Curry Rivel C of E VC Primary School

Calculation Policy

Draft progression in written calculation strategies for addition

(Examples indicate end of year expectations)

Year 1

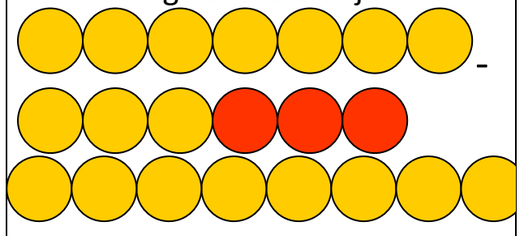
<u>Statutory Guidance</u>

Add one-digit and two-digit numbers to 20, including zero. Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems.

<u>Possible representations</u>

e.g. 7 + 6 =

Using concrete objects



Using pictorial representations

e.g. 13 + 5 =

Year 2

<u>Statutory Guidance</u>

Solve problems with addition:

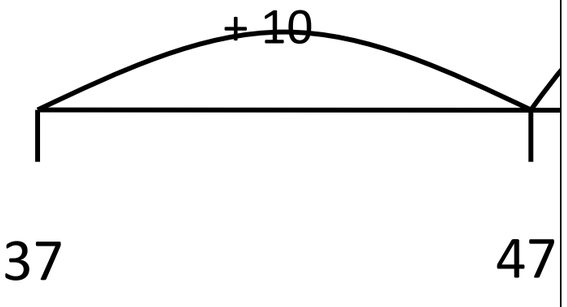
- using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- applying their increasing knowledge of mental and written methods

Add numbers using concrete objects, pictorial representations, and mentally, including:

- a two-digit number and ones
- a two-digit number and tens
- two two-digit numbers
- adding three one-digit numbers

e.g. 37 + 15 =

2 digit number add a 2 digit number using efficient place value jumps



Year 3

<u>Statutory Guidance</u>

Add numbers with up to three digits, using formal written methods of columnar addition.

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

e.g. 376 + 57 = (expanded addition)

Year 4

<u>Statutory Guidance</u>

Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate

e.g. 6321 + 858 =

```
  6 3 2 1
+   8 5 8
-------
  7 1 7 9
-------
    1
```

<u>Measurement</u>

Based on statutory guidance linked to money and measures to 2 decimal places.

Year 5

<u>Statutory Guidance</u>

Add whole numbers with more than 4 digits, including using formal written methods (columnar addition)

e.g. 12478 + 73649 =

```
  1 2 4
+ 7 3
-------
1 9 8
-------
    1
```

<u>Measurement</u>

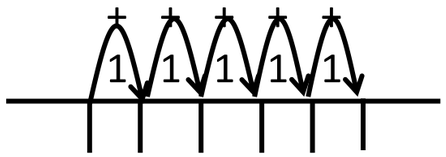
Ye

<u>Statutory Guidance</u>

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

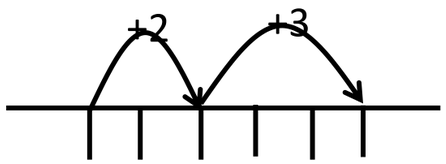
<u>Measurement</u>

Solve proble



13 14 15 16 17 18

Addition using more efficient jumps



18 19 20 21 22 23

Non–statutory guidance

34 + 23 =

$$\begin{array}{r} 30\ \ 4 \\ +\ 20\ \ 3 \\ \hline 50\ \ 7 \end{array} =$$

$$\begin{array}{r} 376 \\ +\ \ 57 \\ \hline 13 \\ 120 \\ 300 \\ \hline 433 \end{array}$$

Or

$$\begin{array}{r} 300\ \ 70\ \ 6 \\ +\ \ \ \ \ \ 50\ \ 7 \\ \hline 400\ \ 30\ \ 3 \\ \hline 100\ \ 10 \end{array} =$$

e.g. 67.75 + 21.50 =

$$\begin{array}{r} 67. \\ +\ 21. \\ \hline 89. \end{array}$$

1

Based on statutory guidance linked to money and measures to 2 decimal places.

