Mathematics Calculation Policy

October 2019

Sacred Heart Catholic Primary School, Ilkley, a Voluntary Academy

TEACHING THE RANGE OF SUBJECTS WITHIN A CATHOLIC SCHOOL

Academy Council's Curriculum Statement

Catholic schools are required by the Catholic Church to provide "a synthesis of culture and faith as well as a synthesis of faith and life. The first is reached by integrating the different aspects of human knowledge through teaching all subjects in the light of the Gospel; the second by encouraging the growth of the virtues characteristic of the Christian." (Congregation for Catholic Education, Rome 1977).

In Sacred Heart School, we draw on a rich treasury of resources gathered over centuries, in literature, art, philosophy and music together with the wealth of information available in this modern day in the areas of mathematics, science and geography in order to create a curriculum which "engages young people and equips them for life and work" (Ref: The Distinctive Curriculum of the Catholic School NBRIA 2012).

We are mindful of the Catholic tradition which has long encouraged critical enquiry, reasoning and reflection (NBRIA 2012) and we ensure that all of our staff receive regular training so that their skills and knowledge in every taught subject is current and highly effective.

It is our overall aim that Sacred Heart School will develop every aspect of the individual pupil: social, intellectual, emotional, moral and spiritual. We are conscious that if any of these elements were to be overlooked, all others would suffer.

Furthermore, we do not consider religious education to be simply "one subject among many but the foundation of the entire educational process" (Bishops' Conference of England and Wales, Religious Education in Catholic Schools, 2000, n.4). Every effort is consequently made to let the light of the Gospel provide an added faith dimension where this is appropriate to the presentation of the other subjects on the curriculum.

The opinions and moral character of our pupils thus formed will, we trust, provide the essential link in handing on the faith with its accompanying Christian virtues, as mandated by Christ (Mt. 28.19f.), to subsequent generations.

<u>Our Philosophy</u>

- We aim to develop a love for Mathematics;
- We encourage children to develop skills to communicate effectively in mathematics;
- We recognise Mathematics as a core subject in the National Curriculum and as a prerequisite for educational and social progress empowering children to communicate creatively and imaginatively;
- We aim to provide an environment for mathematical development that is stimulating and is characterised by high expectations of success so that the fullest potential of each individual may be achieved.

Key Stage 1

Year 1

Key Language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

	Mental Calculations	Written Calculations	Default for ALL Children
Y1 +	Number Bonds Count on in 1s from a given 2-digit number Add two 1-digit numbers Add three 1-digit numbers, spotting doubles or pairs to 10 Count on in 10s from any given 2-digit number Add 10 to any given 2-digit number Use number facts to add 1-digit numbers to 2-digit numbers Add by putting the larger number first		Pairs with a total of 10 Count in 1s Count in 10s Count on 1 from any given 2-digit number

Key Language: Number bonds, counting back, pairs, subtract, take away, facts.

Y1 -	Number bond (story of 5,6,7,8,9 and 10) Count back in 1s from a given 2-digit number Subtract one 1-digit number from another Count back in 10s from any given 2-digit number Subtract 10 from any given 2-digit number		Pairs with a total of 10 Count back in 1s from 20 to 0 Count back in 10s from 100 to 0 Count back 1 from any given 2-digit number

	Use number facts to subtract 1-digit numbers from a 2-digit number		

	Key Language: Count on, times, double.		
Y1 **x**	Begin to count in 2s, 5s and 10s Begin to say what three 5s are by counting in 5s, or what four 2s are by counting in 2s, etc. Double numbers to 10		Begin to count in 2s and 10s Double numbers to 5 using fingers

	Key Language: Half, share, even, odd, array, sets of.		
Y1 **÷**	Begin to count in 2s, 5s and 10s Find half of even numbers to 12 and know it is hard to halve odd numbers Find half of even numbers by sharing Begin to use visual and concrete arrays or 'sets of' to find how many sets of a small number make a larger number		Begin to count in 2s and 10s Find half of even numbers by sharing

Year 2

Key Language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

	Mental Calculations	Written Calculations	Default for ALL Children
Y2 +	Number bonds – know all the pairs of numbers which make all the numbers to 12, and pairs with a total of 20 Count on in 1s and 10s from any given 2-digit number Add two or three 1-digit numbers Add a 1-digit number to any 2-digit number using number facts, including bridging multiples of 10 e.g. 45 + 4 e.g. 38 + 7 Add 10 and small multiples of 10 to any given 2-digit number Add any pair of 2 -digit numbers		Know pairs of numbers which make each total up to 10 Add two 1-digit numbers Add a 1-digit number to a 2-digit number by counting on in 1s Add 10 and small multiples of 10 to a 2-digit number by counting on in 10s

Key Language: Number bonds, counting back, pairs, subtract, take away, facts.

