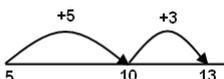
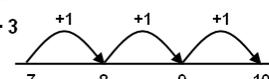
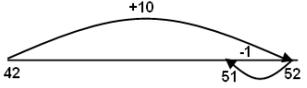
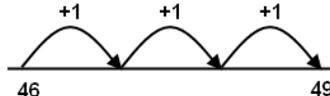
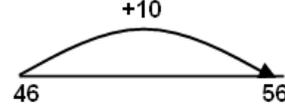
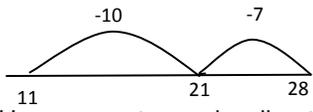
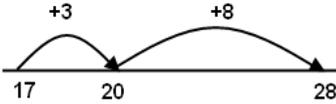
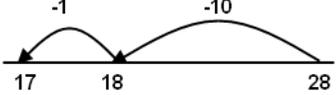
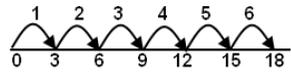
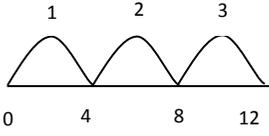


Year Group - Reception	Addition	Subtraction	Multiplication	Division
<p>EYFS GOALS (4-9)</p> <p><u>Numbers as labels & for counting (problem solving, reasoning and numeracy)</u></p> <p>4. Writes number names in sequence, counting to, or backwards from, at least 10.</p> <p>5. Consistently recognises numerals in a range of contexts</p> <p>6. Counts up to 10 objects & counts out a specified number of things from a larger collection showing 1:1 correspondence</p> <p>7. Arranges in order a complete set of numbers from 0-20</p> <p>8. Solve problems and challenges by applying mathematical ideas and methods i.e. missing no, grouping, sharing and estimating</p> <p>9. Has a secure understanding of numbers to 20, counting writing and recognising writing numbers accurately</p> <p><u>Calculating (problem solving reasoning and numeracy)</u></p> <p>4. Finds how many in two groups by combing and counting</p> <p>5. Using everyday objects, able to say how many are left after, say, eating, taking away or hiding, by counting those left</p> <p>6. In practical contexts understanding and begins to use vocabulary involved in addition and subtraction, such as 'add', 'take away', 'altogether', 'how many' etc</p> <p>7. Finds one more or fewer in practical contexts. Can talk about 'more' or 'less'.</p> <p>8. Explores & solves practical problems such as doubling, halving, grouping & sharing, using own methods</p> <p>9. Uses a range of strategies for addition and subtraction; displays mental recall of some addition and subtraction facts including doubles and pairs of numbers that total 10.</p>	<p>Find 1 more or 1 less than a number from 1 to 10</p> <p>Add together</p> <p>Drawing objects</p> <p>Counting on</p> <p>Introduction to + sign</p> <p>Vocabulary: add, plus, equals, is, altogether (verbal)</p> <p>High attainers record 'more'</p> <p>Separate (partition) a given number of objects into two groups.</p> <p>Select two groups of objects to make a given total.</p> <p>Number songs and rhymes.</p> <p>Tallying</p>	<p>Find 1 more or 1 less than a number from 1 to 10</p> <p>Take away practically</p> <p>Number track provided 0-10</p> <p>Drawing</p> <p>Number line provided 0-20</p> <p>Encourage recording on the number line</p> <p>'Less'</p> <p>Begin to relate subtraction to 'taking away' and counting how many are left.</p> <p>Say how many are left when some are taken away, by counting back from the number</p> <p>Find out by counting up how many more will make a given number.</p>	<p>Counting in 2s and 10s</p> <p>Using number line to count in 2</p> <p>Number patterns on a 100 square</p>	<p>Sharing, grouping</p>
			<p>Counting: Doubling and halving</p> <p>Use vocabulary such as:</p> <p>Double, half, halve, part</p> <ul style="list-style-type: none"> • How many shoelace holes are there? • How many slices of bread do we need to make 4 whole sandwiches for the café? • How many eggs will fill this box? • Can you cut the cake in half? How many pieces? • Fill half the tarts with strawberry jam and half with lemon curd. • How many cakes in the box? Take half of them out. How many are left? • Put half of: the cows in the field, cars in the garage, bears in the forest etc • How many pairs of socks are there in the laundrette? Are there any left over? • Find a partner. How any children are there? How many pairs? <p>Counting: repeated addition, grouping or sharing</p> <p>Use vocabulary such as: share, group, left over, how many times?</p> <ul style="list-style-type: none"> • How many wheels do we need for these three Lego cars? • How should we plant the daffodil bulbs in these three pots? • Is there a way of doing it so that they all have the same number? Are there any left over? • Count out these stickers round the circle of children? How many times will they go round? Are there any left over? • Can we share out these cakes fairly? How shall we do it? 	