$$\begin{array}{r} 9. \\ +\ 6. \\ \hline 16. \end{array}$$

1

ms involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

Year 1

Statutory Guidance

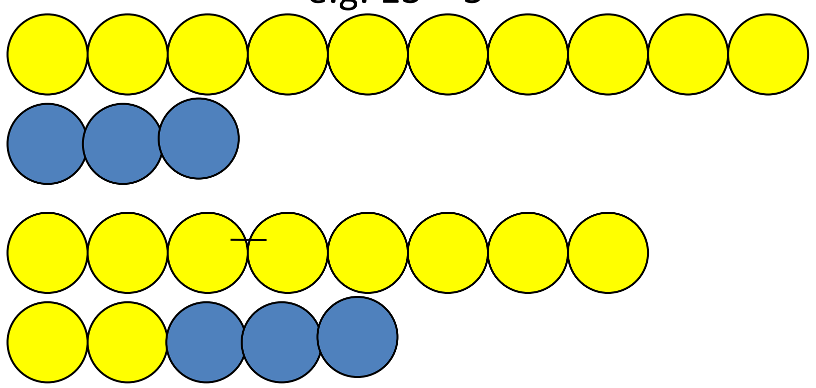
Subtract one-digit and two-digit numbers to 20, including zero.

Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.

