

Shurdington Calculation Policy Year 1

Objectives

- 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 $7 = \quad - 9$.

Key Skills - Addition

- Read and write numbers to 100 in numerals, incl. 1—20 in words.
- Recall bonds to 10 and 20, and addition facts within 20.
- Count to and across 100.
- Count in multiples of 10, 5 and 2.
- Solve simple 1-step problems involving addition, using objects, number lines and pictorial representations.

add, more, plus, and, put together, make, altogether, total, equal to, equals, double, most, count on, number line

Key Skills – Subtraction

- Given a number, say **one more** or **one less**.
- Count to and over 100, **forward and back**, from any number.
- Represent and use **subtraction facts to 20 and within 20**.
- Subtract with **one-digit and two-digit** numbers to 20, including zero.
- Solve one-step problems that involve addition and subtraction, using concrete objects (ie bead string, objects, cubes) and pictures, and missing number problems.
- Read and write numbers from 0 to 20 in numerals and words.

Equal to, take, take away, less, subtract, leaves, difference, how many more, how many fewer, less than, most, least, count back, how many left, how much less?

Key Skills – Multiplication

- Count in multiples of 10, 5 and 2.
- Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.
- Make connections between arrays, number patterns, and counting in twos, fives and tens.
- Begin to understand doubling using concrete objects and pictorial representations.

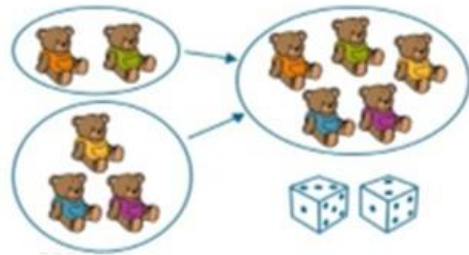
groups of, lots of, times, array, altogether, multiply, count

Key Skills – Division

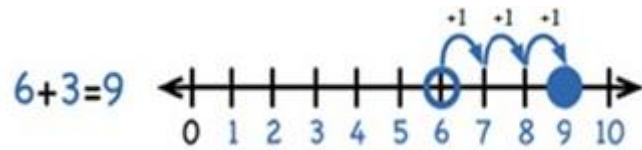
- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations arrays with the support of the teacher
- Through grouping and sharing small quantities, pupils begin to understand, division, and finding simple fractions of objects, numbers and quantities.
- They make connections between arrays, number patterns, and counting in twos, fives and tens.

share, share equally, one each, two each, groups of, lots of, array

Addition



$$5 + 3 = 8$$



$$8 + 5 =$$



3 bears and 2 bears is 5 bears altogether

$$3 + 2 = 5$$



If we know $4 + 5 = 9$

We also know...

$$5 + 4 = 9$$

$$9 - 5 = 4$$

$$9 - 4 = 5$$

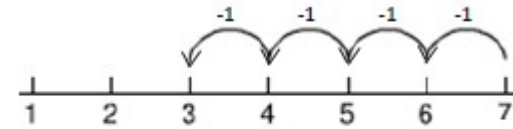
$$\square = 4 + 5$$

$$9 = \square + 5$$

$$15 + 4 = 19$$



Subtraction

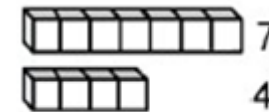


$$7 - 4 = 3$$

$$13 - 5 = 8$$



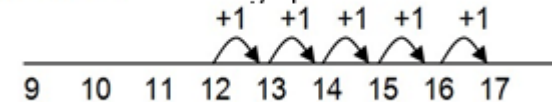
Tom has 5 bears. Sara has 3 bears.
How many more bears does Tom have?



7 is 3 more than 4. I am 3 years older than my sister

$$17 - 12 = 5$$

Counting up



If we know $4 + 5 = 9$

We also know:

$$5 + 4 = 9$$

$$9 - 5 = 4$$

$$9 - 4 = 5$$

$$14 + 5 = 19$$

$$19 - 14 = 5$$

$$19 - \square = 5$$

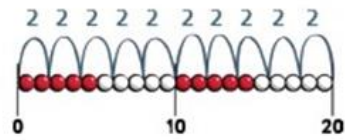
$$\square - 14 = 5$$



$$10 - 6 = 4$$

Multiplication

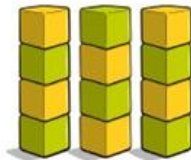
Count in 2s



Count in 10s and 5s

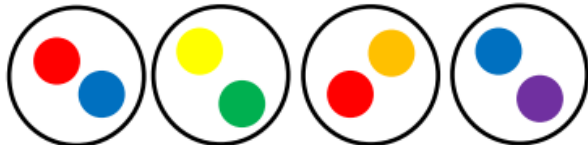
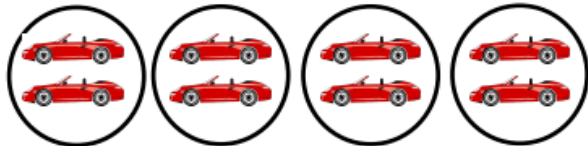