	Mental Calculations	Written Calculations	Default for ALL Children
Y2 -	Number bonds – know all the pairs of numbers which make all the numbers to 12 Count back in 1s and 10s from any given 2 -digit number Subtract a 1 -digit number from any 2 -digit number using number facts, including		Know pairs of numbers which make each total up to 10 Subtract a 1 -digit number from a 2 -digit number by counting back in 1s Subtract 10 and small multiples of 10 from a 2-digit number by counting back in 10s

	bridging multiples of 10 e.g. 56 − 3 e.g. 53 − 5 Subtract 10 and small multiples of 10 from any given 2 -digit number Subtract any pair of 2 -digit numbers by counting back in 10s and 1s or by counting up		

Key Language: Count on, times, double.

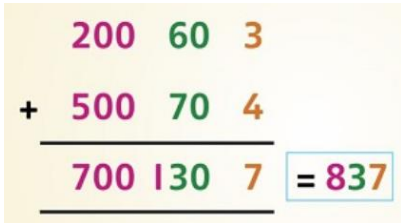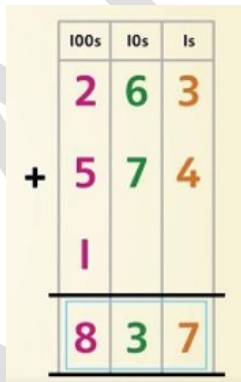|			
Y2 **x**	Count in 2s, 5s and 10s Begin to count in 3s Begin to understand that multiplication is repeated addition and to use arrays e.g. 3 × 4 is three rows of 4 dots Begin to learn the ×2, ×3, ×5 and ×10 tables, seeing these as 'lots of' e.g. 5 lots of 2, 6 lots of 2, 7 lots of 2 Double numbers up to 20 Begin to double multiples of 5 to 100 Begin to double 2-digit numbers less than 50 with 1s digits of 1, 2, 3, 4 or 5		Count in 2s, 5s and 10s Begin to use and understand simple arrays e.g. 2 × 4 is two lots of four Double numbers up to 10 Double multiples of 10 to 50

Key Language: Half, share, even, odd, array, sets of.

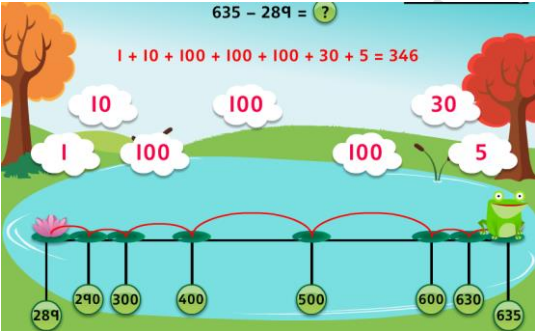| Y2 ÷ | Count in 2s, 5s and 10s

Begin to count in 3s

Using fingers, say where a given number is in the 2s, 5s or 10s count e.g. 8 is the fourth number when I count in 2s

Relate division to grouping e.g. How many groups of 5 in 15?

Halve numbers to 20

Begin to halve numbers to 40 and multiples of 10 to 100

Find 1 /2, 1 /3, 1 /4 and 3 /4 of a quantity of objects and of amounts (whole number answers) | | Count in 2s, 5s and 10s

Say how many rows in a given array e.g. How many rows of 5 are in an array of 3 × 5?

Halve numbers to 12 Find 1 / 2 of amounts |

Lower Key Stage 2	
Year 3	
Key Language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.	