Possible representations

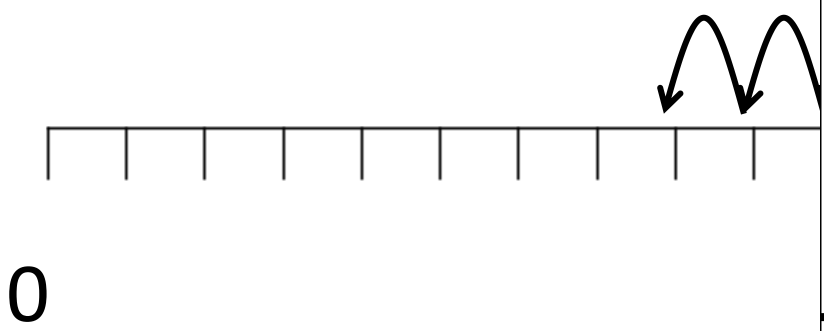
Using concrete objects

e.g. 13 – 5 =

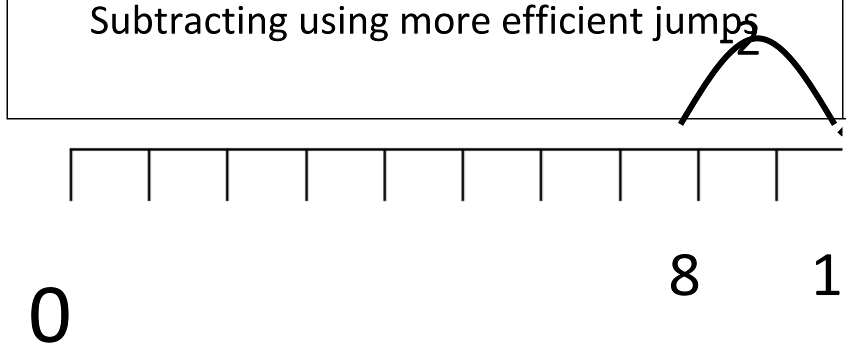


Using pictorial representations

13 – 5 =



Subtracting using more efficient jumps



Year 2

Statutory Guidance

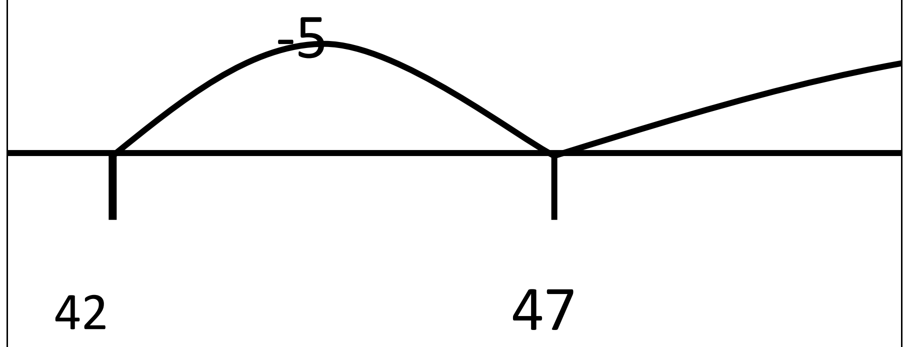
Subtract numbers using concrete objects, pictorial representations, and mentally, including:

- a two-digit number and ones
- a two-digit number and tens
- two two-digit numbers
- adding three one-digit numbers

Possible representations

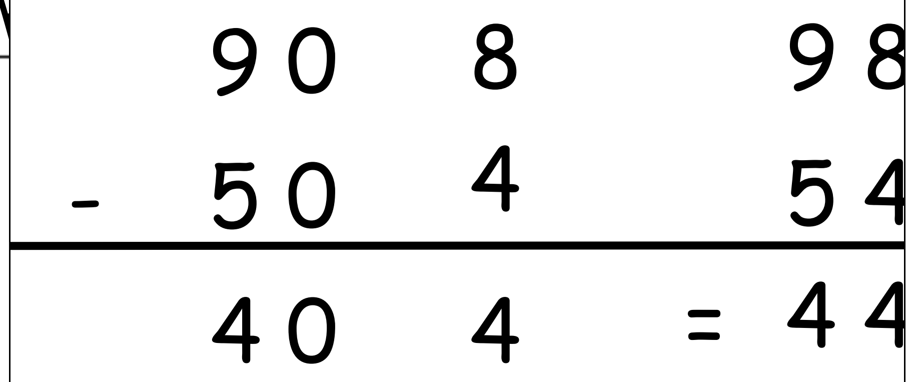
e.g. 67 – 25 =

2 digit subtract 2 digit using efficient place value jumps



Non-statutory guidance

suggests expanded decomposition with no exchanges

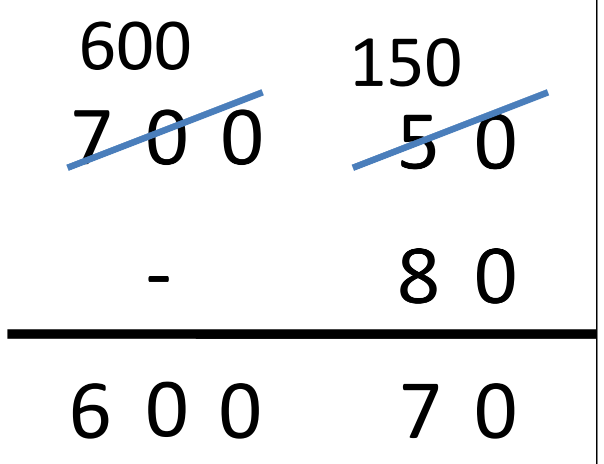


Year 3

Statutory Guidance

Subtract numbers with up to three digits, using formal written methods of columnar subtraction

e.g. 756 – 84 =

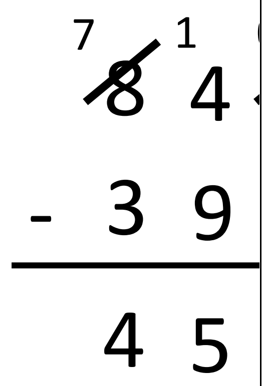


Year

Statutory Guidance

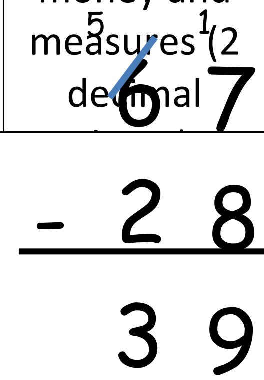
Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate

e.g. 8417 – 3908 =



Non-statutory guidance

Linked to money and measures (2 decimal

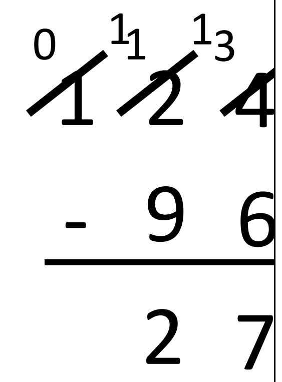


Year

Statutory Guidance

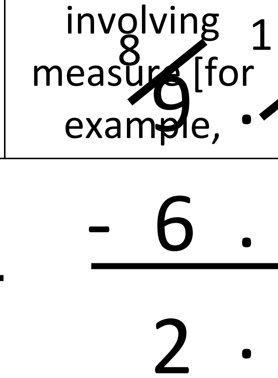
Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)

e.g. 12407 – 9614 =



Measurement

Use all four operations to solve problems involving measure [for example,



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Statutory Guidance

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

Measurement

Solve problems

Year

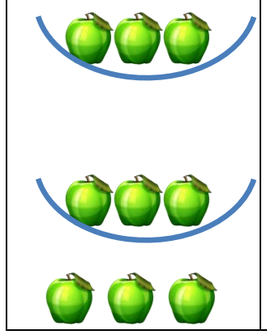
Statutory Guidance

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

Possible representations

e.g. 2 x 3 =

There are two bowls with three apples in each. How many apples are there altogether?

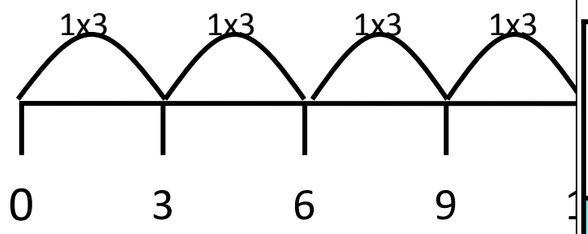


Year 2

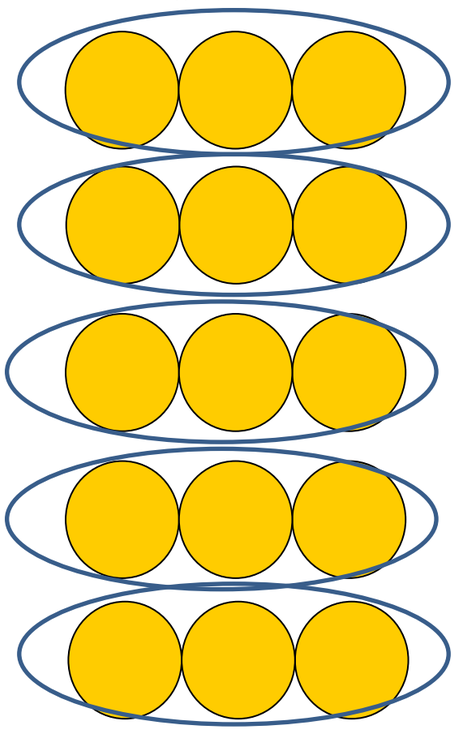
Statutory Guidance Solve problems involving multiplication using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts.

