ADDITION: RECEPTION OVERVIEW

Number Facts

Automatically recall (without reference to rhymes, counting or other aids) **number bonds up to 5, including subtraction facts)** and some number bonds to 10 (see Y1).

1	2	3	4	5
0 + 1	0 + 2 1 + 1	0 + 3 1 + 2	0 + 4 1 + 3 2 + 2	0 + 5 1 + 4 2 + 3
1 - 0	2 – 0 2 – 1 2 - 2	3 – 0 3 – 1 3 – 2 3 - 3	4 – 0 4 – 1 4 – 2 4 – 3 4 - 4	5 – 0 5 – 4 5 – 3 5 – 2 5 - 1 5 - 5

10			
0 + 10 1 + 9 2 + 8	3 + 7 4 + 6 5 + 5	10 – 0 10 – 1 10 – 2 10 – 3 10 - 4	10 – 5 10 – 6 10 – 7 10 – 8 10 – 9 10 - 10

Bronze: addition facts,
e.g. 3 + 2 = 5 so 2 + 3 = 5

Silver: related subtraction facts,
e.g. 4 – 1 = 3 and 4 – 3 = 1

Gold: empty boxes,
e.g. 5 = □ + 2 2 + □ = 5

Vocabulary

subitise

add, addend, more, make, sum, total, altogether

equals, is the same as

one more, two more, ten more…

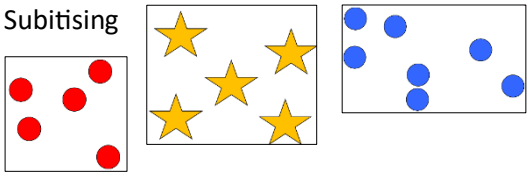
how many more to make… ? how many more is… than…?

double, combine, count on

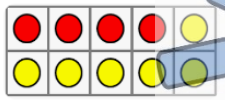
part-whole, partition

Mental Strategies/Jottings

Subitising



Pictorial representations of number facts to understand commutativity, e.g.



Combining 2 sets of objects

Adding onto a set

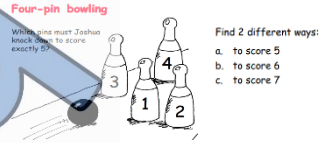
Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN EYFS

Assessment of Expected Standard

Can pupils complete the missing numbers from mental recall of number facts within 5 and some number facts to 10?
Can they find the total of two small groups of objects and talk about how they did it?
Can they say which group of objects is greater and work out how many altogether?

Challenge Opportunities



Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mental, simple jottings or own pictorial representations, such as counting on from the largest number, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 37 + 56 = 80 + 13 = 93	mental: 58 + 65 = 110 + 13 = 123 written: 427 + 254 = 681 427 +254 681 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 written: 6534 + 2786 = 9320 6534 + 2786 9320 1 1 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 3.5 + 1.7 = 4 + 12/10 = 4 + 1.2 = 5.2 written: 31726 + 14535 31726 +14535 46361 27.46 + 85.63 27.46 +85.63 113.09 1 1	mental: .. in my head 85 + 67 = 140 + 12 = 152 1.75 + 4.47 = 5 + 122/100 = 5 + 1 + 22/100 = 6.22 written: 58759 + 13625 58759 +13625 72384 1 1 1 28.056 + 37.489 37.489 +28.056 65.545 1 1 1
Mental/Jottings	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

ADDITION: YEAR 1 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Derive and recall all pairs of numbers that <u>total</u> 10 ('have a sum of 10') and understand the commutative relationship, e.g. 1 + 9 = 9 + 1

Derive and recall all facts <u>within</u> 10 and understand the commutative relationship, e.g. 2 + 6 = 6 + 2

Add and subtract a multiple of 10 from a two-digit number,
e.g. 23 + 10 = 33 63 – 10 = 53

Vocabulary

subitise, add, addend, more, plus, make, sum, total, altogether

equals, is the same as

commutative

one more, two more, ten more…

combine, count on

how many more to make… ?

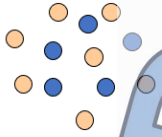
how many more is… than…?

double

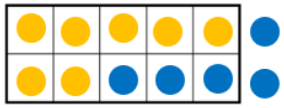
part-whole, partition

Mental Strategies/Jottings

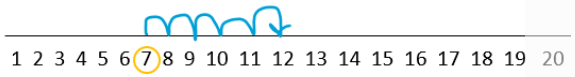
Combining 2 sets of objects



Adding onto a set



Counting on from the largest number, e.g. with a bead frame, bead string, number line, tens-frame or fingers.



Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN YEAR 1

Assessment of Expected Standard

Can pupils complete the missing numbers from mental recall of number facts within 10?

3 + 2 = ☐

6 + ☐ = 8

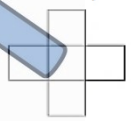
☐ + 7 = 9

4 + 3 = ☐	7 + ☐ = 9
7 – ☐ = 4	9 – ☐ = 7
5 + 2 = ☐	☐ + 3 = 9
☐ – ☐ = 2	☐ – ☐ = ☐

Do they understand the relationship between addition and subtraction and commutativity?

Greater Depth Opportunities

Write the numbers 1 to 5 in the squares so that each row and column adds up to the same number, called the 'magic number'. What is the 'magic number'?



Can you do it with 2, 3, 4, 5 and 6?

Can you do it with 4, 5, 6 ,7 and 8?

Reception	Year 2	Year 3	Year 4	Year 5	Year 6
<u>Concrete or simple pictorial representations:</u> Subitising Pictorial representations of number facts Combining 2 sets of objects Adding onto a set	<u>mental (or with efficient jottings) only:</u> 37 + 56 = 80 + 13 = 93	<u>mental:</u> 58 + 65 = 110 + 13 = 123 <u>written:</u> 427 + 254 = 681 427 +254 681 1	<u>mental:</u> .. in my head 85 + 57 = 130 + 12 = 142 <u>written:</u> 6534 + 2786 = 9320 6534 + 2786 9320 1 1 1	<u>mental:</u> .. in my head 85 + 57 = 130 + 12 = 142 3.5 + 1.7 = 4 + 12/10 = 4 + 1.2 = 5.2 <u>written:</u> 31726 + 14535 31726 +14535 46361 27.46 + 85.63 27.46 +85.63 113.09 1 1	<u>mental:</u> .. in my head 85 + 67 = 140 + 12 = 152 1.75 + 4.47 = 5 + 122/100 = 5 + 1 + 22/100 = 6.22 <u>written:</u> 58759 + 13625 58759 +13625 72384 1 1 1 28.056 + 37.489 37.489 +28.056 65.545 1 1 1
Concrete	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

ADDITION: YEAR 2 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Derive and recall all pairs of multiples of 10 with totals up to 100 and understand the commutative relationship,
e.g. 30 + 70 = 70 + 30

Derive and recall all pairs with totals to 20 ('have a sum of 20') and understand the commutative relationship,
e.g. 5 + 15 = 15 + 5

100			
0 + 100 10 + 90 20 + 80	30 + 70 40 + 60 50 + 50	100 - 0 100 – 10 100 – 20 100 – 30 100 - 40	100 – 50 100 – 60 100 – 70 100 – 80 100 – 90 100 - 100

20			
0 + 20 1 + 19 2 + 18 3 + 17 4 + 16 5 + 15 6 + 14 7 + 13 8 + 12 9 + 11 10 + 10	11 + 9 12 + 8 13 + 7 14 + 6 15 + 5 16 + 4 17 + 3 18 + 2 19 + 1 20 + 0	20 – 0 20 – 1 20 – 2 20 – 3 20 – 4 20 – 5 20 – 6 20 – 7 20 – 8 20 – 9 20 - 10	20 – 11 20 – 12 20 – 13 20 – 14 20 – 15 20 – 16 20 – 17 20 – 18 20 – 19 20 – 20

Vocabulary

addition, add, addend, more, plus, make, sum, total, altogether

equals, is the same as

commutative

one more, two more, ten more…

how many more to make… ? how many more is… than…?

combine, count on

double

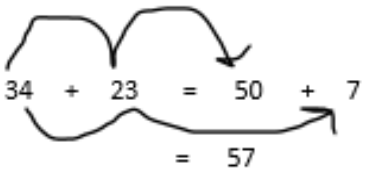
tens, ones, value, represent

part-whole, partition, recombine,

Mental Strategies/Jottings

General case strategy for adding a pair of 2-digit numbers:

"chains"



then 37 + 56 = 80 + 13
= 93

Written Method – end of year expectation

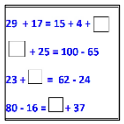
NO FORMAL WRITTEN METHODS IN YEAR 2

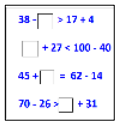
Assessment of Expected Standard

EXS: Add any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 48 + 35).

Greater Depth Opportunities

GD: Use reasoning about numbers and relationships to solve more complex problems and explain their thinking.





Reception	Year 1	Year 3	Year 4	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Combining 2 sets of objects Adding onto a set	Mental, simple jottings or own pictorial representations, such as counting on from the largest number, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental: 58 + 65 = 110 + 13 = 123 written: 427 + 254 = 681 427 +254 681 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 written: 6534 + 2786 = 9320 6534 + 2786 9320 1 1 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 3.5 + 1.7 = 4 + 12/10 = 4 + 1.2 = 5.2 written: 31726 + 14535 31726 +14535 46361 27.46 + 85.63 27.46 +85.63 113.09 1 1	mental: .. in my head 85 + 67 = 140 + 12 = 152 1.75 + 4.47 = 5 + 122/100 = 5 + 1 + 22/100 = 6.22 written: 58759 + 13625 58759 + 13625 72384 1 1 1 28.056 + 37.489 37.489 + 28.056 65.545 1 1 1
Concrete	**Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

ADDITION: YEAR 3 OVERVIEW

Number Facts — Consolidate all previous objectives and:

Derive and recall all addition and subtraction facts for each number within 15 and understand the commutative relationship, e.g. 4 + 11 = 11 + 4

Derive and recall all addition and subtraction facts for each number within 20 and understand the commutative relationship, e.g. 3 + 14 = 14 + 3

Derive and recall sums (+) and differences (-) of multiples of 10 and understand the commutative relationship, e.g. 30 + 40 = 40 + 30

Derive and recall all pairs that total 100 (complements to 100), e.g. 32 + 68 *(using the knowledge that the tens need to total 90 and the ones need to total 10)* **and the related subtraction facts.**

Vocabulary

addition, add, addend, more, make, sum, total, altogether

equals, is the same as

commutative, commutativity

complement

how many more to make… ? how many more is… than…?

inverse

double

count on

increase

partition, recombine

hundreds, tens, ones, value, represent

column

Mental Strategies/Jottings

General case strategy for mentally adding a pair of 2-digit numbers, as Y2:

58 + 65 = 110 + 13
= 123

Special case strategy of *adjusting* only if/when general strategy is secure and confidently chosen by child to solve problems:

47 + 29 = 47 + 30 – 1
= 77 – 1
= 76

Written Method – end of year expectation

Formal (column) method of addition for addition of pairs **of 3-digit numbers** when this cannot be done mentally.

