Practical/Oral- leading to Mental Strategies

Foundation Stage

Addition and Subtraction

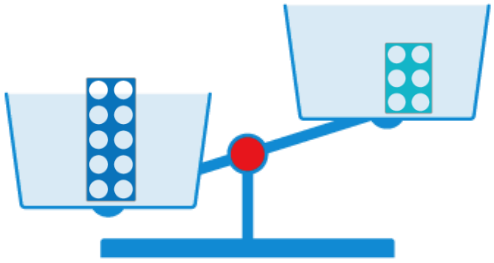
Key Vocabulary

Add, more, altogether, biggest, bigger, most, more, smallest, smaller less, fewer, fewest, value, equal to, equals, before, after, group

The positive 'can do' feeling for children of all abilities will begin here.
Almost every mathematical activity will be practical.

NB When counting ensure counting backwards receives equal attention to counting forwards.

Comparing quantities practically without counting: showing a lot, or a small amount, eventually using the language of comparison (more/less/fewer/bigger/smaller).



Understanding that when something is added, the amount increases and when something is removed, the amount decreases.
Recognising when they have the same number.
Separating a small group of objects in different ways, beginning to recognise that the total is still the same.

Use physical jumping tracks and number stair cases leading to smaller number tracks - summer term number lines to be introduced and used to visualise where numbers are found, to count on and add, counting from 0 to different numbers and counting 1 more, 2 more than a given number. Also counting from different starting points. Beginning at different starting points to count backwards

Physically combining two sets of objects and finding the total by counting all ('altogether').
Physically removing objects from a set (take away).

Number songs and counting songs to introduce mathematical vocabulary- relate addition to combining 2 groups and subtraction to removal.
Activities to develop the understanding of commutativity. (E.g. use of balances and Numicon.)

Activities to develop the understanding that subtraction is not commutative.

Subitising amounts (how many without counting). Showing amounts of objects in regular and irregular patterns and screening. Use of 5 frames –'what did you see?'

Quick recall of one more and one less first to 5 then moving on to 10.

Introduce and learn number bonds up to 5. Relate this to subtraction. (2 and 3 is 5 so 5 take away 3 is 2.)

Introduce and begin to learn number bonds from 6 to 10.

Counting on using screening resources (hiding the first number).
Give children the opportunity to experience why we often start with the largest number for addition.

Counting back using screening resources (hiding the first number).

Introduce number doubles to 10 and practically find equivalence using balances.

Practically find equivalence with more than one number on each side of a balance e.g. 7 and 2 and 6 and 3.

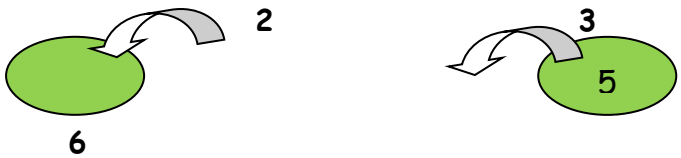
Written Strategies

Foundation Stage

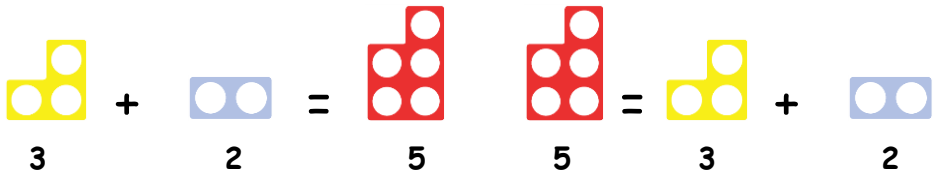
Addition and subtraction

When ready.

Use of scaffolds to record practical problems:



Introduction of simple pictorial number sentences, e.g.



Ensure the understanding of the + and = symbols using practical resources, big arm movements and the relating of the number sentence to stories.

Simple number tracks/lines to 10 with support counting on in 1's.

Record simple number sentences and the reverse e.g. 7+2=9, 9=7+2 supported with practical apparatus to stress the equivalence.
Similarly with subtraction by taking away amounts. Focus on setting up the first number.

Practical/Oral- leading to Mental Strategies

Foundation Stage

Multiplication and division

Key Vocabulary

Groups of, lots of, altogether, double, half

Counting objects in 2s 5s and 10s.
Counting in steps of 2, 5 and 10, forwards and backwards. Use number lines / tracks to support.
Extend beyond to counting in other steps if appropriate, giving children the opportunity to see and talk about patterns.
Activities to develop the concepts of doubling and halving, scaffolds to include butterflies and ladybirds.

Practical activities involving equal sharing and grouping. (Extend beyond sharing by 2 where possible.)
Halving even numbers to 10 and beyond.

Practical activities with Numicon, e.g. how many of shape will cover / balance shape?

Practical/Oral- leading to Mental Strategies
Year 1

Addition and Subtraction

Key Vocabulary

Add, more, altogether, biggest, most, more, smallest, less, least, fewer, fewest, value, equal to, equals, make, take away, leaves, before, after, group, plus, total, count on, count back, minus, subtract, how many more, how many fewer, how many left, how much less is…, worth, digit, tens, ones/units, column, between, partition, exchange, hundreds, how many more/fewer

Throughout, emphasise the link between addition and subtraction.

Mental requirements:

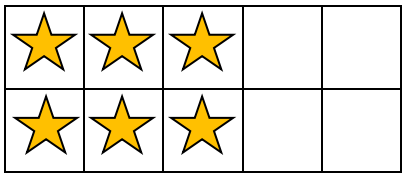
- **Given a number, identify one more and one less**
- **Represent and use number bonds and related subtraction facts within 20.**
- **Add and subtract one-digit and two-digit numbers to 20, including zero.**

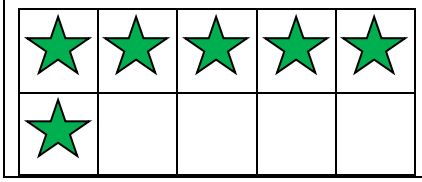
Counting requirements:

- **Count to and across 100, forwards and backwards beginning with 0 or 1 or any given number.**
- **Count in different multiples including ones, twos, fives and tens.**
- **Count on in tens and ones, e.g. 10, 20, 21, 22…**

Children should learn number bonds of numbers between 6 and 10.
Extend to 20.
Ensure children understand and use these facts in subtraction.

Subitising using ten frames (pair-wise and five-wise).





Put the 'biggest' number first in your head and then count on (conserving and screening a number). NB ensure children are given the opportunity to see why this is more efficient by starting at the smaller number also.

Put the 'biggest' number first in your head and then count back (conserving and screening a number).

Use knowledge that addition can be done in any order to do mental calculations more efficiently. 3 + 8= 11 8+3=11

Ensure children understand that (at this stage) subtraction involves taking the smaller number from the bigger.

Use known number bonds to 10 to derive other number bonds e.g. 7+3=10, 17+3=20

Use the relationship between + and – e.g. 7+3=10, 10-3=7 etc.

Use simple near doubles e.g. 5 + 6 = double 5 + 1

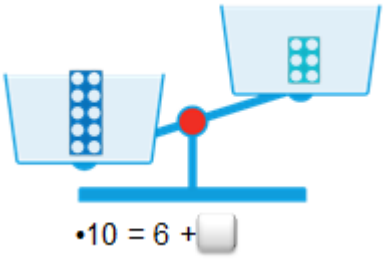
Add/subtract 10 or two multiples of 10.

Add three small numbers by putting the largest first and/or finding a pair totalling 10.

Using known number facts, e.g. add 9 by adding 10 and subtracting 1, subtract 9 by subtracting 10 and adding 1.

Visualising a number line/track to count on using a 1 digit number- for finding a missing number.

Using and applying known number facts to find a missing number:



Developing the idea of equivalence with = as a balance continuing to record number sentences as 7+2=9, 9=7+2 / 5–3=2, 2=5-3.

Extend to recording equivalent number sentences e.g. 5 + 4 = 6 + 3 supported by practical resources such as balances.

Add three or four small numbers by putting the largest number first and/or by finding pairs totalling 9, 10 or 11.

Use the hundred square for counting and playing games. Ensure children work backwards as well as forwards.

When reasonably fluent counters, give the opportunity for children to name objects as they count in order to break the flow, e.g. 1 car, 2 cars, 3 cars, etc.

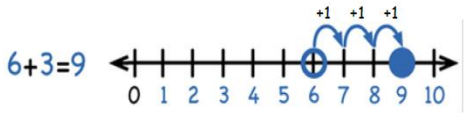
Written Strategies

Year 1

Addition and Subtraction

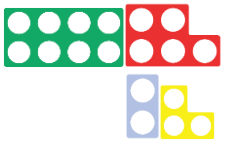
Written requirements - addition

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



Children develop the use of **numbered lines** to support their own calculations using a numbered line to count on in ones.