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



3 lots of 4

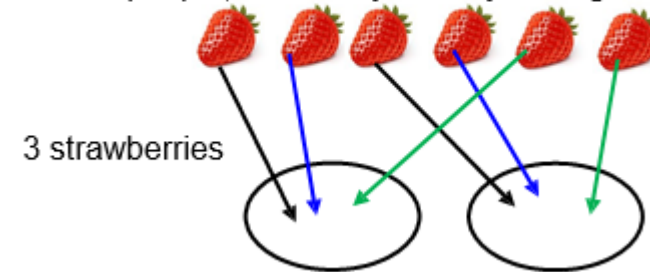
$$4 \times 2 = 8$$



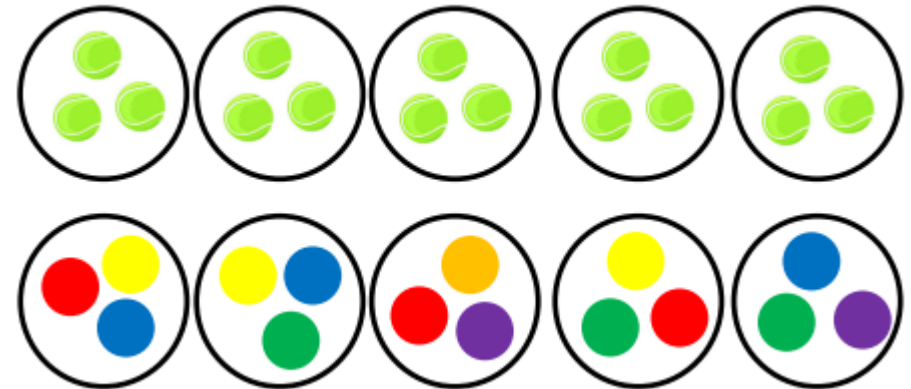
Division

Sharing:

There are 6 strawberries shared between 2 people, how many do they each get?



$$15 \div 5 = 3$$



Shurdington Calculation Policy Year 2

Objectives

- 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 and 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 check calculations and solve missing number problems.
- 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.

Key Skills - Addition

Add a 2-digit number and ones (e.g. $27 + 6$)

Add a 2-digit number and tens (e.g. $23 + 40$)

Add pairs of 2-digit numbers (e.g. $35 + 47$) and add three single-digit numbers (e.g. $5 + 9 + 7$)

Show that adding can be done in any order (the commutative law).

Recall bonds to 20 and bonds of tens to 100 ($30 + 70$ etc.)

Count in steps of 2, 3 and 5 and count in tens from any number.

Key Skills – Subtraction

Recognise the place value of each digit in a two-digit number.

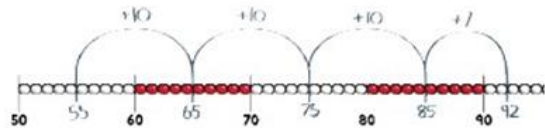
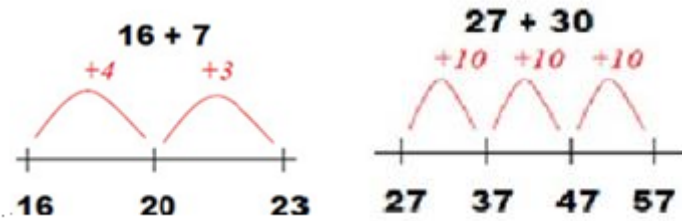
Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100.

Subtract using concrete objects, pictorial representations, 100 squares and mentally, including: a two-digit number and ones, a two-digit number and tens, and two two-digit numbers.

Show that subtraction of one number from another cannot be done in any order.

Understand the place value of 2-digit numbers (tens and ones) Compare and order numbers to 100 using $<$ $>$ and $=$ signs. Read and write numbers to at least 100 in numerals and words. Solve problems with addition, using concrete objects, pictorial representations, involving numbers, quantities and measures, and applying mental and written methods. <i>add, more, plus, and, put together, make, altogether, total, equal to, equals, double, most, count on, number line, sum tens, ones, partition, addition, column, tens boundary.</i>	Recognise and use inverse relationship between addition and subtraction, using this to check calculations and missing number problems. Solve subtraction problems including measures, using concrete objects, pictorial representation, and also applying their increasing knowledge of mental and written methods. <i>Equal to, take, take away, less, subtract, leaves, difference, how many more, how many fewer, less than, most, least, count back, how many left, how much less?, difference, count on, partition, tens, ones</i>
<u>Key Skills – Multiplication</u> Count in steps of 2, 3 and 5 from zero, and in 10s from any number. Recall and use multiplication facts from the 2, 5 and 10 multiplication tables, including recognising odds and evens. Write and calculate number statements using the $\times$ and $=$ signs. Show that multiplication can be done in any order (commutative). Solve a range of problems involving multiplication, using concrete objects, arrays, repeated addition, mental methods, and multiplication facts. Pupils use a variety of language to discuss and describe multiplication <i>groups of, lots of, times, array, altogether, multiply, count</i>	<u>Key Skills – Division</u> Count in steps of 2, 3, and 5 from 0 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 $\times$, $\div$ and $=$ signs. <i>share, share equally, one each, two each, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left over.</i>

Addition



Number Family

If I know:

