The Pegasus Academy Trust

Formal written calculation of whole numbers policy

Compiled by MS, DW and SS July17

1. Introduction

1.1 Children develop their understanding of the processes of calculation through practical, oral and mental activities. Children develop this understanding using concrete objects, pictorial representation, mental manipulation and oral discussion. This use of a range of structured activities leads to the fluent manipulation of or 'feel' for numbers.

1.2 They develop ways of recording their thinking and calculation methods, use particular methods that apply to special cases, and learn to interpret and use appropriate signs and symbols involved. Children use models and images, such as empty number lines, to support their mental and informal methods of calculation. Explicit links are made between concrete, pictorial and abstract representations of calculations.

1.3 Children's mental methods are strengthened and refined to become fluent and effective. This is accompanied by a refining of their informal methods. Children are taught the links between mental methods, informal methods and formal written methods. They are also taught where mental methods are different to formal written methods and how to choose the appropriate approach to a given calculation. When faced with a calculation, children are able to decide which method is most appropriate and have strategies to check its accuracy.

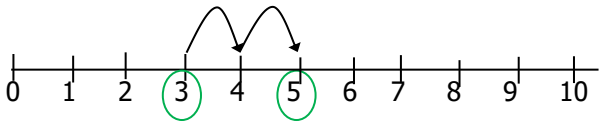
1.4 Children are taught formal written methods for addition, subtraction, multiplication and division in appropriate year groups. By the end of Year 6 children are equipped with mental and written methods that they understand and can use correctly.

1.5 Children's learning is underpinned by a secure knowledge of appropriate number facts, the ability to articulate their understanding of key concepts and the methods they have used to solve calculations.

1.6 The overall aim is that when children leave the Pegasus Academy Trust they:

a) have a secure knowledge of number facts and of the four operations;
b) have an efficient, reliable, compact written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally.

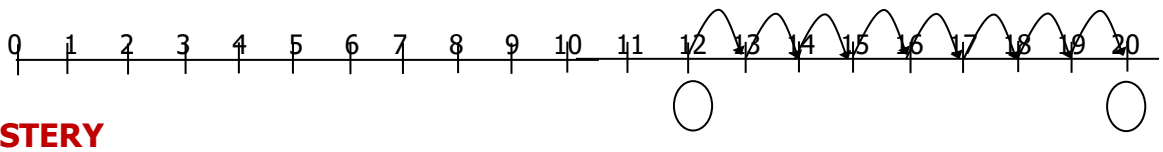
Year 1
Addition

Year 1 add 1-digit and 2-digit numbers to 20, including zero.	Calculation examples
Adding on a number line O + O Children will add two one digit numbers with a total of up to 20 on a printed number line. Children circle their start and end points. **MASTERY** Before moving on: • identify errors e.g. incorrectly circled numbers and incorrect number of jumps • missing number calculations e.g. 10 + _ = 18 • explain reasoning verbally	3 + 2 = 5 

TO + O

Children will add a one digit number to a two digit number totalling up to 20 on a printed number line.

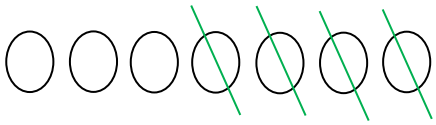
12 + 8 = 20

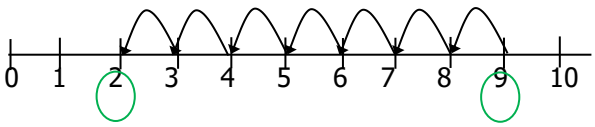


MASTERY
Before moving on:

- identify errors e.g. incorrectly circled numbers and incorrect number of jumps
- missing number calculations e.g. 10 + _ = 18
- explain reasoning verbally