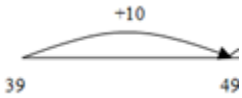
Bridging through 10 with small numbers. Begin with bead strings and Numicon.



8 + 7 = 15

Adding 1 digit numbers to 2 digit numbers, e.g. 12+7.

Use number lines to add on 10.



Record practical problems as number sentences, e.g.

3 + 4 = ? ? = 3 + 4 3 + ? = 7 7 = 3 + ?

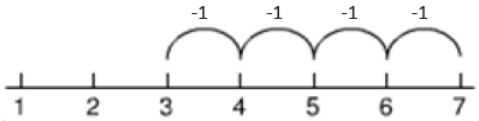
? + 5 = 7 7 = ? + 5

Written requirements - subtraction

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

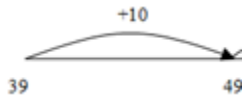
Children develop the use of **numbered lines** to support their own calculations using a numbered line to count back in ones.

7 – 4 = 3



Bridging through 10 with small numbers. Begin with bead strings and Numicon.

Use number lines to subtract 10.



Record practical problems as number sentences, e.g.

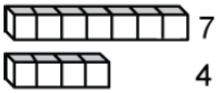
8 - 5 = ? ? = 8 - 5 8 - ? = 3 3 = 8 - ?

? - 5 = 3 3 = ? - 5

Subtracting a 1-digit number from a 2-digit number.

Number line-subtraction counting back, bridging through ten

Beginning to introduce subtraction as difference in the context of 'how many more / fewer'.



'Seven is 3 more than four'

'I am 2 years older than my sister'

Pupils should be finding the most appropriate method to solve the problem.

Also give them opportunity to consider whether a problem is addition or subtraction.

Practical/Oral- leading to Mental Strategies

Year 1

Multiplication and division

Key Vocabulary

Groups of, lots of, altogether, double, half, halve, times, array, multiply, patterns, row, column,

Mental requirements:

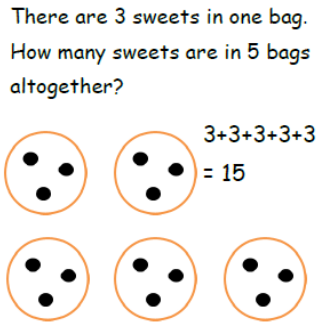
- Use place value and number facts to solve problems
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Counting requirements:

- Count to and across 100, forwards and backwards beginning with 0 or 1 or from any given number
- Count in different multiples including ones, twos, fives and tens.
- Count on and back in tens and ones, e.g. 10, 20, 21, 22.

Give children the opportunity of counting equal groups of objects in 2s, 5s and 10s. Present practical problem solving activities involving counting equal sets or groups as below.

Use number lines with pictures in groups, eg 2 flowers.



Pairing socks, gloves with fingers, printing with hands, etc. and other practical activities to support counting in steps.

Using arrays and Numicon, allow children to discover that 2 X 5 gives the same answer as 5 X 2.

Examine patterns in counting in steps.

Use large number lines with objects in pairs, 5s or 10s to support.

Continue to develop halving skills and relate halving to dividing by 2.
Introduce dividing by four as halving and halving again.

Allow children time to discover odd and even numbers – numbers that can be shared by 2 and that can't (to 10 initially). Use Numicon to support this and extend to 2 digit numbers, e.g. 17 is odd, because although the 10 can be halved, the 7 cannot.

Allow children the opportunity to find out that division cannot be done in any order.

Written Strategies

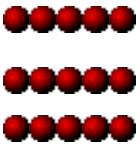
Year 1

Multiplication and division

Written requirements

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

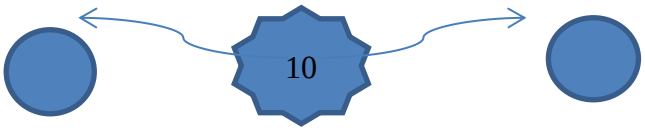
Use pictures and arrays to calculate multiplication as repeated addition related to counting in 2s, 5s and 10s.



5 + 5 + 5

Begin to use big arm signals to show the multiplication and division signs.

Use scaffolds to record number sentences visually initially.



Allow children to experience stories of division which involve sharing and grouping, when ready:

How many teddies if there are 8 legs?

If there are 8 buttons and 2 teddies, how many will each teddy get?

Ensure children solve problems in a variety of contexts at each stage, including measures.

Practical/Oral- leading to Mental Strategies
Year 2

Addition and Subtraction

Key Vocabulary

Add, more, altogether, biggest, most, more, smallest, less, least, fewer, fewest, value, equal to, equals, make, take away, leaves, before, after, plus, total, group, count on, count back, minus, subtract, how many more, how many fewer, how many left, how much less is…, worth, digit, tens, ones/units, column, between, sum, partition, exchange, hundreds, regroup, partition, addition, subtraction, tens boundary, difference, strategy, inverse,

Mental requirements

- Use place value and number facts to solve problems.
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.
- Add and 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
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods.

Counting requirements

- Count in steps of 2, 3 and 5 from 0 and count in tens from any number, forward or backward
- Count in multiples of 3
- Count in fractions up to 10, starting from any number (using $\frac{1}{2}$ and 2/4 equivalence so $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$…)
- Count on or back in tens, then ones from any number, e.g. 34, 44, 54, 64, 65.

Continue to give children the opportunity to name objects as they count, e.g. 1 pencil, 2 pencils, 3 pencils, etc. This will break the flow and prepare them for counting in fractions.

Use known number facts and place value to add or subtract a pair of numbers mentally
within the range 0 to at least 10, then 0 to at least 20.

Begin to bridge through 10, and later 20, when adding or subtracting a single-digit number.
Bridge through 10 or 20.
Bridge through a multiple of 10.

Mental recall of number bonds to 10, 20 and 100

6 + 4 = 10	□ + 3 = 10
20 + 80 = 100	19 + □ = 20

Extending to 25 + 75=100
Use these facts in subtraction: if I know 6 + 4 = 10, then I know 10 – 4 = 6 and 10 – 6 = 4 etc.

Using and applying number facts to solve problems e.g.
□ + □ < 20

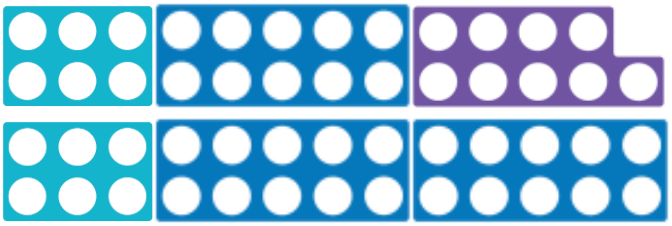
Use near doubles
6 + 7 = double 6 + 1 = 13.

Add three or four small numbers by putting the largest number first and/or by finding pairs totalling 9, 10 or 11. E.g. 7 + 4 + 3 (ensure children can add 10 and a 1-digit number).

Add 3 or 4 small numbers, finding pairs totalling 10, or 9 or 11.

Subtracting 3 numbers, by subtracting one at a time. 17 – 6 - 4

Add/subtract 9 or 11: add/subtract 10 and adjust by 1.
Begin to add/subtract 19 or 21: add/subtract 20 and adjust by 1.
NB Ensure children do this practically so they understand the adjustment.



6 + 19

6 + 20 is 1 too many

Add and subtract mentally a 'near multiple of 10' to or from a two-digit number by adding or subtracting 10, 20, 30 and adjusting.

Add three two-digit multiples of 10, such as 40 + 70 + 50.
Partition into tens and ones, then recombine (e.g. 34 + 53 = 30 + 50 + 4 + 3).

Partition into tens and ones, adding/subtracting the tens first.

Understand the 100 square by combining number tracks to make a square and cutting 100 squares to make tracks. Link adding and subtracting tens on the number line/track to the same on the hundred square.

Counting on or back in repeated steps of 1, 10.
36 + 27 = 63 (by counting on in tens and then in ones) i.e. partitioning the second number: 36, 46, 56, 57, 58, 59, 60, 61, 62, 63
45 – 23 by 45, 35, 25, 24, 23, 22

Add the nearest multiple of 10 adjusting
Using know number facts. Add 9, 11, 19 or 21 by adding 10 and 20 and adjusting
24 + 19 = 24 + 20 – 1 = 43
36 + 21 =36 + 20 + 1 = 57

State the subtraction corresponding to a given addition, and vice versa.