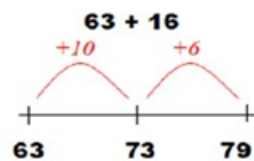
$$2 + 3 = 5$$

I also know:

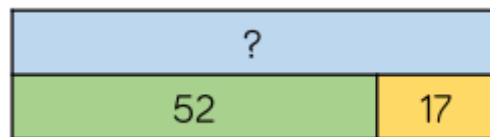
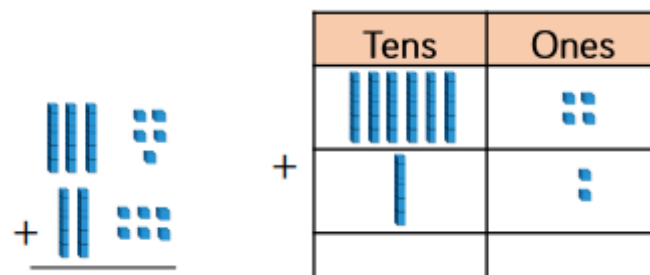
$$3 + 2 = 5$$

$$20 + 30 = 50$$

$$30 + 20 = 50$$



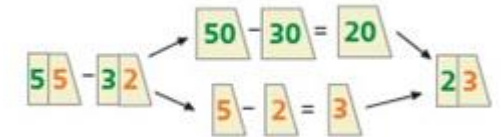
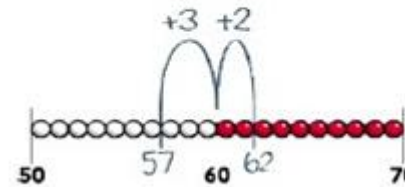
$$\begin{array}{r} 23 \\ + 34 \\ \hline 7 \\ 50 \\ \hline 57 \end{array}$$



Subtraction

Bridging through 10

52-6 as 52-2 then -4 = 46



Number Family

If I know:

$$5 - 3 = 2$$

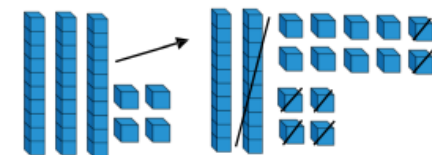
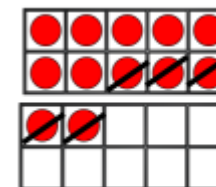
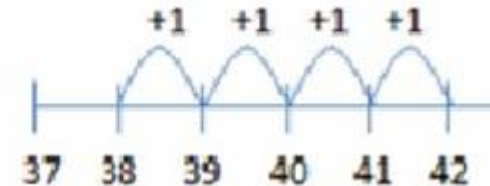
I also know:

$$5 - 2 = 3$$

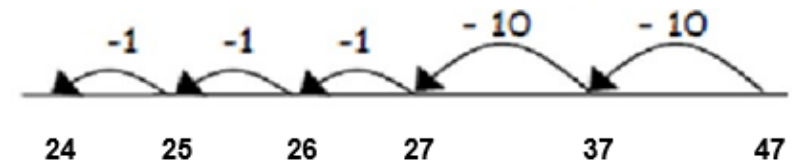
$$50 - 30 = 20$$

$$50 - 20 = 30$$

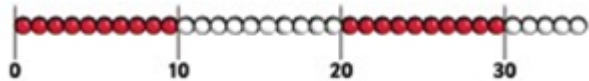
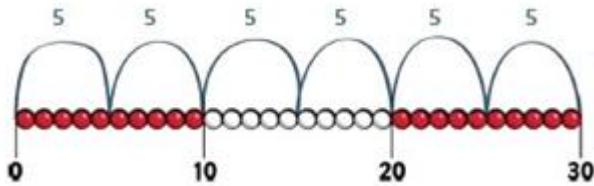
$$42 - 38 = 4$$



$$47 - 23 = 24$$



Multiplication



$$5 \times 3 = 15$$

$$5 \times 3 = 3 + 3 + 3 + 3 + 3 = 15$$

$$3 \times 5 = 5 + 5 + 5 = 15$$



Complete:



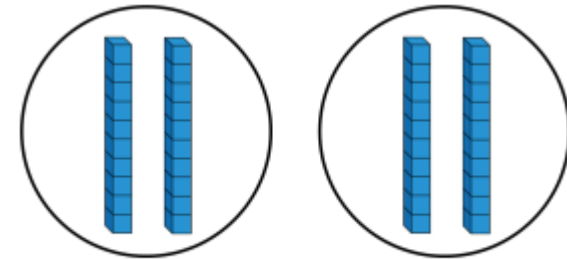
There are ____ equal groups with ____ in each group.

There are three ____s.

$$___ + ___ + ___ = 12$$

Division

$$20 \div 5 =$$



$$40 \div 2 = 20$$

How many groups of 4 can be made with 12 stars?

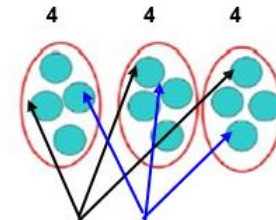
4

4

4



12 sweets shared between 3 people



Shurdington Calculation Policy
Year 3

Objectives

- Add and subtract numbers mentally
 - 3 digit number and 1s
 - 3 digit number and 10s
 - 3 digit number and 100s
- Add and subtract numbers with up to 3 digits using formal written methods of columnar addition and subtraction.
- Estimate the answer to a calculation and use inverse operations to check the answers
- Solve problems including, missing number problems, using number facts, place value, and more complex addition and subtraction
- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know; including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving multiplication and division; including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Key Skills – Addition

Read and write numbers to 1000 in numerals and words.