Year 1
Subtraction

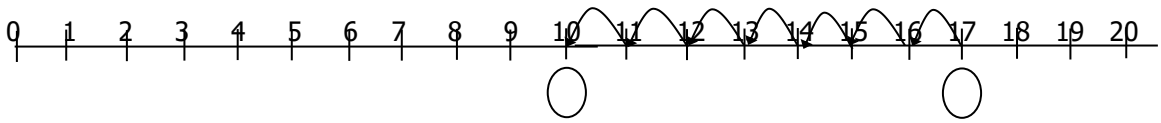
Year 1 subtract 1-digit and 2-digit numbers to 20, including zero.	Calculation examples
<u>Pictorial representation</u> O - O Children will subtract two one digit numbers using an independently drawn pictorial representation. This follows on from children using concrete objects such as counters.	7 - 4 = 3 

Year 1 subtract 1-digit and 2-digit numbers to 20, including zero.	Calculation examples
<u>Subtraction on a number line</u> O - O Children will subtract two one digit numbers by counting back on a printed number line. Children circle their start and end points. MASTERY Before moving on: • identify errors e.g. incorrectly circled numbers and incorrect number of jumps • missing number calculations e.g. 10 - _ = 3 • explain reasoning verbally	9 - 7 = 2 

TO - O

Children will subtract a one digit number from a two digit number less than 20 on a printed number line.

17 - 7 = 10



MASTERY
Before moving on:
- identify errors e.g. incorrectly circled numbers and incorrect number of jumps
- missing number calculations e.g. 18 - _ = 8
- explain reasoning verbally

Year 2
Addition

Year 2 adding numbers with up to 2 digits

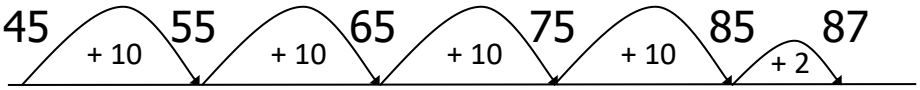
Addition on an empty number line using partitioning

TO + TO *no bridging*

Children will add two 2-digit numbers on an independently drawn empty number line. The number with the least value is partitioned. Children add the 10s first in multiples, then the ones.

45 + 42 =

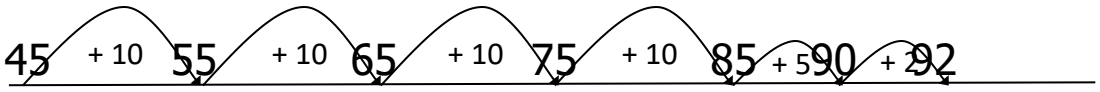
40 2



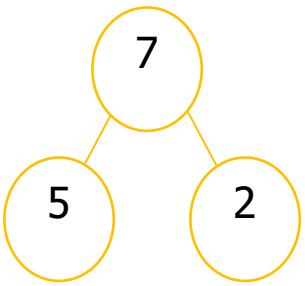
TO + TO *with bridging*

45 + 47 =

40 7



Children will add two 2-digit numbers on an independently drawn empty number line. The number with the least value is partitioned. Children add the 10s first in multiples, then the ones using their understanding of part-part-whole to bridge the 10.



Year 2 adding numbers with up to 2 digits

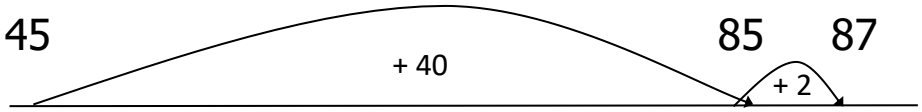
Addition on an empty number line using partitioning

TO + TO *in two steps*

Children will add two 2-digit numbers on an independently drawn empty number line. The number with the least value is partitioned. Children add the 10s in one step, then the ones in the second step.

