Year 3				
Calculation content	ADDITION AND SUBTRACTION (UNIT 1) + and - facts for 100 using multiples of 5 and 10 Add a 3-digit number and ones Subtract ones from a three-digit number (exchanging) Add a three-digit number and tens; subtract tens from a three- digit number Adding multiples of ten beyond one hundred Subtract multiples of ten Add numbers with up to three- digits (without and with exchanging) Subtract numbers with up to three-digits (without and with exchanging)	 MONEY (UNIT 1) Making £1, £2 and £5 Adding 2 two-digit amounts (eg 35p + 25p = 30p + 20p + 5p + 5p) Adding pounds and pence, including bridging through £1 (eg £4 and 70p + £3 and 60p) ADDITION AND SUBTRACTION (UNIT 2) + and - facts for 100 and related facts Add a three-digit number to a three-digit number (exchanging ones to tens and tens to hundreds) Subtract a three-digit number (exchanging hundreds to tens and tens to nones) FRACTIONS (UNIT 2) Add and subtract fractions with the same denominator Subtract from one whole 	 Block S CALCULATION UNIT Scaling additive facts by ten Add a three-digit number to a three-digit number (r) Subtract a three-digit number (r) MONEY (UNIT 2) Subtracting amounts of money (empty number line and subtracti by partitioning the minuend) 	
FECTIV		Subtract from one whole	EFFC	

fear 3				
	Block 1	Block 2	Block 3	
Strategies/ methods	$\frac{+ \text{ and } - \text{ facts for 100 using multiples of }}{5 \text{ and 10}}$ Teaching needs to stress how to avoid common errors when calculating complements to 100, eg: 65 + 45 = 110 instead of 100. See notes in lesson. Add a 3-digit number and ones Making the next ten, eg: 167 + 9 = 167 + 3 + 6. Subtract ones from a three-digit number Making the previous ten, eg: 167 - 9 = 167 - 7 - 2. Add a three-digit number and tens; subtract tens from a three-digit number For addition: partition the three-digit number For addition: partition the three-digit number into hundreds and tens and ones, eg: 258 + 30 = 250 + 8 + 30 = 280 + 8. For subtraction: partition the minuend, eg: 258 - 30 = 58 - 30 + 200	Making £1, £2 and £5Representations of coins and moneynumber lines support calculatingamounts to £1, £2 and £5.Adding 2 two-digit amountsBoth amounts are partitioned intomultiples of ten pence and multiplesof one pence, eg: $35p + 25p = 30p + 5p + 20p + 5p$ Adding pounds and pence, includingbridging through £1The core strategy is to add thepounds, then add the pence, thencombine, eg:£4 and 70p + £3 and 60p =£7 and 130p =£8 and 30pNB Remember that children in Year 3have not formally encountereddecimal notation. Pounds and penceare presented as either £8 and 30p or£8.30 - but the decimal is referred toas a separator.	Scaling additive facts by ten Use known facts, eg: 5 - 2 = 3 so 5 tens - 3 tens = 2 tens. Add a three-digit number to a three- digit number Partitioning to expand second addend partitioning both addends; compensation. Subtract a three-digit number from a three-digit number Counting on using empty number line; compensation. Subtracting amounts of money Empty number line and subtracting by partitioning the minuend.	
FECTIV		40	EFFECT	

Year 3			
	Block 1	Block 2	Block 3
Strategies/ methods	Adding multiples of ten Making the next hundred, eg: 80 + 60 = 80 + 20 + 40. Subtract multiples of ten Making the previous hundred, eg: 140 - 60 = 140 - 40 - 20. Add numbers with up to three-digits (three-digit + two-digit) Partitioning the second addend - 100 square representation; column method. Subtract numbers with up to three- digits (three-digit - two-digit) Using hundred square; counting back on empty number line; column method.	 <u>+ and - facts for 100 and related facts</u> For addition: partitioning both addends into ten and ones and combining parts, eg: 73 + 27 = 70 + 3 + 20 + 7 = 90 + 10. For subtraction: partitioning the subtrahend, eg: 100 - 68 = 100 - 60 - 8; counting on with number line. Add a three-digit number to a three-digit number Column method (exchanging ones to tens and tens to hundreds). Subtract a three-digit number from a three-digit number Column method (exchanging hundreds to tens and tens to ones). 	
FECTIVE		41	EFFECT

