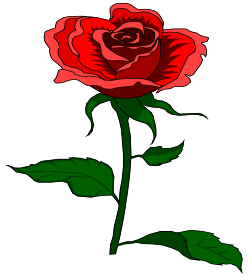
St Therese's Catholic Primary School



Written Calculation Policy Pencil and paper procedures Key Stages 1 and 2

Date endorsed by Governing Body: _____

Date to be reviewed: _____

Addition

Outcome 4

+ = signs and missing numbers

3 + 4 = □ □ = 3 + 4
3 + □ = 7 7 = □ + 4
□ + 4 = 7 7 = 3 + □
□ + ∇ = 7 7 = □ + ∇

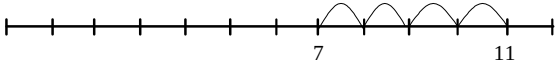
Promote covering up of operations and numbers.

Number lines

Progress from numbered lines to blank number lines

(Teacher model number lines with missing numbers)

7 + 4 = 11



Outcome 5

+ = signs and missing numbers
Continue using a range of equations as in Level 1 but with appropriate, larger numbers.

Extend to:
14 + 5 = 10 + □

and adding three numbers:
32 + □ + □ = 100 35 = 1 + □ + 5

Partition into tens and ones and recombine

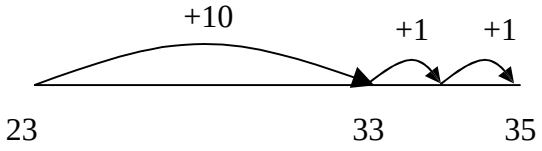
12 + 23 = 10 + 2 + 20 + 3
= 30 + 5
= 35

Also: 12 + 23

10 + 20 + 2 + 3 = 30 +5 = 35

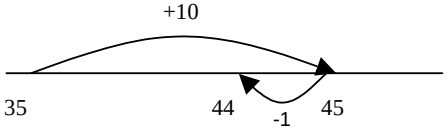
refine to partitioning the second number only:

23 + 12 = 23 + 10 +1 + 1
= 33 + 1 + 1
= 35



Mental Method

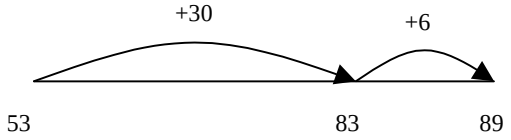
Add 9 or 11 by adding 10 and adjusting by 1
35 + 9 = 44



Outcome 6

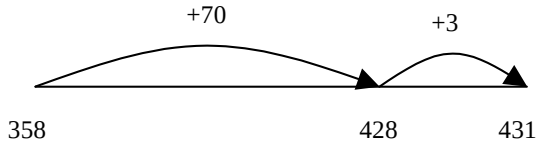
+ = signs and missing numbers
Continue using a range of equations as in Levels 1 and 2 but with appropriate, larger numbers.

Partition into tens and ones and recombine
Partition both numbers and recombine. Refine to partitioning the second number only e.g.
36 + 53 = 53 + 30 + 6
= 83 + 6
= 89



Add a near multiple of 10 to a two-digit number
Continue as in Level 2 but with appropriate numbers e.g. 35 + 19 is the same as 35 + 20 – 1.

Partition into hundreds, tens and ones and recombine
Either partition both numbers and recombine, or partition the second number only e.g.
358 + 73 = 358 + 70 + 3
= 428 + 3
= 431



Addition

Level 3 (secure)

Pencil and paper procedures

83 + 42 = 125

Progress to units first:

```
  80 + 3          to        8 3
+ 40 + 2                  + 4 2
 120 + 5 = 125                5
                            120
                            125
```

358 + 73 = 431

either **or**

```
  300 +  50 +  8                358
+        70 +  3                 73
  300 + 120 + 11 = 431           11
                                120
                                300
                                431
```

Diagram format using number lines as in Outcome 6

Level 4

Pencil and paper procedures

Lead to formal method, showing numbers carried underneath:

```
  358
+  73
  431
  1 1
```

Extend to numbers with at least four digits:

3587 + 675 = 4262

```
  3587
+  675
  4262
 1 1 1
```

Extend to decimals (same number of decimal places) and adding several numbers (with different numbers of digits). *Model negative numbers using a number line.*

Level 5

Pencil and paper procedures

Extend to numbers with any number of digits and decimals with 1 and 2 decimal places:

124.9 + 117.25 = 242.15

```
  124.90
+ 117.25
  242.15
  1 1
```

add in a zero to keep the place value

MUST Targets for Addition

Year 1	Year 2	Year 3
▪ I can count and number name 10 objects in lots of different ways. ▪ I can say what one more than a number is. ▪ I can say how many there are altogether by counting all the objects. ▪ I can use the words more, and, add, sum, total, altogether to describe my counting and adding.	▪ I can recognise that addition can be done in any order. ▪ I can use the +, – and = signs to record mental calculations in a number sentence ▪ I can recognise the use of symbols such as or △ to stand for an unknown number. ▪ I can recognise that more than two numbers can be added together.	▪ I can use and begin to read the related vocabulary. ▪ I can use the +, – and = signs to record mental additions in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I can recognise that addition can be done in any order. ▪ I understand that more than two numbers can be added. ▪ I can begin to add three single-digit numbers mentally or three two-digit numbers with the help of apparatus (totals up to 100). ▪ I understand that subtraction is the inverse of addition (subtraction reverses addition).