Use the relationship between addition and subtraction

36 + 19 = 55	19 + 36 = 55
55 – 19 = 36	55 – 36 = 19

Extend the understanding of equivalence to number sentences with addition on one side and subtraction on the other e.g. 6 + 2 = 12 - 4 and when appropriate include missing numbers □. 6 + □ =12 - 4.

Find a small difference by counting **back** from the smaller number from the larger, or by counting **up** from the smaller to the larger number (e.g. 42 – 39).

Use patterns of similar calculations, e.g. 4 + 3 to help with 14 + 3.

Round numbers to the nearest 10.

Ensure children have plenty of opportunity to partition numbers in different ways, e.g. 43 as 40 and 3, but also 30 and 14, 20 and 24,etc.

Written Strategies

Addition and Subtraction

Year 2

Throughout, emphasise the link between addition and subtraction.

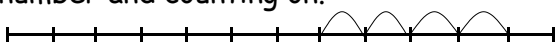
Written requirements:

- Add and 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
- Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods

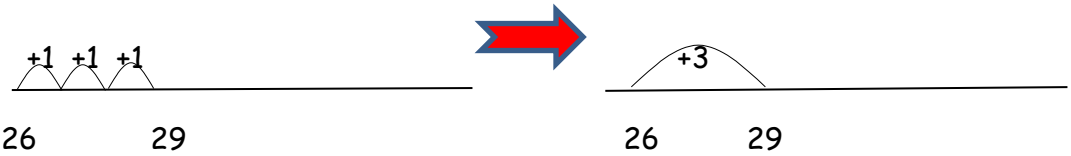
Addition

Number lines

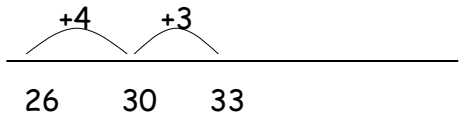
Children will begin to use 'empty number lines' themselves starting with the larger number and counting on.



Adding a 2 digit number and ones: 26 + 3

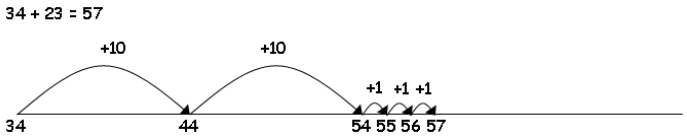


Bridging through ten: 26 + 7

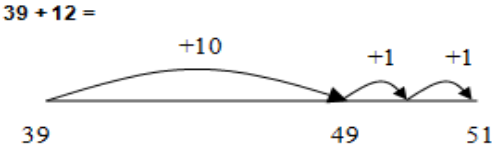


Adding a 2 digit number and tens: 34 + 20

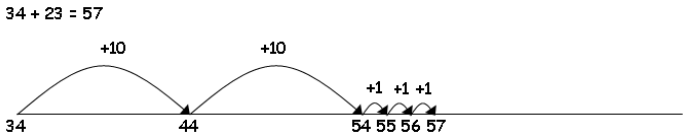
Partitioning the second number only into tens and ones.
First counting on in tens and ones.

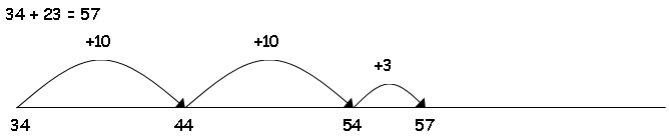


Crossing the tens barrier

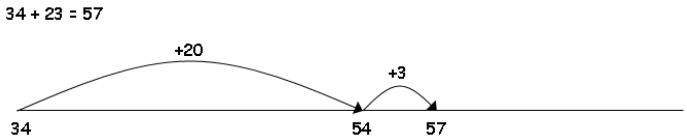


Then helping children to become more efficient by adding the units in one jump (by using known facts e.g. 4 + 3 = 7).





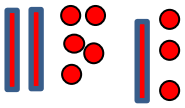
Followed by adding the tens in one jump and the units in one jump.



Partitioning

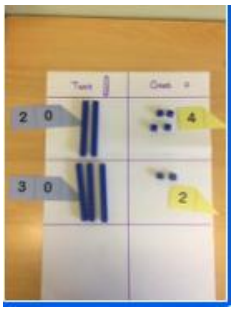
Into tens and units using pictorial representations of the numbers to start with.

2 5 + 1 3 = 38

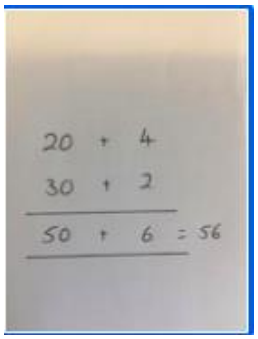


Moving on to partitioning the digits
25 + 13 = 20 + 5 + 10 + 3
= 30 + 8
= 38

The beginnings of vertical addition
The first step would be to go through the process below using 2 digit and 1 digit numbers, initially with no regrouping, then with regrouping.
2 digit + 2 digit (no regrouping)
24 + 32 =
Practical:



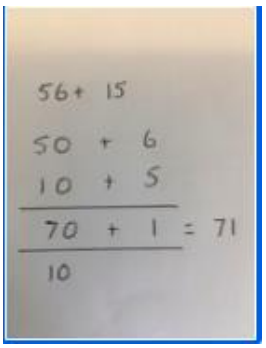
Written:



NB lines should be drawn with a ruler.

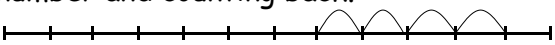
2 digit + 2 digit (with regrouping)
56 + 15 =
Practical

Written:

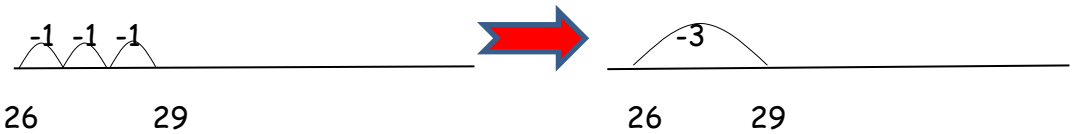


Subtraction

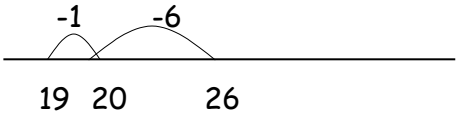
Children will begin to use 'empty number lines' themselves starting with the larger number and counting back.



Subtracting a 2 digit number and ones: 29 - 3



Bridging through ten: 26 - 7

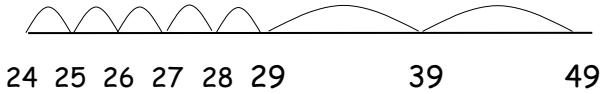


Support these activities with practical apparatus, e.g. cubes, , also Numicon tens number line, in both cases partitioning the number being subtracted. **Ensure children understand such calculations as 26-6, 34-4 first.**

Subtracting a 2 digit number and tens: 54 - 20

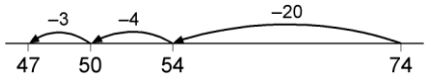
Partitioning the second number only into tens and ones.
First counting back in tens and ones.

49 – 25

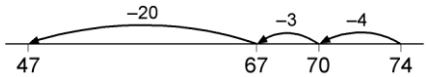


Crossing the tens barrier

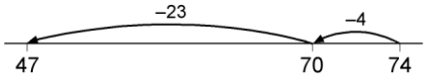
74 – 27 = 47 worked by counting back:



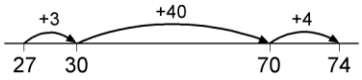
The steps may be recorded in a different order:

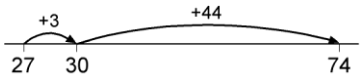


or combined:



<u>Number line - subtraction counting on</u>
Ensure children are given the opportunity to understand why this works, making the connections to jumping back. Ask them to see that the answer is the distance between the numbers.



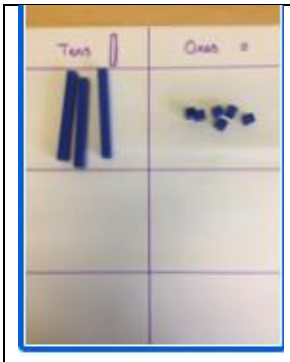


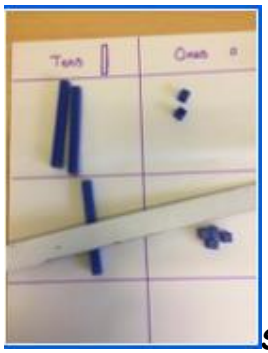
Pupils should be finding the most appropriate method to solve the problem.

Allow children the opportunity to decide whether a problem is addition or subtraction.

