St George's

Church of England Primary School

Maths Policy

Vocabulary

Ensure the correct vocabulary is used at all stages of learning

Addition Stage 1– 6

add, addition, more, plus, increase, sum, total, altogether, double, near double, difference, same as, equals, sign, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse, how many more to make…?, is the same as

Subtraction Stage 1– 6

subtract, subtraction, take away, minus, decrease, leave, how many are left/ left over?, difference between, half, halve, how many more/fewer is…/than…?, how much more/ less is…?, is the same as, equals, sign, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse

Multiplication Stage 1– 6

counting,, steps, each, doubling, scaling, times, twice as big, ____ times as big, count in ones, count in _____, lots of, groups of, x, times, multiply, multiplies by, multiple of, once, twice, three times…, ten times…, times as (big, long, wide….and so on), repeated addition, array, row, column, double, group in pairs, threes...tens, equal groups of, multiplication, product, inverse

Division Stage 1– 6

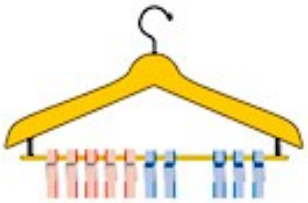
halve, share, share equally, one each, two each, three each…, divide, division, divided by, divided into, left, left over, remainder, quotient, divisible by, inverse, exchange, repartition, divisor, scaling, repeated subtraction, array, row, column, equal groups of ___, ___ equal groups

Please note

- Use the language ‘calculation’ not ‘sum’ (sum means ‘plus’ or ‘total’)
- Use the language ‘digit’ not ‘number’ (number is the amount or quantity)

Addition

Stage 1

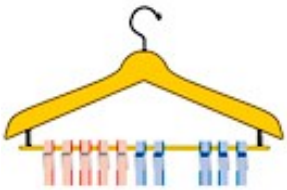


Children will use practical equipment to group objects and find a total. Practical resources will support children's maths to create mental pictures and images.

Children will represent calculations using objects and talk about their representations.

Children will start to understand the principal of exchange and will be able to use the terms, 'worth' and 'value'.

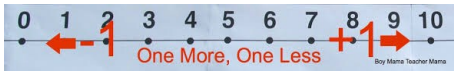
Stage 2



10 = 7 + 3
7 + 3 = 10
3 + 7 = 10

2 + 4 = 6

3 + 5= 8

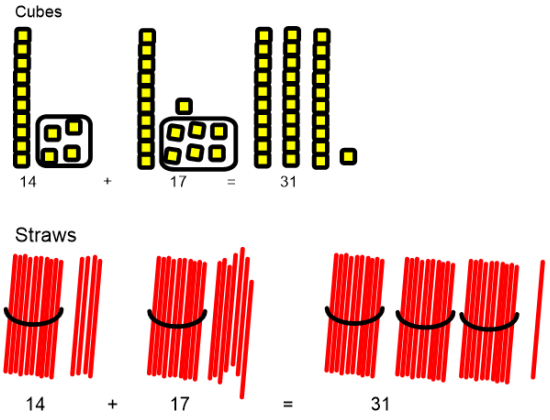


Practical resources will continue to support children's maths to create mental pictures and images. As these become firm, children will begin to develop ways to draw their own pictures.

Children will begin to use number sentences alongside their pictures and practical resources.

Children should be making the link between addition and subtraction.