Year Group – Reception/ One	Addition	Subtraction	Multiplication	Division
<p><u>Numbers as labels & for counting (problem solving, reasoning and numeracy)</u></p> <p>4. Writes number names in sequence, counting to, or backwards from, at least 10.</p> <p>5. Consistently recognises numerals in a range of contexts</p> <p>6. Counts up to 10 objects & counts out a specified number of things from a larger collection showing 1:1 correspondence</p> <p>7. Arranges in order a complete set of numbers from 0-20</p> <p>8. Solve problems and challenges by applying mathematical ideas and methods i.e. missing no, grouping, sharing and estimating</p> <p>9. Has a secure understanding of numbers to 20, counting writing and recognising writing numbers accurately</p> <p><u>Calculating (problem solving reasoning and numeracy)</u></p> <p>4. Finds how many in two groups by combing and counting</p> <p>5. Using everyday objects, able to say how many are left after, say, eating, taking away or hiding, by counting those left</p> <p>6. In practical contexts understanding and begins to use vocabulary involved in addition and subtraction, such as 'add', 'take away', 'altogether', 'how many' etc</p> <p>7. Finds one more or fewer in practical contexts. Can talk about 'more' or 'less'.</p> <p>8. Explores & solves practical problems such as doubling, halving, grouping & sharing, using own methods</p> <p>9. Uses a range of strategies for addition and subtraction; displays mental recall of some addition and subtraction facts including doubles and pairs of numbers that total 10.</p>	<p>Strategies/knowledge</p> <p>Recording for a purpose.</p> <p>Beginning to use symbols +, = and numbers to record number sentences.</p> <p>Use knowledge that addition can be done in any order.</p> <p>Put larger number first in order to count on.</p> <p>Put number in head and count on</p> <p>Add pairs with a total of 10</p> <p>Begin to partition and recombine by breaking units of 6, 7, 8, 9 into 5 and a bit</p> <p>e.g. work out mentally that $5+8 = 5 + (5 \text{ and } 3)$</p> <p>$= 5 + 5 + 3$</p> <p>$= 10 + 3$</p> <p>$= 13$</p>  <p>Identifying near doubles</p> <p>Recording</p> <p>Empty box with numbers as above</p> <p>Adding 3 digits e.g.</p> <p>$3 + 4 + 2 = \square$</p> <p>$3p + \square + 1p = 8p$</p> <p>Using a completed number line or track to count on</p> <p>Using empty number line to count on.</p> <p>$7 + 3$</p>  <p>Addition and subtraction facts to 10 and then 20.</p>	<p>Strategies/knowledge</p> <p>Recording and using signs – and =</p> <p>Number line 0-30</p> <p>Encourage recording on number line.</p> <p>Put number in head and count back.</p> <p>Count back from the largest number.</p> <p>Count on to find the difference</p> <p>Recording</p> <p>Symbolic representations:</p> <p>How many less?</p> <p>$\square\square\square - \square = \square\square$</p> <p>$\circ\circ\circ\circ\circ - \circ\circ = \boxed{3}$</p> <p>Leading to empty box as above with numerals</p> <p>Ensure understand they put the largest number to subtract/take away.</p> <p>$10 - 3 = \square$</p> <p>$10 - \square = 6$</p> <p>Using a completed number line (or number track) to count back</p> <p>$7 - 3 = 4$</p> <p>$8 - 3 = 5$</p>  <p>Addition and subtraction facts to 10 and then 20.</p>	<p>Strategies/knowledge</p> <p>Counting in 2s, 10s and 5s</p> <p>Doubling of numbers to 10</p> <p>Repeated addition</p> <p>Recognise odd and even numbers.</p> <p>Rhymes and stories which involve counting in 2s or 5s.</p> <p>Use of money counting in 2ps, 5ps, 10ps.</p> <p>Recording</p> <p>Initially pictorially</p> <p>$2 + 2 + 2 + 2 = 8$</p> <p>$2 \times 4 = 8$</p> <p>4 groups of 2 = 8</p> <p>2 multiplied four times</p> <p>2 groups of 3: using story sentences e.g. 2 bags with 3 apples each, practical activities</p> <p>column x row</p> <p>$\square\square$</p> <p>$\square\square$</p> <p>$\square\square$</p> <p>$4 \times 2 \square\square\square\square$</p> <p>$\square\square\square\square$</p> <p>$2 \times 4$</p> <p>Number tracks & lines.</p> <p>Grouping objects pictorially</p>	<p>Strategies/knowledge</p> <p>Halving of numbers to 10.</p> <p>Counting patterns and equal groups.</p> <p>Repeated subtraction.</p> <p>Counting forwards and backwards in different intervals.</p> <p>Recording</p> <p>How many groups of 2 in 6?</p> <p>$\square\square \square\square \square\square = 3$</p> <p>Recording pictorially using concrete objects.</p> <p>Partitioning sets</p>