427 + 254 = 681

```
  427
+ 254
  681
   1
```

Assessment of Expected Standard

Mark the work of these children.
What advice would you give them?
What have they done well? What do they need to improve at?

Child A	Child B	Child C
239 + 482 = 611	567 + 383 = 950	346 + 615 = 962

Greater Depth Opportunities

NCETM Teaching for Mastery:

There are six 3-digit addition calculations shown below.

a) 124 + 233
b) 644 + 172
c) 366 + 277
d) 579 + 221
e) 791 + 163
f) 567 + 233

Which calculations have no carry digits?
Which calculations have a carrying digit only once?
Which calculations have a carrying digit twice?
Which calculation has the largest answer?
Which calculation has the smallest answer?

Check that children are looking at the numbers involved, rather than doing the calculations.

Reception	Year 1	Year 2	Year 4	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Combining 2 sets of objects Adding onto a set	Mental, simple jottings or own pictorial representations, such as counting on from the largest number, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 37 + 56 = 80 + 13 = 93	mental: .. in my head 85 + 57 = 130 + 12 = 142 written: 6534 + 2786 = 9320 6534 + 2786 = 9320 1 1 1	mental: .. in my head 85 + 57 = 140 + 12 = 152 1.75 + 4.47 = 5 + 122/100 = 5 + 1 + 22/100 = 6.22 written: 31726 + 14535 = 46361 31726 + 14535 = 46361 27.46 + 85.63 = 113.09 27.46 + 85.63 = 113.09 1 1	mental: .. in my head written: 58759 + 13625 = 72384 58759 + 13625 = 72384 1 1 1 1 28.056 + 37.489 = 65.545 37.489 + 28.056 = 65.545 1 1 1
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

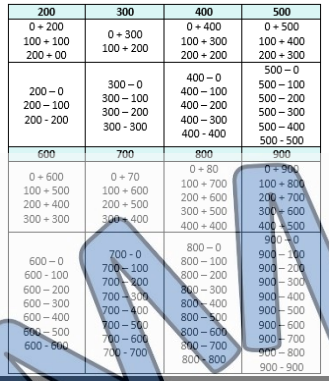
ADDITION: YEAR 4 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Derive sums and differences of pairs of multiples of 100 or 1000.

Add or subtract mentally pairs of two-digit whole numbers, e.g. 47 + 58, 91 - 35



Vocabulary

addition, add, addend, more, make, sum, total, altogether

equals, is the same as

commutative, commutativity

complement

how many more to make… ? how many more is… than…?

inverse

double

count on

increase

partition, recombine

thousands, hundreds, tens, ones, value, represent

column

decimal place

Mental Strategies/Jottings

Continue the general case strategy for *mentally* adding a pair of 2-digit numbers:

85 + 57 = 130 + 12 … *in my head*
= 142

aiming for *no* jottings here by the end of Year 4.

Special case strategy of *adjusting* only if/when general strategy is secure and confidently chosen by child to solve problems:

584 + 198 = 784 -2 … *in my head*
= 782

Written Method – end of year expectation

Formal (columnar) method of addition for addition of numbers **with 4-digits** when this cannot be done mentally :

6534 + 2786 = 9320

```
 6534
+2786
 9320
  111
```

Assessment of Expected Standard

NCETM Teaching for Mastery:

Decide on a mental or written strategy for each of these calculations and perform them with fluency.

- 64 + 36
- 640 + 360
- 64 + 79 + 36
- 378 + 562
- 876 + 921
- 999 + 999
- 1447 + 2362
- 1999 + 874

Greater Depth Opportunities

□ + 3475 = 6□24

What numbers go in the boxes?
What different answers are there?
Convince me that you have found them all – explain in words how you know.

Reception	Year 1	Year 2	Year 3	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Combining 2 sets of objects Adding onto a set	Mental, simple jottings or own pictorial representations, such as counting on from the largest number, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 37 + 56 = 80 + 13 = 93	mental: 58 + 65 = 110 + 13 = 123 written: 427 + 254 = 681 427 +254 681 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 3.5 + 1.7 = 4 + 12/10 = 4 + 1.2 = 5.2 written: 31726 + 14535 31726 +14535 46361 27.46 + 85.63 27.46 +85.63 113.09 11	mental: .. in my head 85 + 67 = 140 + 12 = 152 1.75 + 4.47 = 5 + 122/100 = 5 + 1 + 22/100 = 6.22 written: 58759 + 13625 58759 +13625 72384 1 1 1 28.056 + 37.489 37.489 +28.056 65.545 1 1 1
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

ADDITION: YEAR 5 OVERVIEW

Number Facts

Consolidate all previous number facts for instant recall and:

Derive sums and differences of decimals, using the same partitioning and recombining strategy for adding pairs of 2-digit numbers,

e.g. 2.7 + 3.9 = 5 + 1.6
= 6.6

... in my head or with jottings to 'hold' the numbers, if needed)

Vocabulary

addition, add, addend, more, make, sum, total, altogether
equals, is the same as
commutative, commutativity
complement
how many more to make... ? how many more is... than...?
inverse
double
count on
increase
partition, recombine
thousands, hundreds, tens, ones, value, represent
column
decimal place

Mental Strategies/Jottings

Continue the general case strategy for *mentally* adding a pair of 2-digit numbers:

85 + 57 = 130 + 12
= 142

... in my head

This should be done mentally *before* Year 5.

Applying the same partitioning and recombining **strategy to decimal numbers**,

e.g. 3.5 + 1.7 = 4 + 1.2
= 4 + 1.2
= 5.2

aiming for *no* jottings here by the end of Year 5.

Written Method – end of year expectation

Formal (columnar) method of addition for addition of numbers **with more than 4-digits**, (including those with up to 2 decimal places) when this cannot be done mentally.

31726 + 14535 = 46261

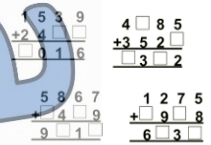
```
  31726
+ 14535
  46261
  1   1
```

27.46 + 85.63 = 113.09

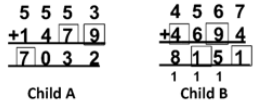
```
  27.46
+ 85.63
 113.09
  1 1
```

Assessment of Expected Standard

Work out the missing numbers and write the original calculations horizontally.



Mark these children's work. Have they calculated correctly? What advice would you give?



Although this shows 4-digit calculations, the missing numbers make them more complex to solve.

Greater Depth Opportunities

NCETM Teaching for Mastery: Sam and Tom have £67·80 between them. If Sam has £6·20 more than Tom, how much does Tom have?

Reception	Year 1	Year 2	Year 3		Year 4		Year 6	
			mental:	written:	mental:	written:	mental:	written:
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Combining 2 sets of objects Adding onto a set	Mental, simple jottings or own pictorial representations, such as counting on from the largest number, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 37 + 56 = 80 + 13 = 93	58 + 65 = 110 + 13 = 123	427 + 254 = 681 427 +254 681 1	*.. in my head* 85 + 57 = 130 + 12 = 142	6534 + 2786 = 9320 6534 + 2786 9320 1 1 1	*.. in my head* 85 + 67 = 140 + 12 = 152 1.75 + 4.47 = 5 + 122/100 = 5 + 1 + 22/100 = 6.22	58759 + 13625 58759 +13625 72384 1 1 1 28.056 + 37.489 37.489 +28.056 65.545 1 1 1
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**		**Mental/Jottings & Written**		**Mental/Jottings & Written**	

ADDITION: YEAR 6 OVERVIEW

Number Facts

Consolidate all previous number facts for instant recall including:

Derive sums and differences of decimals, using the same partitioning and recombining strategy for adding pairs of 2-digit numbers,

e.g. 9.38 + 2.46 = 11 + 84/100
= 11.84

OR 9.38 + 2.46 = 11 + 0.7 + 0.14
= 11.84

and apply all KS2 +/- facts/strategies within problem solving contexts, e.g. measure; use these instantly known facts instead of inefficient vertical written methods.

Vocabulary

addition, add, addend, more, make, sum, total, altogether
equals, is the same as
commutative, commutativity
complement
how many more to make… ? how many more is… than…?
inverse
double
count on
increase
partition, recombine
thousands, hundreds, tens, ones, value, represent
column
decimal place

Mental Strategies/Jottings

Continue the general case strategy for *mentally* adding a pair of 2-digit numbers:

85 + 67 = 140 + 12 … *in my head*
= 152

This should be done mentally by the end of Year 4.

Applying the same partitioning and recombining **strategy to decimal numbers**,

e.g. 1.75 + 4.47 = 5 + 122/100
= 5 + 1 + 22/100
= 6.22

aiming for *minimal* or *no* jottings here by the end of Year 6.

Written Method – end of year expectation

Formal (columnar) method of addition for addition of numbers **with more than 4-digits**, (including those with up to 3 decimal places) when this cannot be done mentally.

58759 + 13625 = 72384

```
  58759
+ 13625
  72384
  1 1  1
```

28.056 + 37.489 = 113.09

```
  37.489
+ 28.056
  65.545
  1  1 1
```

Assessment of Expected Standard

NCETM Teaching for Mastery:

Calculate 36·2 + 19·8
- with a formal written column method
- with a mental method, explaining your reasoning.

Choose digits to go in the empty boxes to make these number sentences true.
14 781 – 6 ☐ 53 = 8528
23·12 + 22· ☐ = 45·23

Greater Depth Opportunities

NCETM Teaching for Mastery:

Can you use five of the digits 1 to 9 to make this number sentence true?
☐☐·☐+☐·☐ = 31·7

Can you find other sets of five of the digits 1 to 9 that make the sentence true?