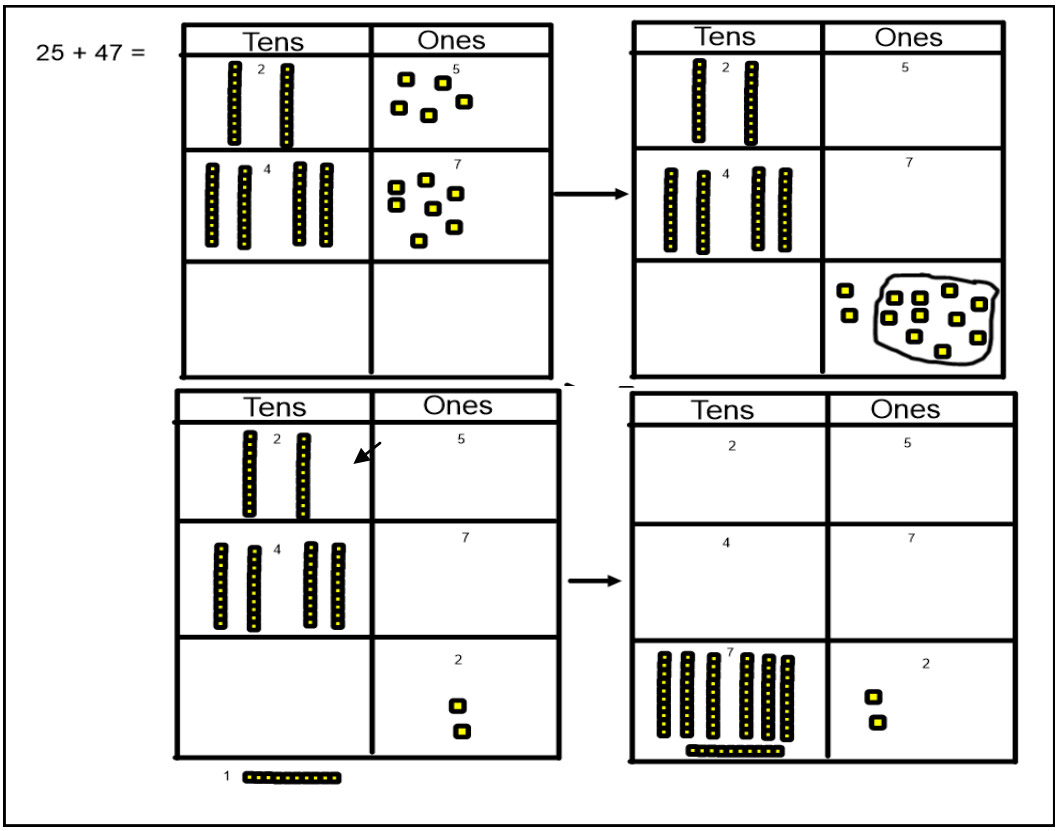
Stage 3



Children will be confidently using equipment to help them combine groups of objects with numbers up to 20.

They will continue to use equipment as well as number lines and hundred squares to support their mental methods.

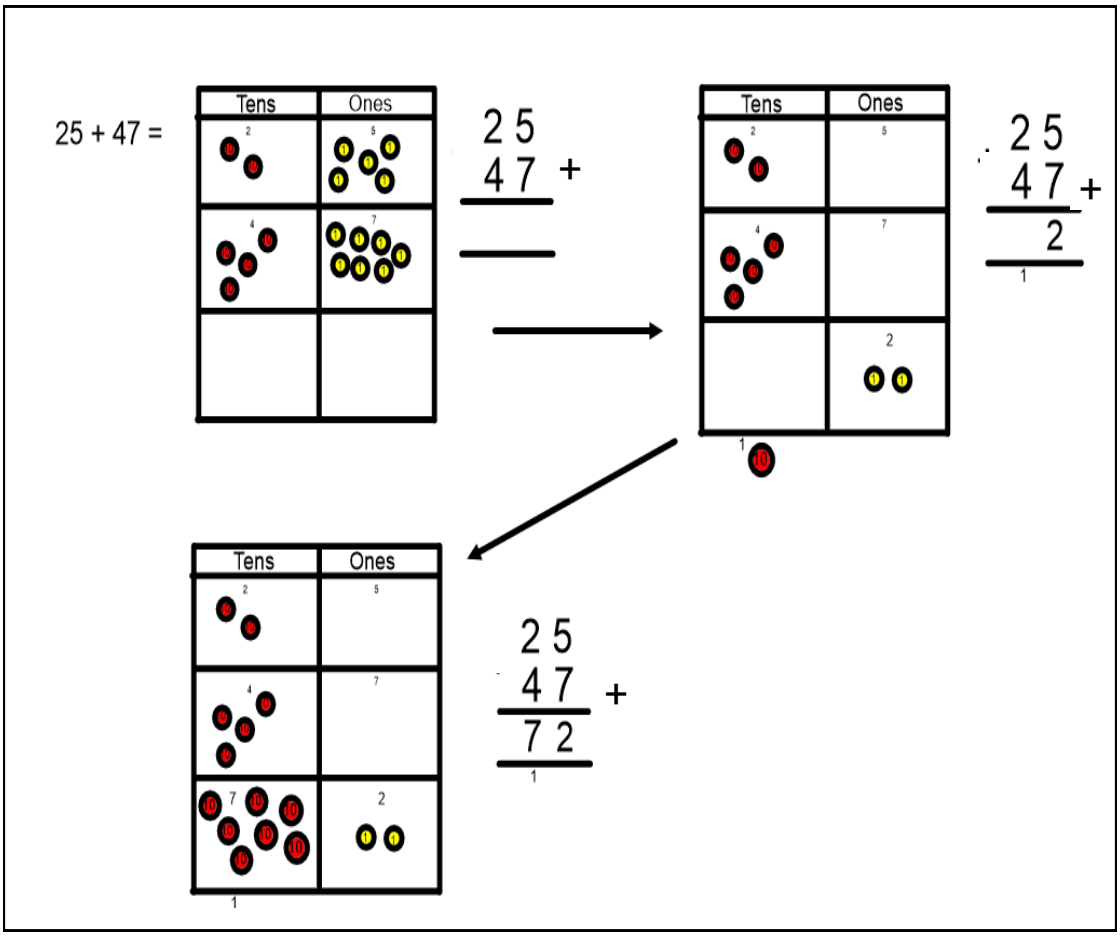
Children will start to work with totals greater than 20 which will require them to use their knowledge of exchange.