	Mental Calculations	Written Calculations	Default for ALL Children

| Y3 + | Know pairs with each total to 20 e.g. 2 + 6 = 8, 12 + 6 = 18, 7 + 8 = 15

Know pairs of multiples of 10 with a total of 100 Add any two 2-digit numbers by counting on in 10s and 1s or by using partitioning

Add multiples and near multiples of 10 and 100 Perform place-value additions without a struggle e.g. 300 + 8 + 50 = 358

Use place value and number facts to add a 1-digit or 2-digit number to a 3-digit number e.g. 104 + 56 is 160 since 104 + 50 = 154 and 6 + 4 = 10 676 + 8 is 684 since 8 = 4 + 4 and 76 + 4 + 4 = 84 Add pairs of 'friendly' 3-digit numbers e.g. 320 + 450

Begin to add amounts of money using partitioning | **Expanded Column Addition**

$$\begin{array}{ccc} 200 & 60 & 3 \\ + \; 500 & 70 & 4 \\ \hline 700 & 130 & 7 \end{array} = 837$$

Contracted Column Addition

Adding Money

ADD METHOD HERE

Adding Fractions

ADD METHOD HERE | Know pairs of numbers which make each total up to 10, and which total 20

Add two 2-digit numbers by counting on in 10s and 1s e.g. 56 + 35 is 56 + 30 and then add the 5

Understand simple place-value additions e.g. 200 + 40 + 5 = 245

Use place value to add multiples of 10 or 100 |

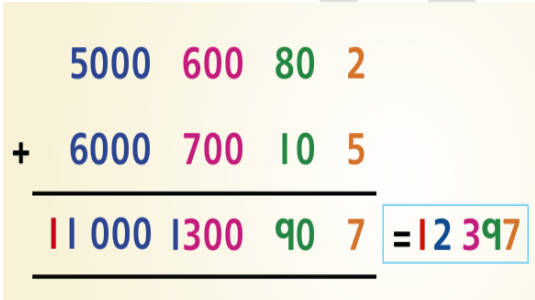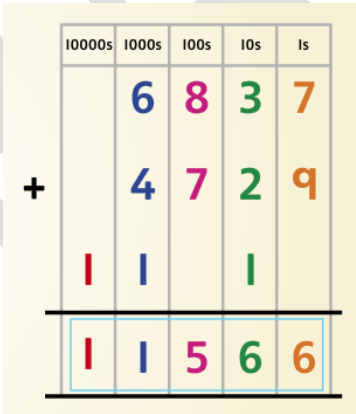**Key Language: Number bonds, counting back, pairs, subtract, take away, facts.**

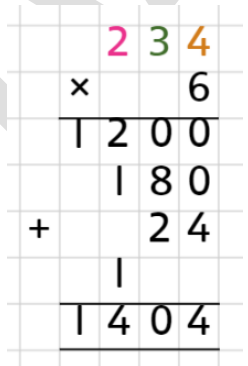| Y3 −	Know pairs with each total to 20 e.g. 8 – 2 = 6 e.g. 18 – 6 = 12 e.g. 15 – 8 = 7 Subtract any two 2-digit numbers Perform place-value subtractions without a struggle e.g. 536 – 30 = 506 Subtract 2-digit numbers from numbers > 100 by counting up e.g. 143 – 76 is done by starting at 76. Then add 4 (80), then add 20 (100), then add 43, making the difference a total of 67 Subtract multiples and near multiples of 10 and 100 Subtract, when appropriate, by counting back or taking away, using place value and number facts Find change from £1, £5 and £10	**Use counting up as an informal written strategy for subtraction** **Subtracting Fractions** Add strategy here	Know pairs of numbers which make each total up to 10, and which total 20 Count up to subtract 2-digit numbers e.g. 72 – 47 Subtract multiples of 5 from 100 by counting up e.g. 100 – 35 Subtract multiples of 10 and 100
	Key Language: Count on, times, double.		
Y3 x	Know by heart all the multiplication facts in the ×2, ×3, ×4, ×5, ×8 and ×10 tables Multiply whole numbers by 10 and 100 Recognise that multiplication is commutative	**Partitioning (Grid Multiplication) to multiply**	Know by heart the ×2, ×3, ×5 and ×10 tables Double given tables facts to get others Double numbers up to 25 and multiples of 5 to 50

	Use place value and number facts in mental multiplication e.g. 30 × 5 is 15 × 10 Partition teen numbers to multiply by a 1-digit number e.g. 3 × 14 as 3 × 10 and 3 × 4 Double numbers up to 50		

<div align="center"><b style="color:red">Key Language: Half, share, even, odd, array, sets of.</div>