45 + 42 =

4 0 2

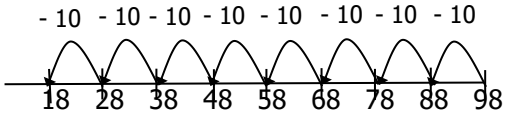
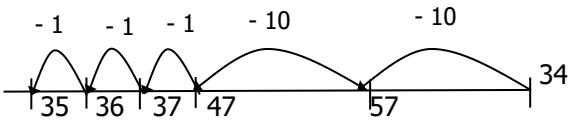


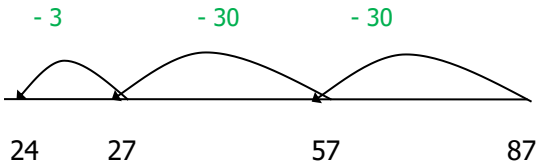
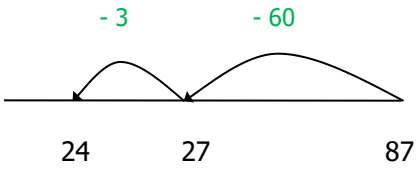
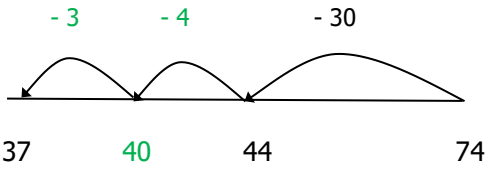
MASTERY
Before moving on:

- can children correct calculations with errors
- identify missing digits
- explain reasoning verbally and in writing

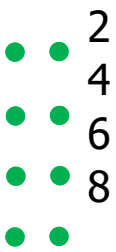
Year 2 adding numbers with up to 2 digits	Calculation examples
<u>Partitioning and recombining</u> TO + TO *no bridging* Children will add numbers with up to 3 digits using brackets to reinforce place value.	T O T O 4 3 + 3 4 40 3 30 4 = (40 + 30) + (3 + 4) = 70 + 7 = 77
TO + TO *with bridging* In this calculation stage, the repartitioning of 16 into 10 and 6 will only be necessary for some pupils.	T O T O 5 9 + 2 7 50 9 20 7 = (50 + 20) + (9 + 7) = 70 + 16 10 6 = (70 + 10) + 6 = 80 + 6 = 86

Year 2
Subtraction

Year 2 subtract numbers using concrete objects and pictorial representations, including: A 2-digit number and ones, A 2-digit number and tens Two 2-digit numbers	Calculation examples
<u>Subtraction on a number line</u> TO - TO *multiples of ten* Children will subtract a two digit multiple of 10 from a two-digit number by counting back in multiples of 10 on an empty number line that they have drawn. MASTERY Before moving on: • identify errors e.g. incorrectly completed number lines • missing numbers • explain reasoning verbally TO - TO *with partitioning* Children subtract a two digit number from a two-digit number. The smaller number is first partitioned into tens and ones. The tens are subtracted first and then the ones. At this stage, calculations do not bridge the tens. MASTERY Before moving on: • identify errors e.g. incorrectly completed number lines • missing numbers • explain reasoning verbally	98 - 80 = 18  57– 23 = 34 20 3 

Year 2 subtract numbers using concrete objects and pictorial representations, including: A 2-digit number and ones, A 2-digit number and tens Two 2-digit numbers	Calculation examples
<u>Subtraction on a number line</u> TO - TO *with partitioning* As children become more proficient, they should complete the calculation in fewer steps. MASTERY Before moving on: • identify errors e.g. incorrectly completed number lines • missing numbers • explain reasoning verbally	87– 63 = 24 60 3 
TO - TO *bridging ten* Children apply mental strategies for bridging ten. MASTERY Before moving on: • identify errors e.g. incorrectly completed number lines • missing numbers • explain reasoning verbally	87– 63 = 24 60 3  74– 37 = 37 30 3 + 4 

Year 2
Multiplication

Year 2 solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context.	Calculation examples
<u>Multiplication using arrays</u> O X O Children use arrays to represent the number of multiples, e.g. the four arrays represent the four multiples of two. This representation can be taught in context: if you have 4 boats with two people in each, how many people are there?	4 x 2 = 8 