Stage 4

Children are now confident with using equipment to combine objects using the principal of exchange.

They will now begin to organise their equipment (straws, dienes, place value counters) in a vertical manner with their combined totals at the bottom.



Stage 5

Children will now be confident in organising their equipment in a vertical manner.

They will now be able to make links between this representation and the formal column addition when seen alongside each other.

Stage 6

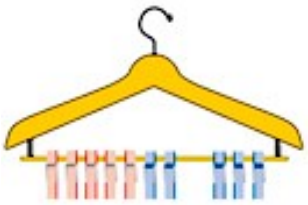
$$\begin{array}{r} 327 \\ 496 \\ \hline 823 \\ \hline 1\ \ 1 \end{array} +$$

Children will have a full understanding of the links between the equipment used and the formal written method.

They will now be able to explore calculating larger numbers as well as decimal numbers using their understanding of the formal written method.

Subtraction

Stage 1

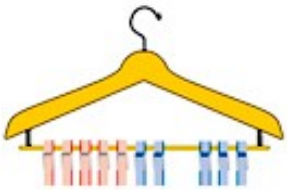


Children will use practical equipment to physically remove an amount from the group to find the total remaining.

Children will represent calculations using objects and talk about their representations.

Children will be introduced to the language of comparison including equal use of 'less' and 'more'.

Stage 2

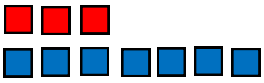


Number line. Biggest number on the right, count back.

? + 4 = 6
6– 4 = ?

3 + ?= 8
8-3 = ?

10 -7 =3
10 - 3 = 7
3 + 7 = 10



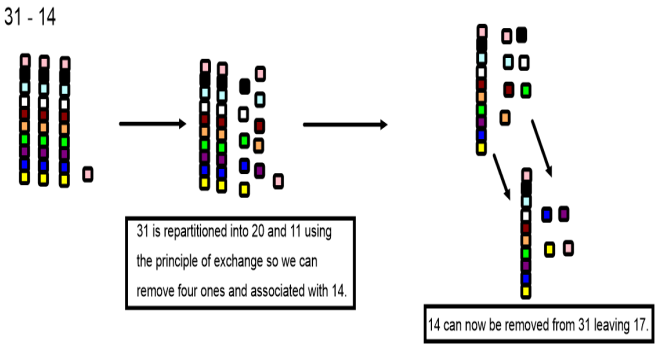
There are more blue than red.
There are less red than blue.
There are 4 more blue than red.
There are 4 less red than blue.

Practical resources will continue to support children's maths to create mental pictures and images. As these become firm, children will begin to develop ways to draw their own pictures.

Children will begin to use number sentences alongside their pictures and practical resources.

Children should be making the link between addition and subtraction.

Stage 3



Children will be confidently using equipment to help them take away and find the difference.