Y3 **÷**	Know by heart all the division facts derived from the ×2, ×3, ×4, ×5, ×8 and ×10 tables Divide whole numbers by 10 or 100 to give whole number answers Recognise that division is not commutative Use place value and number facts in mental division e.g. 84 ÷ 4 is half of 42 Divide larger numbers mentally by subtracting the 10th multiple as appropriate, including those with remainders e.g. 57 ÷ 3 is 10 + 9 as 10 × 3 = 30 and 9 × 3 = 27 Halve even numbers to 100, halve odd numbers to 20	**Performing division above the 10th multiple using horizontal or vertical jottings** **Add method** **Giving a Remainder as a whole number** **Add method** **Find unit fractions of quantities and begin to find non-unit fractions as quantities** **Add method**	Know by heart the division facts derived from the ×2, ×3, ×5 and ×10 tables Halve even numbers up to 50 and multiples of 10 to 100 Perform divisions within the tables including those with remainders e.g. 38 ÷ 5	

Year 4

Key Language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

	Mental Calculations	Written Calculations	Default for ALL Children
Y4 +	Add any two 2-digit numbers by partitioning or counting on Know by heart/quickly derive number bonds to 100 and to £1 Add to the next 100, £1 and whole number e.g. 234 + 66 = 300 e.g. 3·4 + 0·6 = 4 Perform place-value additions without a struggle e.g. 300 + 8 + 50 + 4000 = 4358 Add multiples and near multiples of 10, 100 and 1000 Add £1, 10p, 1p to amounts of money Use place value and number facts to add 1-, 2-, 3- and 4-digit numbers where a mental calculation is appropriate e.g. 4004 + 156 by knowing that 6 + 4 = 10 and that 4004 + 150 = 4154 so the total is 4160	**Expanded Column Addition** 5000 600 80 2 + 6000 700 10 5 11 000 1300 90 7 = 12 397 **Contracted Column Addition** | 10000s	1000s	100s	10s	1s
	6	8	3	7
+	4	7	2	9
1	1		1	
1	1	5	6	6	 **Adding Money** ADD METHOD HERE **Adding Fractions above One Whole**	Add any 2-digit numbers by partitioning or counting on Number bonds to 20 Know pairs of multiples of 10 with a total of 100 Add 'friendly' larger numbers using knowledge of place value and number facts Use expanded column addition to add 3-digit numbers

		==ADD METHOD HERE==	
		Fraction Complements to 1	
		==ADD METHOD HERE==	

Key Language: Number bonds, counting back, pairs, subtract, take away, facts.

| **Y4 –** | Subtract any two 2-digit numbers

Know by heart/quickly derive number bonds to 100

Perform place-value subtractions without a struggle e.g. 4736 – 706 = 4030

Subtract multiples and near multiples of 10, 100, 1000, £1 and 10p Subtract multiples of 0·1

Subtract by counting up e.g. 503 – 368 is done by adding 368 + 2 + 30 + 100 + 3 (so we added 135) | **Expanded Column Subtraction**

130
700 ~~30~~ 12
7000 ~~800~~ ~~40~~ ~~2~~
– 3000 400 90 8
4000 300 40 4 = 4344

Subtraction of fractions with the same denominator

==ADD METHOD HERE== | Use counting up with confidence to solve most subtractions, including finding complements to multiples of 100 e.g. 512 – 287 e.g. 67 + _ = 100 |

	Subtract, when appropriate, by counting back or taking away, using place value and number facts

Subtract £1, 10p, 1p from amounts of money Find change from £10, £20 and £50 | **Subtracting fractions from one whole**

ADD METHOD HERE | |

	Key Language: Count on, times, double.

Y4 x	Know by heart all the multiplication facts up to 12 × 12

Recognise factors up to 12 of 2-digit numbers

Multiply whole numbers and 1-place decimals by 10, 100, 1000

Multiply multiples of 10, 100 and 1000 by 1-digit numbers e.g. 300 × 6 e.g. 4000 × 8

Use understanding of place value and number facts in mental multiplication e.g. 36 × 5 is half of 36 × 10 e.g. 50 × 60 = 3000

Partition 2-digit numbers to multiply by a 1-digit number mentally e.g. 4 × 24 as 4 × 20 and 4 × 4

Multiply near multiples by rounding e.g. 33 × 19 as (33 × 20) − 33 | **Partitioning (Grid Multiplication) to multiply**