Two numbers have a difference of 2·38. What could the numbers be if:
- the two numbers add up to 6?
- one of the numbers is three times as big as the other number?

Two numbers have a difference of 2·3. To the nearest 10, they are both 10. What could the numbers be?

NRICH: *Alphabet Soup*

Reception	Year 1	Year 2	Year 3	Year 4	Year 5
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Combining 2 sets of objects Adding onto a set	Mental, simple jottings or own pictorial representations, such as counting on from the largest number, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 37 + 56 = 80 + 13 = 93	mental: 58 + 65 = 110 + 13 = 123 written: 427 + 254 = 681 4 2 7 + 2 5 4 6 8 1 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 written: 6534 + 2786 = 9320 6534 + 2786 9320 1 1 1	mental: .. in my head 85 + 57 = 130 + 12 = 142 3.5 + 1.7 = 4 + 12/10 = 4 + 1.2 = 5.2 written: 31726 + 14535 31726 + 14535 46361 27.46 + 85.63 27.46 + 85.63 113.09 1 1
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

SUBTRACTION: RECEPTION OVERVIEW

Number Facts

Automatically recall (without reference to rhymes, counting or other aids) **number bonds up to 5, including subtraction facts)** and some number bonds to 10 (see Y1).

1	2	3	4	5
0 + 1	0 + 2 1 + 1	0 + 3 1 + 2	0 + 4 1 + 3 2 + 2	0 + 5 1 + 4 2 + 3
1 - 0	2 – 0 2 – 1 2 - 2	3 – 0 3 – 1 3 – 2 3 - 3	4 – 0 4 – 1 4 – 2 4 – 3 4 - 4	5 – 0 5 – 4 5 – 3 5 – 2 5 - 1 5 - 5

10			
0 + 10 1 + 9 2 + 8	3 + 7 4 + 6 5 + 5	10 – 0 10 – 1 10 – 2 10 – 3 10 - 4	10 – 5 10 – 6 10 – 7 10 – 8 10 – 9 10 - 10

Bronze: addition facts,
e.g. 3 + 2 = 5 so 2 + 3 = 5

Silver: related subtraction facts,
e.g. 4 – 1 = 3 and 4 – 3 = 1

Gold: empty boxes,
e.g. 5 = □ + 2 2 + □ = 5

Vocabulary

subitise

take (away), leave

one less, two less… ten less…

how many fewer is… than…? how many are left/left over? how many have gone?

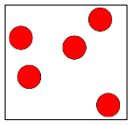
equals, is the same as

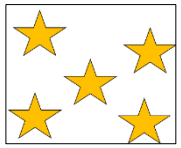
minuend, subtrahend

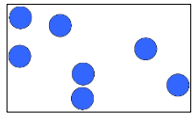
difference, difference between

Mental Strategies/Jottings

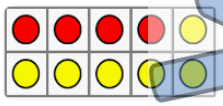
Subitising

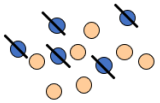






Pictorial representations of number facts to understand commutativity, e.g.





Removing items from a set (*take away*)

Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN EYFS

Assessment of Expected Standard

Can pupils complete the missing numbers from mental recall of number facts within 5 and some number facts to 10?

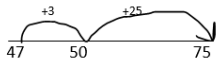
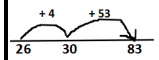
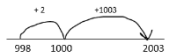
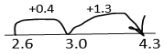
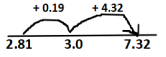
Can they take away an amount from a small groups of objects and work out how many they have left?

Can they say which group of objects has fewest and work out how many less it has than the other?

Greater Depth Opportunities

Use Cuisenaire Rods:

The dark green rod (6) is one more than the yellow rod (5).
Can you find other pairs of rods with a difference of one?
Now find pairs of rods with a difference of 2. How many are there?
Now find pairs of rods with a difference of 3. How many do you think there will be? Why?
What about a difference of 4 or 5?
Can you talk about the pattern you're finding?

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mental, simple jottings or own pictorial representation to count back to take away or count on to find the difference, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 75 – 47 = 28 	mental: 83 - 26 = 57  written: 635 - 379 = 256 635 - 379 256	mental: 2003 – 998 = 1005  written: 8157 - 1678 = 6479 8157 - 1678 6479	mental: 4.3 – 2.6 = 1.7  written: 41535 - 24386 = 17148 41535 - 24386 17149	mental: £7.32 - £2.81 = £4.51  written: 63.512 - 37.843 = 25.669 63.512 - 37.843 25.669
Mental/Jottings	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

SUBTRACTION: YEAR 1 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Derive and recall all pairs of numbers that total 10 ('have a sum of 10') and understand the commutative relationship, e.g. 1 + 9 = 9 + 1 **and the related subtraction facts.**

Derive and recall all facts within 10 and understand the commutative and inverse relationship **and the related subtraction facts,**
e.g. 8 – 2 = 6 and 8 – 6 = 2

Add and subtract a multiple of 10 from a two-digit number,
e.g. 23 + 10 = 33 63 – 10 = 43

Vocabulary

take away, minus, subtract

one less, two less… ten less…

how many fewer is… than…? how many are left/left over? how many have gone?

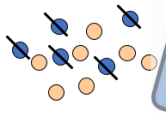
equals, is the same as

minuend, subtrahend

difference, difference between

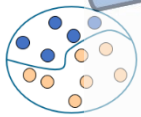
Mental Strategies/Jottings

Removing items from a set (*take away*)



Comparing two sets (*finding the difference*), e.g. with a tens frame, bead frame or sticks of cubes.

Using known number facts to see related calculations



Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN YEAR 1

Assessment of Expected Standard

Can pupils complete the missing numbers from mental recall of number facts within 10?

9 = □ + 7

7 - □ = 4

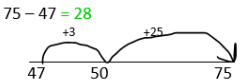
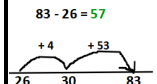
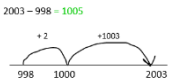
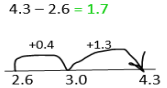
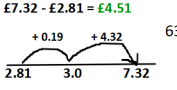
6 = □ - 7

4 + 3 = □	7 + □ = 9
7 – □ = 4	9 – □ = 7
5 + 2 = □	□ + 3 = 9
□ – □ = 2	□ – □ = □

Do they understand the relationship between addition and subtraction and commutativity?

Greater Depth Opportunities

NCETM Teaching for Mastery:
I'm thinking of a number. I've added 8 and the answer is 12. What number was I thinking of? Explain how you know.
I know that 10 take away 7 is 3. How can I find 12 - 7?

Reception	Year 2	Year 3	Year 4	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Removing items from a set	mental (or with efficient jottings) only: 75 – 47 = 28  	mental: 83 - 26 = 57  written: 635 - 379 = 256 635 - 379 256	mental: 2003 – 998 = 1005  written: 8157 - 1678 = 6479 8157 - 1678 6479	mental: 4.3 – 2.6 = 1.7  written: 41535 - 24386 = 17148 41535 - 24386 17149	mental: £7.32 - £2.81 = £4.51  written: 63.512 - 37.843 = 25.669 63.512 - 37.843 25.669
Concrete	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

SUBTRACTION: YEAR 2 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Derive and recall all pairs of multiples of 10 with totals up to 100 and understand the commutative relationship **and the related subtraction facts,**
e.g. 100 – 70 = 30; 100 – 30 = 70

Derive and recall all pairs with totals to 20 ('have a sum of 20') and understand the commutative relationship **and the related subtraction facts,**
e.g. 20 – 15 = 5; 20 – 5 = 15

100			
0 + 100 10 + 90 20 + 80	30 + 70 40 + 60 50 + 50	100 - 0 100 – 10 100 – 20 100 – 30 100 - 40	100 – 50 100 – 60 100 – 70 100 – 80 100 – 90 100 - 100

20			
0 + 20 1 + 19 2 + 18 3 + 17 4 + 16 5 + 15 6 + 14 7 + 13 8 + 12 9 + 11 10 + 10	11 + 9 12 + 8 13 + 7 14 + 6 15 + 5 16 + 4 17 + 3 18 + 2 19 + 1 20 + 0	20 – 0 20 – 1 20 – 2 20 – 3 20 – 4 20 – 5 20 – 6 20 – 7 20 – 8 20 – 9 20 - 10	20 – 11 20 – 12 20 – 13 20 – 14 20 – 15 20 – 16 20 – 17 20 – 18 20 – 19 20 – 20

Vocabulary

take away, minus, subtract

ten less, one hundred less …

how many fewer is… than…? how many are left/left over? how many have gone?

equals, is the same as

minuend, subtrahend

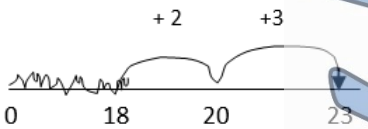
difference, difference between

half, halve

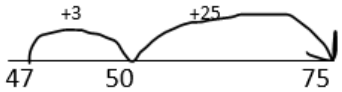
Mental Strategies/Jottings

Find the difference by counting on, using number facts and place value

23 – 18 = 5



then 75 – 47 = 28



Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN YEAR 2

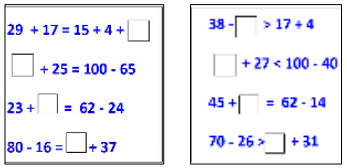
Assessment of Expected Standard

EXS: Add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g.72 – 17).

NB: Aiming for a maximum of 3 jumps but 2 jumps is most efficient.

Greater Depth Opportunities

GD: Use reasoning about numbers and relationships to solve more complex problems and explain their thinking.



