Maths booklet for parents - Year 5

The 4 operations

Falcon Junior School

2021

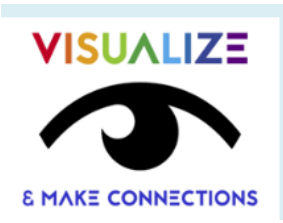
The maths curriculum

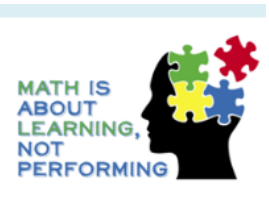
Falcon follows the National curriculum.
The national curriculum (2014) for mathematics aims to ensure that all pupils:

- 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 d2own problems into a series of simpler steps and persevering in seeking solutions.





Year 5 objectives

The following table shows the expectations for the end of Year 5 for place value and the four operations.

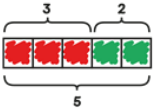
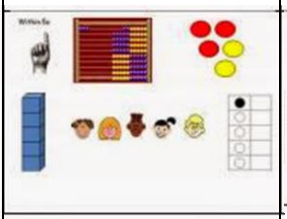
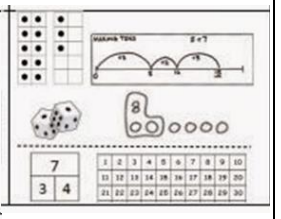
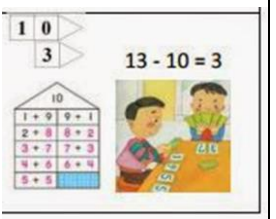
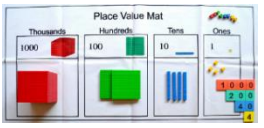
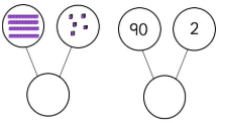
place value	read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
	count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000
	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0
	round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000
	solve number problems and practical problems that involve all of the above
	read Roman numerals to 1,000 (M) and recognise years written in Roman numerals

Addition and subtraction	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
	add and subtract numbers mentally with increasingly large numbers
	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

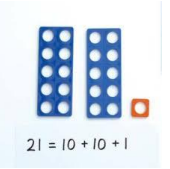
Multiplication/division	identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
	know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
	establish whether a number up to 100 is prime and recall prime numbers up to 19
	multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
	multiply and divide numbers mentally, drawing upon known facts
	divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
	multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
	recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})
	solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
	add and subtract numbers mentally with increasingly large numbers
	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

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 = 5
Children use hands-on, concrete materials	Children draw and look at diagrams	Children use and interpret numbers and mathematical symbols
		
		342 + 77 419 1

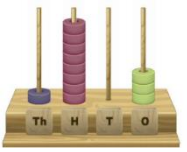
Place value

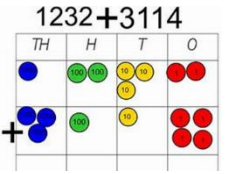


Place value is at the heart of the number system. Children need to understand this Base-10 system. It has 10 digits to show all numbers 0,1,2,3,4,5,6,7,8,9 and uses place value and a decimal point to separate whole numbers from decimal fractions. Each place is 10 times larger than the place to its right.

Hundreds of Thousands 100 000	Tens of Thousands 10 000	One Thousands 1000	Hundreds 100	Tens 10	Units 1	Decimal Point	Tenths $\frac{1}{10}$ 0.1 or	Hundreths $\frac{1}{100}$ 0.01 or
						●		

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.