SHOULD Targets for Addition

Year1	Year2	Year 3
▪ I can recognise that addition can be done in any order. ▪ I can use the +, – and = signs to record mental calculations in a number sentence ▪ I can recognise the use of symbols such as or △ to stand for an unknown number. ▪ I can recognise that more than two numbers can be added together.	▪ I can use and begin to read the related vocabulary. ▪ I can use the +, – and = signs to record mental additions in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I can recognise that addition can be done in any order. ▪ I understand that more than two numbers can be added. ▪ I can begin to add three single-digit numbers mentally or three two-digit numbers with the help of apparatus (totals up to 100). ▪ I understand that subtraction is the inverse of addition (subtraction reverses addition).	▪ I can read and begin to write the related vocabulary ▪ I can recognise that addition can be done in any order. ▪ I can use the +, – and = signs. ▪ I know that more than two numbers can be added; ▪ I can add three or four single-digit numbers mentally, ▪ I can add three or four two-digit numbers with the help of apparatus or pencil and paper. ▪ I understanding that subtraction is the inverse of addition

COULD Targets for Addition

Year 1	Year 2	Year 3
▪ I can use and begin to read the related vocabulary. ▪ I can use the +, – and = signs to record mental additions in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I can recognise that addition can be done in any order. ▪ I understand that more than two numbers can be added. ▪ I can begin to add three single-digit numbers mentally or three two-digit numbers with the help of apparatus (totals up to 100). ▪ I understand that subtraction is the inverse of addition	▪ I can read and begin to write the related vocabulary ▪ I can recognise that addition can be done in any order. ▪ I can use the +, – and = signs. ▪ I know that more than two numbers can be added; ▪ I can add three or four single-digit numbers mentally, ▪ I can add three or four two-digit numbers with the help of apparatus or pencil and paper. ▪ I understanding that subtraction is the inverse of addition	▪ I can count on/back in repeated steps of 1, 10 or 100. ▪ I can partition into tens and units, adding the tens first. ▪ I can identify near doubles, using known doubles ▪ I can add/subtract the nearest multiple of 10, and adjust. ▪ I can continue to use the relationship between +/- ▪ I can add 3 or 4 small numbers, finding pairs totalling 10, or 9 or 11. ▪ I can add three two-digit multiples of 10. ▪ I can use known number facts and place value to add or subtract mentally, including any pair of two-digit whole numbers.

MUST Targets for Addition		
Year 4	**Year 5**	**Year 6**
▪ I can read and begin to write the related vocabulary ▪ I can recognise that addition can be done in any order. ▪ I can use the +, – and = signs. ▪ I know that more than two numbers can be added; ▪ I can add three or four single-digit numbers mentally, ▪ I can add three or four two-digit numbers with the help of apparatus or pencil and paper. ▪ I understanding that subtraction is the inverse of addition.	▪ I can count on/back in repeated steps of 1, 10 or 100. ▪ I can partition into tens and units, adding the tens first. ▪ I can identify near doubles, using known doubles ▪ I can add/subtract the nearest multiple of 10, and then adjust. ▪ I can continue to use the relationship between +/- ▪ I can add 3 or 4 small numbers, finding pairs totalling 10, or 9 or 11. ▪ I can add three two-digit multiples of 10. ▪ I can use known number facts and place value to add or subtract mentally, including any pair of two-digit whole numbers.	▪ I can partition numbers into H, T and U, adding the most significant digits first. ▪ I can identify near doubles, such as 1.5 + 1.6. ▪ I can add or subtract the nearest multiple of 10 or 100, then adjust. ▪ I can develop further the relationship between addition and subtraction. ▪ I can add several numbers (e.g. four or five single digits, or multiples of 10 such as 40 + 50 + 80). ▪ I can use known number facts and place value ▪ for mental addition and subtraction (e.g. ▪ 470 + 380, 7.4 + 9.8).

SHOULD Targets for Addition		
Year 4	**Year 5**	**Year 6**
▪ I can count on/back in repeated steps of 1, 10 or 100. ▪ I can partition into tens and units, adding the tens first. ▪ I can identify near doubles, using known doubles ▪ I can add/subtract the nearest multiple of 10, and then adjust. ▪ I can continue to use the relationship between +/- ▪ I can add 3 or 4 small numbers, finding pairs totalling 10, or 9 or 11. ▪ I can add three two-digit multiples of 10. ▪ I can use known number facts and place value to add or subtract mentally, including any pair of two-digit whole numbers.	▪ I can partition numbers into H, T and U, adding the most significant digits first. ▪ I can identify near doubles, such as 1.5 + 1.6. ▪ I can add or subtract the nearest multiple of 10 or 100, then adjust. ▪ I can develop further the relationship between addition and subtraction. ▪ I can add several numbers (e.g. four or five single digits, or multiples of 10 such as 40 + 50 + 80). ▪ I can use known number facts and place value ▪ for mental addition and subtraction (e.g. ▪ 470 + 380, 7.4 + 9.8).	▪ I can add or subtract the nearest multiple of 10, 100 or 1000, then adjust. ▪ I can use the relationship between addition and subtraction ▪ I can add several numbers. ▪ I can use known number facts and place value ▪ to consolidate mental addition/subtraction ▪ (e.g. 470 + 380, 7.4 + 9.8).

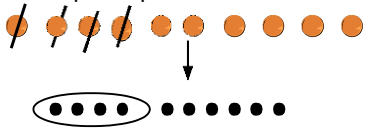
COULD Targets for Addition		
Year 4	**Year 5**	**Year 6**
▪ I can partition numbers into H, T and U, & add the most significant digits first. ▪ I can identify near doubles, such as 1.5 + 1.6. ▪ I can add the nearest multiple of 10 or 100, then adjust. ▪ I can develop further the relationship between addition and subtraction. ▪ I can add several numbers (e.g. four or five single digits, or multiples of 10 such as 40 + 50 + 80). ▪ I can use known number facts and place value ▪ for mental addition and subtraction (e.g. ▪ 470 + 380, 7.4 + 9.8).	▪ I can add or subtract the nearest multiple of 10, 100 or 1000, then adjust. ▪ I can use the relationship between addition and subtraction ▪ I can add several numbers. ▪ I can use known number facts and place value ▪ to consolidate mental addition/subtraction ▪ (e.g 470 + 380, 7.4 + 9.8).	▪ I can use informal pencil and paper methods to support, record or explain additions. ▪ I can extend my written methods to: column addition of two integers less than 10000; ▪ I can carry out addition of more than two integers less than 10000; ▪ I can extend my written methods to column addition of numbers involving decimals. ▪ I can carry out addition of a pair of decimal fractions, both with one or both with two decimal places (e.g. £29.78 + £53.34).

Subtraction

Outcome 4

Pictures / marks

Sam spent 4p. What was his change from 10p?

