Year 5 and Year 6 Mathematics Workshop

Aims of today

▶ To understand how we use the written calculation methods at Gascoigne and why they are important.

▶ To enable you to be confident at supporting your child in maths.To take away some ideas to support your children at home.

Why learn about maths?
We all use maths everyday!

• We look at the clock to tell the time before we get out of bed! How many more minutes do I have before I have to get up for work?! How many times can I hit that snooze button?

•We estimate how far it is to the floor!

•We know how many degrees to turn the tap so that we get enough water without getting soaked!

•We measure the cornflakes in our bowl so they dont spill over!

•We go to the shops, pay bills, pay for the bus, petrol
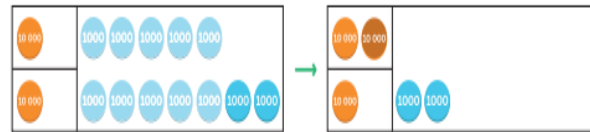
    …you get the picture!

Addition

- Year 5 – add whole numbers with more than 4 digits, including using formal written methods

- Year 6 – solve addition multi-step problems in contexts, deciding which operations and methods to use and why

Year 5

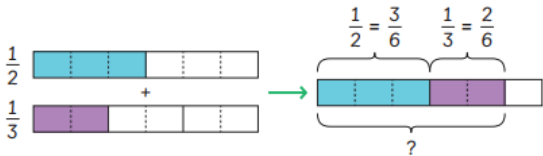| Year	Topic/Strand	Representation	Key Idea
Year 5	Formal Written Method	5 thousands + 7 thousands = 12 thousands 12 thousands = 1 ten thousand + 2 thousands 15 000 + 17 000 = 32 000	Place–value counters are used to represent the formal written method. The procedure remains unchanged from Year 2.

Year 6

Year	Topic/Strand	Representation	Key Idea
Year 6	**Addition within Order of Operations**	First, carry out all the operations in ( ). Next, perform all the multiplication and division. Then, calculate all the addition and subtraction. Calculate. (a) $(1 + 3) \times 5 - 7 =$ ▭ (b) $1 + (3 \times 5) - 7 =$ ▭ (c) $(1 + 3) \times (7 - 5) =$ ▭	Pupils utilise the previous addition skills within mixed operation equations. Addition is carried out after multiplication and division. If only addition and subtraction are present in an equation, pupils work from left to right.
Year 6	**Adding Fractions**	 $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$	Pupils use their understanding of adding the same noun when adding fractions with the same and different denominators. Pupils use their understanding of equivalence to ensure the nouns and the denominators are the same before the calculation is completed.
Year 6	**Adding Decimals**	$$\begin{array}{r} £\ \overset{1}{3}.90 \\ +\ £\ 2.50 \\ \hline £\ 6.40 \end{array}$$	Pupils use their understanding of adding the same nouns when adding decimal numbers. They use place–value knowledge and composing and decomposing at a rate of 10 when adding decimals. The procedure remains the same as adding whole numbers.

▶ Have a go!

Q2 8,275 + 82

Q6 5.87 + 3.123

Subtraction

- Year 5 – subtract whole numbers with more than 4 digits, including using formal written methods

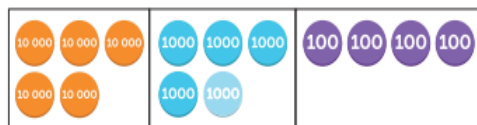- Year 6 - solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Year 5

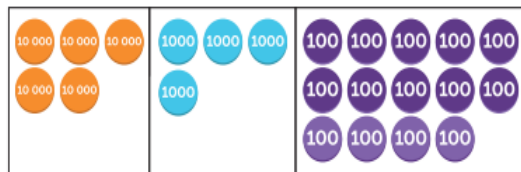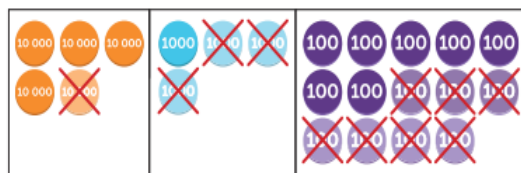| Year	Topic/Strand	Representation	Key Idea
Year 5	Formal Written Method		Place–value counters are used to represent the formal written method. The procedure to subtract using numbers up to 6-digits using the formal written method remains the same as when it was first introduced. Pupils begin at the least value place and work to the left through the places to find the difference. Renaming takes place when a calculation in a place cannot be done. Again, this procedure is the same as when this was first learned and requires the renaming of the minuend. The renaming of the minuend is also represented using a number bond, providing the foundation for mental methods that require renaming.

Year 6

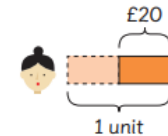| Year	Topic/Strand	Representation	Key Idea
Year 6	Subtraction within Order of Operations	First, carry out all the operations in ( ). Next, perform all the multiplication and division. Then, calculate all the addition and subtraction. $15 - 4 \times 3 = 15 - 12$ $= 3$ $(15 - 4) \times 3 = 11 \times 3$ $= 33$ *Follow the order of operations. Multiply, then subtract.* *First, do the subtraction in the ( ). Then multiply.*	Pupils utilise the previous subtraction skills within mixed operation equations. Subtraction is carried out after multiplication and division. If only addition and subtraction are present in an equation, pupils work from left to right.
Year 6	Bar Models	£20 1 unit $= £40 - £20$ $= £20$	Pupils are expected to utilise previously learned subtraction skills within increasingly complex situations. The procedure of subtraction is often at a level previously learned in isolation but the skill being developed is identifying when to use subtraction within a problem.