Year 3
Addition

Year 3 add numbers with up to three digits, using formal written methods of columnar addition.	Calculation examples
<u>Expanded column addition:</u> HTO + HTO *no bridging* Children will add numbers with up to 3 digits using columns to reinforce place value. Start by adding the column of least significant value: please model to the children that we always start adding the ones column first.	H T O H T O 2 3 5 + 1 6 2 200 + 30 + 5 + 100 + 60 + 2 300 + 90 + 7 = 397
<u>Expanded column addition:</u> HTO + HTO *bridging 10* The first stage is bridging 10. Children are taught to carry the ten from the ones column into the tens column and recording it above. Planning: please consider carefully the numbers children are adding. At this stage, the children should only be bridging 10.	H T O H T O 3 4 8 + 1 2 9 10 + 300 + 40 + 8 100 + 20 + 9 400 + 70 + 7 = 477

Year 3 add numbers with up to three digits, using formal written methods of columnar addition.	Calculation examples
<u>Expanded column addition:</u> HTO + HTO *bridging 100* The second stage is bridging 100. Children are taught to carry the hundred from the tens column into the hundreds column, recording it above. Planning: please consider carefully the numbers children are adding. At this stage, the children should only be bridging 100.	H T O H T O 6 9 7 + 2 8 1 100 + 600 + 90 + 7 200 + 80 + 1 900 + 70 + 8 = 978
<u>Expanded column addition:</u> HTO + HTO *bridging 10 and 100* The final stage is bridging 10 and 100. Children are taught to combine the taught skills in one calculation. Planning: please consider carefully the numbers children are adding. At this stage, the children should be bridging 10 and 100.	H T O H T O 4 7 7 + 2 6 4 100 10 400 + 70 + 7 + 200 + 60 + 4 700 + 40 + 1 = 741

Year 3
Subtraction

Year 3 subtract numbers with up to three digits, using formal written methods of columnar subtraction	Calculation examples
<u>Expanded column subtraction:</u> TO - TO *no exchange* Children will subtract numbers with up to 3 digits using columns to reinforce place value. Start by subtracting the column of least significant value: please model to the children that we always start subtracting in the ones column first. Move on to HTO - HTO	T O T O 6 7 - 4 2 60 + 7 - 40 + 2 20 + 5 = 25
<u>Expanded column subtraction:</u> TO - TO *with exchange from the 10s column* The first stage is exchanging from the 10s column into the ones column. Planning: • please consider carefully the numbers children are subtracting. At this stage, the children should only be exchanging from the 10s column. • All children will need use Diennes and other concrete resources to understand what exchange is and why it is necessary. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	T O T O 8 2 - 5 9 70 12 ~~80~~ + ~~2~~ 50 + 9 - 20 + 3 = 23

Year 3 subtract numbers with up to three digits, using formal written methods of columnar subtraction	Calculation examples
<u>Expanded column subtraction:</u> HTO - HTO *with exchange from the 100s column* The second stage is exchanging from the 100s column into the 10s column. Planning: • please consider carefully the numbers children are subtracting. At this stage, the children should only be exchanging from the 100s column. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	H T O H T O 3 1 6 - 1 7 4 200 110 ~~300~~ + ~~10~~ + 6 - 100 + 70 + 4 100 + 40 + 2 = 142
<u>Expanded column subtraction:</u> HTO - HTO *with two exchanges* The third stage is exchanging from the 100s and 10s column in one calculation. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	H T O H T O 4 2 6 - 2 3 8 110 300 ~~10~~ 16 ~~400~~ + ~~20~~ + ~~6~~ 200 + 30 + 8 - 100 + 80 + 8 = 188

Year 3 subtract numbers with up to three digits, using formal written methods of columnar subtraction	Calculation examples
<u>Expanded column subtraction:</u> HTO - HTO *with a 0 in the ones column* The fourth stage is exchanging from the 10s column when there is a 0 in the ones column. Planning: • please consider carefully the numbers children are subtracting. At this stage, there should be only one exchange. The next stage is HTO - HTO with a 0 in the 10s column, again there should be only one exchange (e.g. 304 - 122). MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	H T O H T O 2 9 0 - 1 7 6 80 10 200 + ~~90~~ + 0 100 + 70 + 6 - 100 + 10 + ~~4~~ = ~~114~~