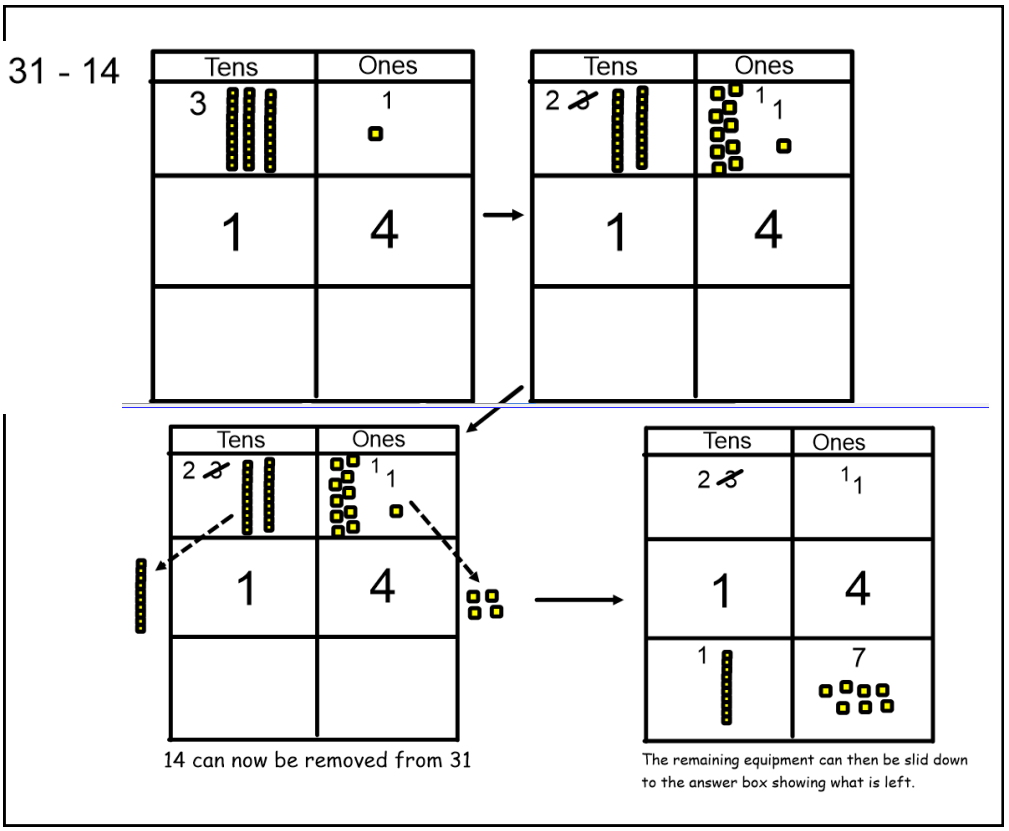
They will continue to use equipment as well as number lines and hundred squares to support their mental methods.

Children will start to work with numbers greater than 20 which will require them to use their knowledge of exchange.

As they become accustomed to repartitioning numbers, they can be introduced to formal notation of the repartitioning