Vertical Written Method (Ladder Method)

 | Know by heart multiplication tables up to 10 × 10

Multiply whole numbers by 10 and 100

Use the grid method to multiply a 2-digit or a 3-digit number by a number ≤ 6 | |

	Find doubles to double 100 and beyond using partitioning Begin to double amounts of money e.g. £35·60 doubled is £71·20		

<div align="center" style="color:red">**Key Language: Half, share, even, odd, array, sets of.**</div>

Y4 **÷**	Know by heart all the division facts up to 144 ÷ 12 Divide whole numbers by 10, 100, to give whole number answers or answers with 1 decimal place Divide multiples of 100 by 1-digit numbers using division facts e.g. 3200 ÷ 8 = 400 Use place value and number facts in mental division e.g. 245 ÷ 20 is half of 245 ÷ 10 Divide larger numbers mentally by subtracting the 10th or 20th multiple as appropriate e.g. 156 ÷ 6 is 20 + 6 as 20 × 6 = 120 and 6 × 6 = 36 Find halves of even numbers to 200 and beyond using partitioning	**Written Method for Division (Chunking)** ADD METHOD HERE **Expressing remainders as whole numbers** ADD METHOD HERE **Reducing fractions into their simplest form** ADD METHOD HERE **Find unit and non-unit fractions of larger amounts** ADD METHOD HERE	Know by heart all the division facts up to 100 ÷ 10 Divide whole numbers by 10 and 100 to give whole number answers or answers with 1 decimal place Perform divisions just above the 10th multiple using the written layout and understanding how to give a remainder as a whole number Find unit fractions of amounts

	Begin to halve amounts of money e.g. half of £52·40 is £26·20		

Upper Key Stage 2
Year 5

Key Language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

	Mental Calculations	Written Calculations	Default for ALL Children
Y5 +	Know number bonds to 1 and to the next whole number Add to the next 10 from a decimal number e.g. 13·6 + 6·4 = 20 Add numbers with 2 significant digits only, using mental strategies e.g. 3·4 + 4·8 e.g. 23 000 + 47 000 Add 1- or 2-digit multiples of 10, 100, 1000, 10 000 and 100 000 e.g. 8000 + 7000 e.g. 600 000 + 700 000 Add near multiples of 10, 100, 1000, 10 000 and 100 000 to other	**Contracted Column Addition (including decimals)** 	Add numbers with only 2 digits which are not zeros e.g. 3·4 + 5·8 Derive swiftly and without any difficulty number bonds to 100 Add 'friendly' large numbers using knowledge of place value and number facts Use expanded column addition to add pairs of 4- and 5-digit numbers

numbers e.g. 82 472 + 30 004 Add decimal numbers which are near multiples of 1 or 10, including money e.g. 6·34 + 1·99 e.g. £34·59 + £19·95

Use place value and number facts to add two or more 'friendly' numbers, including money and decimals e.g. 3 + 8 + 6 + 4 + 7 e.g. 0·6 + 0·7 + 0·4 e.g. 2056 + 44

	£10s	£1s	·10ps	1ps
£	5	4 ·	8	7
+ £	2	3 ·	6	5
			1	1
£	7	8 ·	5	2

Adding Related Fractions

<mark>ADD METHOD HERE</mark>

Key Language: Number bonds, counting back, pairs, subtract, take away, facts.

Y5

–

Subtract numbers with 2 significant digits only, using mental strategies e.g. 6·2 – 4·5 e.g. 72 000 – 47 000 Subtract 1- or 2-digit multiples of 10, 100, 1000, 10 000 and 100 000 e.g. 8000 – 3000 e.g. 60 000 – 200 000

Subtract 1- or 2-digit near multiples of 10, 100, 1000, 10 000 and 100 000 from other numbers e.g. 82 472 – 30 004

Subtract decimal numbers which are near multiples of 1 or 10, including money e.g. 6·34 – 1·99 e.g. £34·59 – £19·95 Use

Expanded Column Subtraction

8000	1300	50	10
~~9000~~	~~300~~	~~60~~	~~0~~
– 4000	700	20	6
4000	600	30	4 = 4634