Year 3 Multiplication

Year 3 multiplying 2 digits by 1 digit	Calculation examples
<u>Grid method:</u> TO x O Children will multiply 2 digit by 1 digit numbers using the grid method to partition beginning with smaller numbers. Planning: • All children will need to use Diennes and other concrete resources to support and reinforce their learning.	T O 1 2 x 4 10 2 X 10 2 4 40 8 40 + 8 = 48
When secure, they will move on to larger numbers. Children would be expected to use the formal column addition method they have already learnt to add the totals from the grid. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	T O 8 9 x 7 80 9 X 80 9 7 560 63 560 + 63 = 623

Year 4
Addition

Year 4 add numbers with up to 4-digits using the formal written methods of columnar addition.	Calculation examples
<u>Compact column addition:</u> ThHTO + ThHTO *no exchange* The first stage is compact column addition with no carrying. Planning: please consider carefully the numbers children are adding. At this stage, the children should not be carrying. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O Th H T O 2 3 4 1 + 1 6 1 3 2 341 1 613 + 3 954 _____ _____
<u>Compact column addition:</u> ThHTO + ThHTO *bridging 10* The second stage is bridging through 10. Please make sure carried digits are in line with the relevant column. Planning: please consider carefully the numbers children are adding. At this stage, the children should be bridging 10 only. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O Th H T O 2 2 5 4 + 1 6 3 8 1 2 2 5 4 1 6 3 8 + 3 8 9 2 _____ _____

Year 4 add numbers with up to 4-digits using the formal written methods of columnar addition.	Calculation examples
<u>Compact column addition:</u> ThHTO + ThHTO *bridging 100* The third stage is bridging through 100. Planning: please consider carefully the numbers children are adding. At this stage, the children should be bridging 100 only. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O Th H T O 5 4 5 3 + 1 2 8 5 1 5 4 5 3 1 2 8 5 + 6 7 3 8 _____ _____
<u>Compact column addition:</u> ThHTO + ThHTO *multiple bridging* The fourth stage is bridging through 10 and 100. Planning: please consider carefully the numbers children are adding. At this stage, the children should be bridging 10 and 100 only. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O Th H T O 3 2 6 4 + 2 4 5 9 1 1 3 2 6 4 2 4 5 9 + 5 7 2 3 _____ _____

Year 4
Subtraction

Year 4 add numbers with up to 4-digits using the formal written methods of columnar addition.	Calculation examples
<u>Compact column addition:</u> ThHTO + ThHTO *bridging 100* The third stage is bridging through 100. Planning: please consider carefully the numbers children are adding. At this stage, the children should be bridging 100 only. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O Th H T O 5 4 5 3 + 1 2 8 5 1 5 4 5 3 1 2 8 5 + 6 7 3 8 _____ _____
<u>Compact column addition:</u> ThHTO + ThHTO *multiple bridging* The fourth stage is bridging through 10 and 100. Planning: please consider carefully the numbers children are adding. At this stage, the children should be bridging 10 and 100 only. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O Th H T O 3 2 6 4 + 2 4 5 9 1 1 3 2 6 4 2 4 5 9 + 5 7 2 3 _____ _____

Year 4 Subtract numbers with up to 4-digits using the formal written methods of columnar subtraction.	Calculation examples
<u>Compact column subtraction:</u> ThHTO - ThHTO *with exchange from the 100s column* Children will subtract numbers with up to 4 digits The third stage is exchanging from the 100s column into the tens column.	ThHTO ThHTO 6 874 - 2 582 7 1 6 8 7 4 2 5 8 2 - 4 2 9 2
<u>Expanded column subtraction:</u> ThHTO - ThHTO *with multiple exchanges* The final stage is exchanging from the 10s and 100s column. Planning: • please consider carefully the numbers children are subtracting. At this stage, the children should only be exchanging from the 10s and 100s column. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	ThHTO ThHTO 9 4 72 - 2 2 8 8 1 3 6 1 9 4 7 2 2 2 8 8 - 7 1 8 4