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Year Group – One/Two	Addition	Subtraction	Multiplication	Division

<p>Number and place value</p> <ul style="list-style-type: none"> count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens given a number, identify one more and one less identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least read and write numbers from 1 to 20 in numerals and words. <p>Addition and subtraction</p> <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including zero solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 - \square = 9$. <p>Multiplication and division</p> <ul style="list-style-type: none"> solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. 	<p>Strategies/knowledge Range: Nos. 0-100 Adding several numbers Addition bonds for all numbers to 10 then 100 Largest number first. Focus on place value. Partition into 100s, 10s and units Draw own number line Add 3 numbers by using strategies such as: look for pairs that make 10, start with largest number. Work out mentally questions like: $2 + 7 + 4 = 1 + 9 + 5 =$ Identify near doubles by using doubles already known e.g. $40 + 39 =$ (double 40 take away 1) Recognise symbol such as Δ to stand for unknown number</p> <p>Recording Adding 9 by adding 10 & adjusting</p>  <p>Solve number problems using conventional signs and symbols Develop children's own recording in the context of practical work and explaining how problems were solved Using a number line or number grid to count on in 1s or 10s (or in head) $46 + 3 = 49$</p>  <p>$46 + 10$</p> 	<p>Strategies/knowledge Range: Nos. 0-100 use number line Take away Subtract Difference between How many more? Find a small difference by counting up Subtract 2, 2 digit numbers Subtract 'teens' numbers from 2 digit number</p> <p>Recording Empty number box problems $10 - 7 = \square$ $10 - \square = 3$ Subtract 9 by subtracting 10 and adjusting leading to subtract 19 Partition numbers into tens and units on a blank number line $28 - 17 = 11$</p>  <p>Use an empty number line to count on/back to find the difference. $28 - 17 = 11$</p>  	<p>Strategies/knowledge Counting in 2s, 3s, 5s, 10s Doubles Understand as repeated addition Times/multiply Use 'x' sign in number sentences</p> <p>Recording Introduce arrays as a form of recording Number in column times number in row $6 \times 3 =$ $c \times r$</p>  <p>$3 \times 6 =$ $c \times r$</p>  <p>Multiplication as repeated addition using blank number line</p> <p>$6 \times 3 = 18$</p> 	<p>Strategies/knowledge Understand \div as sharing equally Understand \div as grouping Use \square sign in number sentences</p> <p>Recording Sharing 12 sweets between 4 How many do each have? $12 \div 4 = \square$</p>  <p>Division as grouping How many 4s make 12 (using blank number line) 12</p>  <p>Introduce remainders when sharing</p>
<p>Year Group – Two/Three</p>	<p>Addition</p>	<p>Subtraction</p>	<p>Multiplication</p>	<p>Division</p>

Number and place value

Pupils should be taught to:

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward
- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use <, > and = signs
- read and write numbers to at least 100 in numerals and in words
- use place value and number facts to solve problems.

Addition and subtraction

- solve problems with addition and subtraction:
 - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
 - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - two two-digit numbers
 - adding three one-digit numbers
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to

Multiplication and division

Strategies/knowledge

Put largest number first
 Add several numbers
 Place value for 2, 3, and 4 digit numbers
 Partition and recombine (into 5 and a bit when adding 6,7,8 or 9)
 Identify near doubles
 Bridge through multiples of 10 and adjust
 Recognise addition as the inverse of subtraction.