Add 2-digit numbers mentally, incl: those exceeding 100.

Add a three-digit number and ones mentally ($175 + 8$)

Add a three-digit number and tens mentally ($249 + 50$)

Add a three-digit number and hundreds mentally ($381 + 400$)

Estimate answers to calculations, using inverse to check answers.

Solve problems, including missing number problems, using number facts, place value, and more complex addition.

Recognise place value of each digit in 3-digit numbers (hundreds, tens, ones.)

Key Skills – Subtraction

Subtract mentally a: 3-digit number and ones, 3-digit number and tens, 3-digit number and hundreds.

Estimate answers and use inverse operations to check.

Solve problems, including missing number problems

Find 10 or 100 more or less than a given number.

Recognise the place value of each digit in a 3-digit number.

Counting up differences as a mental strategy when numbers are close together or near multiples of 10 (see examples above)

Read and write numbers up to 1000 in numerals and words.

Practise mental subtraction strategies, such as subtracting near multiples of 10 and adjusting.

Continue to practise a wide range of mental addition strategies, ie. number bonds, adding the nearest multiple of 10, 100, 100 and adjusting, using near doubles, partitioning and recombining. add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact.	Equal to, take, take away, less, minus, leaves, diastance, between, how many more. How many fewer, most, least, count back, how many left, how much less, difference, count on, partition, tens, ones exchange, decrease, hundred, value, digit.
Key Skills – Multiplication Recall and use multiplication facts for the 2, 3, 4, 5, 8 and 10 multiplication tables, and multiply multiples of 10. Write and calculate number statements using the multiplication tables they know, including 2-digit x single digit, drawing upon mental methods, and progressing to reliable written methods. Solve multiplication problems, including missing number problems. Developmental strategies using commutativity (e.g. $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) Solve simple problems in contexts, deciding which operations and methods to use. Develop efficient mental methods to solve a range of problems e.g using commutativity ($4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and for missing number problems $\times 5 = 20$, $3 \times = 18$, $\times = 32$ groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, _times as big as, once, twice, three times..., partition, grid method, multiple, product, tens, units, value	Key Skills – Division Recall and use multiplication and division facts for the 2, 3, 4, 5, 8 and 10 multiplication tables (through doubling, connect the 2, 4 and 8s). Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, in contexts, and including missing number problems, involving multiplication and division. Pupils develop efficient mental methods, for example, using multiplication and division facts (e.g. using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 \times 6 = 12$ to derive related facts ($30 \times 2 = 60$, so $60 \div 3 = 20$ and $20 \times 3 = 60$)). Pupils develop reliable written methods for division, starting with calculations of 2-digit numbers by 1-digit numbers and progressing to the formal written method of short division. Share, share equally, one each, two each, group, equal groups, arrays, divide, divided by, divided into, division, grouping, numberline, left, carry, left over, inverse, short division, remainder, multiple.
Addition	Subtraction

$$475 + 200 =$$

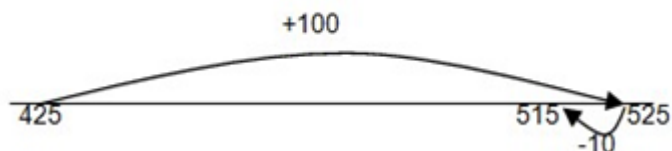
$$425 + 8 = 425 + 5 + 3$$

$$= 430 + 3$$

$$= 433$$



$$425 + 90 =$$

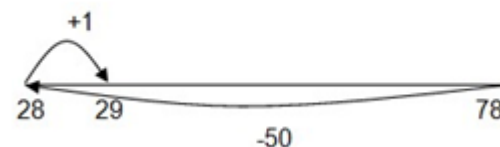


	2	3	6
+		7	3
			9
	1	0	0
	2	0	0
	3	0	9

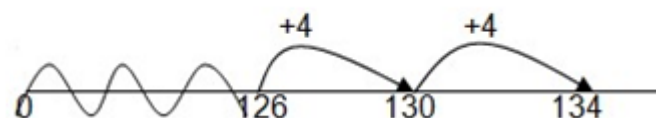
	2	7	8
+		9	4
	3	7	2
		1	0
	1	0	0

	3	1	7
+		4	6
	3	6	3
			1

$$78 - 49 = 29$$



$$134 - 126 = 8$$



$$136 - 8 =$$

$$136 - 6 (130)$$

$$- 2 = 128$$

$$89 - 35 = 54$$

$$80 + 9$$

$$- 30 + 5$$

$$50 + 4$$

$$60 \cancel{70} + 2$$

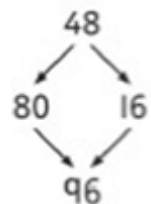
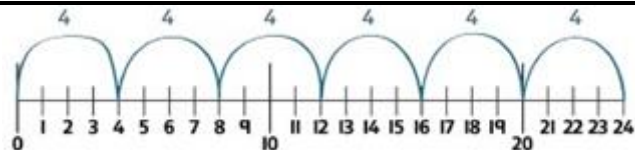
$$- 40 + 7$$

$$20 + 5$$

	2	3	8	-	1	4	6	=	9	2
	2	0	0	+	3	0	+ 8			
-	1	0	0	+	4	0	+ 6			
			0	+	9	0	+ 2			

	2	4	¹ 5
-		2	8
	2	2	7

Multiplication



$3 \times 8 = 24$ so I know $30 \times 8 = 240$ as 30 is 10 times bigger.