For example: $\overset{2}{\cancel{3}}\,\overset{1}{1}$

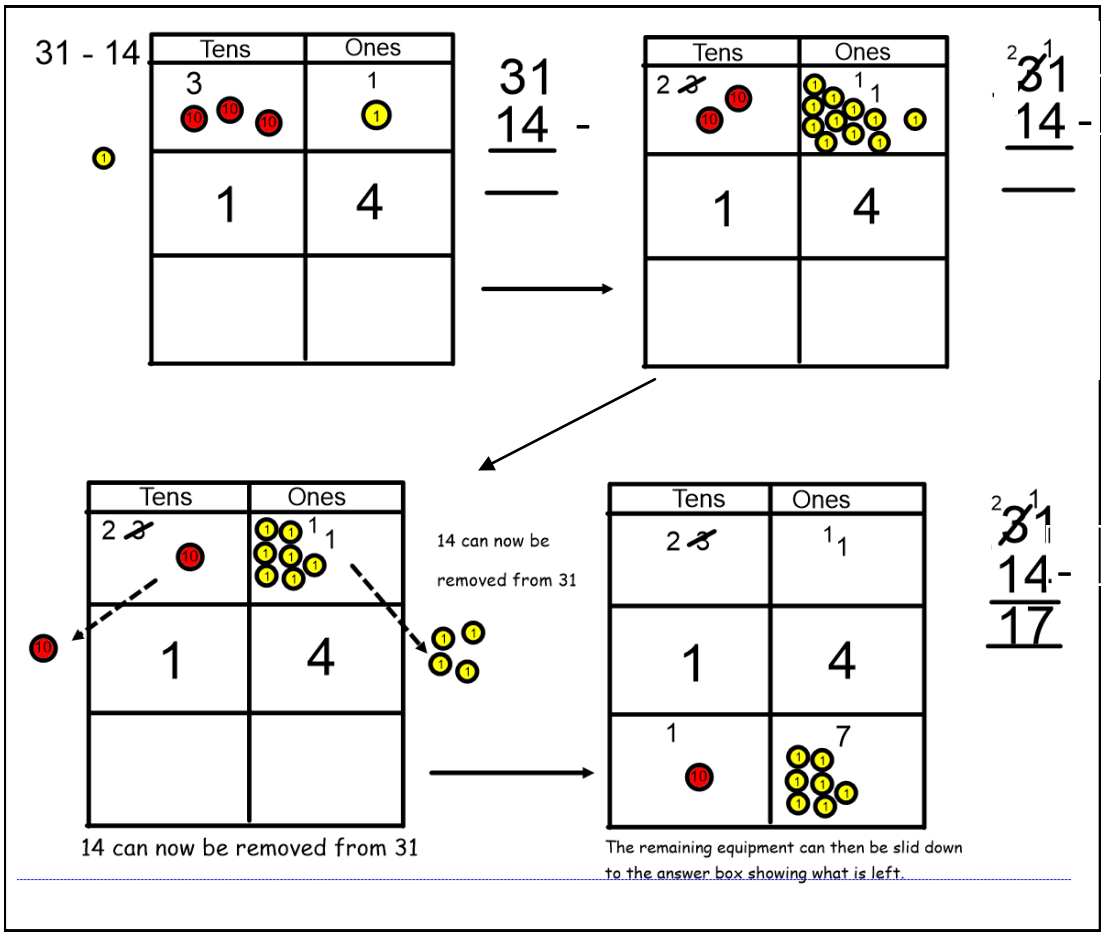
Stage 4



Children are now confident with using equipment to take away and find the difference using the principal of exchange.

They will now begin to organise their equipment (straws, dienes, place value counters) in a vertical manner with the amount that remains at the end situated at the bottom.

Stage 5



Children will now be confident in organising their equipment in a vertical manner.

They will now be able to make links between this representation and the formal column subtraction when seen alongside each other.

Stage 6

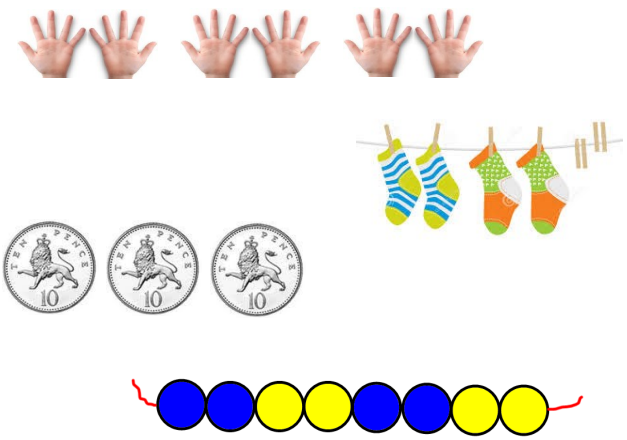
$$\begin{array}{r} {}^{7}\cancel{8}\,{}^{1}4 \\ 259 \\ \hline 525 \end{array} -$$

Children will have a full understanding of the links between the equipment used and the formal written method.

They will now be able to explore calculating larger numbers as well as decimal numbers using their understanding of the formal written method.