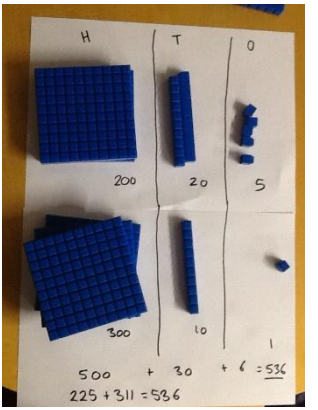




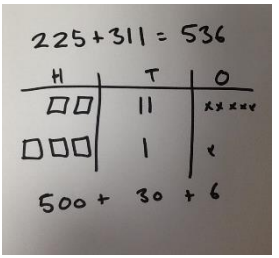
Addition

(Up to 5-digits, including decimals)

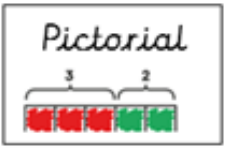
Concrete



We use Base 10 or place-value counters and partition the numbers into hundreds, tens and ones.



Pictorial



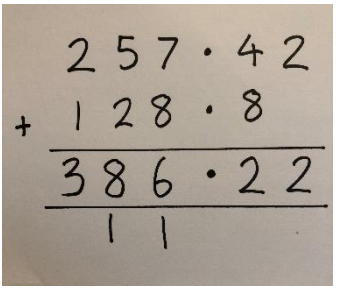
First, we draw the Base 10 using columns:
Square = 100s Line = 10s
Cross = 1s. Then we record the total for each column.

Abstract

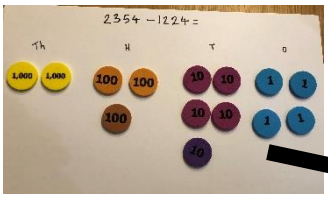
3 + 2 = 5

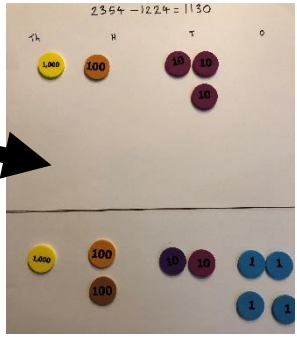
Formal column method

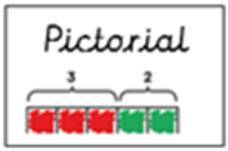
Once secure, they will then move onto the compact column method. Any exchanges are recorded below the line.

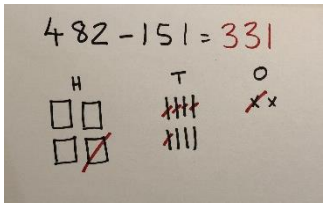


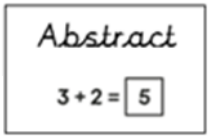
Subtraction









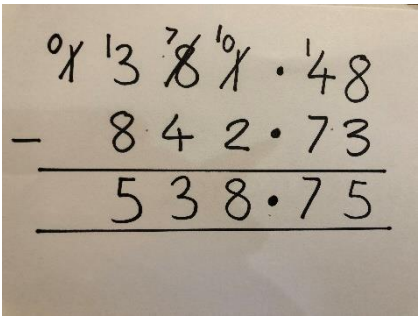


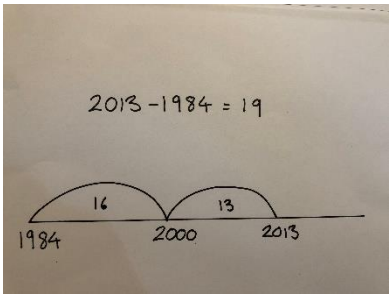
Formal column method

Record any exchanges as shown in the example.

Find the difference - numberline

We teach as an alternative to column especially with close numbers

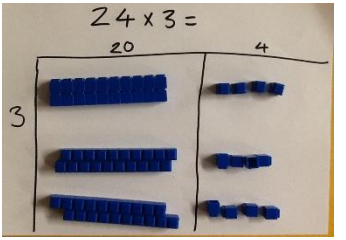


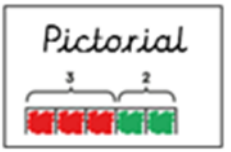


Multiplication

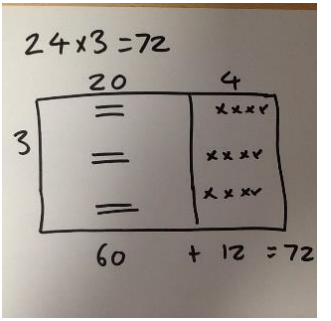
(4 by 1 and 2 by 3 digits, including decimals)

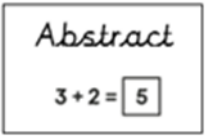
Use base ten.
Partition tens and ones first.