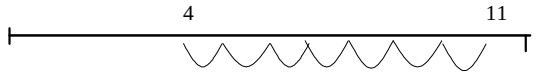


- = signs and missing numbers

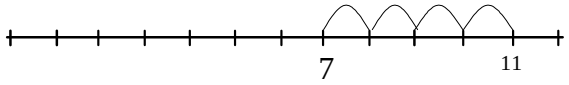
7 - 3 = □ □ = 7 - 3
7 - □ = 4 4 = □ - 3
□ - 3 = 4 4 = 7 - □
□ - ∇ = 4 4 = □ - ∇

Visual / practical activities

Number lines (empty)



The difference between 7 and 11
(Counting on)
To reinforce concept. Practical strategies essential to see 'difference'.



Recording by - drawing jumps on prepared lines
- constructing own lines

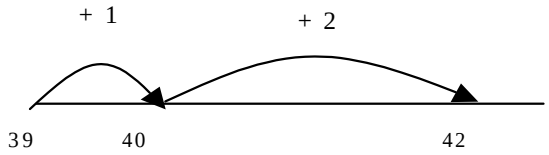
(Teachers model jottings appropriate for larger numbers)

Outcome 5

- = signs and missing numbers

Continue using a range of equations as in Level 1 but with appropriate numbers.
Extend to 14 + 5 = 20 - □
Find a small difference by counting up

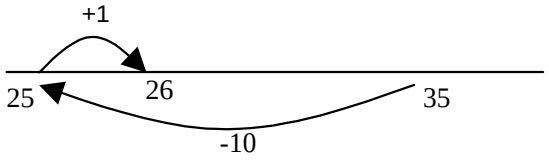
42 – 39 = 3



Mental Method

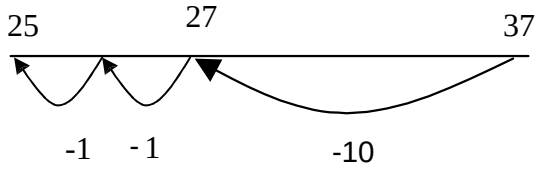
Subtract 9 or 11. Begin to add/subtract 19 or 21

35 – 9 = 26



Use known number facts and place value to subtract
(partition second number only)

37 – 12 = 37 – 10 – 2
= 27 – 2
= 25



Outcome 6

Find a small difference by counting up

Continue as in Level 2 but with appropriate numbers e.g. 102 – 97 = 5

Use known number facts and place value to subtract

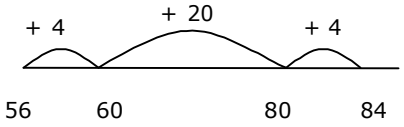
Continue as in Level 2 but with appropriate numbers e.g. 3 digit number – 2 digit number:

197 – 15 = 182

Pencil and paper procedures

Complementary addition:

84 – 56 = 28



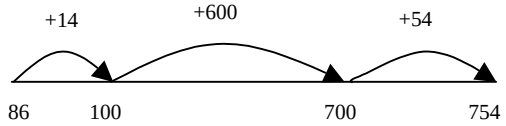
Subtraction

Level 3 (Secure)

Pencil and paper procedures

Complementary addition:

754 – 86 = 668



98
- 24
4 (8-4)
70 (90-20)
74

Use expanded method as an introduction to decomposition:

90 2 → 80 12
- 30 8 - 30 8
50 + 4 = 54

Level 4

Find a difference by counting up:

e.g. 8006 – 2993 = 5013

This can be modelled on an empty number line

Pencil and paper procedures

8 1
9 2
- 3 8
5 4

Level 5

Pencil and paper procedures

Use decomposition

2 1 4
3 5 2
- 1 7 8
1 7 4

Extend to decomposition using '0' as a place holder

Extend to numbers with any number of digits and decimals with 1 and 2 decimal places:

MUST Targets for Subtraction

Year1	Year 2	Year 3
▪ I can count back in ones from 10 ▪ I can say what one less than a number is. ▪ I can understand that subtraction is taking away objects from a set and finding how many are left I can use the words take away, less than, to describe my counting back and subtracting	▪ I can use the +, – and = signs to record mental calculations in a number sentence. ▪ I can recognise the use of symbols such as or △ to stand for an unknown number. ▪ I can use patterns of similar calculations (e.g. 10 – 0 = 10, 10 – 1 = 9, 10 – 2 = 8…). ▪ I can use known number facts and place value to subtract a pair of numbers mentally within the range 0 to at least 10, then 0 to at least 20.	▪ I can use and begin to read the related vocabulary. ▪ I can use the +, – and = signs to record mental additions and subtractions in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I can recognise that addition can be done in any order, but not subtraction: for example, 3 + 21 = 21 + 3, but 21 – 3 does not equal 3 – 21. ▪ I understand that subtraction is the inverse of addition (subtraction reverses addition). ▪ I can find a small difference by counting up from the smaller to the larger number (e.g. 42 – 39). ▪ I can add/subtract 9 or 11: add/subtract 10 and adjust by 1. I can begin to add/subtract 19 or 21: add/subtract 20 and adjust by 1.

SHOULD Targets for Subtraction

Year1	Year 2	Year 3
▪ I can use the +, – and = signs to record mental calculations in a number sentence. ▪ I can recognise the use of symbols such as or △ to stand for an unknown number. ▪ I can use patterns of similar calculations (e.g. 10 – 0 = 10, 10 – 1 = 9, 10 – 2 = 8…). ▪ I can use known number facts and place value to subtract a pair of numbers mentally within the range 0 to at least 10, then 0 to at least 20.	▪ I can use and begin to read the related vocabulary. ▪ I can use the +, – and = signs to record mental additions and subtractions in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I can recognise that addition can be done in any order, but not subtraction: for example, 3 + 21 = 21 + 3, but 21 – 3 does not equal 3 – 21. ▪ I understand that subtraction is the inverse of addition (subtraction reverses addition). ▪ I can find a small difference by counting up from the smaller to the larger number (e.g. 42 – 39). ▪ I can add/subtract 9 or 11: add/subtract 10 and adjust by 1. I can begin to add/subtract 19 or 21: add/subtract 20 and adjust by 1. ▪ I can use patterns of similar calculations. ▪ I can say the subtraction corresponding to a given addition, and vice versa. ▪ I can use known number facts and place value to add/subtract mentally	▪ I can read and begin to write the related vocabulary. ▪ I can use the +, – and = signs. ▪ I can find a small difference by counting up from the smaller to the larger number (e.g. 102 – 97). ▪ I can add and subtract mentally a 'near multiple of 10' to or from a two-digit number… by adding or subtracting 10, 20, 30… and adjusting. ▪ I can use patterns of similar calculations. ▪ I can say or write a subtraction statement corresponding to a given addition statement, and vice versa. ▪ I can use known number facts and place value to add/subtract mentally.