The beginnings of vertical subtraction
The first step would be to go through the process below using 2 digit and 1 digit numbers, initially with no regrouping, then with regrouping.

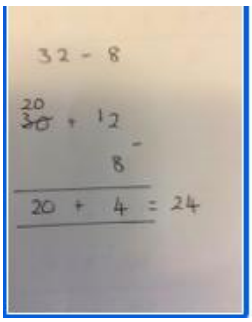
2 digit - 2 digit (no regrouping)
36 – 14 =
Practical:





Something could be used to cross out the amount which has been removed as in the ruler.
Record as below without regrouping.

2 digit – 1 digit (with regrouping)



Practical/Oral- leading to Mental Strategies
Year 2

Multiplication and division

Key Vocabulary

Groups of, lots of, altogether, double, half, halve, times, array, multiply, patterns, column, row, multiplied by, multiplication, repeated addition, …times as big as, once, twice, three times…, commutative

Counting requirements

- Count in steps of 2, 3 and 5 from 0 and count in tens from any number, forward or backward
- Count in multiples of 3
- Count in fractions up to 10, starting from any number (using $\frac{1}{2}$ and 2/4 equivalence so 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 1 $\frac{3}{4}$…)
- Count on or back in tens, then ones from any number, e.g. 34, 44, 54, 64, 65.

Mental requirements

- Use place value and number facts to solve problems
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Use an array to show that multiplication is commutative.

5 + 5 or 2 + 2 + 2 + 2 + 2

2 X 5 or 5 X 2

Develop further the understanding that multiplying by 2 is the same as doubling.

Ensure children know all doubles to double 10.

To multiply by 10, shift the digits one place to the left. This must be done practically using place value apparatus to ensure children know why the digits shift. Ensure that zero is identified as the place holder.

Understanding of place value must be secure before introducing this.

We are NOT adding a zero.

Say or write a division statement corresponding to a given multiplication statement, e.g. 3 X 4 = 12 so 12 ÷ 4 = 3.

Use the relationship between multiplication and division, e.g. use 6 X 2 to calculate 12 ÷ 2.

Use known number facts and place value to carry out mentally simple multiplications and divisions including dividing multiples of 10 by 20.

Children should be recalling multiplication and division facts for 2, 5 and 10 times tables and recognising multiples of these numbers.

Ensure children know halves of all even numbers to 20.

Children should be beginning to calculate division problems by working out how many groups of something in an amount, e.g. 20 ÷ 5 = 4 because there are four fives in 20.

Ensure children solve problems in a variety of contexts at each stage, including measures.

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Written Strategies

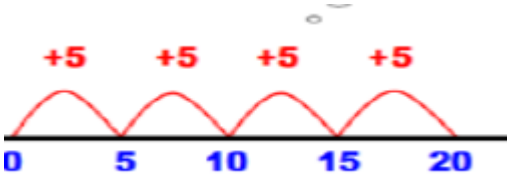
Year 2

Multiplication and division

Written requirements

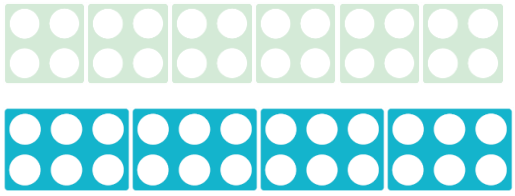
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Repeated addition on a number line.



4 X 5 (4 lots of 5)

With Numicon and number lines, allow children to see commutativity:



6 x 4 = 4 x 6

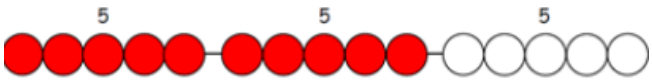
Use arrays to help teach the understanding of the commutative law of multiplication, e.g. 3 X __ = 15

5 x 3 = 15

5 X 3 = 3 + 3 + 3 + 3 + 3

3 X 5 = 5 + 5 + 5

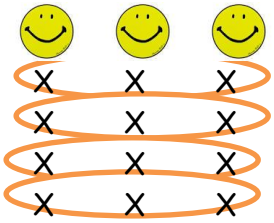
5 x 3 = 5 + 5 + 5



Use bead strings alongside number lines.

Dividing as equal sharing.
Include remainders when appropriate.

Use arrays to begin developing the link between grouping and sharing:



12 ÷ 3 as 12 shared between 3 **and** how many 3s in 12?

Allow children to see this in context, e.g.
12 sweets shared between 3 people, how many each?
12 sweets put into bags of 3 – how many bags?

Allow children the opportunity to decide whether a problem is multiplication or division.

Practical/Oral- leading to Mental Strategies
Year 3

Addition and Subtraction

Key Vocabulary

Add, more, altogether, biggest, most, more, smallest, less, least, fewer, fewest, value, equal to, equals, make, take away, leaves, before, after, plus, total, group, count on, count back, minus, subtract, how many more, how many fewer, how many left, how much less is…, worth, digit, tens, ones/units, column, between, sum, partition, exchange, hundreds, regroup, partition, addition, subtraction, tens boundary, difference, strategy, inverse, decrease, increase

Year 3

Counting requirements:

- Count from 0 in multiples of 4, 8, 50 and 100.
- Count up or down in tenths
- Count in tens and hundreds.

Count on and back in hundreds, tens then ones, e.g. 100, 200, 300, 310, 320, 321, 322, 323.

Mental requirements:

- Compare and order numbers up to 1000
- Add and subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- Estimate the answer to a calculation and use inverse operations to check answers
- Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]
- Compare and order unit fractions, and fractions with the same denominators

Consolidate all strategies from previous years.

Counting on or back in repeated steps of 1, 10, 100, 1000. Also 0.1.

Count on or back from different starting points in steps of 5, 2 and 3.

Add and subtract:

- A three-digit number and ones, e.g. 162 + 7 / 145 + 8, 198 – 5 / 145 - 7
- A three-digit number and tens, e.g. 243 + 20 / 453 + 60 (if ready), 163 – 20 / 423 – 40
- A three-digit number and hundreds, e.g. 463 + 300, 358 - 200

Changing the count, e.g. hundreds, to tens, to ones.

86 + 57 = 143 (by counting on in tens and then in ones)
86 – 53 = 33 (by counting back in tens and then in ones)

460 +300 = 760 (by counting on in hundreds)
350 – 200 = 150 (by counting back in hundreds)

Add 31, 41….by adding 30, 40… and adjusting, similarly with subtraction.

Continue to use the relationship between addition and subtraction and develop this further.

Add several numbers of any size.
Partition into hundreds, tens and ones, adding/subtracting the most significant digits first.

Mentally add and subtract fractions with the same denominator with 1, e.g. 2/5 + 1/5, 6/8 – 3/8

Round numbers to the nearest 10 and 100 and use this to estimate and check answers.

Continue to use counting on as a strategy for subtraction.

Written Strategies

Year 3

Addition and Subtraction

Written requirements

- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Continue to develop Year 2 strategies as appropriate and develop these strategies into 3 digit and 2 digit calculations.

The move into formal written methods MUST be accompanied by practical apparatus (see Place Value development document) ALONGSIDE the written to ensure children have understanding of the written algorithm.

Children will not be ready for bridging ten until they have had much experience of exchange/regrouping – ones for tens and tens for ones and later tens for hundreds and hundreds for tens.

Ensure problems are also presented in the context of measures

NB All these methods should be demonstrated using practical apparatus, e.g. straws, Numicon, Dienes and the children should be 'hands on'.

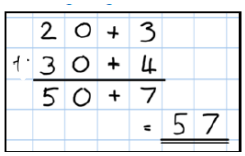
Addition

Partitioned numbers are written under one another:

Step 1 – expanded method

23 + 34

23
34 +
___



Step 2 – compact method, no regrouping

2 3
3 4 +
5 7

NB Start with the units!
3 digit and 2 digits

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

Step 3 – expanded method without, then with, regrouping
two 2 digits with regrouping / exchange

```
  47  =  40 + 7
 +76     70 + 6
 ----   -------
        110 +13  = 123
```

Step 4 - expanded method
with regrouping

```
3 6
2 9 +
-----
1 5
5 0 +
-----
6 5
```

Step 5 – compact method with regrouping

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

Step 6
Extend to using hundreds as appropriate.

Subtraction

Continue to work on difference using a number line (see Y2).
Ensure children have had plenty of experience of regrouping and partitioning in different ways.

Step 1
No exchange.
98 – 24

```
90   8 -
20   4
-------
70 + 4  = 74
-------
```

Step 2
With exchange
92 - 38

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

72 - 47

```
60
 ~~70~~ + 12
 - 40 + 7
 ---------
   20 + 5
```

Step 3

Compact method without exchange

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

NB Using Place Value grids and practical resources.