Reception	Year 1	Year 3	Year 4	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Removing items from a set	Mental, simple jottings or own pictorial representation to count back to take away or count on to find the difference, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental: 83 - 26 = 57 written: 635 - 379 = 256	mental: 2003 – 998 = 1005 written: 8157 - 1678 = 6479	mental: 4.3 – 2.6 = 1.7 written: 41535 - 24386 = 17148	mental: £7.32 - £2.81 = £4.51 written: 63.512 - 37.843 = 25.669
Concrete	**Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

SUBTRACTION: YEAR 3 OVERVIEW

Number Facts — Consolidate all previous objectives and:

Derive and recall all addition and subtraction facts for each number within 15 and understand the commutative relationship **and the related subtraction facts, e**.g. 14 – 6 = 8; 14 – 8 = 6

Derive and recall all addition and subtraction facts for each number within 20 and understand the commutative relationship **and the related subtraction facts,** e.g. 19 – 4 = 15; 19 – 15 = 4

Derive and recall sums (+) and differences (-) of multiples of 10 and understand the commutative relationship **and the related subtraction facts.** e.g. 70 – 40 = 30; 70 – 30 = 40

Derive and recall all pairs that total 100 (complements to 100), e.g. 32 + 68 *(using the knowledge that the tens need to total 90 and the ones need to total 10)* **and the related subtraction facts.**

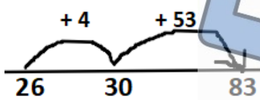
Vocabulary

take away, minus, subtract
ten less, one hundred less …
how many fewer is… than…? how many are left/left over? how many have gone?
equals, is the same as
difference, difference between
minuend, subtrahend
inverse
half, halve
decrease
repartition, exchange

Mental Strategies/Jottings

General case strategy for mentally subtracting a pair of 2-digit numbers, as Y2:

83 - 26 = 57



Special case strategy of *adjusting only if/when* general strategy is secure and confidently chosen by child to solve problems:

85 - 19 = 85 - 20 + 1
= 65 + 1
= 66

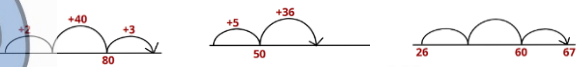
… in my head

Written Method – end of year expectation

Formal (column) method of subtraction for subtraction **of pairs of 3-digit numbers** when this cannot be done mentally.

Assessment of Expected Standard

What is the subtraction calculation for each number line? Could it be more efficient? How?



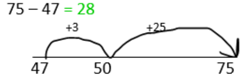
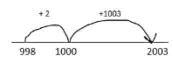
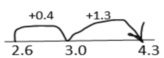
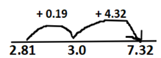
Sam has completed this calculation. What advice would you give him?

```
  355
- 247
  112
```

Greater Depth Opportunities

Complete the missing digits and write the calculations horizontally. Can you teach someone else to solve these problems?

```
  8 _ 1      5 _ 3      _ 7 7
- 5 0 _    - _ 8 6    - 7 2 _
  3 2 3        5 7      2 4 9
```

Reception	Year 1	Year 2	Year 4	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Removing items from a set	Mental, simple jottings or own pictorial representation to count back to take away or count on to find the difference, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 75 – 47 = 28 	mental: 2003 – 998 = 1005  written: 8157 - 1678 = 6479 8157 - 1678 = 6479 (column)	mental: 4.3 – 2.6 = 1.7  written: 41535 - 24386 = 17148 41535 - 24386 = 17149 (column)	mental: £7.32 - £2.81 = £4.51  written: 63.512 - 37.843 = 25.669 63.512 - 37.843 = 25.669 (column)
Concrete	Jottings	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

SUBTRACTION: YEAR 4 OVERVIEW

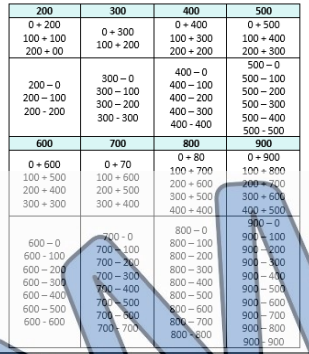
Number Facts

Consolidate all previous objectives and:

Derive sums and differences of pairs of multiples of 100 or 1000,

Add or subtract mentally pairs of two-digit whole numbers,

e.g. 47 + 58, 91 - 35



Vocabulary

take away, minus, subtract

ten less, one hundred less …

how many fewer is… than…? how many are left/left over? how many have gone?

equals, is the same as

difference, difference between

minuend, subtrahend

inverse

half, halve

decrease

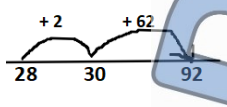
repartition, exchange

tens/hundreds/thousands boundary

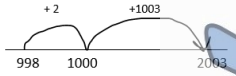
Mental Strategies/Jottings

Continue the general case strategy for mentally subtracting a pair of 2-digit numbers and applying to larger numbers:

92 - 28 = 64



2003 – 998 = 1005



aiming for *no* jottings for these by the end of Year 4.

Special case strategy of *adjusting* only if/when general strategy is secure and confidently chosen by child to solve problems.

… in my head

584 - 298 = 284 + 2
= 286

Written Method – end of year expectation

Formal (columnar) method of subtraction for subtraction **of numbers with 4-digits** when this cannot be done mentally .

8157 - 1678 = 6479

7 10 14 11
8 1 5 7
- 1 6 7 8
6 4 7 9

Assessment of Expected Standard

Decide on a mental or written strategy for each of these calculations and perform them with fluency.

- 72 – 35
- 680 – 240
- 8613 – 6378
- 7162 – 5475
- 91 – 32
- 924 – 799
- 2567 - 1425
- 853 – 242
- 3004 – 1998
- 6104 - 3582

Greater Depth Opportunities

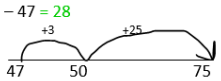
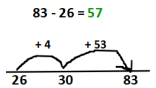
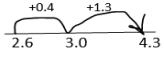
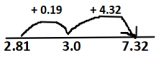
NCETM Teaching for Mastery:

Fill in the missing digits. Explain your strategies.

1 ☐ 5 ☐ + 300 = 1557

5 ☐ 28 – 44 ☐ = 4788

☐☐☐ 0 – 2468 = 5092

Reception	Year 1	Year 2	Year 3	Year 5	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Removing items from a set	Mental, simple jottings or own pictorial representation to count back to take away or count on to find the difference, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 75 – 47 = 28  	mental: 83 - 26 = 57  written: 635 - 379 = 256 5 12 1 6 3 5 - 3 7 9 2 5 6	mental: 4.3 – 2.6 = 1.7  written: 41535 - 24386 = 17148 3 1 4 12 1 5 4 1 5 3 5 - 2 4 3 8 6 1 7 1 4 9	mental: £7.32 - £2.81 = £4.51  written: 63.512 - 37.843 = 25.669 5 12 14 12 6 3 . 5 1 2 - 3 7 . 8 4 3 2 5 . 6 6 9
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

SUBTRACTION: YEAR 5 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Derive sums and differences of decimals, using the same partitioning and recombining strategy for adding pairs of 2-digit numbers,

e.g. 2.7 + 3.9 = 5 + 1.6
= 6.6

Vocabulary

take away, minus, subtract

ten less, one hundred less …

how many fewer is… than…? how many are left/left over? how many have gone?

equals, is the same as

difference, difference between

minuend, subtrahend inverse

half, halve

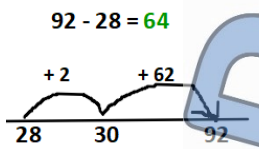
decrease

repartition, exchange

tens/hundreds/thousands boundary

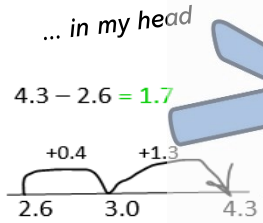
Mental Strategies/Jottings

Continue the general case strategy for mentally subtracting a pair of 2-digit numbers and applying to larger numbers:



This should be done mentally *before* Year 5 and then apply to larger numbers in Year 5.

Applying the same strategy of counting up to find the difference, using known facts and place value **to decimal numbers,** e.g.

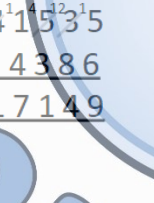


aiming for *no* jottings here by the end of Year 5.

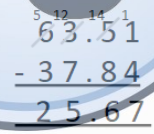
Written Method – end of year expectation

Formal (columnar) method of subtraction for subtraction of numbers **with more than 4-digits,** (including those with up to 2 decimal places) when this cannot be done mentally.

41535 - 24386 = 17148



63.51 - 37.84 = 25.67



Assessment of Expected Standard

NCETM Teaching for Mastery:

Solve these calculations using a column method. Complete the missing numbers in the horizontal calculations.

3254 + ☐ = 7999

2431 = ☐ – 3456

6373 – ☐ = 3581

6719 = ☐ – 4562

Greater Depth Opportunities

NCETM Teaching for Mastery:

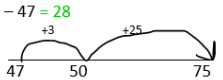
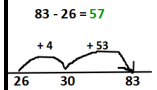
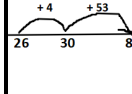
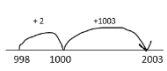
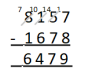
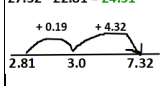
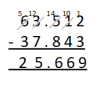
True or False?

- 3999 – 2999 = 4000 – 3000
- 3999 – 2999 = 3000 – 2000
- 2741 – 1263 = 2742 – 1264
- 2741 + 1263 = 2742 + 1264
- 2741 – 1263 = 2731 – 1253
- 2741 – 1263 = 2742 – 1252

Explain your reasoning.

Using this number statement, 5222 – 3111 = 5223 – 3112 write three more pairs of equivalent calculations.

Pupils should not calculate the answer to these questions but should look at the structure and relationships between the numbers.

Reception	Year 1	Year 2	Year 3	Year 4	Year 6
Concrete or simple pictorial representations: Subitising Pictorial representations of number facts Removing items from a set	Mental, simple jottings or own pictorial representation to count back to take away or count on to find the difference, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	mental (or with efficient jottings) only: 75 – 47 = 28 	mental: 83 - 26 = 57  written: 635 - 379 = 256 	mental: 2003 – 998 = 1005  written: 8157 - 1678 = 6479 	mental: £7.32 - £2.81 = £4.51  written: 63.512 - 37.843 = 25.669 
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

SUBTRACTION: YEAR 6 OVERVIEW

Number Facts

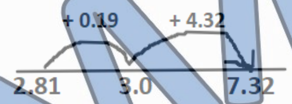
Consolidate all previous number facts for instant recall including:

Derive sums and differences of decimals, using the same strategy for subtracting pairs of 2-digit numbers by counting up to find the difference,
e.g. 9.38 - 11.52

… in my head or with jottings to 'hold' the numbers, if needed)

and apply all KS2 +/- facts/strategies within problem solving contexts, e.g. measure; use these instantly known facts instead of inefficient vertical written methods.