COULD Targets for Subtraction

Year1	Year 2	Year 3
▪ I can use and begin to read the related vocabulary. ▪ I can use the +, – and = signs to record mental additions and subtractions in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I can recognise that addition can be done in any order, but not subtraction: for example, 3 + 21 = 21 + 3, but 21 – 3 does not equal 3 – 21. ▪ I understand that subtraction is the inverse of addition (subtraction reverses addition). ▪ I can find a small difference by counting up from the smaller to the larger number (e.g. 42 – 39). ▪ I can add/subtract 9 or 11: add/subtract 10 and adjust by 1. I can begin to add/subtract 19 or 21: add/subtract 20 and adjust by 1.	▪ I can read and begin to write the related vocabulary. ▪ I can use the +, – and = signs. ▪ I can find a small difference by counting up from the smaller to the larger number (e.g. 102 – 97). ▪ I can add and subtract mentally a 'near multiple of 10' to or from a two-digit number… by adding or subtracting 10, 20, 30… and adjusting. ▪ I can use patterns of similar calculations. ▪ I can say or write a subtraction statement corresponding to a given addition statement, and vice versa. ▪ I can use known number facts and place value to add/subtract mentally.	▪ I can find a small difference by counting up (e.g. 5003 – 4996). ▪ I can count on or back in repeated steps of 1,10 or 100. ▪ I can add or subtract the nearest multiple of 10, then adjust. ▪ I can continue to use the relationship between addition and subtraction. ▪ I can use known number facts and place ▪ value to add or subtract mentally, including ▪ any pair of two-digit whole numbers.

MUST Targets for Subtraction

Year 4	Year 5	Year 6
▪ I can read and begin to write the related vocabulary. ▪ I can use the +, – and = signs. ▪ I can find a small difference by counting up from the smaller to the larger number (e.g. 102 – 97). ▪ I can subtract mentally a 'near multiple of 10' to or from a two-digit number… by adding or subtracting 10, 20, 30… and adjusting. ▪ I can use patterns of similar calculations. ▪ I can say or write a subtraction statement corresponding to a given addition statement, and vice versa. ▪ I can use known number facts and place value to add/subtract mentally.	▪ I can find a small difference by counting up (e.g. 5003 – 4996). ▪ I can count on or back in repeated steps of 1,10 or 100. ▪ I can add or subtract the nearest multiple of 10, then adjust. ▪ I can continue to use the relationship between addition and subtraction. ▪ I can use known number facts and place ▪ value to add or subtract mentally, including ▪ any pair of two-digit whole numbers.	▪ I can find differences by counting up through next ▪ multiple of 10, 100 or 1000, e.g. calculate ▪ mentally a difference such as 8006 – 2993. ▪ I can add or subtract the nearest multiple of 10 or 100, then adjust. ▪ I can develop further the relationship between addition and subtraction. ▪ I can use known number facts and place value ▪ for mental addition and subtraction (e.g. 810 – 380, 9.2 – 8.6).

SHOULD Targets for Subtraction

Year 4	Year 5	Year 6
▪ I can find a small difference by counting up (e.g. 5003 – 4996). ▪ I can count on or back in repeated steps of 1,10 or 100. ▪ I can add or subtract the nearest multiple of 10, then adjust. ▪ I can continue to use the relationship between addition and subtraction. ▪ I can use known number facts and place ▪ value to add or subtract mentally, including ▪ any pair of two-digit whole numbers.	▪ I can find differences by counting up through next ▪ multiple of 10, 100 or 1000, e.g. calculate ▪ mentally a difference such as 8006 – 2993. ▪ I can add or subtract the nearest multiple of 10 or 100, then adjust. ▪ I can develop further the relationship between addition and subtraction. ▪ I can use known number facts and place value ▪ for mental addition and subtraction (e.g. 810 – 380, 9.2 – 8.6).	▪ I can find a difference by counting up; add or subtract the nearest multiple of 10, 100 or 1000, then adjust. ▪ I can use the relationship between addition and subtraction. ▪ I can use known number facts and place value to consolidate mental addition/subtraction (e.g 810 – 380, 9.2 – 8.6). ▪ I can use informal pencil and paper methods to support record or explain subtractions. ▪ I can extend written methods to column subtraction of numbers involving decimals.

COULD Targets for Subtraction

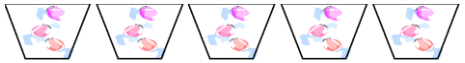
Year 4	Year 5	Year 6
▪ I can find differences by counting up through next ▪ multiple of 10, 100 or 1000, e.g. calculate mentally a difference such as 8006 – 2993. ▪ I can add or subtract the nearest multiple of 10 or 100, then adjust. ▪ I can develop further the relationship between addition and subtraction. ▪ I can use known number facts and place value ▪ for mental addition and subtraction (e.g. 810 – 380, 9.2 – 8.6).	▪ I can find a difference by counting up; add or subtract the nearest multiple of 10, 100 or 1000, then adjust. ▪ I can use the relationship between addition and subtraction. ▪ I can use known number facts and place value to consolidate mental addition/subtraction (e.g 810 – 380, 9.2 – 8.6).	▪ I can use informal pencil and paper methods to support record or explain subtractions. ▪ I can extend written methods to column subtraction of numbers involving decimals.

Multiplication

Outcome 4

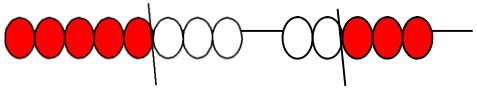
Pictures and symbols

There are 3 sweets in one bag.
How many sweets are there in 5 bags?