Contracted Column Subtraction

Derive swiftly and without difficulty number bonds to 100

Use counting up with confidence to solve most subtractions, including finding complements to multiples of 1000 e.g. 3000 – 2387
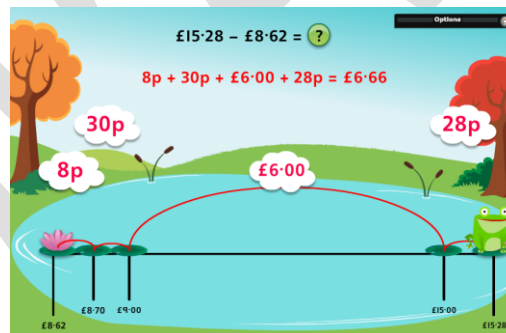
counting up subtraction, with knowledge of number bonds to 10, 100 or £1, as a strategy to perform mental subtraction e.g. £10 – £3·45 e.g. 1000 – 782

Recognise fraction complements to 1 and to the next whole number e.g. 1 2 /5 + 3 /5 = 2

1000s	100s	10s	1s
8	13	5	10
9̸	3̸	6̸	0̸
– 4	7	2	6
4	6	3	4

Complementary addition for subtractions of decimal numbers with up to 2 places, including amounts of money

£15·28 – £8·62 = ?

8p + 30p + £6·00 + 28p = £6·66

30p   28p
8p   £6·00

£8·62   £8·70 £9·00   £15·00   £15·28

Subtract Related Fraction using equivalence

ADD METHOD HERE

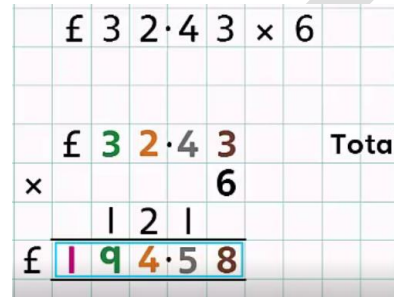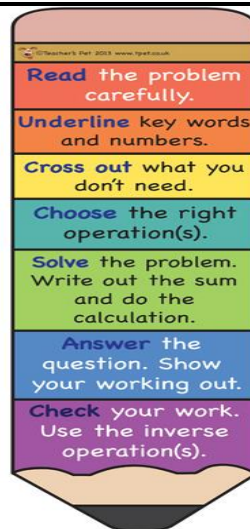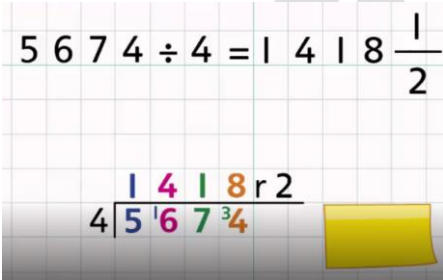| Y5 x | Multiply whole numbers and 1- and 2- place decimals by 10, 100, 1000, 10 000

Use knowledge of factors and multiples in multiplication e.g. 43 × 6 is double 43 × 3 e.g. 28 × 50 is 1/2 of 28 × 100 = 1400

Use knowledge of place value and rounding in mental multiplication e.g. 67 × 199 as 67 × 200 − 67

Use doubling and halving as a strategy in mental multiplication e.g. 58 × 5 is half of 58 × 10 e.g. 34 × 4 is 34 doubled twice

Partition 2-digit numbers, including decimals, to multiply by a 1-digit number mentally e.g. 6 × 27 as 6 × 20 (120) plus 6 × 7 (42) e.g. 6·3 × 7 as 6 × 7 (42) plus 0·3 × 7 (2·1)

Double amounts of money by partitioning e.g. £37·45 doubled is £37 doubled (£74) plus 45p | **Short Multiplication**

£32.43 × 6

£32.43
× 6
121
£194.58 Total

Long Multiplication to multiply 3 and 4-digit numbers by a number between 11 and 20

ADD METHOD HERE

Use appropriate method in any given situation | Know by heart all the multiplication facts up to 12 × 12

Know multiplication tables to 11 × 11

Multiply whole numbers and 1-place decimals by 10, 100 and 1000

Use knowledge of factors as aids to mental multiplication e.g. 13 × 6 is double 13 × 3 e.g. 23 × 5 is 1/2 of 23 × 10

Use the grid method to multiply numbers with up to 4 digits by 1-digit numbers

Use the grid method to multiply 2-digit numbers by 2- digit numbers |

Read the problem carefully.