$$\begin{array}{r} \times \quad 20 \quad 3 \\ \hline \end{array}$$

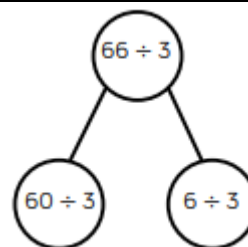
8	160	24
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$$160 + 24 = 184$$

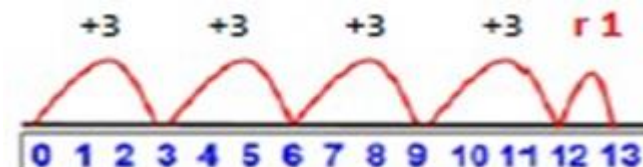
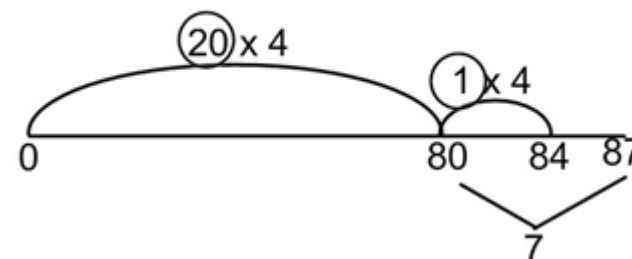
	T	O
	1	6
$\times$		4
	6	4
	2	

Tens	Ones
10	60
10	60
10	60
10	60

Division



$$87 \div 4 = 21 \text{ r}3$$



Shurdington Calculation Policy
Year 4

Objectives

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
- recall multiplication and division facts for multiplication tables up to 12×12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- recognise and use factor pairs and commutativity in mental calculations
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit; integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

Key Skills - Addition

Select most appropriate method: mental, jottings or written and explain why.

Recognise the place value of each digit in a four-digit number.

Round any number to the nearest 10, 100 or 1000.

Estimate and use inverse operations to check answers.

Solve 2-step problems in context, deciding which operations and methods to use and why.

Find 1000 more or less than a given number.

Continue to practise a wide range of mental addition strategies, ie. number bonds, add the nearest multiple of 10, 100, 1000 and adjust, use near doubles, partitioning and recombining.

Add numbers with up to 4 digits using the formal written method of column addition

Solve 2-step problems in contexts, deciding which operations and methods to use and why.

Estimate and use inverse operations to check answers to a calculation.

Key Skills – Subtraction

Subtract by counting on where numbers are close together or they are near to multiples of 10, 100 etc.

Children select the most appropriate and efficient methods for given subtraction calculations.

Estimate and use inverse operations to check answers.

Solve addition and subtraction 2-step problems, choosing which operations and methods to use and why.

Solve simple measure and money problems involving fractions and decimals to two decimal places.

Find 1000 more or less than a given number.

Count backwards through zero, including negative numbers.

Recognise place value of each digit in a 4-digit number Round any number to the nearest 10, 100 or 1000

Solve number and practical problems that involve the above, with increasingly large positive numbers.

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse

Equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less, most, least, count back, how many left, how much less, difference, count on, strategy, partition, tens, ones exchange, decrease, hundreds, value, digit, inverse.

Key Skills – Multiplication

Count in multiples of 6, 7, 9, 25 and 1000

Recall multiplication facts for all multiplication tables up to 12×12 .

Recognise place value of digits in up to 4-digit numbers

Use place value, known facts and derived facts to multiply mentally, e.g. multiply by 1, 10, 100, by 0, or to multiply 3 numbers.

Use commutativity and other strategies mentally $3 \times 6 = 6 \times 3$, $2 \times 6 \times 5 = 10 \times 6$, $39 \times 7 = 30 \times 7 + 9 \times 7$.

Solve problems with increasingly complex multiplication in a range of contexts.

Count in multiples of 6, 7, 9, 25 and 1000

Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)

groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, groups of, sets of, lots of, equal groups, times, multiply, times as big as, once, twice, three times... partition, grid method, total, multiple, product, sets of, inverse

Key Skills – Division

Recall multiplication and division facts for all numbers up to 12×12 .

Use place value, known and derived facts to multiply and divide mentally, including: multiplying and dividing by 10 and 100 and 1.