(Recording on a number line modelled by the teacher when solving problems)

Use of bead strings to model groups of:

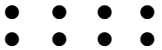


Outcome 5

x = signs and missing numbers

7 x 2 = □ □ = 2 x 7
7 x □ = 14 14 = □ x 7
□ x 2 = 14 14 = 2 x □
□ x ∇ = 14 14 = □ x ∇

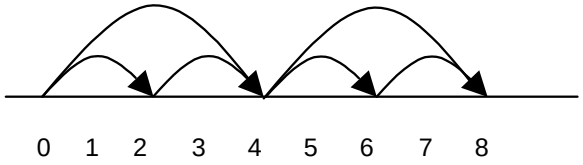
Arrays and repeated addition



4 x 2 or 4 + 4
2 x 4

or repeated addition:

2 + 2 + 2 + 2



Doubling multiples of 5 up to 50

15 x 2 = 30

Partition: (10 x 2) + (5 x 2)
20 + 10

= 30

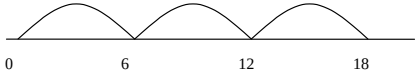
Outcome 6

x = signs and missing numbers

Continue using a range of equations as in Level 2 but with appropriate numbers.

Number lines

6 x 3



Partition

35 x 2 = 70

x	30	5
2	60	10

60 + 10 = 70

Multiplication

Level 3 (Secure)

x = signs and missing numbers
Continue using a range of equations as in Level 2 but with appropriate numbers

Pencil and paper procedures

Grid method:

TU x U

23 x 7 is approximately 20 x 10 = 200

23 x 7 = 161

	T	U
x	20	3
7	140	21

140 + 21 = 161

HTU x U

123 x 3 = 369

	H	T	U
X	100	20	3
3	300	60	9

300 + 60 + 9 = 369

Level 4

x = signs and missing numbers
Continue using a range of equations as in Level 2 but with appropriate numbers

Pencil and paper procedures
Grid method:

TU x TU

72 x 38 is approximately 70 x 40 = 2800
72 x 38 = 2736

x	70	2	
30	2100	60	= 2160
8	560	16	= 576 +
			2736
			1

Estimate and check.

ThHTU x U

1125 x 7 = 7875

	Th	H	T	U
X	1000	100	20	5
7	7000	700	140	35

Move on to formal method when appropriate:

```
  1 2 5
x     7
-------
  8 7 5
  1 3
```

Level 5

x = signs and missing numbers
Continue using a range of equations as in Level 2 but with appropriate numbers

Pencil and paper procedures
Grid method
Estimate and check

372 x 24 is approximately 400 x 20 = 8000

x	300	70	2	
20	6000	1400	40	= 7440
4	1200	280	8	= 1488 +
				8928

Grid method for decimals

7.2 x 3.8

x	7	0.2	
3	21	0.6	= 21.60
0.8	5.6	0.16	= 5.76 +
			27.36
			1

Only for children who already know this method (and are accurate with it)
'Carried' numbers to sit on top line of answer box

```
  2 5
x   1
-----
 1 7
 3
  1 7 5
  2 5 0
```

MUST Targets for Multiplication

Year1	Year 2	Year 3
	▪ I can count on and back in twos, fives and tens ▪ I know the doubles of numbers to 10 ▪ I can recognise the relationship between multiple groups of objects when using the vocabulary 'multiply by' and 'groups of' ▪ I am beginning to understand multiplication as repeated addition or grouping ▪ I can recognise the relationship between multiplication and division	▪ I can use and begin to read the related vocabulary. ▪ I can use the x, ÷ and = signs to record mental calculations in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I know and use halving as the inverse of doubling. ▪ I use known number facts and place value to carry out mentally simple multiplications

SHOULD Targets for Multiplication

Year1	Year 2	Year 3
▪ I can count on and back in twos, fives and tens ▪ I know the doubles of numbers to 10 ▪ I can recognise the relationship between multiple groups of objects when using the vocabulary 'multiply by' and 'groups of' ▪ I am beginning to understand multiplication as repeated addition or grouping ▪ I can recognise the relationship between multiplication and division	▪ I can use and begin to read the related vocabulary. ▪ I can use the x, ÷ and = signs to record mental calculations in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I know and use halving as the inverse of doubling. ▪ I use known number facts and place value to carry out mentally simple multiplications.	▪ I know that multiplication can be done in any order. ▪ I recognise that division is the inverse of multiplication, and that halving is the inverse of doubling. ▪ I know that to multiply by 10/100, I shift the digits one/two places to the left. ▪ I can use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4). ▪ I can say or write a division statement corresponding to a given multiplication statement. ▪ I can use known number facts and place value to carry out mentally simple multiplications.

COULD Targets for Multiplication

Year1	Year 2	Year 3
▪ I can use and begin to read the related vocabulary. ▪ I can use the x, ÷ and = signs to record mental calculations in a number sentence. ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I know and use halving as the inverse of doubling. ▪ I use known number facts and place value to carry out mentally simple multiplications.	▪ I can read and begin to write the related vocabulary. ▪ I know that multiplication can be done in any order. ▪ I recognise that division is the inverse of multiplication, and that halving is the inverse of doubling. ▪ I know that to multiply by 10/100, I shift the digits one/two places to the left. ▪ I can use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4). ▪ I can say or write a division statement corresponding to a given multiplication statement. ▪ I can use known number facts and place value to carry out mentally simple multiplications.	▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 4, by doubling, then double again; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find the 8 times-table facts by doubling the 4 times-table; ▪ I can use closely related facts (e.g. to multiply by 9 or 11, multiply by 10 and adjust; ▪ I can develop the x6 table from the x4 and x2 tables). ▪ I can partition numbers to complete multiplication questions. (e.g. 23 x 4 = (20 x 4) + (3 x 4)). ▪ I can use the relationship between x and ÷ to solve calculations. ▪ I can use known number facts and place value to ▪ multiply and divide integers, including by 10 and then 100 (whole-number answers).