Step 4

Compact method with exchange

```
  7 13 -
  2  6
-------
  4  7
-------
```

Step 5

Moving to using hundreds

```
7 4 3 -          2
1 2  1          7 3 11 -
-------         1 2  6
6 2 2           -------
-------          6 0  5
                -------

                4
                5 16 3 -
                2  9 1
                -------
                  2 7 2
                -------
```

Ensure problems are presented in terms of difference also.

Pupils should be finding the most appropriate method to solve the problem.

Ensure children have plenty of opportunity to partition numbers in different ways, e.g. 43 as 40 and 3, but also 30 and 14, 20 and 24,etc.

Allow children the opportunity to decide whether a problem is addition or subtraction.

Practical/Oral- leading to Mental Strategies
Year 3

Multiplication and Division

Key Vocabulary

Groups of, lots of, altogether, double, half, halve, times, array, multiply, patterns, column, row, multiplied by, multiplication, repeated addition, …times as big as, once, twice, three times…, commutative, partition, multiple, grid method, product

Counting Requirements

- Count from 0 in multiples of 4, 8, 50 and 100.
- Count up or down in tenths
- Count in tens and hundreds.
- Count on and back in hundreds, tens then ones, e.g. 100, 200, 300, 310, 320, 321, 322, 323.

Mental Requirements

- Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

To multiply by 10/100, shift the digits one/two places to the left – **ensure understanding**. NB Place holders.

Use doubling or halving, starting from known facts (e.g. 8 x 4 is double 4 x 4).

Use doubling or halving, starting from known facts. For example:

- double/halve two-digit numbers by doubling/halving the tens first;
- to multiply by 4, double, then double again;
- to multiply by 5, multiply by 10 then halve;
- to multiply by 20, multiply by 10 then double;
- find the 8 times-table facts by doubling the 4 times-table;
- find quarters by halving halves.

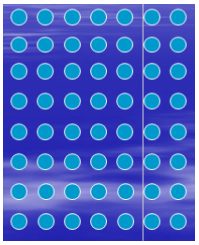
Multiply multiples of 10 by a 1-digit number, using their multiplication table knowledge, e.g. 4 X 20, 3 X 40, 6 X 30, etc.

Use doubling or halving, starting from known facts. Double/halve any two-digit number by doubling/halving the tens first. Allow children to see this with practical apparatus:

Double 23 (2 x 23):

Double 20 (2 x 20)
Double 3 (2 x 3)

Give children chance to partition arrays to develop understanding of the distributive law, e.g. 8 X 7 as



8 X 5 and 8 X 2

Develop understanding of the one-to-many principle of multiplication, e.g.

Also through problems such as 'Bags of sweets cost 23p each, how much would 3 cost?'

Through practical examples, develop understanding of the inverse of multiplication and division to solve missing number problems, e.g. ? x 4 = 12 2 x ? = 18 ? ÷ 5 = 4 and be aware of the exception: 14 ÷ ? = 7
Develop strategies for questions such as ? x ? = 32 or ? ÷ ? = 4

Develop division strategies through grouping, e.g. 24 ÷3 as 'how many 3s in 24?'

Develop the understanding of patterns, e.g. multiples of 2, 4, 6, 8 are even; if a number can be halved twice it is divisible by 4, etc.

Develop the understanding of dividing numbers by 10 and 100, where the answers are whole numbers.

Written Strategies

Year 3

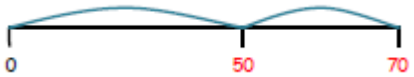
Multiplication and Division

Written requirements

- Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Consolidate the use of jumps on a number line and arrays (Y2).

Extend to multiplying a 2-digit number by a 1-digit number, e.g. 14 X 5 (10 X 5 and 4 X 5)



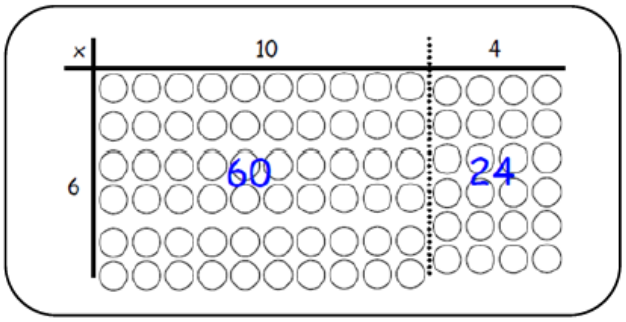
Introduce the grid method for multiplying 2-digit numbers by single digits, linking the layout to an array initially:

Eg. 23 x 8 = 184

X	20	3
8	160	24

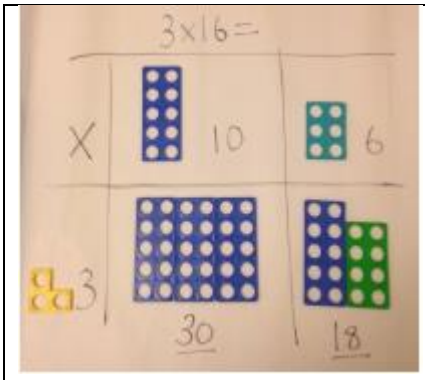
160 + 24 = 184

Link the layout of the grid to an array initially:



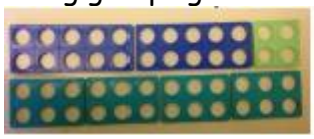
6 X 14

NB Begin 2-digit numbers with numbers with only one ten, e.g 15, 18.
Support the understanding of this with Numicon or Dienes apparatus:



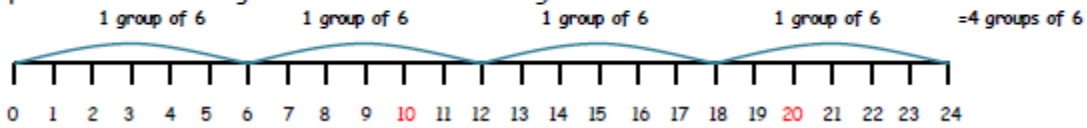
Move to 2-digit numbers with more than one ten as appropriate, e.g. 5 X 32

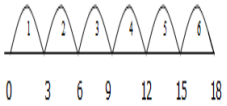
Using grouping on a number line for division, e.g. 18 ÷ 3. Link this to arrays:



24 divided into groups (chunks) of 6
There are 4 groups of 6 in 24

Repeated addition using a numbered **numberline** *e.g. 24 ÷6 = 4*





Counting up.

Extend to remainders.

Develop the understanding that if 21 ÷ 3 = 7 then 210 ÷ 3 = 70, etc.

Develop a strong understanding of the relationship between multiplication and division.

Practical/Oral- leading to Mental Strategies
Year 4

Addition and Subtraction

Key Vocabulary

Add, more, altogether, biggest, most, more, smallest, less, least, fewer, fewest, value, equal to, equals, make, take away, leaves, before, after, plus, total, group, count on, count back, minus, subtract, how many more, how many fewer, how many left, how much less is…, worth, digit, tens, ones/units, column, between, sum, partition, exchange, hundreds, regroup, partition, addition, subtraction, tens boundary, difference, strategy, inverse, decrease, increase, decimal point, tenths, hundredths

Counting requirements

- Count in multiples of 6, 7, 9, 25 and 1000.
- Count backwards through 0 to include negative numbers.
- Count up and down in hundredths
- Count on or back from any given number in hundreds, tens, then ones, e.g. 423, 323, 223, 213, 203, 202, 201.

Mental requirements

- Find 1000 more or less than a given number
- Order and compare numbers beyond 1000
- Round any number to the nearest 10, 100 or 1000
- Estimate and use inverse operations to check answers to a calculation
- Add and subtract fractions with the same denominator
- Round decimals with one decimal place to the nearest whole number
- Compare numbers with the same number of decimal places up to two decimal places

Continue with counting as for previous year groups.
Count on and back from different starting points in steps of 4.

Use number lines to aid counting with negative numbers.

Consolidate all strategies from previous year, including:

- use the relationship between addition and subtraction
- add several numbers (e.g. our or five single digits, or multiples of 10 such as 40 + 50 + 80).

Add several numbers of any size.

Partition into H, T and ones, adding the most significant digits first.

Find a small difference by counting up (e.g. 5003 – 4996).

Consolidate and develop mental strategies such as:

- partitioning numbers in different ways to aid calculation
- searching for doubles and near-doubles
- adding/subtracting the nearest multiple of 10, 100 and adjusting
- bridging through multiples of 10, 100, etc.

NB Ensure children have plenty of opportunity to consider whether a mental or written strategy is the most efficient.