Multiplication

Stage 1

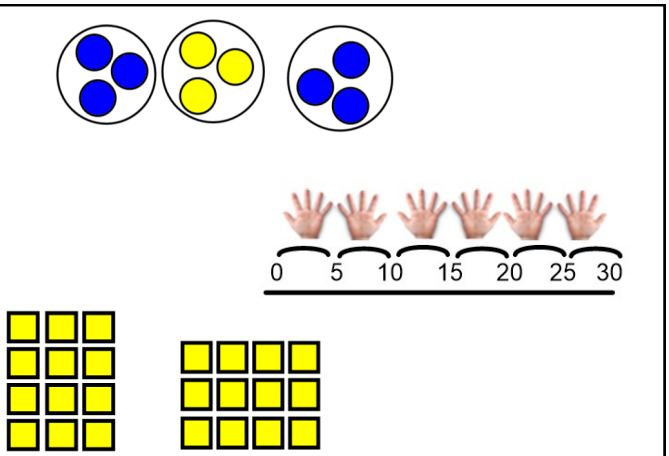


Children will physically show equal groups using a wide range of practical equipment.

Children will begin to count in different multiples including twos, fives and tens and making links to natural groupings eg socks, legs on animals etc.

Children start to recognise patterns of multiples using equipment.
They will start to use the language and representations for doubling.

Stage 2



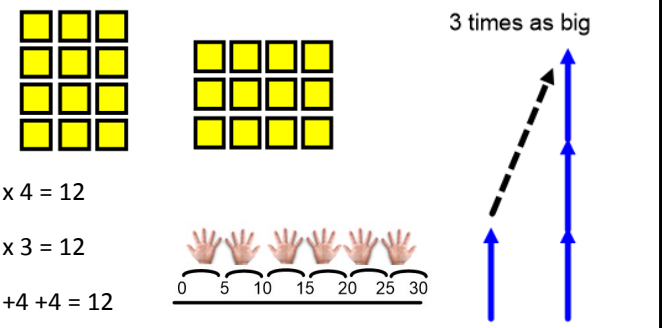
Children will start to sort objects into equal groups to aid counting.

They will continue to count in multiples and begin to relate this to multiplication using finger counting.

Children will experience a variety of representations of repeated addition alongside practical equipment.

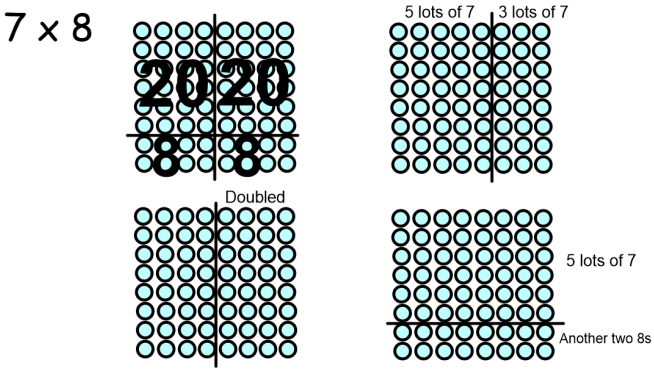
Children will start to look at arrays and relate to real life eg. egg boxes, chocolate boxes, baking trays, wrapping papers etc.

Stage 3



Children will continue to count in multiples. They will be able to model a calculation using a practical array and link to re-peated addition. Children should be able to make a variety of arrays and explain what they show. Children will also develop the language of scaling.

Stage 4



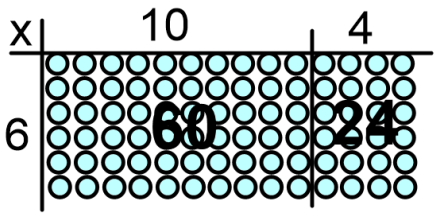
Children will explore arrays for larger numbers, thinking flexibly beyond just repeated addition, They will look for friendly numbers to help them efficiently calculate totals
eg 7 x 8 = (4 x 5)+ (4 x 2) + (4 x 5)+ (4 x 2)

Stage 5

Children will continue to work with arrays, exploring larger numbers, leading into the grid method.

Children start using the grid method when multiplying 2 and 3 digit numbers by 1 digit numbers.