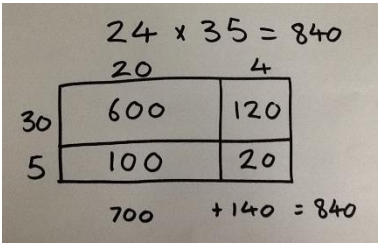
Draw as an array separating the tens and ones

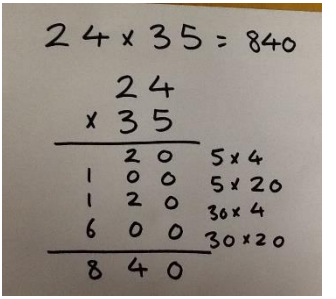




Empty array
Record answer in each section then add together.

Expanded column method
Record each step at a time.



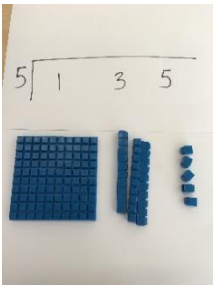


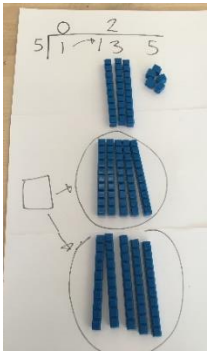
Divison

(4 digits by 1 and 2 digits, including decimals)

Concrete

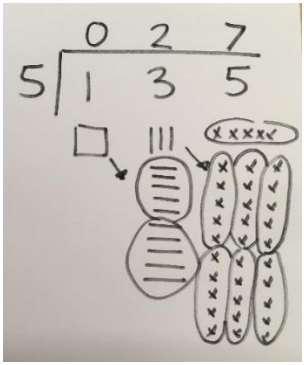
Use Base Ten or place value counters. We use the phrase "How many groups of... "





Pictorial

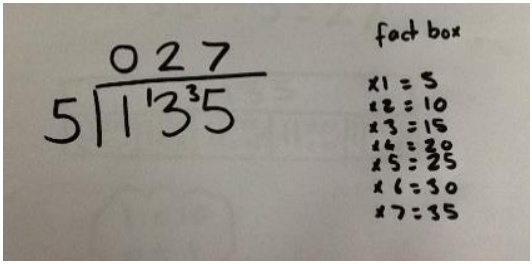
Draw the Base 10 and circle the groups you are dividing it by. Any left over, carry to next column.



Abstract

3 + 2 = 5

Fact boxes can be used to support finding the number of groups.



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 5.

Partitioning numbers including decimals 42.36 = 40 +2 +0.3 + 0.06
Counting forwards/ backwards in different multiples, fractions, decimals and into negative numbers 0.02, 0.04, 0.06..... 4,2,0,-2,-4,.....
Half and double numbers, including near doubles 402 +398 = 800 Half of 2550 = 1275
X and ÷ by 10,100,1000 including decimals 2.3 x 10 = 23 23 ÷ 10 =2.3
Find the difference (mental subtraction) 3026 -2924 = 102 Count up from 2924 to 3026
To identify and use related times and division facts 2400 ÷ 6 = 400 use 24 ÷ 6 = 24
Composition of decimal numbers 0.6 = 0.1 +0.5
Round numbers to nearest tenth, whole, 10 and 100 12.47 →12.5 (nearest tenth) 12 (nearest whole)
Add and subtract 3 digit numbers and multiples of 10 246 + 50 = 296 528 - 40 = 488

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 4. 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 Studio and Sound Check. If they want to improve their rock status, they need to complete 10 games on Studio.

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

Produced by B Falcon 2021