MUST Targets for Multiplication

Year 4	Year 5	Year 6
▪ I can read and begin to write the related vocabulary. ▪ I know that multiplication can be done in any order. ▪ I recognise that division is the inverse of multiplication, and that halving is the inverse of doubling. ▪ I know that to multiply by 10/100, I shift the digits one/two places to the left. ▪ I can use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4). ▪ I can say or write a division statement corresponding to a given multiplication statement. ▪ I can use known number facts and place value to carry out mentally simple multiplications.	▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 4, by doubling, then double again; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find the 8 times-table facts by doubling the 4 times-table; ▪ I can use closely related facts (e.g. to multiply by 9 or 11, multiply by 10 and adjust; ▪ I can develop the x6 table from the x4 and x2 tables). ▪ I can partition numbers to complete multiplication questions. (e.g. 23 x 4 = (20 x 4) + (3 x 4)). ▪ I can use the relationship between x and ÷ to solve calculations. ▪ I can use known number facts and place value to ▪ multiply and divide integers, including by 10 and then 100 (whole-number answers).	▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 4, by doubling, then double again; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find the 8 times-table facts by doubling the 4 times-table; ▪ I can use closely related facts (e.g. to multiply by 9 or 11, multiply by 10 and adjust; ▪ I can develop the x6 table from the x4 and x2 tables). ▪ I can partition numbers to complete multiplication questions. (e.g. 23 x 4 = (20 x 4) + (3 x 4)). ▪ I can use the relationship between x and ÷ to solve calculations. ▪ I can use known number facts and place value to ▪ multiply and divide integers, including by 10 and then 100 (whole-number answers).

SHOULD Targets for Multiplication

Year 4	Year 5	Year 6
▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 4, by doubling, then double again; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find the 8 times-table facts by doubling the 4 times-table; ▪ I can use closely related facts (e.g. to multiply by 9 or 11, multiply by 10 and adjust; ▪ I can develop the x6 table from the x4 and x2 tables). ▪ I can partition numbers to complete multiplication questions. (e.g. 23 x 4 = (20 x 4) + (3 x 4)). ▪ I can use the relationship between x and ÷ to solve calculations. ▪ I can use known number facts and place value to ▪ multiply and divide integers, including by 10 and then 100 (whole-number answers).	▪ I can use doubling or halving, starting from known facts. ▪ For example: double/halve any two-digit number by ▪ doubling/halving the tens first; double one number and ▪ halve the other; ▪ I can multiply by 25, by multiplying by 100 then ▪ dividing by 4; ▪ I can find the x16 table facts by doubling the x8 table; I can use factors to help me solve multiplication calculations. (e.g. 8 x 12 = 8 x 4 x 3). ▪ I can use closely related facts (e.g. multiply by 19 or 21 by multiplying by 20 and adjusting; ▪ I can develop the x12 table from the x10 and x2 tables). ▪ I can Partition numbers to help me work out multiplication calculations. (e.g. 47 x 6 = (40 x 6) + (7 x 6)). ▪ I can use the relationship between multiplication and division to help me solve multiplication calculations. ▪ I can use known facts and place value to multiply and divide mentally.	▪ I can use related facts and doubling or halving. For ▪ example: double or halve the most significant digit first; ▪ I can multiply by 25, by multiplying by 100 and then dividing by 4; ▪ I can double one number and halve the other; ▪ I can find the x24 table by doubling the x6 table twice. ▪ I can use factors to help me solve multiplication calculations (e.g. 35 x 18 = 35 x 6 x 3). ▪ I can use closely related facts: for example, multiply by ▪ 49 or 51 by multiplying by 50 and adjusting. ▪ I can develop the x 17 table by adding facts from the x 10 and x 7 tables. ▪ I can partition a number to help me solve multiplication calculations. (e.g. 87 x 6 = (80 x 6) + (7 x 6) ▪ I can use the relationship between x and ÷ to help me solve multiplication calculations. ▪ I can use known number facts and place value to consolidate mental multiplication and division. ▪ I can use approximation to help me estimate a multiplication answer

COULD Targets for Multiplication

Year 4	Year 5	Year 6
▪ I can use doubling or halving, starting from known facts. ▪ For example: double/halve any two-digit number by ▪ doubling/halving the tens first; double one number and ▪ halve the other; ▪ I can multiply by 25, by multiplying by 100 then ▪ dividing by 4; ▪ I can find the x16 table facts by doubling the x8 table; ▪ I can use factors to help me solve multiplication calculations. (e.g. 8 x 12 = 8 x 4 x 3). ▪ I can use closely related facts (e.g. multiply by 19 or 21 by multiplying by 20 and adjusting; ▪ I can develop the x12 table from the x10 and x2 tables). ▪ I can Partition numbers to help me work out multiplication calculations. (e.g. 47 x 6 = (40 x 6) + (7 x 6)). ▪ I can use the relationship between multiplication and division to help me solve multiplication calculations. ▪ I can use known facts and place value to multiply and divide mentally.	▪ I can use related facts and doubling or halving. For ▪ example: double or halve the most significant digit first; ▪ I can multiply by 25, by multiplying by 100 and then dividing by 4; ▪ I can double one number and halve the other; ▪ I can find the x24 table by doubling the x6 table twice. ▪ I can use factors to help me solve multiplication calculations (e.g. 35 x 18 = 35 x 6 x 3). ▪ I can use closely related facts: for example, multiply by ▪ 49 or 51 by multiplying by 50 and adjusting. ▪ I can develop the x 17 table by adding facts from the x 10 and x 7 tables. ▪ I can partition a number to help me solve multiplication calculations. (e.g. 87 x 6 = (80 x 6) + (7 x 6) ▪ I can use the relationship between x and ÷ to help me solve multiplication calculations. ▪ I can use known number facts and place value to consolidate mental multiplication and division. ▪ I can use approximation to help me estimate a multiplication answer. ▪ I can use informal pencil and paper methods to support, record or explain multiplications. ▪ I can extend written methods to: multiplication of ▪ Th HTU by U (short multiplication); ▪ I can use short multiplication of numbers involving decimals; I can use long multiplication of a three-digit by a two-digit integer to solve a multiplication calculation.	▪ I can use formal pencil and paper methods to support record or explain multiplications. ▪ I can extend written methods to: multiplication of ThHTU by TU (long multiplication); ▪ I can use long multiplication of numbers involving decimals. ▪ I can use long multiplication of a three-digit by a three -digit integer to solve a multiplication calculation

Division

Outcome 4

Pictures / marks

12 children get into teams of 4 to play a game. How many teams are there?