Pupils practise to become fluent in the formal written method of short division with exact answers when dividing by a one-digit number

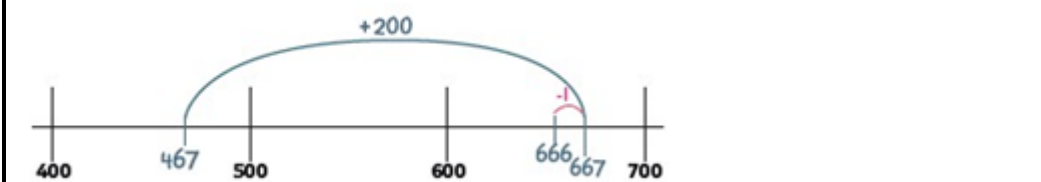
Pupils practise mental methods and extend this to three-digit numbers to derive facts, for example $200 \times 3 = 600$ so $600 \div 3 = 200$

Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.

Share, share equally, one each, two each..., group, equal groups, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor.

	<i>Addition</i>
--	-----------------

167+55 as $167 + 50 = 217$

 $215+5=222$ $467 + 199$ 

	2	7	8
+	1	9	4
	4	7	2
		1	0
	1	0	0

	1	2	7	8
	+	1	9	4
	1	4	7	2
		1	1	

1	2	7	8
+	1	9	4
1	4	7	2
	1	1	

<i>Subtraction</i>

$$1 - 0.6 = 0.4$$



$$2754 - 1562 = 1192$$

$$\begin{array}{r} 2000 + \overset{600}{\cancel{700}} + 50 + 4 \\ - 1000 + 500 + 60 + 2 \\ \hline 1000 \quad 100 + 90 + 2 \end{array}$$

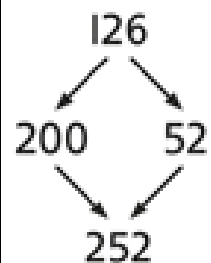
$$\begin{array}{r}
 \text{£ } 4^3 + 130\text{p} + 6\text{p} \\
 - \text{£ } 2 + 50\text{p} + 3\text{p} \\
 \hline
 \text{£ } 1 + 80\text{p} + 3\text{p}
 \end{array}$$

$$\begin{array}{r} 2754 \\ - 1562 \\ \hline 1192 \end{array}$$

Multiplication

$4 \times 8 = 32$ so make it 100 times bigger,
 $400 \times 8 = 3200$

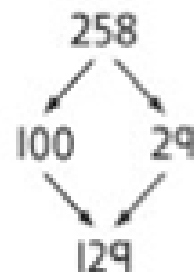
Th	H	T	O
3	2	0	0



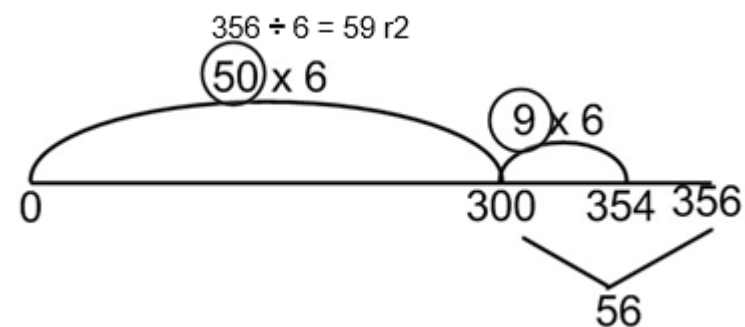
X	100	30	6	500
				150
				<u>+30</u>
				<u>680</u>

	3	2	7
x			4
1	3	0	8
	1	2	

Division



Begin to halve amounts of money
 e.g. £9 halved £4.50



$$186 \div 3 = 62$$

$$\begin{array}{r} 62 \\ 3 \overline{) 186} \\ \underline{-180} 3 \times (60) \\ 6 \\ \underline{-6} 3 \times (2) \\ 0 \end{array}$$

$$\begin{array}{r} 18 \\ 4 \overline{) 72} \end{array}$$

Shurdlington Calculation Policy Year 5

Objectives

- 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.
- identify multiples and factors, including finding all factor pairs of a number, and common factors of two 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 1000
- 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
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Key Skills - Addition

Add numbers mentally with increasingly large numbers, using and practising a range of mental strategies ie: add the nearest multiple of 10, 100, 100 and adjust; use near doubles, inverse, partitioning and re-combining; using number bonds.

Use rounding to check answers and accuracy.

Solve multi-step problems in contexts, deciding which operations and methods to use and why.

Read, write, order and compare numbers to at least 1 million and determine the value of each digit.

Key Skills - Subtraction

Subtract numbers mentally with increasingly large numbers .

Use rounding and estimation to check answers to calculations and determine, in a range of contexts, levels of accuracy .

Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.

Read, write, order and compare numbers to at least 1 million and determine the value of each digit.

Count forwards or backwards in steps of powers of 10 for any given number up to 1 million.

Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Add numbers with more than 4 digits using formal written method of columnar addition. add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenth, hundredths, thousandths.	Interpret negative numbers in context, counting forwards and backwards with positive and negative integers through 0. Round any number up to 1 million to the nearest 10, 100, 1000, 10 000 and 100 000. Equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less, most, least, count back, how many left, how much less, difference, count on, strategy, partition, tens, ones exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal.
Key Skills – Multiplication Identify multiples and factors, using knowledge of multiplication tables to 12x12. Solve problems where larger numbers are decomposed into their factors Multiply and divide integers and decimals by 10, 100 and 1000 Recognise and use square and cube numbers and their notation Solve problems involving combinations of operations, choosing and using calculations and methods appropriately. groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, groups of, sets of, lots of, equal groups, times, multiply, times as big as, once, twice, three times... partition, grid method, total, multiple, product, sets of, inverse, square, factor, integer, decimal, short/long mu	Key Skills – Division Recall multiplication and division facts for all numbers up to 12 x 12 (as in Y4). Multiply and divide numbers mentally, drawing upon known facts. Identify multiples and factors, including finding all factor pairs of a number, and common factors of two number. Solve problems involving multiplication and division where larger numbers are decomposed into their factors. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Work out whether a number up to 100 is prime, and recall prime numbers to 19. 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 Use multiplication and division as inverses. Interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (e.g. $98 \div 4 = 24 \text{ r } 2 = 24\frac{1}{2} = 24.5 \approx 25$). Solve problems involving combinations of all four operations, including understanding of the equals sign, and including division for scaling by different fractions and problems involving simple rates.

Share, share equally, one each, two each..., group, equal groups, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, quotient, prime number, prime factors, composite number.

Addition

$$\begin{array}{r} 23481 \\ + 1362 \\ \hline 24843 \end{array}$$

$$\begin{array}{r} £23.59 \\ + £7.55 \\ \hline £31.14 \end{array}$$

$$\begin{array}{r} 19.01 \\ 3.65 \\ + 0.70 \\ \hline 23.36 \end{array}$$

Add near multiples of 1

e.g. $6.34 + 0.99$

e.g. $5.63 + 0.9$

Count on from large numbers

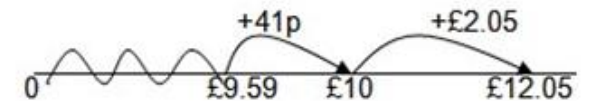
e.g. $6834 + 3005$ as $9834 + 5$

$$5.72 + 3.05 \text{ as } 5.72 + 3 (8.72) + 0.05 \\ = 8.77$$

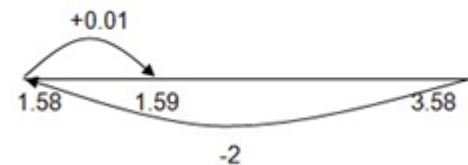
Subtraction

$$\begin{aligned} 3964 - 1051 &= \\ 3964 - 1000 &= 2964 \\ 2964 - 50 &= 2914 \\ 2914 - 1 &= 2913 \\ \text{Or} \\ 5.72 - 2.01 &= \\ 5.72 - 2 &= 3.72 \\ 3.72 - 0.1 &= 3.62 \end{aligned}$$

$$£12.05 - £9.59 = £2.46$$



$$3.58 - 1.99 =$$



$$\begin{array}{r} 28'10'8'6 \\ - 2128 \\ \hline 28,928 \end{array}$$

$$\begin{array}{r} 7'10'6'8'0 \\ - 372.5 \\ \hline 6796.5 \end{array}$$

Multiplication

$$\begin{array}{r} 18 \\ \times 13 \\ \hline 24 \quad (8 \times 3) \\ 30 \quad (10 \times 3) \\ 80 \quad (8 \times 10) \\ 100 \quad (10 \times 10) \\ \hline 234 \end{array}$$

$$\begin{array}{r} 18 \\ \times 13 \\ \hline 54 \quad (18 \times 3) \\ 180 \quad (18 \times 10) \\ \hline 234 \end{array}$$

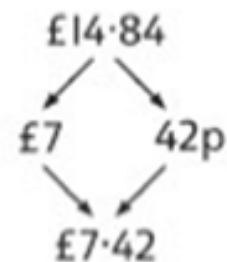
$$\begin{array}{r} 327 \\ \times 4 \\ \hline 1308 \end{array}$$

$$\begin{array}{r} 3652 \\ \times 8 \\ \hline 29216 \end{array}$$

$$\begin{array}{r} 1234 \\ \times 16 \\ \hline 7404 \\ 12340 \\ \hline 19744 \end{array}$$

Division

$$\begin{array}{r} 32 \\ 3 \overline{)96} \end{array}$$



$$\begin{array}{r} 18 \\ 4 \overline{)72} \end{array}$$

$$\begin{array}{r} 218 \\ 4 \overline{)872} \end{array}$$

$$\begin{array}{r} 0663 \text{ r } 5 \\ 8 \overline{)53029} \end{array}$$

hurdington Calculation Policy
Year 6

Objectives

- perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-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
- 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
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Key Skills – Addition

Perform mental calculations, including with mixed operations and large numbers, using and practising a range of mental strategies.

Solve multi-step problems in context, deciding which operations and methods to use and why.

Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

Read, write, order and compare numbers up to 10 million and determine the value of each digit.

Round any whole number to a required degree of accuracy.

Key Skills – Subtraction

Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.

Read, write, order and compare numbers up to 10 million and determine the value of each digit

Round any whole number to a required degree of accuracy

Use negative numbers in context, and calculate intervals across zero.