▶ Have a go…

1) 1789 – 8621

2) 43532 – 34536

Q19 7-2.25

Multiplication

- Year 5 – 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

- Year 6 –multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.

- Multiply one-digit numbers with up to two decimal places by whole numbers.

Year 5

Year	Topic/Strand	Representation	Key Idea
Year 5	Formal Written Method	Multiply 253 by 17. 253 × 17 ───── 1 7 7 1 + 2 5 3 0 ───── 4 3 0 1 2 5 3 × 7 ───── 1 7 7 1	Pupils use formal written methods, short and long, to multiply a 3-digit number by a 1-digit number; then move on to multiply a 4-digit number by a 1-digit number. Initially the long method is used, showing the product as a result of multiplying each place. Pupils then progress to the short formal written method making a link between the two procedures. Next, pupils learn to multiply a 2-digit number by a 2-digit number, then a 3-digit number by a 2-digit number. Links are made to the formal written procedure that they know. Pupils work systematically through the procedure progressing from multiplying by ones to multiplying by tens and ones.

Year 6

- ▶ Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.

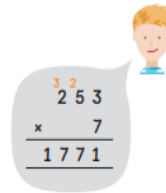- ▶ Multiply one-digit numbers with up to two decimal places by whole numbers.

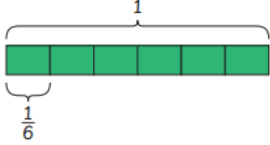| Year	Topic/Strand	Representation	Key Idea
Year 6	Order of Operations	First, carry out all the operations in ( ). Next, perform all the multiplication and division. Then, calculate all the addition and subtraction. $15 - 4 \times 3 = 15 - 12$ $(15 - 4) \times 3 = 11 \times 3$ $= 3$ $= 33$ Follow the order of operations. Multiply, then subtract. First, do the subtraction in the ( ). Then multiply.	Pupils use the multiplication skills they have learned in previous years within expressions and equations that use multiple operations. Pupils learn to multiply within brackets first, then left to right in expressions and equations that use multiplication. The procedures to multiply remain the same throughout.
Year 6	Multiplying by 2-Digit Numbers	£1229 × 28 = $$\begin{array}{r} {\scriptstyle 1}\ {\scriptstyle 2}\ {\scriptstyle 1}\!\!\!\!{\scriptstyle 7} \\ 1\ 2\ 2\ 9 \\ \times\ \ \ \ 2\ 8 \\ \hline 9\ 8\ 3\ 2 \\ +\ 2\ 4\ 5\ 8\ 0 \\ \hline 3\ 4\ 4\ 1\ 2 \end{array}$$ $\longrightarrow 1229 \times 8 = 9832$ $\longrightarrow 1229 \times 20 = 24\,580$ $\longrightarrow 1229 \times 28 = 34\,412$	Pupils revisit the formal written method, multiplying up to 4-digit numbers by 2-digit numbers.

▶Have a go...

Q23 836 x 27

Q30 3468 x 62

Division

- Year 5 – 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

- Year 6 –Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.

- Use written division methods in cases where the answer has up to two decimal places.

Year 5

Year	Topic/Strand	Representation	Key Idea
Year 5	**Dividing without Remainder**		Pupils use place–value counters and number bond diagrams to support their understanding of the long formal written method for division. Pupils are shown how numbers can be partitioned into known multiples before carrying out the division.
Year 5	**Dividing with Remainder**		The same procedure used for dividing without a remainder is used for dividing with a remainder but once pupils have made the maximum possible number of equal groups, they have a quantity remaining that is less than the equal group size. This is the remainder. Initially, the remainder is shown as a whole number. This progresses to showing the remainder as a fraction. This progression is supported pictorially with a bar model. Pupils should also start to become aware that the representation of the remainder will be determined by the context of the problem.

Year 6

Year	Topic/Strand	Representation	Key Idea
Year 6	Order of Operations	$15 - 4 \times 3 = 15 - 12$ $= 3$ Follow the order of operations. Multiply, then subtract.	Pupils understand the order to calculate expressions and equations that have multiple operations.
Year 6	Dividing by a 2-Digit Number without Remainder	$450 \div 15 = $ 45 tens $\div 15 = 3$ tens $450 \div 15 = 30$ 450 = 45 tens	Pupils use simple division to help them calculate more complex division. Initially, pupils understand that if the dividend increases by a factor of 10 and the divisor remains the same, the quotient will also increase by a factor of 10. So, if $45 \div 15 = 3$, then $450 \div 15 = 30$. Pupils also use their understanding of factors to divide. They progress to show division using a long formal written method. Once the long method is understood, pupils move on to divide using a short formal written method. While the process remains the same, the notation changes to keep it within the short division structure.

▶ Have a go...

Q25 257 ÷ 8

Q25 888 ÷ 37

Q36 8051 ÷ 83

Percentages

- Have a go...

Q27 35% of 320

Q29 51% of 900

Q33 36% of 450

Fractions

- Have a go…

Q22

Q24

Q26

How you can help at home

- Telling the time
- The ability to estimate
- To use maths in a real life context
- Cooking
- Shopping
- Practise times tables
- Support with homework using methods we've shown you.

- We have these calculation policies on our school website alongside the national curriculum for maths.

- We will also put this PowerPoint on the Year 5 and Year 6 class page on our website.

- Please feel free to come and see me if you need any help or have any questions.