£7.32 - £2.81 = £4.51



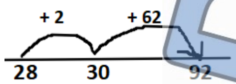
Vocabulary

take away, minus, subtract
ten less, one hundred less …
how many fewer is… than…? how many are left/left over? how many have gone?
equals, is the same as
difference, difference between
minuend, subtrahend inverse
half, halve
decrease
repartition, exchange
tens/hundreds/thousands boundary

Mental Strategies/Jottings

Continue the general case strategy for mentally subtracting a pair of 2-digit numbers and applying to larger numbers:

92 - 28 = 64



… in my head

This should be done mentally by the end of Year 4.

Applying the same strategy of counting up to find the difference, using known facts and place value to **decimal numbers and larger numbers** (see Year 5), **aiming for *minimal* or *no* jottings** here by the end of Year 6.

Written Method – end of year expectation

Formal (columnar) method of subtraction for subtraction of numbers **with more than 4-digits,** (including those with up to 3 decimal places) <u>when this cannot be done mentally.</u>

41535 - 24386 = 17148

```
 ³4¹1⁴5¹²3¹5
- 2 4 3 8 6
  1 7 1 4 9
```

63.512 - 37.843 = 25.669

```
 ⁵6¹²3 . ¹⁴5¹⁰1¹2
- 3 7 . 8 4 3
  2 5 . 6 6 9
```

Assessment of Expected Standard

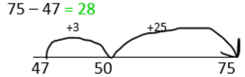
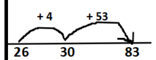
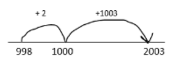
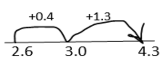
Calculate 8.123 – 6. 989
- with a column method
- with a mental method, explaining your reasoning.

Greater Depth Opportunities

NCETM Teaching for Mastery:

Two numbers have a difference of 2·38. What could the numbers be if:
- the two numbers add up to 6?
- one of the numbers is three times as big as the other number?

Two numbers have a difference of 2·3. To the nearest 10, they are both 10. What could the numbers be?

Reception	Year 1	Year 2	Year 3	Year 4	Year 5
<u>Concrete or simple pictorial representations:</u> Subitising Pictorial representations of number facts Removing items from a set	<u>Mental, simple jottings or own pictorial representation</u> to count back to take away or count on to find the difference, e.g. within 10 or 20 with a bead frame, bead string, number line, tens-frame or fingers.	<u>mental (or with efficient jottings) only:</u> 75 – 47 = 28 	<u>mental:</u> 83 - 26 = 57  <u>written:</u> 635 - 379 = 256 6̸3̸5 (⁵6 ¹²3 ¹5) - 3 7 9 2 5 6	<u>mental:</u> 2003 – 998 = 1005  <u>written:</u> 8157 - 1678 = 6479 ⁷8¹⁰1¹⁴5¹7 - 1 6 7 8 6 4 7 9	<u>mental:</u> 4.3 – 2.6 = 1.7  <u>written:</u> 41535 - 24386 = 17148 ³4¹1⁴5¹²3¹5 - 2 4 3 8 6 1 7 1 4 9
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

MULTIPLICATION: RECEPTION OVERVIEW

Number Facts

Automatically recall (without reference to rhymes, counting or other aids) . . . **double facts** at least up to 5 + 5 = 10, e.g. double 4 is 8

Doubling Facts to 10					
0 + 0 = 0	1 + 1 = 2	2 + 2 = 4	3 + 3 = 6	4 + 4 = 8	5 + 5 = 10
double 0 is 0	double 1 is 2	double 2 is 4	double 3 is 6	double 4 is 8	double 5 is 10

Extend to Halving Facts Within 10				
half of 2 is 1	half of 4 is 2	half of 6 is 3	half of 8 is 4	half of 10 is 5

Vocabulary

equal groups of …, grouping

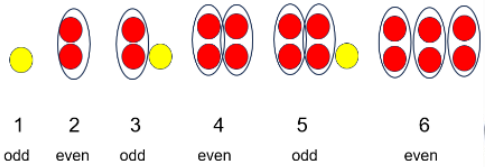
odd, even

double, doubling

Mental Strategies/Jottings

Explore and **represent patterns within numbers up to 10, including evens and odds**, double facts and how quantities can be distributed equally.

e.g. odds and evens 1, 2, 3, 4, 5, 6



Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN EYFS

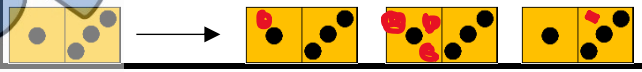
Assessment of Expected Standard

Can pupils use manipulatives to show and talk about a pattern of doubles and halves, e.g. Cuisenaire Rods, multilink cubes in 2 colours?

Can they recall doubling facts up to 5 + 5?

Greater Depth Opportunities

Can pupils draw dots on dominoes showing even numbers so that they show an odd number? Can they do it in different ways? Can they talk about what they notice?



Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
practical and pictorial: Solve problems using concrete objects, pictorial representations, e.g. arrays and equal grouping.	mental only: 4 2 x 2 (or double 42) = 8 4 x2 (or d) x2 (or d) 80 + 4	mental: 3 2 x 5 = 160 x10 320 ÷ h 160 63 x 8 = 504 x8 x8 480 + 24 written: 63 x 8 = 504 6 3 x 8 5 0 4 2	mental: 124 x 5 = 620 x10 1240 ½ 620 79 x 6 = 420 + 54 = 474 written: 236 x 7 = 1652 2 3 6 x 7 1 6 5 2 2 4	mental: 2 4 x 1 2 = 2 8 8 x 10 x 2 (or d) 240 + 48 written: 4 5 1 6 x 3 7 = 167,092 4 5 1 6 x 3 7 3 1 6 1 2 1 3 5 4 8 0 1 6 7 0 9 2	mental: 1. 6 x 3 = 4.8 x 3 x 3 3.0 1.8 written: 4 5 1 6 x 3 7 = 167,092 4 5 1 6 x 3 7 3 1 6 1 2 1 3 5 4 8 0 1 6 7 0 9 2
Mental/Jottings	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

MULTIPLICATION: YEAR 1 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Count in 10s from zero (to the 12th multiple): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 120.

Count in 2s from zero (to the 12th multiple): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24.

Count in 5s from zero (to the 12th multiple): 0, 5, 10, 15, 20, 25, 30, 35, 40, 50, 55, 60.

Recall doubles up to 10 + 10, e.g. 8 + 8 = 16 so double 8 = 16

Vocabulary

array, rows and columns

equal groups of …, grouping

odd, even

double, doubling

once, twice, three times… ten times… times as (big, long, wide… and so on)

twice as much/many

Mental Strategies/Jottings

Practical work:

Grouping (equal groups)

e.g. 2 equal groups of 6 and 6 equal groups of 2

Arrays

e.g. 2+2+2+2+2+2+2+2+2+2 = 2 x 7

and 7+7 = 7 x 2

(Ref: Solve one-step problems involving multiplication calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.)

Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN YEAR 1

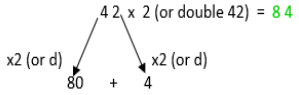
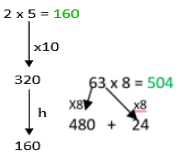
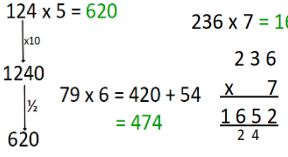
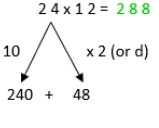
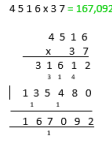
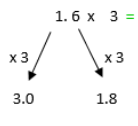
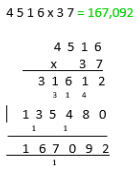
Assessment of Expected Standard

Can pupils count in 2s, 5s and 10s up to the 12th multiple? Can they find the total of several 2p coins? Do they know doubles facts up to double 10 off by heart?

Can pupils use manipulatives or their own pictorial representations to create equal groups and explain what they have shown? e.g. to show how many wheels if there are if there are 5 tricycles.

Greater Depth Opportunities

Solve problems, e.g. How many different 'flat' (1 cube deep) cuboids can you build using 12 multilink cubes? Can you record this on squared paper using 2 colours and explain what you have found using numbers?

Reception	Year 2	Year 3	Year 4	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be grouped equally.	mental only: 	mental:  written: 63 x 8 = 504 63 x 8 504 2	mental:  written: 236 x 7 = 1652 236 x 7 1652 24	mental:  written: 	mental:  written: 
Concrete	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

MULTIPLICATION: YEAR 2 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall multiplication and division **facts for the 10 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 2 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 5 times table** up to the 12th multiple.

Vocabulary

times, multiply, multiplied by

multiple of 2, 5, 10

array, rows and columns

repeated addition

commutative

equal groups of …, grouping

once, twice, three times… ten times… times as (big, long, wide… and so on)

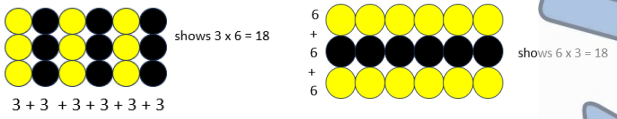
odd, even

double, doubling

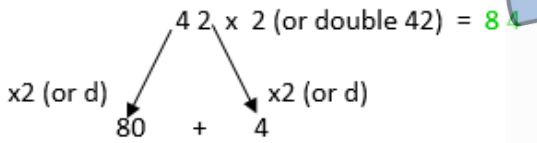
twice as much/many

Mental Strategies/Jottings

Arrays/repeated addition to calculate unknown facts (not 2, 5 or 10 times table)



Double 2-digit numbers



Written Method – end of year expectation

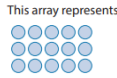
NO FORMAL WRITTEN METHODS IN YEAR 2

Assessment of Expected Standard

EXS: Recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary.

Can they instantly recall?

NCETM Teaching for Mastery:

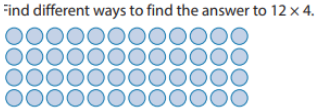


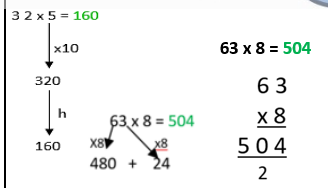
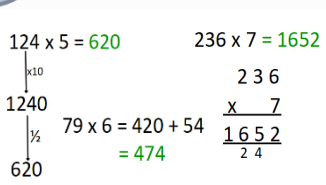
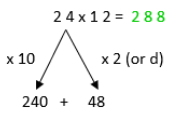
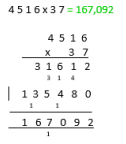
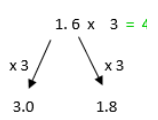
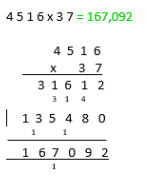
Write three other multiplication or addition facts that this array shows.
Write one division fact that this array shows.