Written Strategies

Year 4

Addition and Subtraction

Written requirements

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
- Solve simple measure and money problems involving fractions and decimals to two decimal places.

Ensure problems are also presented in the context of measures

Addition

Columnar methods with 2, 3 and 4 digits, e.g.

658 + 165 as:

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

Include numbers with different numbers of digits, e.g. 4,263 + 385.

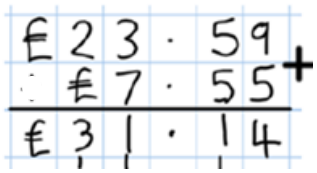
Children should be given the opportunity to set out the calculations themselves.

Subtraction

Columnar methods with 2, 3 and 4 digits, e.g.

```
 5 13                      9
~~6~~ 4 13 -              ~~4~~5 ~~1~~0 13 -
1 9  4                     1  4  7
-------                   -------
4 4 9                     3  5  6
-------                   -------
```

Extend to 4 digits.



Include decimals to 2 decimal places in the context of money and/or measures.

The decimal point should be aligned in the same way as the other place value columns, and must be in the same column as the answer.

Pupils should be finding the most appropriate method to solve the problem.

Practical/Oral- leading to Mental Strategies

Year 4

Multiplication and Division

Key Vocabulary

Groups of, lots of, altogether, double, half, halve, times, array, multiply, patterns, column, row, multiplied by, multiplication, repeated addition, …times as big as, once, twice, three times…, commutative, partition, multiple, grid method, product, inverse, factor, factor pairs

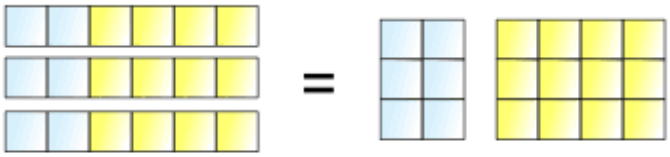
Counting Requirements

- Count in multiples of 6, 7, 9, 25 and 1000.
- Count backwards through 0 to include negative numbers.
- Count up and down in hundredths
- Count on or back from any given number in hundreds, tens, then ones, e.g. 423, 323, 223, 213, 203, 202, 201.

Mental Requirements

- Recall multiplication and division facts for multiplication tables up to 12 x 12
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- Recognise and use factor pairs and commutativity in mental calculations
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- Solve simple measure and money problems involving fractions and decimals to two decimal places.

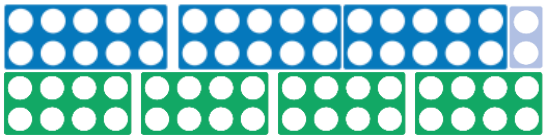
Understand and use the principles (but not the names) of the commutative, associative and distributive laws of multiplication:
Commutative: 8 X 14 = 14 X 8
Associative: 6 X 15 = 6 X (5 X 3) = (6 X 5) X 3 = 30 X 3 = 90
Distributive: i.e. that multiplying a number by a group of numbers added together is the same as doing each multiplication separately, e.g.
3 x (2 + 4) = (3 x 2) + (3 x 4)



3 x (2+4) = 3x2 + 3x4

Practical activities to show the effect of dividing 2-digit numbers by 10 and 100, moving places to the left, including decimals to two places.

Develop an understanding of 'factors' and how these can be used in pairs to help solve calculations. Use Numicon and Cuisenaire Rods to support the understanding of this.



(placed on top without the gaps)

Use doubling or halving, starting from known facts:

- double/halve any two-digit number by doubling/halving the tens first.
- double one number and halve the other.
- multiply by 25, multiply by 100 then divide by 4
- find the x16 table facts by doubling the x8 table;
- find sixths by halving thirds.

Approximate answers, e.g. 346 x 9 is approximately 350 x 10. Use this to check written calculations.

Multiply multiples of ten and one hundred by a single-digit, using their multiplication table knowledge.

Continue to develop the understanding of dividing by grouping, using multiplication knowledge.
Divide multiples of ten and one hundred by a single-digit, using their multiplication table knowledge. E.g. 280 ÷ 7 = 40 because 28 tens divided by 7 is 4 tens.

Written Strategies

Year 4

Multiplication and Division

Written requirements

- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- Solve simple measure and money problems involving fractions and decimals to two decimal places.

Develop the grid method to multiply a 3-digit number by a 1-digit number,

Eg. 136 x 5 = 680

X	100	30	6
5	500	150	30

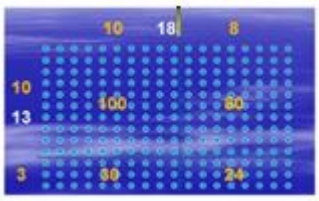
500
150
+ 30
680

Encourage column addition to add accurately.

Grid method for 2-digit x 2-digit
18 x 23

X	10	8
20	200	160
3	30	24

360
54 +



Arrays can be used to visualise the partitioning and link with the grid.

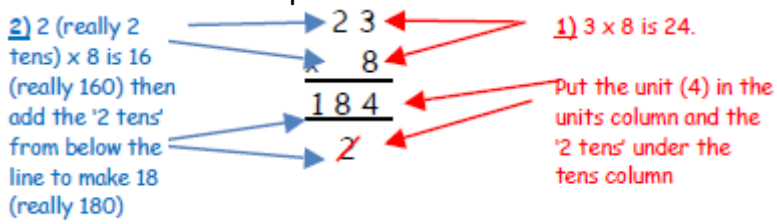
Examine links between the grid method and the compact written method using practical apparatus

Move to the formal written method for multiplying a 2 digit number by a 1-digit number. Ensure the conceptual understanding of multiplying by multiples of 10, e.g. 3 x 20.

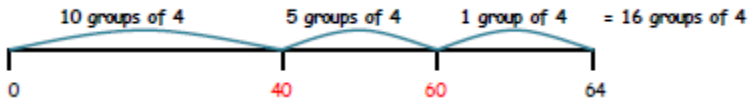
```
 1 7x
   3
 2 1
 3 0
 5 1
```

Use the expanded method initially:

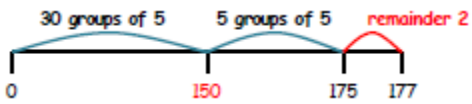
Then move to the compact:



Divide larger numbers by grouping and chunking on a number line:
64 ÷ 4

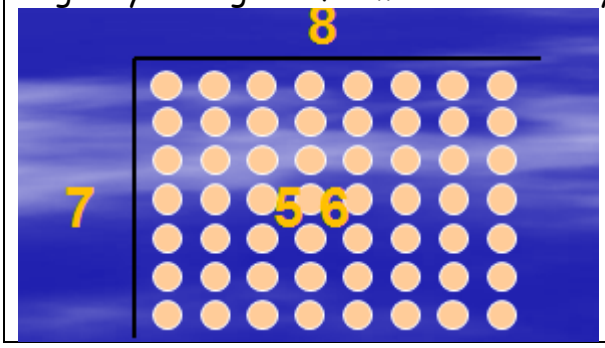


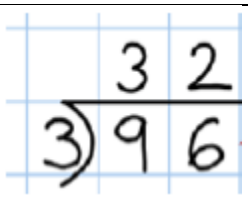
Chunking on a number line using 3-digit numbers divided by a single digit number with remainders. 177 ÷ 5:



If appropriate, begin to look at the 'bus stop' method of division using practical apparatus.

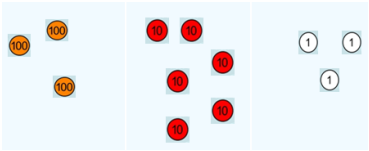
Begin by linking the format to the array:





Initially no regrouping. 'How many groups of 3 tens can you make from the 9 tens?' Similarly with the units.

Similarly with hundreds:



Practical/Oral- leading to Mental Strategies
Year 5

Addition and Subtraction

Key Vocabulary

Add, more, altogether, biggest, most, more, smallest, less, least, fewer, fewest, value, equal to, equals, make, take away, leaves, before, after, plus, total, group, count on, count back, minus, subtract, how many more, how many fewer, how many left, how much less is…, worth, digit, tens, ones/units, column, between, sum, partition, exchange, hundreds, regroup, partition, addition, subtraction, tens boundary, difference, strategy, inverse, decrease, increase, decimal point, tenths, hundredths, factors, product, multiple, thousandths, negative, positive, ascending, descending order, greater than or equal to, less than or equal to, is approximately equal to

Counting Requirements

- Count in multiples of 6, 7, 9, 25 and 1000.
- Count backwards through 0 to include negative numbers.
- Count up and down in hundredths
- Count on or back from any given number in hundreds, tens, then ones, e.g. 423, 323, 223, 213, 203, 202, 201.