Outcome 5

÷ = signs and missing numbers

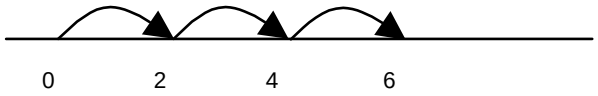
6 ÷ 2 = □ □ = 6 ÷ 2
6 ÷ □ = 3 3 = 6 ÷ □
□ ÷ 2 = 3 3 = □ ÷ 2
□ ÷ ∇ = 3 3 = □ ÷ ∇

Understand division as sharing and grouping

Sharing – 6 sweets are shared between 2 people. How many do they have each?

6 ÷ 2 can be modelled as:

Grouping – There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)



Outcome 6

÷ = signs and missing numbers

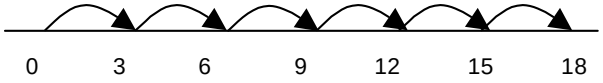
Continue using a range of equations as in Level 2 but with appropriate numbers.

Understand division as sharing and grouping

18 ÷ 3 can be modelled as:

Sharing – 18 shared between 3 (see Level 2 diagram)

Grouping - How many 3's make 18?

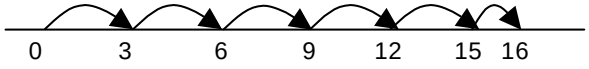


Remainders

16 ÷ 3 = 5 r1

Sharing - 16 shared between 3, how many left over?

Grouping – How many 3's make 16, how many left over?
e.g.



Division

Level 3 secure

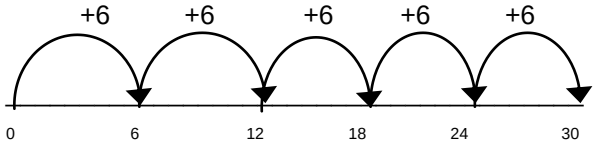
÷ = signs and missing numbers

Recall methods from Level 2

Sharing and grouping

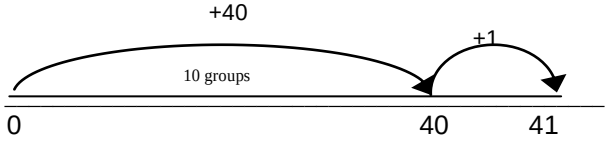
30 ÷ 6 can be modelled as:

grouping – groups of 6 taken away and the number of groups counted e.g:



sharing – sharing among 4, the number given to each person

41÷ 4 = 10 r1



OR 41 = (10 x 4) + 1

Level 4

÷ = signs and missing numbers

Recall methods from Level 3

Remainders

Quotients expressed as fractions or decimal fractions:

61 ÷ 4 = 15 ¼ or 15.25

Pencil and paper procedures

Use 'bus stop' method for division:

Estimate and check.

360 ÷8 is approximately 400 ÷8 = 50

$$\begin{array}{r|l} & 45 \\ \hline 8 & {}^{3}6\,{}^{4}0 \end{array}$$

Extend to division of decimal numbers by a single digit, up to two decimal places:

$$\begin{array}{r|l} & 0\ 7\ 8\ 3\ 3 \\ \hline 3 & 2\ {}^{2}3\ {}^{2}5\ {}^{1}0\ {}^{1}0 \end{array}$$

Level 5

÷ = signs and missing numbers

Recall methods from Level 3

Remainders

Quotients expressed as fractions or decimal fractions:

676 ÷ 8 = 84.5

Pencil and paper procedures

Estimate and check.

9748 ÷ 17 is approximately 10,000 ÷20=500

$$\begin{array}{r|l} & 5\ 7\ 3\ \text{r}1 \\ \hline 17 & 9\ 7\ 4\ 8 \\ & -8\ 5\ \downarrow \\ & \quad 1\ 2\ 4 \\ & -1\ 1\ 9\ \downarrow \\ & \quad\quad 5\ 8 \\ & \quad -5\ 1 \\ & \quad\quad 7 \end{array}$$

Use the same method to divide decimal numbers:

Estimate and check:
331.25 ÷ 53 is approximately 300 ÷ 50 = 6

$$\begin{array}{r|l} & 6\ .\ 2\ 5 \\ \hline 53 & 3\ 3\ 1\ .\ 2\ 5 \\ & 3\ 1\ 8 \\ & \quad 1\ 3\ 2 \\ & \quad -1\ 0\ 6 \\ & \quad\quad 2\ 6\ 5 \\ & \quad\quad -2\ 6\ 5 \\ & \quad\quad\quad 0 \end{array}$$

MUST Targets for Division

Year 1	Year 2	Year 3
	▪ I can recognise the relationship between sharing equally and division when using the vocabulary 'divide by' and 'share equally' ▪ I am beginning to understand division as repeated subtraction or grouping ▪ I can recognise the relationship between multiplication and division.	▪ I can use and begin to read the related vocabulary. ▪ I can use the x, ÷ and = signs to record mental calculations in a number sentence, ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I know and can use halving as the inverse of doubling. ▪ I can use known number facts and place value to carry out mentally simple divisions.

SHOULD Targets for Division

Year 1	Year 2	Year 3
▪ I can recognise the relationship between sharing equally and division when using the vocabulary 'divide by' and 'share equally' ▪ I am beginning to understand division as repeated subtraction or grouping ▪ I can recognise the relationship between multiplication and division.	▪ I can use and begin to read the related vocabulary. ▪ I can use the x, ÷ and = signs to record mental calculations in a number sentence, ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I know and can use halving as the inverse of doubling. ▪ I can use known number facts and place value to carry out mentally simple divisions.	▪ I can read and begin to write the related vocabulary. ▪ I can recognise that division is the inverse of multiplication, and halving is the inverse of doubling. ▪ I can begin to find remainders after simple division. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4). ▪ I can say or write a division statement corresponding to a given multiplication statement. ▪ I can use known number facts and place value to carry out mentally simple divisions.