6 x 14

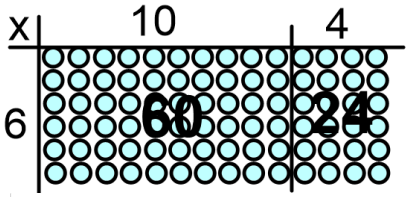


x	10	4
6	60	24

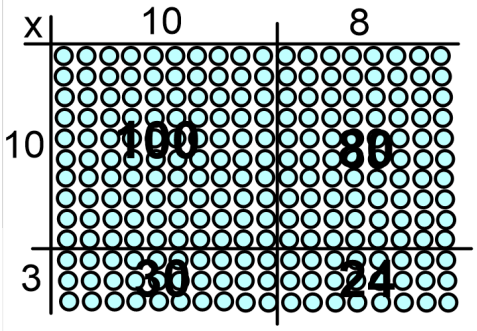
Stage 6

Children will now be secure in using the grid method for multiplying by 1 digit numbers and will begin to make links with the expanded method of short multiplication.

Children will also start to explore using the grid method when multiplying by 2 digit numbers.



14
6 x
24 (6x4)+
60 (6x10)
84



x	10	8
10	100	80
3	30	24

180
54 +
234
1

Stage 7

Children will have a good understanding of the expanded short multiplication method and will begin to represent this as compact short multiplication when multiplying by 1 digit numbers.
Children will be secure in using grid method when multiplying by 2 digit numbers and will start to explore the expanded method of long multiplication.

14
6 x
24 (6x4)+
60 (6x10)
84

→

14
6 x
84
2

x	10	8
10	100	80
3	30	24

→

18
13 x
24 (3x8)
30 (3x10)
80 (10x8)
100 (10x10)
234
1

Stage 8

Children will now have a good understanding of the short multiplication method as well as the long multiplication method. They will begin to represent long multiplication more efficiently.

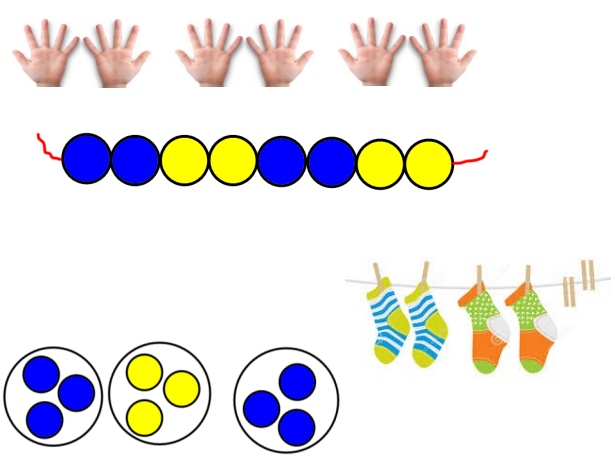
18
13 x
24 (3x8)
30 (3x10)
80 (10x8)
100 (10x10)
234
1

→

2
18
13 x
54
80 +
234
1

Division

Stage 1



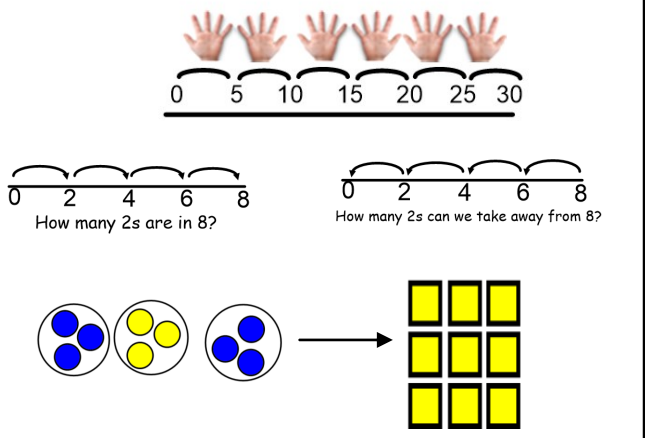
Children will explore the language of sharing. They will experience practical activities in sharing objects between a small number of people with the emphasis on sharing equally.

Alongside this, children will be introduced to grouping objects into equal groups as a representation of division.

They will begin to use the language and representations of halving.

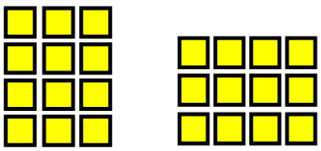
Children will be encouraged to develop ways of recording their findings using pictures.