Year 4
Multiplication

Year 4 multiply 3 digit numbers by a 1-digit number using formal written layout.	Calculation examples
<u>Expanded column multiplication:</u> HTO x O *with brackets* Children will multiply 3 digit by a 1 digit number using expanded column multiplication starting with the column of least significant value. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	H T O 2 1 2 x 4 212 x 4 8 (4 x 2) 40 (4 x 10) 800 (4 x 200) 848
HTO x O *without brackets* Children will multiply 3 digit by a 1 digit number using expanded column multiplication starting with the column of least significant value. Please make sure carried digits are in line with the relevant column. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	H T O 2 7 5 x 7 275 x 7 35 490 1 1400 1925

Year 5
Addition

Year 5 add whole numbers with more than 4 digits, including using formal written	Calculation examples
<u>Compact column addition:</u> HthTthThHTO + HthTthThHTO *multiple bridging* Continue using compact column addition to add numbers of more than 4 digits. Planning: Children in Year 5 need to read and write numbers up to 1,000,000. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	238 396 + 446 423 1 1 2 3 8 3 9 6 4 4 6 4 2 3 + 6 8 4 8 1 9 _____ _____

Year 5
Subtraction

Year 5 subtract whole numbers with more than 4 digits, including using formal written methods.	Calculation examples
<u>Compact column subtraction:</u> HthTthThHTO - HthTthThHTO *multiple exhcange* Continue using compact column subtraction to subtract numbers of more than 4 digits. Planning: Children in Year 5 need to read and write numbers up to 1,000,000. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	528 245 - 254 128 4 1 3 1 5 2 8 2 4 5 2 5 4 1 2 8 2 7 4 1 1 7

Year 5
Multiplication

Year 5 multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.	Calculation examples
<u>Short multiplication:</u> THTO x O Children will multiply 4 digit by a 1 digit number using short multiplication starting with the column of least significant value. Please make sure carried digits are in line with the relevant column. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	TH H T O 4 3 8 7 x 4 1 3 2 4 3 8 7 x 4 1 7 5 4 8
<u>Long multiplication:</u> TO x TO Children will multiply 2 digit by 2 digit numbers using long multiplication starting with the column of least significant value. When multiplying by the tens digit of the multiplier, a zero must be used as place holder. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in Writing	T O T O 7 5 x 1 9 4 7 5 x 1 9 6 7 5 7 5 0 1 4 2 5 4 40 8

Year 5 multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.	Calculation examples
<u>Long multiplication:</u> THO x TO Children will multiply 3 digit by 2 digit numbers using long multiplication. When multiplying by the tens digit of the multiplier, a zero must be used as place holder. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	H T O T O 1 2 4 x 2 6 1 2 4 x 2 6 7 4 4 1 1 2 4 8 0 3 2 2 4
<u>Long multiplication:</u> ThHTO x TO Children will multiply 4 digit by 2 digit numbers using long multiplication. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O T O 2 4 2 8 x 1 9 2 4 2 8 x 1 9 2 1 8 5 2 1 1 2 4 2 8 0 4 6 1 3 2 4 40 8

Year 5 multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.	Calculation examples
<u>Long multiplication:</u> THO x TO Children will multiply 3 digit by 2 digit numbers using long multiplication. When multiplying large numbers where there are many carried digits, children would be encouraged to cross through the carried digit already used for 'house-keeping'. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • Explain their reasoning verbally and in writing	Th H T O T O 2 4 2 8 x 3 9 1 2 ~~3 2 7~~ 2 4 2 8 x 3 9 2 1 8 5 2 1 7 2 8 4 0 9 4 6 9 2 _____ _____ 4 40 8