Recording

Empty number boxes with missing numbers in all three positions e.g.

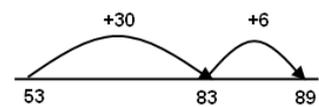
34 + 5 = □

34 + □ = 39

39 = 5 + □

partition into tens and ones and recombine on number line

36 + 53 = 53 + 30 + 6



Stage one of column addition

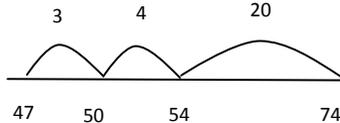
$$\begin{array}{r}
 43 \\
 + 54 \\
 \hline
 7 \\
 90 \\
 \hline
 97
 \end{array}$$

Strategies/knowledge

Add and subtract mentally a near multiple of 10 to or from a two digit number
 i.e. 284 - 9 = 275
 284 - 10 + 1
 Recognise that when 2 numbers are close together it is easier to count up to find the difference.

Recording

Using an empty number line to count on or back to subtract.
 Counting back or counting on; partition the second number to support counting back in stages
 74 - 27 = 47
 74 - (20 + 4 + 3)



Strategies/knowledge

Use knowledge of no facts and place value to x/÷ by
 2, 3, 4, 5, 6, 10.
 Use doubling and halving
 Multiplication can be done in any order
 Recognise as inverse of division.

As scaling up getting X times bigger

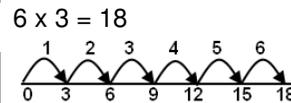
Recording

Continue to use arrays as a form or recording

6 x 3 =

□	□	□	□	□	□
□	□	□	□	□	□
□	□	□	□	□	□

Multiplication as repeated addition (using blank number line)



Introduce partitioning and grid method when ready to introduce TU x U

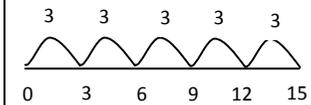
Eg 13 x 3 = 10 x 3 + 3 x 3

Strategies/knowledge

Introduce remainders
 Recognition of sign
 Understand as sharing or grouping
 Recognise as inverse of multiplication

Recording

Division grouping (using a blank number line)
 Counting steps on number line
 15 ÷ 3 = 5



or sharing 15 shared between 3

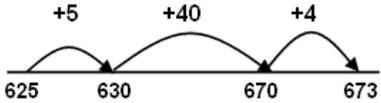
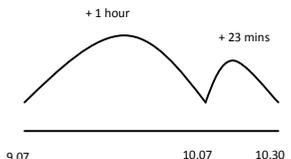
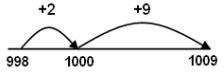
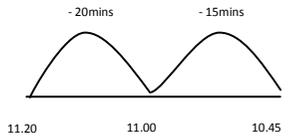
15 ÷ 3 = □ □ □

□	□	□
□	□	□
□	□	□
□	□	□

Finding remainders after division using number lines or concrete resources.

16 ÷ 5 = 3r1

<ul style="list-style-type: none"> recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. 				
Year Group –	Addition	Subtraction	Multiplication	Division