Greater Depth Opportunities

GD: Make deductions outside known multiplication facts.

NCETM Teaching for Mastery:



Reception	Year 1	Year 3	Year 4	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	practical and pictorial: Solve problems using concrete objects, pictorial representations, e.g. arrays and equal grouping.	mental:  written: 63 x 8 = 504 6 3 x 8 5 0 4 2	mental:  written: 236 x 7 = 1652 2 3 6 x 7 1 6 5 2 2 4	mental:  written:  	mental:  written: 
Concrete	**Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

MULTIPLICATION: YEAR 3 OVERVIEW

Number Facts :

Consolidate all previous objectives and:

Count in 50s from zero.

0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600 . . .

Recall multiplication and division **facts for the 3 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 4 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 8 times table** up to the 12th multiple.

Vocabulary

times, multiply, multiplied by
multiple of
product, factor
array, rows and columns
repeated addition
commutative, commutativity
equal groups of …, grouping
once, twice, three times… ten times…
times as (big, long, wide… and so on)
double, doubling
twice as much/many
inverse
scaling

Mental Strategies/Jottings

Consolidate all previous mental strategies and:

Mentally multiply 2-digit and 3-digit numbers by 5

3 2 x 5 = 160
x10
320
h
160

2-digit x 1-digit mental multiplication using times tables they know

63 x 8 = 504
x8 x8
480 + 24

63 x 8 = 480 + 24
= 504

Written Method – end of year expectation

2-digit x 1-digit mental multiplication progressing to formal (short multiplication) using times tables they know.

63 x 8 = 504

6 3
x 8
5 0 4
2

1 6 x 3 = 48

1 6
x 3
4 8
1

Assessment of Expected Standard

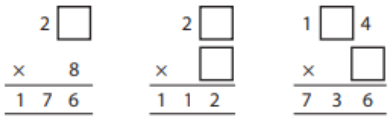
Show different ways to work out each of the following calculations:

48 x 3 93 x 4 64 x 5 67 x 8

Greater Depth Opportunities

NCETM Teaching for Mastery:

Find the missing digits.



Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be grouped equally.	practical and pictorial: Solve problems using concrete objects, pictorial representations, e.g. arrays and equal grouping.	mental only: 42 x 2 (or double 42) = 84; x2 (or d) 80 + 4 x2 (or d)		mental: written: 124 x 5 = 620; x10 1240 ½ 620; 79 x 6 = 420 + 54 = 474; 236 x 7 = 1652; 2 3 6 x 7 1 6 5 2 2 4	mental: written: 24 x 12 = 288; x 10 240 + 48 x 2 (or d); 4516 x 37 = 167,092; 4 5 1 6 x 3 7 3 1 6 1 2 1 3 5 4 8 0 1 1 1 6 7 0 9 2 1	mental: written: 1.6 x 3 = 4.8; x3 3.0 1.8 x3; 4516 x 37 = 167,092; 4 5 1 6 x 3 7 3 1 6 1 2 1 3 5 4 8 0 1 1 1 6 7 0 9 2 1
Concrete	Jottings	Mental/Jottings		Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

MULTIPLICATION: YEAR 4 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Count in 25s.

0, 25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 . . .

Recall multiplication and division **facts for the 6 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 11 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 7 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 9 times table** up to the 12th multiple.

Recall multiplication and division **facts for the 12 times table** up to the 12th multiple.

Vocabulary

times, multiply, multiplied by

multiple of

product, factor

array, rows and columns

repeated addition

commutative, commutativity

equal groups of …, grouping

once, twice, three times… ten times…

times as (big, long, wide… and so on)

double, doubling

twice as much/many

scaling

inverse

Mental Strategies/Jottings

Consolidate all previous mental strategies:

Mentally multiply 3-digit numbers by 5

124 x 5 = 620

x10

1240

½

620

2-digit x 1-digit mental multiplication

79 x 6 = 420 + 54

= 474

Written Method – end of year expectation

Formal written method of short multiplication to multiply two-digit and three-digit numbers by a one-digit number, when this cannot be done mentally.

236 x 7 = 1652

```
 2 3 6
 x   7
1 6 5 2
 2 4
```

Assessment of Expected Standard

Show different ways to work out each of the following calculations:

315 x 7 36 x 8 246 x 5 67 x 9

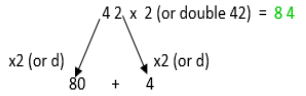
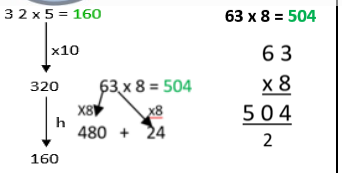
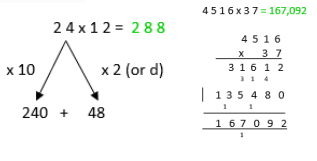
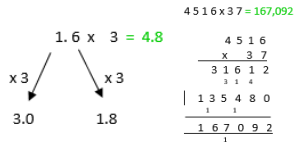
Can they carry out short multiplication accurately?

Greater Depth Opportunities

Can pupils write the number 36 as a product of 3 numbers? Can they do it in different ways?

Can they describe their approach – is it systematic?

Can pupils identify missing digits in a partially completed short multiplication calculation?

Reception	Year 1	Year 2	Year 3	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be grouped equally.	practical and pictorial: Solve problems using concrete objects, pictorial representations, e.g. arrays and equal grouping.	mental only: 	mental: written: 	mental: written: 	mental: written: 
Concrete	Jottings	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

MULTIPLICATION: YEAR 5 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall prime numbers up to 19.
2, 3, 5, 7, 11, 13, 17, 19 . . .

Recognise and use square numbers.
1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144.

Find all factor pairs of a number and common factors of two numbers.
e.g. factor pairs of 24 are 1 and 24, 2 and 12, 3 and 8, 4 and 6.
e.g. common factors of 15 and 20 are 1 and 5.

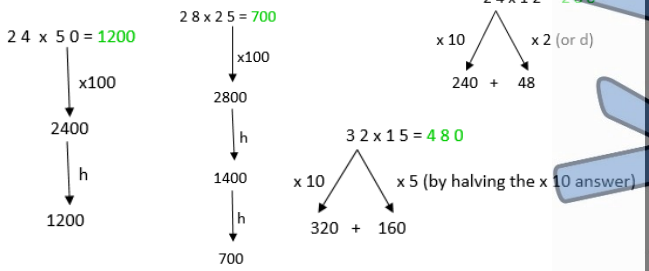
Vocabulary

times, multiply, multiplied by
multiple,
product
factor, factor pairs, common factor
square number, cubed number
commutative, commutativity
equal groups of …, grouping
once, twice, three times… ten times…
times as (big, long, wide… and so on)
double, doubling
scaling
inverse

Mental Strategies/Jottings

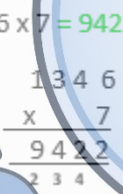
Consolidate all previous mental strategies and:

× 50 ½ of × 100 (× 100 then halve it)
× 25 ¼ of × 100 (× 100 then ½ and ½ again)
× 12 × 10 plus × 2 (double)
× 15 × 10 plus ½ of × 10

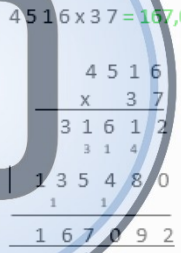


Written Method – end of year expectation

Formal method of short multiplication for multiplication of up to 4-digit by 1-digit numbers when this cannot be done mentally.



Formal method of long multiplication for multiplication of up to 4-digit by 2-digit numbers.

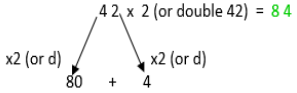
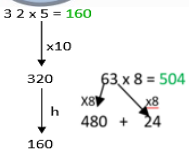
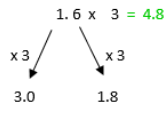
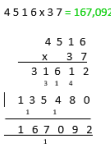


Assessment of Expected Standard

Can pupils recite the prime numbers up to 19 and square numbers up to 144? Can they explain why 1 is not prime? (It does not have 2 factors)
Do pupils spot when a mental strategy is more efficient than a written strategy?
Can they carry out short and long multiplication accurately and identify missing digits in a partially completed short multiplication calculation?

Greater Depth Opportunities

Can pupils identify missing digits in a partially completed long multiplication calculation?
Can they diagnose the errors in an incorrect long multiplication calculation and give advice on how to improve?

Reception	Year 1	Year 2	Year 3	Year 4	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be grouped equally.	practical and pictorial: Solve problems using concrete objects, pictorial representations, e.g. arrays and equal grouping.	mental only: 	mental:  written: 63 x 8 = 504 63 x 8 504 2	mental: 124 x 5 = 620 x10 1240 ½ 620 79 x 6 = 420 + 54 = 474 written: 236 x 7 = 1652 236 x 7 1652 2 4	mental:  written: 
Concrete	Jottings	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

MULTIPLICATION: YEAR 6 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall equivalences between simple fractions, decimals and percentages.

Convert measurements (length, mass, volume and time) **from smaller units of measure to larger and vice-versa.**

Fraction	Decimal	Percentage
1/10	0.1	10%
2/10 = 1/5	0.2	20%
¼	0.25	25%
3/10	0.3	30%
4/10 = 2/5	0.4	40%
5/10 = ½	0.5	50%
6/10 = 3/5	0.6	60%
7/10	0.7	70%
¾	0.75	75%
8/10 = 4/5	0.8	80%
9/10	0.9	90%
10/10 = 1	1.0	100%

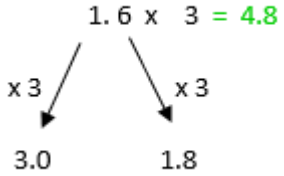
Vocabulary

times, multiply, multiplied by
multiple, common multiple
product
factor, factor pairs, common factor
square number, cubed number
commutative, commutativity
equal groups of …, grouping
once, twice, three times… ten times…
times as (big, long, wide… and so on)
double, doubling
scaling
inverse

Mental Strategies/Jottings

Consolidate all previous mental strategies, including Year 5 strategies for x50, x25, x12, x15

Mentally multiply decimal numbers with one decimal place.