Year 5
Division

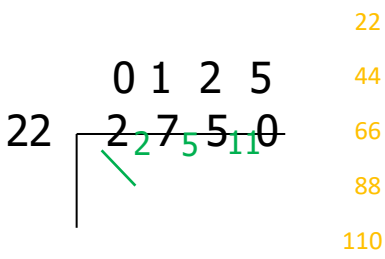
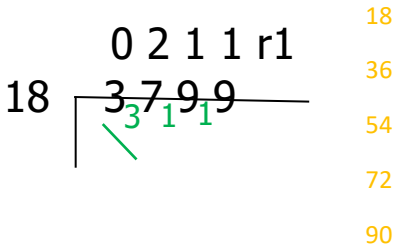
Year 5 divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.	Calculation examples
<u>Short division:</u> ThHTO ÷ O *no remainders* The expectation is that children will be able to divide a 4 digit by a 1 digit number using short division. Start by dividing into the most significant digit. This is the first formal written method of division that children will learn. Previously, they will have represented dividing as sharing, grouping and as the inverse of multiplication. Children must be secure with their understanding of place value: • The first step is 'how many 3s go into 6000?' • The 2 in the answer represents 2000 3s. • There are then 100 3s in 300, 30 3s in 90 and 2 3s in 6. • The answer shows there are 2132 3s in 6396 or 6396 ÷ 3 = 2132. Planning: the expectation is that children will be able to recall their multiplication and division facts to 12x12 by the end of Y4. Begin by using digits that are all divisible by the divisor. In the example, each digit is in the 3 times-table. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • explain their reasoning verbally and in writing	6396 ÷ 3 = 2 1 3 2 3 ⟌ 6 3 9 6

Year 5 divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.	Calculation examples
<u>Short division:</u> ThHTO ÷ O *with **one** internal remainder of **1*** The second stage is to include one digit that will leave an internal remainder of 1. Planning: please consider carefully the numbers children are dividing. At this stage there must only be one internal remainder. MASTERY Before moving on: • children must have the opportunity to record the one remainder in different columns • can children correct calculations with errors and identify missing digits • explain their reasoning verbally and in Writing • Question about place value; what is the value of each digit and what does that mean. •	4236 ÷ 3 = 1 4 1 2 3 4 2 3 6 1 4236 ÷ 3 = 2 1 4 2 3 6 4 2 6 1
ThHTO ÷ O *with **one** internal remainder greater than 1* The third stage is to include one digit that will leave an internal remainder greater than 1. Planning: please consider carefully the numbers children are dividing. At this stage there must only be one internal remainder that is greater than 1. MASTERY Before moving on: • See above	5136 ÷ 3 = 1 7 1 2 3 5 1 3 6 2

Year 5 divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.	Calculation examples
<u>Short division:</u> ThHTO ÷ O *with a digit less than the divisor* The fourth stage is to divide numbers when a digit is less than the divisor. Zero must be used as a place holder Planning: please consider carefully the numbers children are dividing. At this stage there must only be one internal remainder. MASTERY Before moving on: • children must have the opportunity to record the remainder in different columns • can children correct calculations with errors • identify missing digits • explain their reasoning verbally and in writing	2469 ÷ 3 = 0 8 2 3 3 2 4 6 9 2 3627 ÷ 3 = 1 2 0 9 3 3 6 2 7 2
ThHTO ÷ O The fifth stage is to include digits that will leave more than one internal remainder and digits less than the divisor. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • explain their reasoning verbally and in writing	2253 ÷ 3 = 0 7 5 1 3 2 2 5 3 2 1

Year 5	divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.	Calculation examples
<u>Short division:</u> ThHTO ÷ O *with remainders* The final stage is to divide numbers that leave a remainder. Planning: please consider carefully the numbers children are dividing. At this stage there must be remainders. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • explain their reasoning verbally and in writing		2437 ÷ 3 = 0 8 1 2 r1 3 2 4 3 7 2

Year 6
Division

Year 6 divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.	Calculation examples
<u>Short division:</u> ThHTO ÷ TO *no remainders* The expectation is that children will be able to divide a 4 digit by a 2 digit number using short division. Start by dividing into the most significant digit. Children must be secure with the division methods taught in Y5. Children will need to record multiples of the divisor alongside the calculation before attempting to solve it. MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • explain their reasoning verbally and in writing	2750 ÷ 22 = 
ThHTO ÷ TO *with remainders* MASTERY Before moving on: • can children correct calculations with errors • identify missing digits • explain their reasoning verbally and in writing	3799 ÷ 18 = 