Underline key words and numbers.

Cross out what you don't need.

Choose the right operation(s).

Solve the problem. Write out the sum and do the calculation.

Answer the question. Show your working out.

Check your work. Use the inverse operation(s).

<u>Find simple percentages of amounts</u>
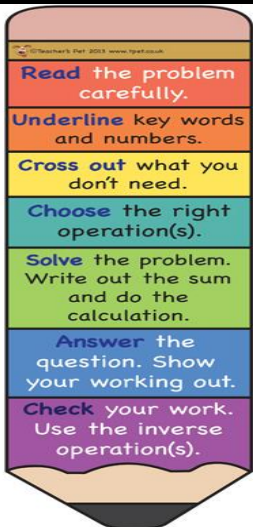
<mark>ADD METHOD HERE</mark>

<u>Multiply fraction and mixed number by whole numbers < 10</u>

<mark>ADD METHOD HERE</mark>

Key Words: Half, share, even, odd, array, sets of.

| **Y5 ÷** | Know by heart all the division facts up to 144 ÷ 12

Divide whole numbers by 10, 100, 1000, 10 000 to give whole number answers or answers with 1, 2 or 3 decimal places

Use doubling and halving as mental division strategies e.g. 34 ÷ 5 is (34 ÷ 10) × 2

Use knowledge of multiples and factors, as well as tests for divisibility, in mental division e.g. 246 ÷ 6 is 123 ÷ 3 e.g. We know that 525 divides by 25 and by 3

Halve amounts of money by partitioning e.g. 1 /2 of £75·40 = 1 /2 of £75 (£37·50) plus half of 40p (20p) which is £37·70

Divide larger numbers mentally by subtracting the 10th or 100th multiple as appropriate e.g. 96 ÷ 6 is 10 + 6, as 10 × 6 = 60 and 6 × 6 = 36 e.g. 312 ÷ 3 is 100 + 4 as 100 × 3 = 300 and 4 × 3 = 12

Know tests for divisibility by 2, 3, 4, 5, 6, 9 and 25

Know square numbers and cube numbers Reduce fractions to their simplest form | **<u>Short Division to divide numbers up to 4-digits</u>**

<u>Give remainders as whole numbers or as fractions</u>

$$5674 \div 4 = 1418\frac{1}{2}$$

$$\begin{array}{r} 1\ 4\ 1\ 8\ r\ 2 \\ \hline 4\,|\,5\,{}^{1}6\,{}^{\ }7\,{}^{3}4 \end{array}$$

<u>Find non-unit fractions of large-amounts</u>

<mark>ADD METHOD HERE</mark>

<u>Turn Improper fractions into mixed numbers and vice versa</u>

<mark>ADD METHOD HERE</mark>

<u>Choose the most efficient method in any given situation</u> | Know by heart division facts up to 121 ÷ 11

Divide whole numbers by 10, 100 or 1000 to give answers with up to 1 decimal place

Use doubling and halving as mental division strategies

Use an efficient written method to divide numbers ≤ 1000 by 1-digit numbers

Find unit fractions of 2- and 3-digit numbers |

Read the problem carefully.

Underline key words and numbers.

Cross out what you don't need.

Choose the right operation(s).

Solve the problem. Write out the sum and do the calculation.

Answer the question. Show your working out.

Check your work. Use the inverse operation(s).

Year 6		
Key Language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.		
	Mental Calculations	**Written Calculations**	**Default for ALL Children**

| Y6 + | Know by heart number bonds to 100 and use these to derive related facts e.g. 3·46 + 0·54

Derive, quickly and without difficulty, number bonds to 1000

Add small and large whole numbers where the use of place value or number facts makes the calculation do-able mentally e.g. 34 000 + 8000

Add multiples of powers of 10 and near multiples of the same e.g. 6345 + 199

Add negative numbers in a context such as temperature where the numbers make sense

Add two 1-place decimal numbers or two 2-place decimal numbers less than 1 e.g. 4·5 + 6·3 e.g. 0·74 + 0·33

Add positive numbers to negative numbers e.g. Calculate a rise in temperature or continue a sequence beginning with a negative number | | Derive, swiftly and without difficulty, number bonds to 100

Use place value and number facts to add 'friendly' large or decimal numbers e.g. 3·4 + 6·6 e.g. 26 000 + 54 000

Use column addition to add numbers with up to 4-digits

Use column addition to add pairs of 2-place decimal numbers |

Key Language: Number bonds, counting back, pairs, subtract, take away, facts.