strategies/ methods Add and subtract fractions with the same denominator Teaching uses dual-naming. For example: $\frac{2}{6} + \frac{3}{6} =$ First say: Two one-sixths and three one-sixths = five one-sixths. (Unitising the fraction by verbally describing a non-unit fraction as a multiple of its unit fraction - this is important to avoid the misconception that two-sixths plus three-sixths = five twelfths. Then say: Two sixths plus three sixths = five sixths. Subtract from one whole	
Key teaching point is that when the numerator and denominator are the same the fraction is equivalent to a whole number. For example: $1 - \frac{5}{6} = \frac{6}{6} - \frac{5}{6}$	



BLOCK 1

+ and - facts for 100 using multiples of 5 and 10

Teaching needs to stress how to avoid common errors when calculating complements to 100, eg:

65 + 45 = 110 instead of 100. See notes in lesson.



Add a 3-digit number and ones Making the next ten, eg: 167 + 9 = 170 + 3 + 6.



Subtract ones from a three-digit number Making the previous ten, eg: 167 - 9 = 167 - 7 - 2.



Add a three-digit number and tens

For addition: partition the three-digit number into hundreds and tens and ones, eg:

258 + 30 = 250 + 8 + 30 = 280 + 8.

The point is to create two multiples of ten from both of the addends. One is already a multiple of ten, so we only need to adjust the other. Counting on in tens is also helpful.



<u>Subtract tens from a three-digit number</u> For subtraction: partition the minuend, eg: 258 - 30 = 58 - 30 + 200 (the second example above).

The examples above illustrate taking the subtrahend from different parts of the partitioned minuend.



Adding multiples of ten Making the next hundred, eg: 80 + 60 = 80 + 20 + 40.

If children are not confident with making the next/previous ten, consider focusing on securing this rather than making the next/previous hundred. The ability to bridge through ten is fundamental to securing effective calculation ability.



Add numbers with up to three-digits

(three-digit + two-digit)

Two methods:

- partitioning the second addend;
- column method.

NB In Year 2 children added 2 two-digit numbers. The next step here is to add a three-digit number to a two-digit. In Block 2 they will add 2 three-digit numbers.

Language for the compact column method

The use of accurate language is essential to ensure <u>conceptual</u> understanding of the column method.

Avoid terms like 'units' and 'carry'.

Link to children's understanding of how base 10 works, perhaps revisiting the trading games played in Y2 place value unit 1.

Say: Add the ones. 6 ones and 5 ones makes 11 ones. 11 ones is the same as 1 ten and 1 one.

Add the tens.

4 tens and 3 tens and 1 ten makes 8 tens. As you say the above, write: $4\underline{0} + 3\underline{0} + 1\underline{0} = 8\underline{0}$ $8\underline{0} = 80$

You are writing and underlining the digit zero as you say 'tens'. 8 tens = $8\underline{0}$

Add the hundreds.

2 hundreds and no hundreds makes 2 hundreds.



Subtract numbers with up to three-digits (three-digit - two-digit)

(Unree-digit - two-dig

Three methods:

- using hundred square;
- counting back on empty number line;
- column method.

Language for the compact column method

As for addition, accurate use of language is essential to ensure <u>conceptual</u> understanding of the column method.

Do not use the term 'borrow'.

There are not enough ones in the situation 2 ones take away 9 ones. So we need some more ones. Let's exchange/swap 1 ten for 10 ones. Now we have 12 ones. 12 ones take away 9 ones equals 3 ones.