Three/Four																									
<p>PRIMARY FRAMEWORK OBJECTIVES:</p> <p><u>Counting and understanding number</u> - Partition, round & order 4 digit whole numbers; use positive & negative numbers in context & position on a no line; state inequalities using the symbols < > <u>Knowing and using number facts</u> - Use knowledge of +/- facts & place value to derive sums/differences of pairs of multiples of 10,100, 1000 - Identify the doubles of 2-digit numbers use to calculate doubles of multiples of 10 & 100 & derive the corresponding halves. - Derive & recall x facts up to 10 x 10, the corresponding ÷ facts & multiples of numbers to 10 up to the tenth multiple. - Use knowledge of rounding, number operations & inverses to estimate & check calculations.</p> <p><u>Calculating</u> - +/- mentally pairs of 2-digit whole no's - Refine & use efficient written methods & subtract 2 & 3 digit whole numbers & £p - x / ÷ numbers up to 1000 by 10 & then 100 (whole no answers) understanding the effect; (relate to scaling up or down) - Develop & use written methods to record, support & explain x / ÷ of 2-digit numbers by a 1-digit no, including ÷ with remainders - Use a calculator to carry out 1 & 2 step calcs involving all 4 operations; recog negative no's in the display, correct mistaken entries/ interpret the display correctly in the context of money.</p> <p><u>Using and Applying mathematics</u> - Solve 1 & 2 step problems in a variety of contexts, choose & carry out appropriate calculations using calculator methods where appropriate –problems to involve communicating and reasoning skills.</p>	<p>Strategies/knowledge Partitioning into hundreds, tens and ones Use & adjust near doubles Recording Continue work from Y3 using empty number lines 625 + 48</p>  <p>When ready move to expanded written methods Know how to set out in columns</p> $\begin{array}{r} 625 \\ +48 \\ \hline 673 \end{array}$ <p>Adding least significant numbers preparing for 'regrouping' above the line.</p> <p>Add several numbers with different numbers of digits Extend to decimals e.g money</p> <p>Using number lines to add time.</p> 	<p>Strategies/knowledge Know that subtraction is NOT commutative. Continuing work in Y3 using empty number lines when finding difference. Encourage estimating the answer first Recording Expanded method leading to adjusting</p> <table style="margin-left: auto; margin-right: auto;"> <tr><td>H</td><td>T</td><td>U</td></tr> <tr><td>600</td><td>140</td><td>14</td></tr> <tr><td>700</td><td>50</td><td>4</td></tr> <tr><td>-</td><td>80</td><td>6</td></tr> <tr><td>600</td><td>60</td><td>8</td></tr> </table> <p>Only when ready:</p> $\begin{array}{r} 6\ 14\ 14 \\ 7\ 5\ 4 \\ -\ 8\ 6 \\ \hline 6\ 6\ 8 \end{array}$ <p>Continue to use mental methods with jottings where appropriate e.g. 1009 - 998</p>  <p>Share the knowledge that multiple subtractions need to be carried in steps</p> <p>Using number lines to subtract time.</p> 	H	T	U	600	140	14	700	50	4	-	80	6	600	60	8	<p>Strategies/knowledge Know by heart multiplication facts up to 10 x10, including multiplication by 0 and 1 Multiply a multiple of 100 by 10 e.g. 600 x 10 = 6000 by shifting digits Derive corresponding division facts Derive quickly related facts for doubling and halving. Multiply any 2-digit number by 10 then 100 Approximate first e.g. 23 x 8 is approximately 20 x 10 = 200</p> <p>Recording Partitioning using distributive law/ grid method TU x U 23 x 8</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>x</td><td>20</td><td>3</td></tr> <tr><td>8</td><td>160</td><td>24</td></tr> </table> <p>160 + 24 = 184</p>	x	20	3	8	160	24	<p>Strategies/knowledge Using tables facts Divide a multiple of 100 by 10 e.g. 600 ÷ 10 = 60 by moving shifting digits Use repeated halving e.g. 60 ÷ 4 60 ÷ 2 = 30 30 ÷ 2 = 15</p> <p>Recording</p>
H	T	U																							
600	140	14																							
700	50	4																							
-	80	6																							
600	60	8																							
x	20	3																							
8	160	24																							

Year Group – Four/Five	Addition	Subtraction	Multiplication	Division
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PRIMARY FRAMEWORK OBJECTIVES:

Counting and understanding number

- explain what each digit represents in whole numbers & decimals with up to 2 places & partition round and order these numbers.

Knowing and using number facts

- Use knowledge of place value & addition & subtraction of 2-digit no's to derive sum & differences, doubles & halves of decimals.
 - Recall quickly x facts up to 10 x 10 use to multiply pairs of multiples of 10 & 100 & derive quickly corresponding ÷ facts
 - use knowledge of rounding, place value, No. facts & inverse ops to estimate & check calcs.

Calculating

- Extend mental methods for whole no. calcs e.g. to multiply a 2-digit by 1-digit no 12 x 9
 - Use efficient written methods to +/- whole numbers & decimals with up to 2 places.
 - Use understanding of place value to x & ÷ whole numbers & decimals by 10, 100 & 1000
 - Refine & use efficient written methods to x & ÷ HTU x U, TU x TU, U.t x U & HTU ÷ U
 - Use calculator to solve problems inc decimals & fractions e.g. find ¾ of 150g; interpret the display correctly in context of measurement.