Written Method – end of year expectation

Continue formal method of short multiplication (as Year 5) for multiplication of up to 4-digit by 1-digit numbers when this cannot be done mentally.

Formal method of long multiplication for multiplication of 4-digit by 2-digit numbers.

Assessment of Expected Standard

Do pupils recall equivalent fractions, decimals and percentages?
Do pupils spot when a mental strategy is more efficient than a written strategy?
Can pupils identify missing digits in a partially completed long multiplication calculation?
Can they explain why long multiplication is not used to multiply a number by a multiple of 10, e .g. 272 x 30

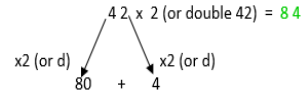
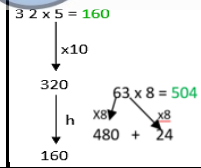
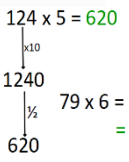
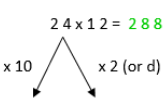
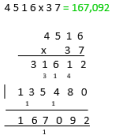
Greater Depth Opportunities

NCETM Teaching for Mastery:

In each pair of calculations, which one would you prefer to work out?

- (a) 35 × 0·3 + 35 × 0·7 **or** (b) 3·5 × 0·3 + 35 × 7
- (c) 6·4 × 1·27 – 64 × 0·1 **or** (d) 6·4 × 1·27 – 64 × 0·027

Explain your choices.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be grouped equally.	practical and pictorial: Solve problems using concrete objects, pictorial representations, e.g. arrays and equal grouping.	mental only: 	mental:  written: 63 x 8 = 504 6 3 x 8 5 0 4 2	mental:  79 x 6 = 420 + 54 = 474 written: 236 x 7 = 1652 2 3 6 x 7 1 6 5 2 2 4	mental:  written: 
Concrete	Jottings	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

DIVISION: RECEPTION OVERVIEW

Number Facts

Automatically recall (without reference to rhymes, counting or other aids) . . . **double facts, extending to the corresponding halving facts** at least up to half of 10 is 5, e.g. half of 8 is 4.

Doubling Facts to 10					
0 + 0 = 0	1 + 1 = 2	2 + 2 = 4	3 + 3 = 6	4 + 4 = 8	5 + 5 = 10
double 0 is 0	double 1 is 2	double 2 is 4	double 3 is 6	double 4 is 8	double 5 is 10

Extend to Halving Facts Within 10				
half of 2 is 1	half of 4 is 2	half of 6 is 3	half of 8 is 4	half of 10 is 5

Vocabulary

equal groups of …

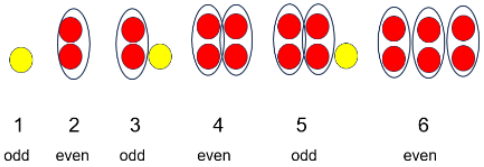
share equally, sharing between

half, halve

odd, even

Mental Strategies/Jottings

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally, e.g. odds and evens 1, 2, 3, 4, 5, 6



Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN EYFS

Assessment of Expected Standard

Can pupils use manipulatives to show and talk about a pattern of doubles and halves, e.g. Cuisenaire Rods, multilink cubes in 2 colours?

Can they recall halving facts up to 5 + 5?

Greater Depth Opportunities

Can pupils recognise when they *can't* share a quantity equally between two because they know it is an odd number?

Can they use manipulatives and pictorial representations to explain this?

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
practical and pictorial: Mental, simple jottings or own pictorial representations e.g. sharing equally to solve a real-life problem.	mental only: ½ of 64 = 32 ½ (or h) ½ (or h) 30 + 2	mental (or with efficient jottings) only: ½ of 76 = 38 (60 + 10) ½ ½ ½ (or h) 30 + 5 + 3 320 ÷ 5 = 64 ÷ 10 32 d 64	mental (or with efficient jottings) only: 192 ÷ 16 = 12 160 + 32 10 2	mental: 2400 ÷ 50 = 48 ÷100 24 d 48 2300 ÷ 25 = 92 ÷100 23 x4 (d/d) 92 written: 1647 ÷ 3 = 549 0549 3 1 6 14 27	mental: (as Year 5) 2400 ÷ 50 = 48 ÷100 24 d 48 2300 ÷ 25 = 92 ÷100 23 x4 (d/d) 92 written: 1440 ÷ 32 = 45 0045 32 1440 -128↓. 160 -160 0
Mental/Jottings	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

DIVISION: YEAR 1 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall halves of even numbers up to half of 20, e.g. half of 18 is 9.

Halving Facts Within 20				
half of 2 is 1	half of 4 is 2	half of 6 is 3	half of 8 is 4	half of 10 is 5
half of 12 is 6	half of 14 is 7	half of 16 is 8	half of 18 is 9	half of 20 is 10

Vocabulary

array, rows and columns

repeated subtraction

equal groups of …

share equally, sharing between

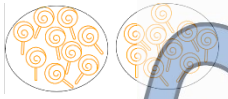
odd, even

half, halve, half of.., quarter of..

Mental Strategies/Jottings

Practical work:

Sharing, e.g. share 18 between 2



Grouping (equal groups),
e.g. 18 grouped in 2s

and 18 grouped in 9s

Linked to **Arrays**, e.g. 2 x 9 and 9 x 2 (rows and columns)

(Ref: Solve one-step problems involving . . . division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.)

Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN YEAR 1

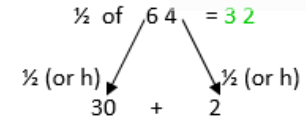
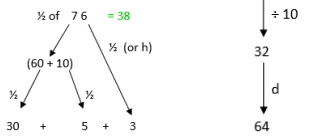
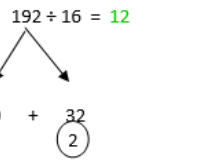
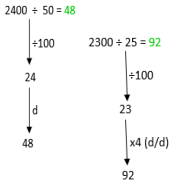
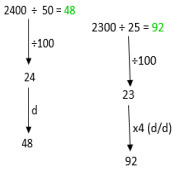
Assessment of Expected Standard

Do pupils know halving facts of even numbers to 20 off by heart?

Can they use manipulatives or their own pictorial representations to solve division problems and explain what they have shown? e.g. to show how many quad bikes if there are if there are 20 wheels.

Greater Depth Opportunities

Can pupils solve problems? e.g. If you had 20 sweets, how many different ways could you arrange them into party bags with an equal amount in each bag? How many bags do you use each time? Can you show this pictorially?

Reception	Year 2	Year 3	Year 4	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be shared equally.	mental only: 	mental (or with efficient jottings) only: 	mental (or with efficient jottings) only: 	mental:  written: 1647 ÷ 3 = 549 0549 3 1 6 1 4 2 7	mental: (as Year 5)  written: 1440 ÷ 32 = 45 0045 32 1440 -128 160 -160 0
Concrete	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

DIVISION: YEAR 2 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall multiplication and **division facts for the 10 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 2 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 5 times table** up to the 12th multiple.

Vocabulary

array, rows and columns

repeated subtraction

equal groups of …

share equally, sharing between

odd, even

half, halving, half of.., quarter of..

divide, divided by, divided into

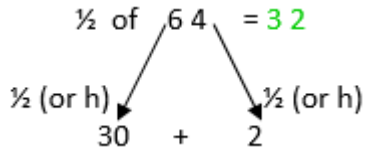
dividend, divisor, quotient

Mental Strategies/Jottings

Sharing 15 ÷ 3

Grouping 15 ÷ 3

Halve 2-digit even numbers.



Written Method – end of year expectation

NO FORMAL WRITTEN METHODS IN YEAR 2

Assessment of Expected Standard

EXS: Recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary.

Can they *instantly* recall facts? e.g. what number divided by 5 is 7?

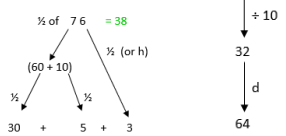
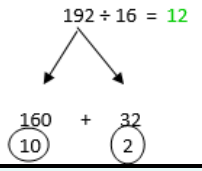
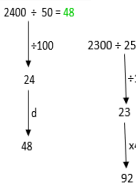
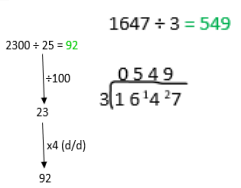
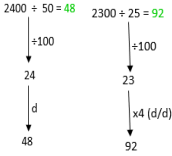
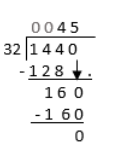
NCETM Teaching for Mastery:

Two friends share 12 sweets equally between them. How many do they each get?
Write this as a division number sentence.
Make up two more sharing stories like this one.

Greater Depth Opportunities

NCETM Teaching for Mastery:

Two friends want to buy some marbles and then share them out equally between them.
They could buy a bag of 13 marbles, a bag of 14 marbles or a bag of 19 marbles.
What size bag should they buy so that they can share them equally?
What other numbers of marbles could be shared equally?

Reception	Year 1	Year 3	Year 4	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be shared equally.	practical and pictorial: Mental, simple jottings or own pictorial representations e.g. sharing equally to solve a real-life problem.	mental (or with efficient jottings) only:  	mental (or with efficient jottings) only:  	mental:  written:  	mental: (as Year 5)  written: 
Concrete	**Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

DIVISION: YEAR 3 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall multiplication and **division facts for the 3 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 4 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 8 times table** up to the 12th multiple.

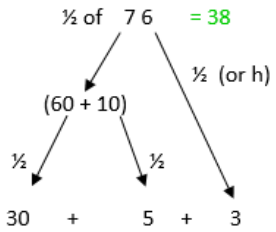
Vocabulary

array, rows and columns
repeated subtraction
equal groups of …
share equally, sharing between
divide, divided by, divided into
dividend, divisor, quotient
half, halving
remainder
inverse
factor

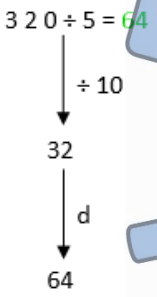
Mental Strategies/Jottings

Consolidate Year 2 mental strategies and:

Halve 2-digit and 3-digit even numbers:



Divide 3-digit multiples of 10 by 5:



Written Method – end of year expectation

Use known division facts to solve problems in context (2, 5, 10, 3, 4 and 8 times tables).

NO FORMAL WRITTEN METHODS IN YEAR 3

Assessment of Expected Standard

Can pupils *instantly* recall division facts? e.g. what number divided by 3 is 9?