Mental Requirements

- Find 1000 more or less than a given number
- Order and compare numbers beyond 1000
- Round any number to the nearest 10, 100 or 1000
- Estimate and use inverse operations to check answers to a calculation
- Add and subtract fractions with the same denominator
- Round decimals with one decimal place to the nearest whole number
- Compare numbers with the same number of decimal places up to two decimal places

Continue with counting as for previous year groups.
Consolidate and develop mental strategies such as:

- partitioning numbers in different ways to aid calculation
- searching for doubles and near-doubles, including decimals, e.g. 1.5 + 1.6
- adding/subtracting the nearest multiple of 10, 100, 1000 and adjusting

NB Ensure children have plenty of opportunity to consider whether a mental or written strategy is the most efficient.

Continue to use practical apparatus to ensure that children understand mental strategies and have a model for visualisation.

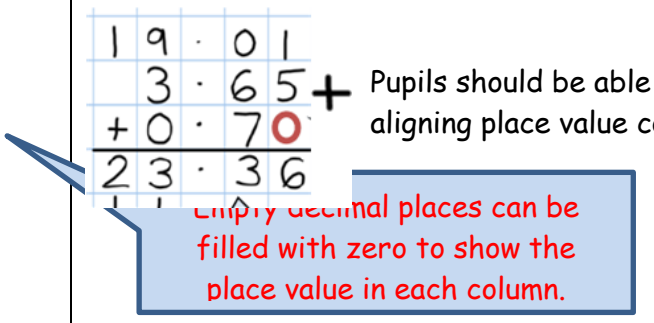
Written Strategies

Year 5

Addition and Subtraction

Written requirements

- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- Solve problems involving number up to three decimal places



Pupils should be able to add more than two values, carefully aligning place value columns.

Addition and subtraction including negative numbers on a number line.

4 – 5:

Pupils should be finding the most appropriate method to solve the problem. Problems should be in the a variety of contexts, including measures. Problems should be multi-step and using a variety of different types of calculations.

Practical/Oral- leading to Mental Strategies
Year 5

Multiplication and Division

Key Vocabulary

Groups of, lots of, altogether, double, half, halve, times, array, multiply, patterns, column, row, multiplied by, multiplication, repeated addition, …times as big as, once, twice, three times…, commutative, partition, multiple, grid method, product, inverse, factor, prime, square, cube, factor, integer

Counting Requirements

- Count forwards and backwards in steps of powers of 10 for any given number up to 1000000.
- Count backwards through 0 to include negative numbers, decimals and fractions.

Mental Requirements

- Establish whether a number up to 100 is prime and recall prime numbers up to 19
- Multiply and divide numbers mentally drawing upon known facts
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]

Consolidate and expand the multiplication and division of numbers by multiples of ten.

Identify and discuss different ways of working out the same calculation and the merits of these. They use and discuss mental strategies for special cases of harder types of calculations, for example to work out 35 × 11, 72 ÷ 3, 50 × 900.

Use factors to work out a calculation such as 16 × 6 by thinking of it as 16 × 2 × 3.

Record their methods using diagrams (such as number lines) or jottings and explain their methods to each other.

Use knowledge of the times tables to calculate factors.
Recognise and use square, cube and prime numbers.

Written Strategies

Year 5

Multiplication and Division

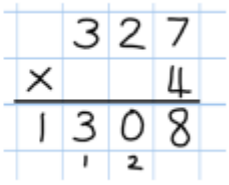
Written requirements

- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- 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
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
- Solve problems involving number up to three decimal places

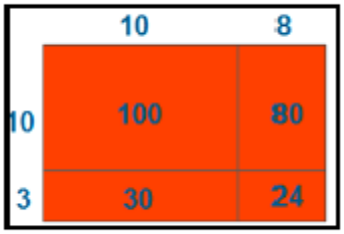
Continue to link the grid method to the column method: comparing and contrasting with larger numbers. Begin by multiplying by 1-digit numbers with the expanded method:

```
 327 x
   4
  28
  80
1200
```

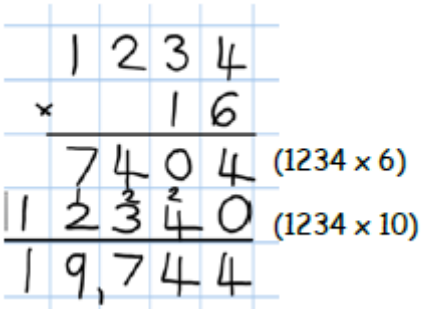
x	300	20	7
4	1200	80	28



Introduce long multiplication for multiplying by 2 digits.



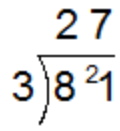
Moving towards more complex numbers:



Begin with numbers with 1 in the tens column. The move to more than 1 is more complex. Children must understand the link between 20 x 8 (for example) and the fact that the 0 is not needed because they are working in the tens column already.

Initially short division using the 'bus stop' where an amount has to be regrouped, e.g.

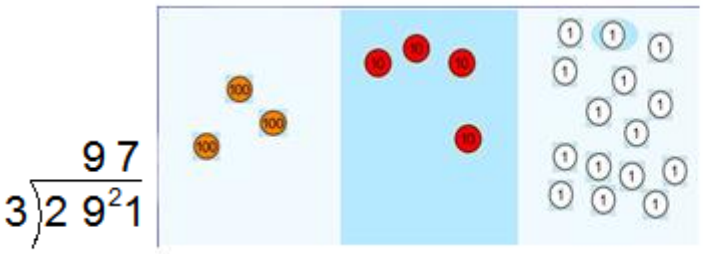
81÷3 =

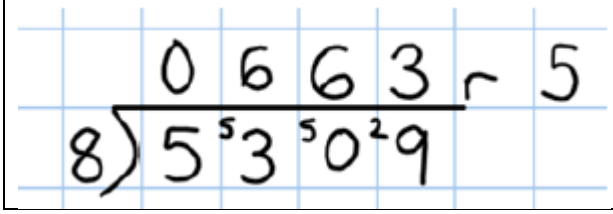


moving to 3-digit numbers and remainders.

Ensure the use of practical apparatus alongside the recording to develop conceptual understanding.

Include decimals through measures and money when appropriate.





The answer to 5309 ÷ 8 could be expressed as 663 and five eighths, 663 r 5, as a decimal, or rounded as appropriate to the problem involved.

NB Ensure children have plenty of opportunity to round up and down with remainders in context, e.g. 'There are 58 children who need to go to the leisure centre. 8 can fit in a mini-bus at a time. How many trips does the mimi-bus need to take?' and '29 eggs have been laid today. How many full boxes of 6 can the farmer pack?'

Practical/Oral- leading to Mental Strategies

Year 6

Addition and Subtraction

Key Vocabulary

Add, more, altogether, biggest, most, more, smallest, less, least, fewer, fewest, value, equal to, equals, make, take away, leaves, before, after, plus, total, group, count on, count back, minus, subtract, how many more, how many fewer, how many left, how much less is…, worth, digit, tens, ones/units, column, between, sum, partition, exchange, hundreds, regroup, partition, addition, subtraction, tens boundary, difference, strategy, inverse, decrease, increase, decimal point, tenths, hundredths, thousandths, negative, positive, ascending, descending order, greater than or equal to, less than or equal to, is approximately equal to

Counting requirements

- Continue to develop counting in context where possible, 250g, 500g, 750g, 1kg.
- Ensure children continue to count daily from different starting points, in varying steps, forwards and backwards. Include fractions, decimals and percentages.

Mental requirements

- Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
- Round any whole number to a required degree of accuracy
- Use negative numbers in context, and calculate intervals across zero
- Perform mental calculations, including with mixed operations and large numbers
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Compare and order fractions, including fractions > 1

Continue with counting as for previous year groups.
Continue to use practical apparatus to ensure that children understand mental strategies and have a model for visualisation.
Use known number facts and place value for mental addition and subtraction (e.g. 470 + 380, 810 – 380, 7.4 + 9.8, 9.2 – 8.6).
NB Ensure children have plenty of opportunity to consider whether a mental or written strategy is the most efficient. Problems should include a variety of different operations.