Using and Applying mathematics

- Solve 1 & 2 step problems involving whole numbers & decimals & all 4 ops, choosing & using appropriate calc strategies, inc calculator use.
 - Represent a puzzle or problem by identifying & recording the calculations needed to solve it, find possible solutions & confirm them in the context of the problem.

Strategies/knowledge

Use empty number lines as for Y3 & 4
 Recognise when a written or mental strategy (with or without jottings) is more efficient

Recording

Consolidate expanded method where necessary.

Move to standard method:

$$\begin{array}{r} 587 \\ + 475 \\ \hline 1062 \\ 11 \end{array}$$

Work with at least 2 digits
 Add several numbers
 Beginning with partitioning:
 Add 2 or more decimal fractions
 Know how to line up decimal points.

Strategies/knowledge

Use empty number line as for Y3 & 4
 Recognise when a written or mental strategy (with or without jottings) is more efficient

Recording

Consolidate expanded subtraction method where necessary

Move to standard method:

$$\begin{array}{r} 61414 \\ 754 \\ - 286 \\ \hline 468 \end{array}$$

Subtract decimals using expanded method

$$\begin{array}{r} 69.7 - 42.9 \\ \text{T U tenths} \\ 609 \cdot 7 \\ - 402 \cdot 9 \\ \hline 206.8 \quad \mathbf{26.8} \end{array}$$

Strategies/knowledge

Know all multiplication tables
 Use mental calculations with jottings

Using Partitioning:

$$\begin{array}{l} 47 \times 5 = (40 \times 5) + (7 \times 5) \\ = 200 + 35 \\ = 235 \end{array}$$

Recording

Grid method
 HTU x U; TU x TU e.g.

56 x 27

x	50	6
20	1000	120
7	350	42

When ready or to be taught alongside:

Expanded **long** multiplication

$$\begin{array}{r} 346 \\ \times 8 \\ \hline 48 \quad 8 \times 6 \\ 320 \quad 8 \times 40 \\ \hline 2400 \quad 8 \times 300 \\ 2768 \end{array}$$

Only when ready move to standard method for **long** multiplication using 'regrouping'

Strategies/knowledge

Use corresponding division facts.
 Mental calculations with jottings.

Recording

'Chunking' using multiples of the divisor
 Identify useful multiples:
 1x, 2x, 5x, 10x, 20x, 50x, 100x
 Explicit links to tables i.e. 6 x 7 (replaces 5 x 7 & 1 x 7)
 Largest possible 'chunk' first

HTU ÷ U

$$\begin{array}{r} 256 \div 7 = \mathbf{36 R4} \\ 256 \\ - 140 \quad (20 \times 7) \\ \hline 116 \\ - 70 \quad (10 \times 7) \\ \hline 46 \\ - 42 \quad (6 \times 7) \\ \hline 4 \end{array}$$

Begin to give remainder as a simplified fraction or decimal where appropriate e.g.

$$38 \div 6 = 6 \quad \mathbf{r 2}$$

$$39 \div 6 = 6 \quad \mathbf{2/6 \text{ (two sixths)}}$$

$$39 \div 6 = 6 \quad \mathbf{1/3 \text{ (one third)}}$$

Or

$$39 \div 6 = 6 \quad \mathbf{r 3}$$

$$39 \div 6 = 6 \quad \mathbf{3/6 \text{ (three sixths)}}$$

$$39 \div 6 = 6 \quad \mathbf{1/2 \text{ (half)}}$$

$$39 \div 6 = \mathbf{6.5}$$

Year Group – Five/Six	Addition	Subtraction	Multiplication	Division

Counting and understanding number

- find the difference between a positive & a negative integer, or 2 negative integers in context.

Knowing and using number facts

- Use knowledge of place value & x facts to 10 x 10 to derive related x & ÷ facts involving decimal no's e.g. 0.8 x
- Use knowledge of x facts to derive quickly squares of no's to 12 x 12 & corresponding squares of multiples of 10. 7, 4.8 ÷ 6

Calculating

- Calculation mentally with whole no's & decimals e.g. U.t ± U.t, TU x U, Ut x U etc
- Use efficient written methods to +/- integers & decimals, to x & ÷ integers & decimals by a one-digit integer, & to multiply 2 & 3 digit integers by a 2-digit integer.
- Relate fractions to multiplication & division e.g. 6 ÷ 2 = 1/2 of 6 = 6 x 1/2
Express a quotient as a fraction or decimal e.g. 67 ÷ 5 = 13.4 or 13 2/5, find fractions & percentages of whole number quantities e.g. 5/8 of 96, 65% of £260.
- Use a calculator to solve problems involving multi-step calculations; Using and Applying mathematics
- Solve multi-step problems & problems involving communication and reasoning; choose & use appropriate calculation strategies at each stage inc calculation use.