Can they use jottings or mental strategies to halve 2-digit numbers or to divide 3-digit multiples of 10 by 5?

NCETM Teaching For Mastery:

The following problems can be solved by using the calculation 8 ÷ 2. True or false?

- There are 2 bags of bread rolls that have 8 rolls in each bag. How many rolls are there altogether?
- A boat holds 2 people. How many boats are needed for 8 people?
- I have 8 pencils and give 2 pencils to each person. How many people receive pencils?
- I have 8 pencils and give 2 away. How many do I have left?

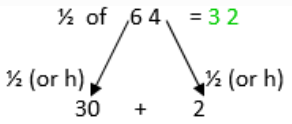
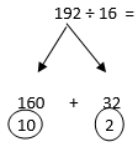
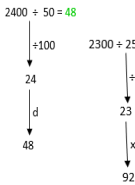
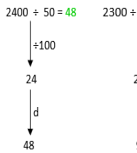
Greater Depth Opportunities

Can pupils mentally solve problems involving remainders using known division facts?

And *NCETM Teaching for Mastery:*

What is the relationship between these calculations?

2 × 3	4 × 3
2 × 30	4 × 30
20 × 3	40 × 3
20 × 3 × 10	40 × 3 × 10

Reception	Year 1	Year 2	Year 4	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be shared equally.	practical and pictorial: Mental, simple jottings or own pictorial representations e.g. sharing equally to solve a real-life problem.	mental only: 	mental (or with efficient jottings) only: 	mental:  written: 1647 ÷ 3 = 549 0549 3 1 6 14 27	mental: (as Year 5)  written: 1440 ÷ 32 = 45 00 45 32 1440 -128 160 -160 0
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**

DIVISION: YEAR 4 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall multiplication and **division facts for the 6 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 11 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 7 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 9 times table** up to the 12th multiple.

Recall multiplication and **division facts for the 12 times table** up to the 12th multiple.

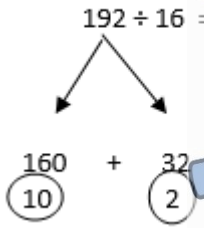
Vocabulary

repeated subtraction
equal groups of …
share equally, sharing between
divide, divided by, divided into
dividend, divisor, quotient
half, halving
remainder
inverse
factor

Mental Strategies/Jottings

Consolidate Years 2 and 3 mental strategies and:

Mentally divide 2- or 3-digit numbers by 1- or 2-digit numbers using times tables beyond the 12th multiple, where there are no remainders.



Written Method – end of year expectation

Use known division facts to solve problems in context (times tables up to 12 x 12).

NO FORMAL WRITTEN METHODS IN YEAR 4

Assessment of Expected Standard

Can pupils *instantly* recall division facts? e.g. what number divided by 7 is 8?

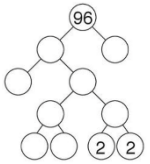
Can pupils solve problems using known division facts, including involving remainders?

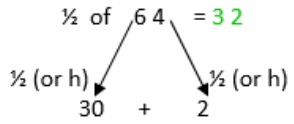
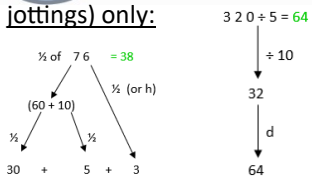
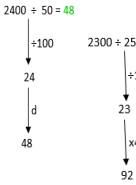
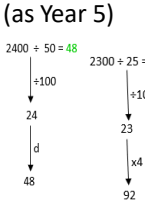
Can they use a jotting or mental strategy to divide beyond the 12th multiple of the divisor (but less than the 12th)?

Greater Depth Opportunities

Can pupils solve factor tree puzzles in different ways and create their own to challenge others?

Can they show resilience and solve *A First Product Sudoku* from *NRich?*



Reception	Year 1	Year 2	Year 3	Year 5	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be shared equally.	practical and pictorial: Mental, simple jottings or own pictorial representations e.g. sharing equally to solve a real-life problem.	mental only: 	mental (or with efficient jottings) only: 	mental:  written: 1647 ÷ 3 = 549 0549 3 1 6 1 4 2 7	mental: (as Year 5)  written: 1440 ÷ 32 = 45 0045 32 1440 -128 160 -160 0
Concrete	Jottings	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

DIVISION: YEAR 5 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recognise and use square numbers, including for example (square roots), *what number squared is 144?*
1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144.

Find all factor pairs of a number and common factors of two numbers.
e.g. factor pairs of 24 are 1 and 24, 2 and 12, 3 and 8, 4 and 6.
e.g. common factors of 15 and 20 are 1 and 5.

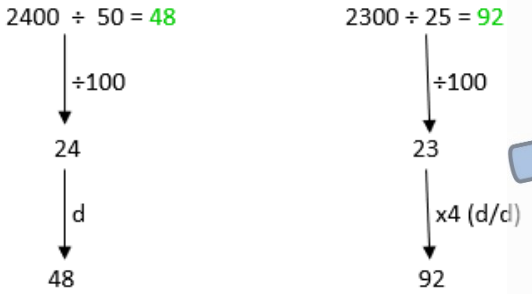
Vocabulary

repeated subtraction
equal groups of …
share equally, sharing between
divide, divided by, divided into
dividend, divisor, quotient
half, halving
remainder
inverse
factor, factor pairs, common factor
prime number, composite number

Mental Strategies/Jottings

Consolidate all previous mental strategies and:

Divide by 50 and 25 with whole number answers:



Written Method – end of year expectation

Formal method of short division for division of numbers up to 4-digits by a one-digit number and interpret remainders appropriately for the context.

Assessment of Expected Standard

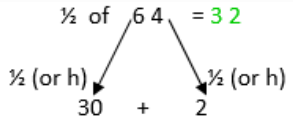
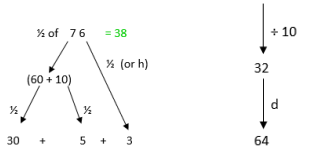
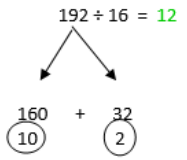
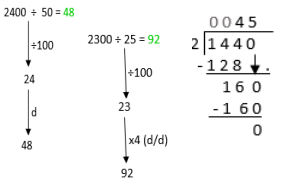
Do pupils spot when a mental strategy is more efficient than a written strategy?
Can pupils carry out short division accurately, using known division facts and remainders to solve a problem?

Greater Depth Opportunities

NCETM Teaching for Mastery :

Fill in the missing numbers:

□ ÷ 120 = 117 ÷ 13 = 10 800 ÷ □ = 234 ÷ □

Reception	Year 1	Year 2	Year 3	Year 4	Year 6
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be shared equally.	practical and pictorial: Mental, simple jottings or own pictorial representations e.g. sharing equally to solve a real-life problem.	mental only: 	mental (or with efficient jottings) only: 	mental (or with efficient jottings) only: 	mental: (as Year 5) written: 1440 ÷ 32 = 45 
Concrete	Jottings	Mental/Jottings	Mental/Jottings & Written	Mental/Jottings & Written	Mental/Jottings & Written

DIVISION: YEAR 6 OVERVIEW

Number Facts

Consolidate all previous objectives and:

Recall equivalences between simple fractions, decimals and percentages.

Convert measurements (length, mass, volume and time) **from smaller units of measure to larger and vice-versa.**

Fraction	Decimal	Percentage
1/10	0.1	10%
2/10 = 1/5	0.2	20%
¼	0.25	25%
3/10	0.3	30%
4/10 = 2/5	0.4	40%
5/10 = ½	0.5	50%
6/10 = 3/5	0.6	60%
7/10	0.7	70%
¾	0.75	75%
8/10 = 4/5	0.8	80%
9/10	0.9	90%
10/10 = 1	1.0	100%

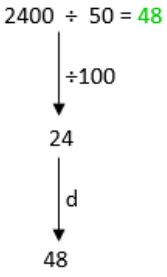
Vocabulary

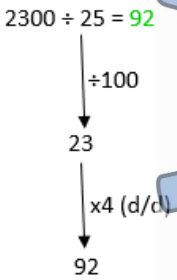
repeated subtraction
equal groups of …
share equally, sharing between
divide, divided by, divided into
dividend, divisor, quotient
half, halving
remainder
inverse
factor, common factor, factor pairs
common multiple
prime number, composite number

Mental Strategies/Jottings

Consolidate all previous mental strategies, including:

Year 5: Divide by 50 and 25 with whole number answers:





Written Method – end of year expectation

Formal method of short division and long division for division of numbers up to 4-digits by a 2-digit whole number and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

1647 ÷ 3 = 549

```
 0549
3|1614 27
```

1440 ÷ 32 = 45

```
  0045
32|1440
 -128
  160
 -160
    0
```

Assessment of Expected Standard

Do pupils spot when a mental strategy is more efficient than a written strategy?
Do pupils know and understand the difference between short and long division and know when to use each method? Can they use both methods accurately?

Greater Depth Opportunities

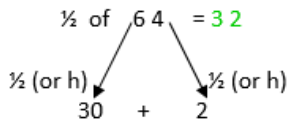
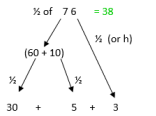
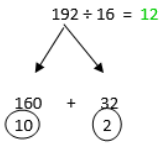
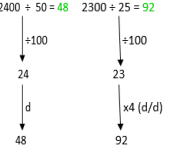
Can pupils identify missing digits in a partially completed short division calculation?

And *NCETM Teaching for Mastery:*

In each pair of calculations, which one would you prefer to work out?

- (e) 52·4 ÷ 0·7 + 524 ÷ 7 **or** (f) 52·4 ÷ 0·7 – 524 ÷ 7
- (g) 31·2 ÷ 3 – 2·4 ÷ 6 **or** (h) 31·2 ÷ 3 – 1·2 ÷ 0·3

Explain your choices.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5
practical only: Represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be shared equally.	practical and pictorial: Mental, simple jottings or own pictorial representations e.g. sharing equally to solve a real-life problem.	mental only: 	mental (or with efficient jottings) only: 	mental (or with efficient jottings) only: 	mental:  written: 1647 ÷ 3 = 549 0549 3|1614 27
Concrete	**Jottings**	**Mental/Jottings**	**Mental/Jottings & Written**	**Mental/Jottings & Written**	**Mental/Jottings & Written**