Possible representations

e.g. 5 x 3 =



5 x 3 =



3 x 5 =

Year 3

Statutory Guidance Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.

e.g. 34 x 8 =

x	30	4
8	240	32

Multiplication facts include: 2,3,4,5,8 and 10

Year

Statutory Guidance

Multiply two-digit and three-digit numbers by a one digit number using the formal written layout.

e.g. 347 x 7 =

```
  3 4
x
-----
2 4 2
  3 4
```

Multiplication facts up to 12 x 12

Year

Statutory Guidance

Multiply numbers up to 4 digits by a one – or two-digit number using the formal written method,

e.g. 2741 x 6 =

```
  2 7 4
x
-------
¹ 6 4 4
  4 2
```

including long multiplication for two-digit numbers

```
   2
  2 4
x 1 6
-----
  1 4 4
  2 4 0
-----
  3 8 4
-----
```

Year 6

Statutory Guidance

Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.

e.g. 2741 x 66 =

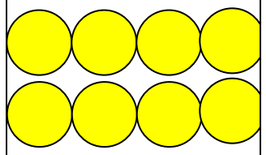
```
    4  2
  2 7 4
x     6
-------
  ¹ 6 4 4
¹ 6 4 4 6
-------
¹ 8 0 9 0
-------
  1   1
```

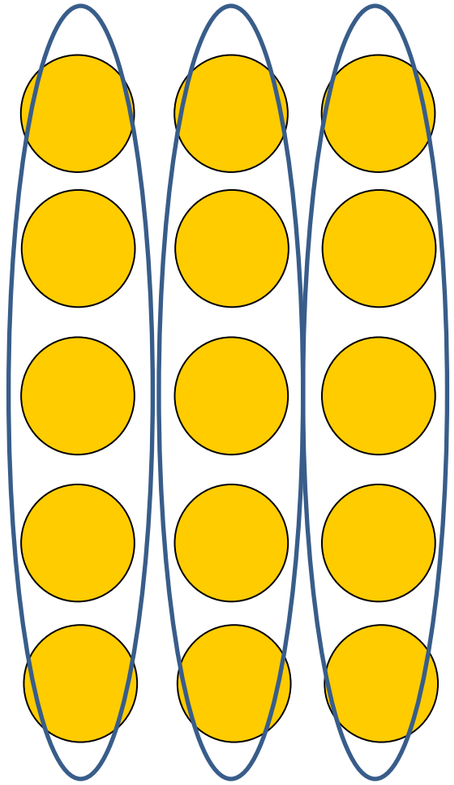
From Fractions section:

Multiply one-digit numbers with up to two decimal places by whole numbers

Non-Statutory guidance

They make connections between arrays, number patterns, and counting in twos, fives and tens.





Multiplication facts include: 2,5 and 10

$$\begin{array}{r} 2.41 \\ \times\ 6 \\ \hline 14.46 \\ \hline 2 \end{array}$$

Year 1	Year 2	Year 3	Year 4	Year 5	Year

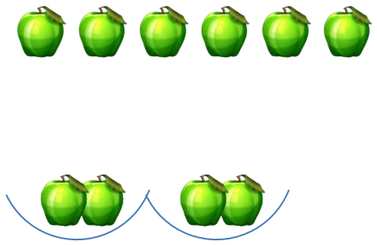
Statutory Guidance

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

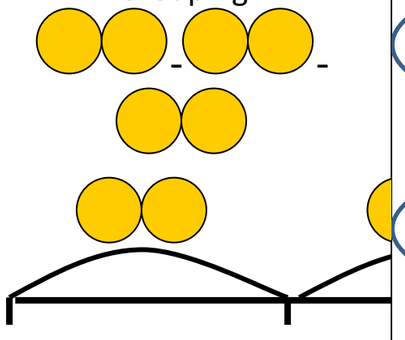
Possible representations

e.g. 6 ÷ 3 =

How many apples are in each bowl if I share 6 apples between three bowls?



Grouping



Non- statutory guidance

They make connections between arrays, number patterns, and counting in twos, fives and tens.