Year 6	divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.	Calculation examples

Long division:

ThHTO ÷ TO *no remainders*

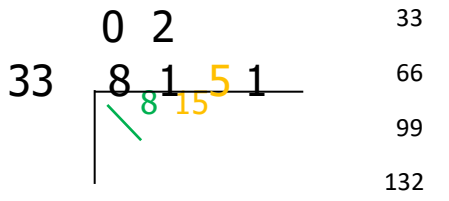
Children will use long division when short division is no longer the most efficient method.

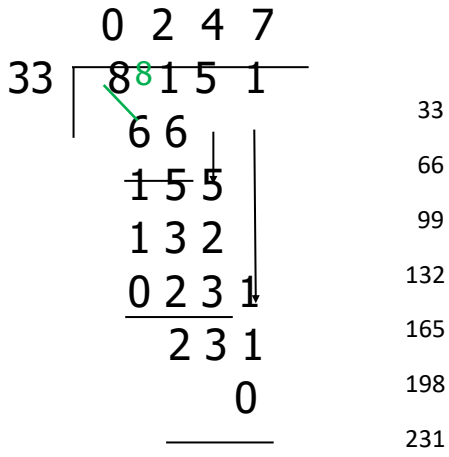
In the example, the next step is to find the difference between 155 and 132.
If a written subtraction is needed to calculate an internal remainder, long division should be used.

MASTERY
Before moving on:

- can children correct calculations with errors
- identify missing digits
- explain their reasoning verbally and in writing

8151 ÷ 33 =





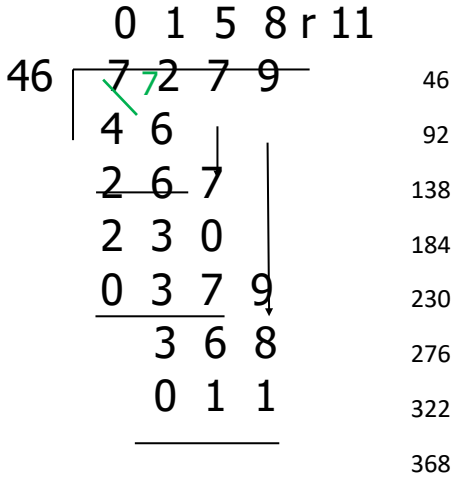
Year 6	divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.	Calculation examples

Long division:

ThHTO ÷ TO *with remainders*

MASTERY
Before moving on:

- can children correct calculations with errors
- identify missing digits
- explain their reasoning verbally and in writing



Year 6	divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.	Calculation examples

<u>Long division:</u>

ThHTO ÷ TO *with the remainder recorded as a Fraction*

The remainder 6 can recorded as 6/24. You will notice that the divisor is the denominator and the remainder is the numerator. This can be simplified to 1/4.

MASTERY
Before moving on:

- can the children reduce a fraction to its simplest term
- explain their reasoning verbally and in Writing

3438 ÷ 24

0 1 4 3 remainder 6/24

24 | 3 4 3 8

2 4

1 0 3

9 6

7 8

7 2

6

24
48
72
96
120

= 143

1/4

ThHTO ÷ TO *with remainders recorded as decimals*

MASTERY
Before moving on:

- can children correct calculations with errors
- identify missing digits
- explain their reasoning verbally and in writing

Remainders can also be calculated as decimals. The remaining ones can be converted to tenths by putting in the place holder and a decimal point in the answer. The remainder of 60 tenths can now be divided by 24. Similarly, the remainder 12 can be converted into 120 hundredths, again by putting in the place holder, and can then be divided by 24.

3438 ÷ 24

0 1 4 3 . 2 5

24 | 3 4 3 8

2 4

1 0 3

9 6

7 8

7 2

6 0

4 8

1 2 0

1 2 0

0