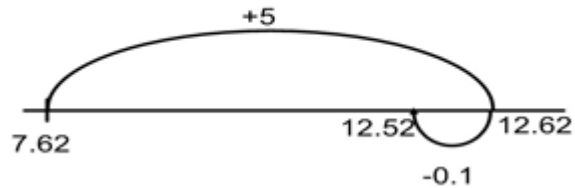
Children need to utilise and consider a range of mental subtraction strategies, jottings and written methods before choosing how to calculate.

Pupils understand how to add mentally with larger numbers and calculations of increasing complexity. Pupils know that decimals points should line up under each other, particularly when adding or subtracting mixed amounts add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenth, hundredths, thousandths.	Equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less, most, least, count back, how many left, how much less, difference, count on, strategy, partition, tens, ones exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal.
Key Skills – Multiplication Recall multiplication facts for all times tables up to 12×12 (as Y4 and Y5). Multiply multi-digit numbers, up to 4-digit $\times$ 2-digit using long multiplication. Perform mental calculations with mixed operations and large numbers. Solve multi-step problems in a range of contexts, choosing appropriate combinations of operations and methods. Estimate answers using round and approximation and determine levels of accuracy. groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, groups of, sets of, lots of, equal groups, times, multiply, times as big as, once, twice, three times... partition, grid method, total, multiple, product, sets of, inverse, square, factor, integer, decimal, short/long multiplication, carry, tenths, hundredths, decimal.	Key Skills – Division Recall and use multiplication and division facts for all numbers to 12×12 for more complex calculations Divide numbers up to 4 digits by a two-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. Use short division where appropriate. Perform mental calculations, including with mixed operations and large numbers. Identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations and determine accuracy, in the context of a problem. Use written division methods in cases where the answer has up to two decimal places. Solve problems which require answers to be rounded to specified degrees of accuracy. Share, share equally, one each, two each..., group, equal groups, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, quotient, prime number, prime factors, composite number, common factor.

Addition

$6 \cdot 314 + 3 \cdot 006$ as $6 \cdot 314 + 3 (9 \cdot 314) +$
 $0 \cdot 006 = 9 \cdot 32$

$$7.62 + 4.9$$



$$63 + 37 = 100$$

$$0.63 + 0.37 = 1$$

2	3	.	3	6	1
	9	.	0	8	0
5	9	.	7	7	0
+	1	.	3	0	0
9	3	.	5	1	1
2	1		2		

8	1	,	0	5	9
			3	6	8
			1	5	3
+	2	0	,	5	5
1	2	0	,	5	7
	1		1	1	1

Subtraction

$$3964 - 1051 =$$

$$3964 - 1000 = 2964$$

$$2964 - 50 = 2914$$

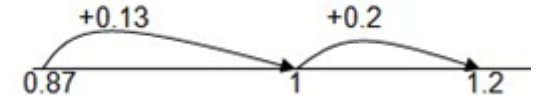
$$2914 - 1 = 2913$$

$$5.72 - 2.01 =$$

$$5.72 - 2 = 3.72$$

$$3.72 - 0.1 = 3.62$$

$$1.2 - 0.87 = 0.33$$



9	8	,	6	9	9
-			8	9	9
			6	0	7

9	8	,	6	9	9	kg
-			3	6	0	8
			6	9	3	3

Multiplication

$$6 \times 4 = 24, 0.06 \times 4 = 0.24$$

$$3060 \times 4 \text{ as } 3000 \times 4 = 12,000 \text{ and } 60 \times 4 = 240, 12,000 + 240 = 12,240$$

$$8.4 \times 8 \text{ as } 8 \times 8 = 64, \text{ and } 0.4 \times 8 = 3.2, 64 + 3.2 = 67.2$$

$$421 \times 6 \text{ as } 421 \times 3 = 1263 \text{ doubled} = 2526$$

$$\begin{array}{r} 3652 \\ \times 8 \\ \hline 29216 \\ \hline \end{array}$$

$$\begin{array}{r} 1234 \\ \times 16 \\ \hline 7404 \quad (1234 \times 6) \\ 12340 \quad (1234 \times 10) \\ \hline 19744 \end{array}$$

$$\begin{array}{r} 3.19 \\ \times 8 \\ \hline 25.52 \\ \hline \end{array}$$

$$\begin{array}{c} £6.73 \\ \swarrow \quad \searrow \\ £12 \quad £1.46 \\ \swarrow \quad \searrow \\ £13.46 \end{array}$$

Division

$$\begin{array}{c} 36.86 \\ \swarrow \quad \searrow \\ 18 \quad 0.43 \\ \swarrow \quad \searrow \\ 18.43 \end{array}$$

$$340 \div 100 = 3.4$$

$$\begin{array}{r} 0812.125 \\ 8 \overline{)6497.000} \end{array}$$

$$\begin{array}{r} 27 \\ 36 \overline{)972} \\ \underline{-720} \quad 36 \times (20) \\ 252 \\ \underline{-180} \quad 36 \times (5) \\ 72 \\ \underline{-72} \quad 36 \times (2) \\ 0 \end{array}$$

$$\begin{array}{r} 28 \text{ r } 12 \text{ or } \frac{12}{15} \text{ or } \frac{4}{5} \\ 15 \overline{)432} \\ \underline{-300} \quad 15 \times (20) \\ 132 \\ \underline{-120} \quad 15 \times (8) \\ 12 \end{array}$$