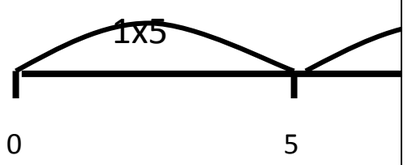
Statutory Guidance

Solve problems involving division, using materials, arrays, repeated addition, mental methods, and division facts, including problems in contexts.

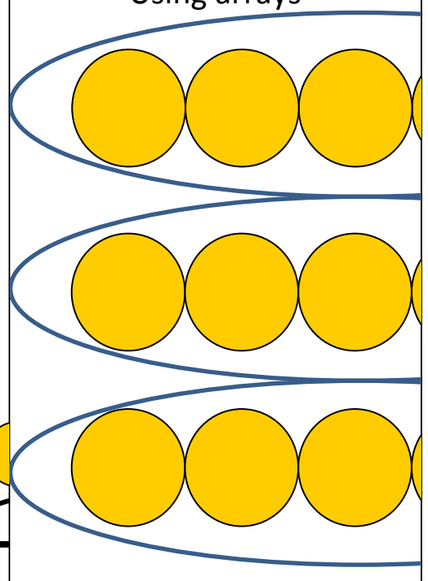
Possible representations

e.g. 15 ÷ 5 =

Counting up on a number line.



Using arrays



Division facts: 2,5 & 10

Non- statutory guidance

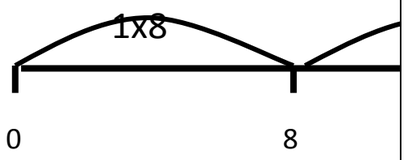
They connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and

Statutory Guidance

Write and calculate mathematical statements for division using the multiplication tables that they know, progressing to formal written methods

e.g. 24 ÷ 8 =

Counting up on a number line.



Division facts include: 2,3,4,5,8 and 10

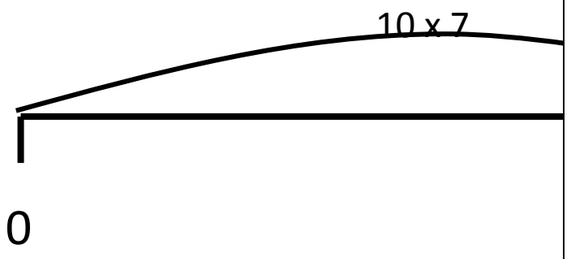
Statutory Guidance

No reference written division calculations.

North Somerset example:

e.g. 98 ÷ 7 =

Counting up on a number line.



Non- statutory guidance

Pupils practise to become fluent in the formal written method of short division with exact answers

$$\begin{array}{r} 1\ 4 \\ 7\overline{)\,9^{2}8} \end{array}$$

Division facts up to 12 x 12

Statutory Guidance

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

Divide whole numbers and those involving decimals by 10, 100 and 1000

e.g. 8369 ÷ 8 =

$$\begin{array}{r} 1\ 0\ 4\ 6 \\ 8\overline{)\,8\ 3\ 6^{4}9} \end{array}$$

Non- statutory guidance

Interpret non integer answers to division by expressing results in different ways

e.g.

$$98 \div 4 = \frac{98}{4} =$$

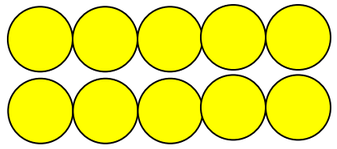
Statutory Guidance

Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.

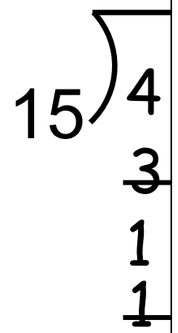
Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.

Long division

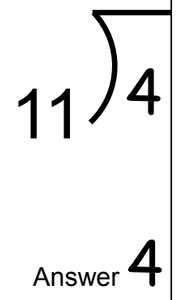
e.g. 432 ÷ 15 =



to measures, finding fractions of lengths, quantities, sets of objects or shapes.



And short division are statutory requiremnts



(With support of the teacher)