Written Strategies

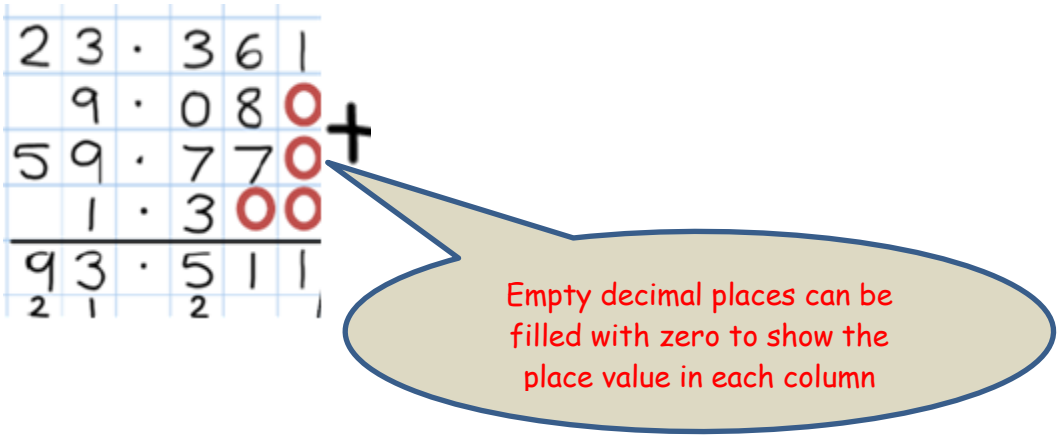
Year 6

Addition and Subtraction

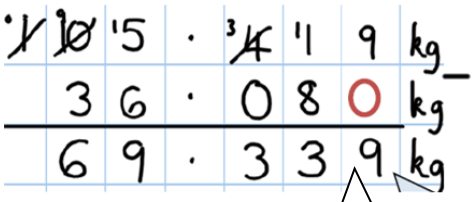
Written requirements

- Use negative numbers in context, and calculate intervals across zero
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Solve problems involving addition, subtraction, multiplication and division
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

Standard written methods including decomposition and regrouping, incorporating decimal numbers with different numbers of decimal places.



Adding several numbers with different numbers of decimal places (including money and measures). Tenths, hundredths and thousandths should be correctly aligned with the decimal point lined up vertically including in the answer row.



Using the compact method to subtract more complex integers.

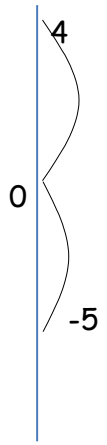
Include measures with different numbers of decimal places.

Empty decimal places can be filled with zero to show the place value in each column.

Using the compact method to subtract money and measures, including decimals with different numbers of decimal places.

Pupils should be able to apply their knowledge of a range of mental strategies, mental recall skills and informal and formal written strategies **when selecting the most appropriate method** to solve addition and subtraction problems.

4 – (-5) as difference on a number line:



Practical/Oral- leading to Mental Strategies

Year 6

Multiplication and Division

Key Vocabulary

Groups of, lots of, altogether, double, half, halve, times, array, multiply, patterns, column, row, multiplied by, multiplication, repeated addition, …times as big as, once, twice, three times…, commutative, partition, multiple, grid method, product, inverse, factor, prime, square, cube, factor, integer

Counting requirements:

- Continue to develop counting in context where possible, 250g, 500g, 750g, 1kg.
- Count in various steps, forwards and backwards, including fractions and decimals.

Mental requirements:

- Perform mental calculations, including with mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Solve problems involving addition, subtraction, multiplication and division
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
- Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- Divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Solve problems involving similar shapes where the scale factor is known or can be found
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Multiplying and dividing larger numbers using mental strategies and estimation, e.g. rounding, using multiples of ten, doubling, halving, etc.

Identify common factors, common multiples and prime numbers.

Children need to be familiar with all their times tables to 10x10 and at least be able to calculate to 12x12.

They should use their known times tables to help them calculate unknown facts in division and multiplication

Written Strategies

Year 6

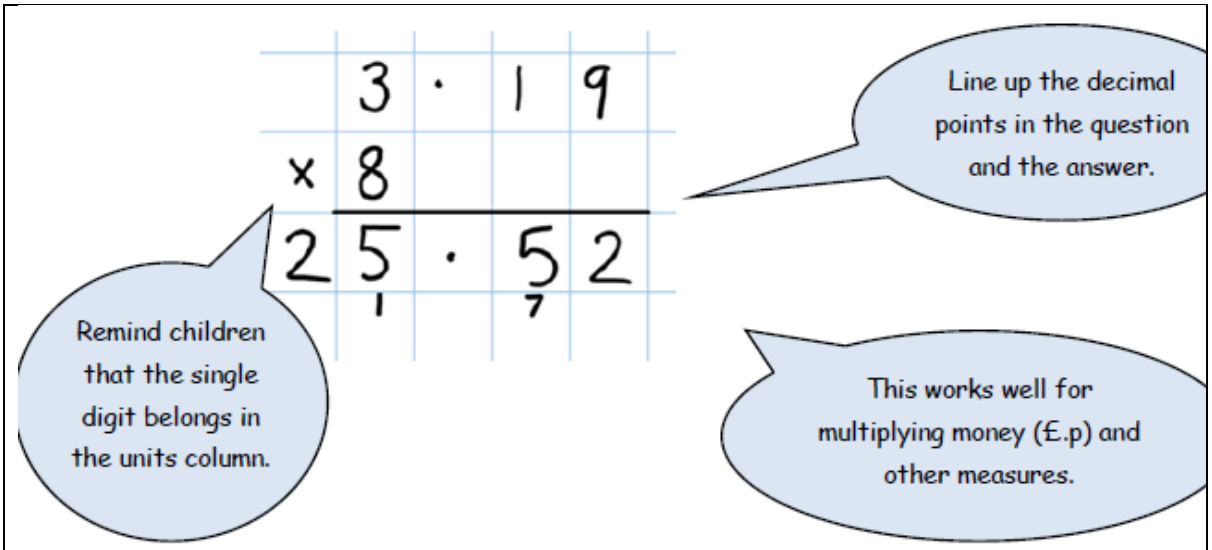
Multiplication and Division

Written requirements:

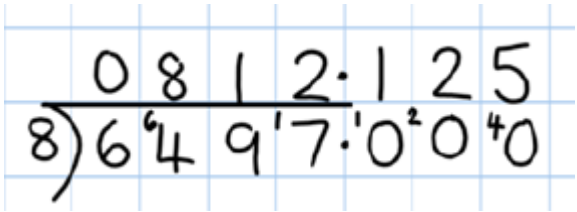
- Use negative numbers in context, and calculate intervals across zero
- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, 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
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Solve problems involving addition, subtraction, multiplication and division
- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]
- Multiply one-digit numbers with up to two decimal places by whole numbers
- Use written division methods in cases where the answer has up to two decimal places
- Solve problems which require answers to be rounded to specified degrees of accuracy
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
- Solve problems involving similar shapes where the scale factor is known or can be found
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Use long multiplication to multiply at least 4-digit numbers by 2-digit numbers (see Y5).

Extend to decimals:



Short division when dividing by a single digit:



Children should understand how to represent remainders as decimals, fractions, whole number remainders or rounded numbers. Use real-life problems where children can understanding the most appropriate way of representing the remainder.

Introduce long division with whole numbers intially then moving into decimals:

How many groups of 13 are in 4? None. Write a '0' above the 4.
How many Groups of 13 are in 46? 3. Write a '3' above the '6'

```
        0 3
13 ) 4 6 2.0 0
```

What is 3 x 13? 39. Write this '3'9 underneath the '46' and subtract it. Write the answer '7' underneath the '9'

```
            0 3
        13 ) 4 6 2.0 0
(3 x13=39)  - 3 9
              7
```

Bring down the '2' and write it next to the '7'

```
              0 3
           13)4 6 2.0 0
(3 x13=39)  - 3 9
              7 2
```

How many groups of 13 are there in 72? 5. Write the '5' above '2' on the answer line

```
              0 3 5
           13)4 6 2.0 0
3 x13=39)   - 3 9
              7 2
```

What is 5 x 13? 65. Write '65' below the '72' and subtract it.

Write the answer '7' underneath the '5'.

```
              0 3 5
           13)4 6 2.0 0
(3 x13=39)  - 3 9
              7 2
(5x13 = 65)   - 6 5
                7
```

Put the decimal point into the answer line.

Bring down the '0' and write it next to the '7'

```
              0 3 5.
           13)4 6 2.0 0
(3 x13=39)  - 3 9
              7 2
(5x13 = 65)   - 6 5
                7 0
```

How many groups of 13 are in 70? 5. Write the '5' on the answer line above the '0'

```
              0 3 5. 5
           13)4 6 2.0 0
(3 x13=39)  - 3 9
              7 2
(5x13 = 65)   - 6 5
                7 0
```

Encourage children to list multiples of the divisor alongside, e.g.

13
26
39
52
65