Y6 −	Use number bonds to 100 to perform mental subtraction of any pair of integers by complementary addition e.g. 1000 – 654 as 46 + 300 in our heads Use number bonds to 1 and 10 to perform mental subtraction of any pair of 1-place or 2-place decimal numbers using complementary addition and including money e.g. 10 – 3·65 as 0·35 + 6 e.g. £50 – £34·29 as 71p + £15 Use number facts and place value to perform mental subtraction of large numbers or decimal numbers with up to 2 places e.g. 467 900 – 3005 e.g. 4·63 – 1·02 Subtract multiples of powers of 10 and near multiples of the same Subtract negative numbers in a context such as temperature where the numbers make sense		Use number bonds to 100 to perform mental subtraction of numbers up to 1000 by complementary addition e.g. 1000 – 654 as 46 + 300 in our heads Use complementary addition for subtraction of integers up to 10 000 e.g. 2504 – 1878 Use complementary addition for subtractions of 1- place decimal numbers and amounts of money e.g. £7·30 – £3·55
Key Language: Count on, times, double.			

| Y6 x | Know by heart all the multiplication facts up to 12 × 12

Multiply whole numbers and decimals with up to 3 places by 10, 100 or 1000 e.g. 234 × 1000 = 234 000 e.g. 0·23 × 1000 = 230

Identify common factors, common multiples and prime numbers and use factors in mental multiplication e.g. 326 × 6 is 652 × 3 which is 1956 Use place value and number facts in mental multiplication e.g. 4000 × 6 = 24 000 e.g. 0·03 × 6 = 0·18

Use doubling and halving as mental multiplication strategies, including to multiply by 2, 4, 8, 5, 20, 50 and 25 e.g. 28 × 25 is a quarter of 28 × 100 = 700

Use rounding in mental multiplication e.g. 34 × 19 as (34 × 20) − 34

Multiply 1- and 2-place decimals by numbers up to and including 10 using place value and partitioning e.g. 3·6 × 4 is 12 + 2·4 e.g. 2·53 × 3 is 6 + 1·5 + 0·09

Double decimal numbers with up to 2 places using partitioning e.g. 36·73 doubled is double 36 (72) plus double 0·73 (1·46) | | Know by heart all the multiplication facts up to 12 × 12

Multiply whole numbers and 1- and 2-place decimals by 10, 100 and 1000

Use an efficient written method to multiply a 1-digit or a teen number by a number with up to 4 digits by partitioning (grid method)

Multiply a 1-place decimal number up to 10 by a number ≤ 100 using the grid method |

Key Language: Half, share, even, odd, array, sets of.		
Y6 ÷	Know by heart all the division facts up to 144 ÷ 12 Divide whole numbers by powers of 10 to give whole number answers or answers with up to 3 decimal places Identify common factors, common multiples and primes numbers and use factors in mental division e.g. 438 ÷ 6 is 219 ÷ 3 which is 73 Use tests for divisibility to aid mental calculation Use doubling and halving as mental division strategies, for example to divide by 2, 4, 8, 5, 20 and 25 e.g. 628 ÷ 8 is halved three times: 314, 157, 78·5 Divide 1- and 2-place decimals by numbers up to and including 10 using place value e.g. 2·4 ÷ 6 = 0·4 e.g. 0·65 ÷ 5 = 0·13 e.g. £6·33 ÷ 3 = £2·11 Halve decimal numbers with up to 2 places using partitioning e.g. Half of 36·86 is half of 36 (18) plus half of 0·86 (0·43) Know and use equivalence between simple fractions, decimals and		Know by heart all the division facts up to 144 ÷ 12 Divide whole numbers by 10, 100, 1000 to give whole number answers or answers with up to 2 decimal places Use an efficient written method, involving subtracting powers of 10 times the divisor, to divide any number of up to 1000 by a number ≤ 12 e.g. 836 ÷ 11 as 836 − 770 (70 × 11) leaving 66 which is 6 × 11, giving the answer 76 Divide a 1-place decimal by a number ≤ 10 using place value and knowledge of division facts

	percentages, including in different contexts Recognise a given ratio and reduce a given ratio to its lowest terms		