COULD Targets for Division

Year 1	Year 2	Year 3
▪ I can use and begin to read the related vocabulary. ▪ I can use the x, ÷ and = signs to record mental calculations in a number sentence, ▪ I can recognise the use of a symbol such as or △ to stand for an unknown number. ▪ I know and can use halving as the inverse of doubling. ▪ I can use known number facts and place value to carry out mentally simple divisions.	▪ I can read and begin to write the related vocabulary. ▪ I can recognise that division is the inverse of multiplication, and that halving is the inverse of doubling. ▪ I can begin to find remainders after simple division. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4). ▪ I can say or write a division statement corresponding to a given multiplication statement. ▪ I can use known number facts and place value to carry out mentally simple divisions.	▪ I can find remainders after division. ▪ I can divide a whole number of pounds by 2, 4, 5 or 10 to give £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find quarters by halving halves. ▪ I can use the relationship between multiplication and division to help me solve division calculations. I can use known number facts and place value to multiply and divide integers, including by 10 and then 100 (whole-number answers).

MUST Targets for Division

Year 4	Year 5	Year 6
▪ I can read and begin to write the related vocabulary. ▪ I can recognise that division is the inverse of multiplication, and that halving is the inverse of doubling. ▪ I can begin to find remainders after simple division. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4). ▪ I can say or write a division statement corresponding to a given multiplication statement. ▪ I can use known number facts and place value to carry out mentally simple divisions.	▪ I can find remainders after division. ▪ I can divide a whole number of pounds by 2, 4, 5 or 10 to give £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find quarters by halving halves. ▪ I can use the relationship between multiplication and division to help me solve division calculations. ▪ I can use known number facts and place value to multiply and divide integers, including by 10 and then 100 (whole-number answers).	▪ I can begin to use brackets to help me solve division calculations. ▪ I can begin to express a quotient as a fraction, or as ▪ a decimal when dividing a whole number by 2, 4, ▪ 5 or 10, or when dividing £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts. ▪ For example: double/halve any two-digit number by ▪ doubling/halving the tens first; double one number and ▪ halve the other; ▪ I can multiply by 25, by multiplying by 100 then ▪ dividing by 4; ▪ I can find sixths by halving thirds. ▪ I can use the relationship between multiplication and ▪ Division to help me solve division calculations. ▪ I can use known facts and place value to multiply and divide mentally.

SHOULD Targets for Division

Year 4	Year 5	Year 6
▪ I can find remainders after division. ▪ I can divide a whole number of pounds by 2, 4, 5 or 10 to give £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; ▪ I can multiply by 5, by multiplying by 10 then halving; ▪ I can find quarters by halving halves. ▪ I can use the relationship between multiplication and division to help me solve division calculations. ▪ I can use known number facts and place value to multiply and divide integers, including by 10 and then 100 (whole-number answers).	▪ I can begin to use brackets to help me solve division calculations. ▪ I can begin to express a quotient as a fraction, or as ▪ a decimal when dividing a whole number by 2, 4, ▪ 5 or 10, or when dividing £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts. ▪ For example: double/halve any two-digit number by ▪ doubling/halving the tens first; double one number and ▪ halve the other; ▪ I can multiply by 25, by multiplying by 100 then ▪ dividing by 4; ▪ I can find sixths by halving thirds. ▪ I can use the relationship between multiplication and ▪ Division to help me solve division calculations. ▪ I can use known facts and place value to multiply and divide mentally.	▪ I can express a quotient as a fraction or as a decimal rounded to 1dp. ▪ I can divide £.p by a two-digit number to give £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use related facts and doubling or halving. ▪ I can multiply by 25, by timesing by 100 then divide by 4; ▪ I can double one number and halve the other. ▪ I can use the relationship between multiplication and division to help me solve division calculations. ▪ I can use known number facts and place value to consolidate mental multiplication and division. ▪ I can use approximation first when solving division calculations. ▪ I can use informal pencil and paper methods to support record or explain divisions. ▪ I can use written methods of short division to solve division calculations of TU or HTU by U (mixed-number answer); ▪ I can use long division to solve division calculations of HTU by TU (long division, whole-number answer); ▪ I can use short division of numbers involving decimals.

COULD Targets for Division

Year 4	Year 5	Year 6
▪ I can begin to use brackets to help me solve division calculations. ▪ I can begin to express a quotient as a fraction, or as ▪ a decimal when dividing a whole number by 2, 4, ▪ 5 or 10, or when dividing £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use doubling or halving, starting from known facts. ▪ For example: double/halve any two-digit number by ▪ doubling/halving the tens first; double one number and ▪ halve the other; ▪ I can multiply by 25, by multiplying by 100 then ▪ dividing by 4; ▪ I can find sixths by halving thirds. ▪ I can use the relationship between multiplication and ▪ Division to help me solve division calculations. ▪ I can use known facts and place value to multiply and divide mentally.	▪ I can express a quotient as a fraction or as a decimal rounded to one decimal place. ▪ I can divide £.p by a two-digit number to give £.p. ▪ I can round up or down after division, depending on the context. ▪ I can use related facts and doubling or halving. For ▪ example: double or halve the most significant digit ▪ first; ▪ I can multiply by 25, by multiplying by 100 then dividing ▪ by 4; ▪ I can double one number and halve the other. ▪ I can use the relationship between multiplication ▪ and division to help me solve division calculations. ▪ I can use known number facts and place value to consolidate mental multiplication and division. ▪ I can use approximation first when solving division calculations. ▪ I can use informal pencil and paper methods to support record or explain divisions. ▪ I can use written methods of short division to solve division calculations of TU or HTU by U (mixed-number answer); ▪ I can use long division to solve division calculations of HTU by TU (long division, whole-number answer); ▪ I can use short division of numbers involving decimals.	▪ I can use formal pencil and paper methods to support record or explain divisions. ▪ I can use written methods of long division to solve division calculations of TU or HTU by TU (mixed-number answer); ▪ I can use long division to solve division calculations of HTU by HTU (long division, whole-number answer); ▪ I can use long division of numbers involving decimals.