then add together.

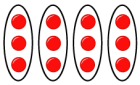


Divison

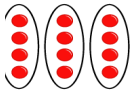
Children need to understand that division can be grouping or sharing.

12 ÷ 3 = 4

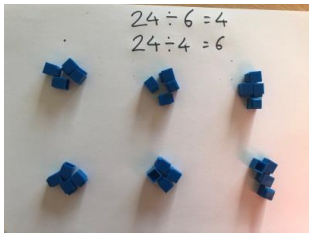
<u>Grouping</u>
3 in each group.
The answer is the number **of** groups.

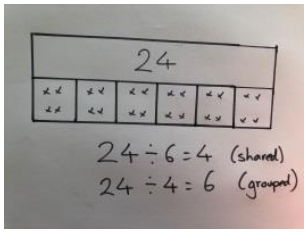


<u>Sharing</u>
3 groups. The answer is the number **in** each groups.



Concrete



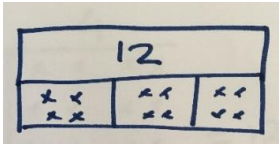


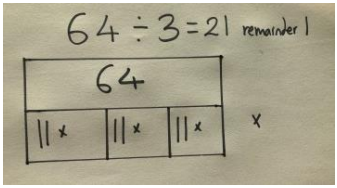
Pictorial

Bar Model (sharing)

Draw total first then number of groups (what it is divided by). If a larger number; share tens equally first.

This is the main method we use.



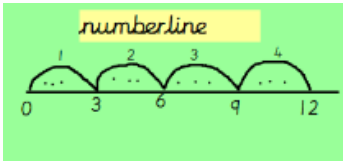


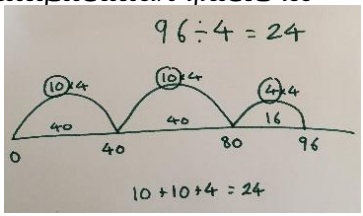
Abstract

3 + 2 = 5

Number line (grouping)

When solving division calculations with larger numbers, they need to be secure on the multiplication facts to use this method.





Mental maths

Mental maths is the foundation maths is built on. Children need to regularly practice these skills to become fluent. If you want to support your child at home, practicing these will really help. Keep it fun and in short, regular bursts. Below is a list of some mental maths skills we focus on in Year 3.

Subitising (Recognising objects to 10 without needing to count) Use fingers, dots on a dice
Number bonds to 10, 100 and 20 2 + 8 = 10
Partitioning 3 digit numbers 236 = 200 + 30 + 6
Counting forwards/ backwards in ones, twos, fives and tens. 65,60,55,50.....
Double single digits and half number to 100 Double 4 = 8 Half of 50 = 25
X and ÷ by 10 23 x 10 = 230 230 ÷ 10 =23
Find the difference (mental subtraction) 133 -124 = 9 Count from 124 to 133 to find the difference

Times tables

A good knowledge and quick recall of times tables is essential to children's mathematical progress. The children are taught up to 12 X 12. The target is for all children to know their tables by the end of year four. It is very important that children practice their times tables daily at home.

When learning their tables, children are taught to look for patterns such as odd and even number answers, or patterns made by adding together the separate digits in the answers. Children are also taught to recognise the related facts so that knowing 6X7 = 42 means they know 7X6 = 42; 42 ÷ 6 = 7; 42 ÷ 7 = 6.

The school has purchased the app Times Tables Rock Stars. Children can practise their weekly set times tables on Garage. They can also practise all the times tables on the games Jamming, Studio and Sound Check.

Useful websites

Hit The Button (Quick fire maths practise)
https://www.topmarks.co.uk/maths-games/hit-the-button

Oxford Owl (practise multiplication facts)
https://www.oxfordowl.co.uk/for-home/kids-activities/fun-maths-games-and-activities/

Super movers (fun times table songs)
https://www.bbc.co.uk/teach/supermovers/ks2-maths-collection/z7frpg8

Top Marks (maths games)

https://www.topmarks.co.uk/Search.aspx?Subject=16&AgeGroup=3

Crick web (maths games)

http://www.crickweb.co.uk/ks2numeracy.html

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