Strategies/knowledge

Use empty number lines as for Y3, 4 and 5
Continue to recognise when a written or mental strategy (with or without jottings) is more efficient

Recording

Use 'regrouping' (continue to record as expanded addition).

Decimals

Add 2 or more with up to 4 digits and one or two decimal places
e.g. 24.9 + 7.25

$$\begin{array}{r} 24.90 \\ + 7.25 \\ \hline 32.15 \\ 11 \end{array}$$

Strategies/knowledge

Use empty number lines as for Y3, 4 and 5
Continue to recognise when a written or mental strategy (with or without jottings) is more efficient

Recording

Use expanded subtraction as for Y5

Use decomposition (continue to record as expanded subtraction if necessary).

Dealing with zeros when adjusting e.g.
503 - 278

$$\begin{array}{r} 4 \ 8 \ 13 \\ 5 \ 0 \ 3 \\ - 2 \ 7 \ 8 \\ \hline 2 \ 2 \ 5 \end{array}$$

Strategies/knowledge

Mental calculations with jottings

Using Partitioning:

$$\begin{array}{l} 87 \times 7 = (80 \times 7) + (7 \times 7) \\ = 560 + 49 \\ = 609 \end{array}$$

Continue to approximate first

Recording

Use Grid method initially and move towards long multiplication (continue to record as expanded long multiplication if necessary).

Expanded long multiplication

$$\begin{array}{r} 56 \\ \times 27 \\ \hline 42 \quad (7 \times 6) \\ 350 \quad (7 \times 50) \\ 120 \quad (20 \times 6) \\ 1000 \quad (20 \times 50) \\ \hline 1512 \end{array}$$

Only when ready move to standard method for long multiplication using 'regrouping'.

$$\begin{array}{r} 2 \ 4 \\ \times 1 \ 6 \\ \hline 1 \ 4 \ 4 \\ 2 \ 4 \ 0 \\ \hline 3 \ 8 \ 4 \end{array}$$

Answer: 384

For only the most confident move to **short** multiplication with regrouping

Strategies/knowledge

Mental calculations with jottings

Continue to approximate first

Recording

Useful multiples

Explicit links to tables Efficient 'chunking' using multiples of the divisor

HTU ÷ TU

977 ÷ 36

$$\begin{array}{r} 977 \\ - 360 \quad (10 \times 36) \\ \hline 617 \\ - 360 \quad (10 \times 36) \\ \hline 257 \\ - 180 \quad (5 \times 36) \\ \hline 77 \\ - 72 \quad (2 \times 36) \\ \hline 5 \end{array}$$

Answer **27 r5**

When ready move to **long division** subtracting the largest multiple.

432 ÷ 15 becomes

$$\begin{array}{r} 2 \ 8 \\ 1 \ 5 \overline{) 4 \ 3 \ 2} \\ \underline{3 \ 0 \ 0} \\ 1 \ 3 \ 2 \\ \underline{1 \ 2 \ 0} \\ 1 \ 2 \end{array}$$

Answer: 28 remainder 12

When confident, moving towards **short** division with regrouping when confident and appropriate.

24 × 6 becomes

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \\ 2 \end{array}$$

Answer: 144

24 × 12 becomes

$$\begin{array}{r} 24 \\ \times 12 \\ \hline 288 \\ 4 \end{array}$$

Answer: 288

124 × 12 becomes

$$\begin{array}{r} 124 \\ \times 12 \\ \hline 1488 \end{array}$$

432 ÷ 5 becomes

$$\begin{array}{r} 86 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

574 ÷ 15 becomes

$$\begin{array}{r} 38 \\ 15 \overline{) 574} \\ \underline{45} \\ 124 \\ \underline{120} \\ 4 \end{array}$$

Answer: $38 \frac{4}{15}$

511 ÷ 35 becomes

$$\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \\ \underline{35} \\ 161 \\ \underline{140} \\ 210 \\ \underline{210} \\ 0 \end{array}$$

Answer: 14.6