Similarly, there are not enough tens in the situation 2 *tens take away 4 tens*. We need more tens. Let's exchange/swap 1 hundred for 10 tens. Now we have 12 tens.

12 tens take away 8 tens equals 4 tens.



BLOCK 2

+ and - facts for 100 and related facts

For addition:

• partitioning both addends into ten and ones and combining parts, eg:

73 + 27 = 70 + 3 + 20 + 7 = 90 + 10.



- <u>+ and facts for 100 and related facts</u> For subtraction:
- partitioning the subtrahend, eg:

100 - 68 = 100 - 60 - 8;

• counting on with number line.



Add a three-digit number to a three-digit number

Column method (exchanging ones to tens and tens to hundreds).

Language for the compact column method

The use of accurate language is essential to ensure <u>conceptual</u> understanding of the column method.

Avoid terms like 'units' and 'carry'.

Say:

Add the ones.

7 ones and 6 ones makes 13 ones. 13 ones is the same as 1 ten and 3 ones.

Add the tens.

6 tens and 5 tens and 1 ten makes 12 tens. As you say the above, write: 60 + 50 + 10 = 120120 = 12

You are writing and underlining the digit zero as you say 'tens'. 12 tens = $12\underline{0}$

Add the hundreds.

3 hundreds and 2 hundreds and 1 hundred makes 6 hundreds. As you say the above, write: $3\underline{00} + 2\underline{00} + 1\underline{00} = 6\underline{00}$



<u>Subtract a three-digit number from a three-digit number</u> Column method (exchanging hundreds to tens and tens to ones).

Language for the compact column method

As for addition, accurate use of language is essential to ensure <u>conceptual</u> understanding of the column method.

Do not use the term 'borrow'.

There are not enough ones in the situation *1 one take away 7 ones*. So we need some more ones. Let's exchange/swap 1 ten for 10 ones. Now we have 11 ones. 11 ones take away 7 ones equals 4 ones.

Similarly, there are not enough tens in the situation *3 tens take away 8 tens*. We need more tens. Let's exchange/swap 1 hundred for 10 tens. Now we have 13 tens.

13 tens take away 8 tens equals 5 tens.



Subtract a three-digit number from a three-digit number

Column method (exchanging hundreds to tens and tens to ones).

In this example there is an initial exchange from hundreds to tens, then tens to ones.



BLOCK 3

Scaling additive facts by ten Use known facts, eg: 3 + 2 = 5 so 3 tens + 2 tens = 5 tens = 50



Scaling additive facts by ten Use known facts, eg: 5 - 2 = 3 so 5 tens - 3 tens = 2 tens.



Add a three-digit number to a three-digit number Three methods:

- partitioning to expand second addend;
- partitioning both addends;
- compensation.



Subtract a three-digit number from a three-digit number

Two methods:

- counting on using empty number line;
- compensation.

Compensation is a powerful strategy that children should be introduced to. It is a sophisticated strategy, and in subtraction children may over generalise and make errors.

Over time, teaching needs to help children see that:

- if the minuend is <u>increased</u> the difference will need to be <u>decreased</u> by the same amount;
- if the minuend is <u>decreased</u> the difference will need to be <u>increased</u> by the same amount;
- if the subtrahend is <u>increased</u> the difference will need to be <u>increased</u> by the same amount;
- if the subtrahend is <u>decreased</u> the difference will need to be <u>decreased</u> by the same amount.

These are not rules to be learnt by rote. Teaching needs to ensure children have the conceptual understanding to support why the rules work.

For example, in the first example above the minuend was **decreased**. So the resulting difference is not big enough because we have subtracted 489 from a smaller minuend: 600 instead of 608. We need to **increase** the difference by 8.

In the second example, the subtrahend is **increased**. So we have taken away more than we need to: 500 instead of 489. The initial difference (108) is therefore too small and needs to be **increased**.

We want children to be fluent with most methods. All children should be exposed to using compensation for subtraction; some children may be usefully encouraged to focus on number line methods, partitioning the subtrahend, partitioning the minuend and column method.