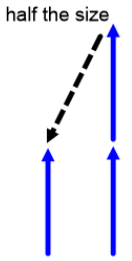
Stage 2



Children will relate the grouping of objects to repeated subtraction and begin to represent this using a numberline and equipment.
They will use their knowledge of counting up in multiples to solve division calculations and recognise that this is the inverse of multiplication.
Children will continue to group and share equally using equipment and will now begin to organise their groups into arrays.
Children will link division with fractions and understand that the fraction line is equivalent to the division sign so a÷b can be written as $\frac{a}{b}$

Stage 3





12 into ____equal groups gives ____in each group.

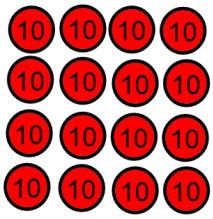
12÷4 = 3

12÷3 = 4

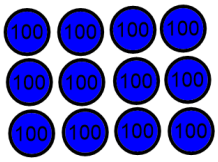
Children will continue to use their knowledge of counting in multiples to support the inverse of multiplication and repeated subtraction. Children will build on their use of arrays to explore division facts. Children will be confident in using the language of scaling.

Stage 4

120÷3=

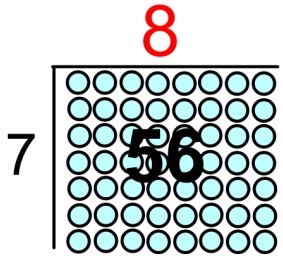


1200÷3=

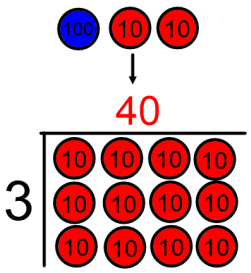


Children will continue to organise groups into arrays, now working with larger numbers by either grouping or sharing. Children will be able to explain all the facts they know about a given array. How many in each group? How many groups?

56÷7



120 divided by 3

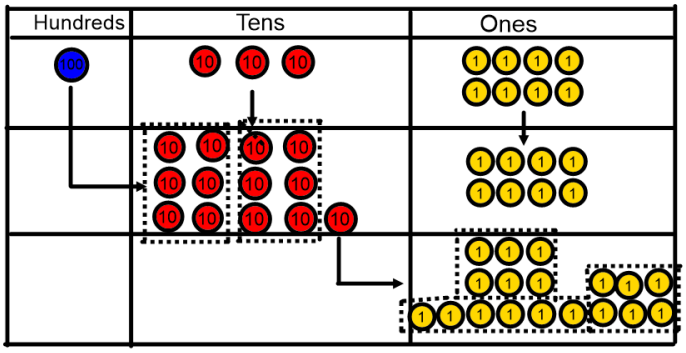


Stage 5

Children will continue to work with arrays, exploring known multiplication and division facts with the use of grid lines to make a link to short division.

Children will begin to use counters within an array using their knowledge of practical exchange where necessary

138÷6



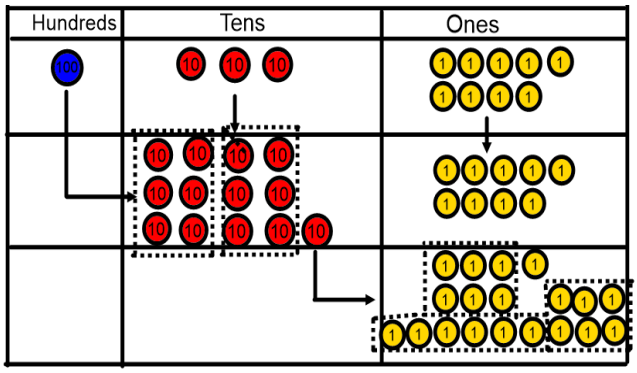
$$6\overline{)138}\quad 23$$

Stage 6

Children will work with equipment to divide by a single digit divisor using their knowledge of exchange.

Children will be introduced to the notation of short division linking this with the principle of exchange.

139÷6



$$6\overline{)139}\quad 23_{r1}$$

Stage 7

Children will now begin to use the short division notation for numbers with remainders.

They will begin to explore the use of jottings of friendly numbers to support long division of calculations with 2 digit divisors.

420÷15

1x15=15
2x15=30
4x15=60
8x15=120
10x15=150
20x15=300

$$\begin{array}{r} 28 \\ 15\overline{)420} \\ 300 \quad (20\times15) \\ \hline 120 \\ 120 \quad (8\times15) \\ \hline 0 \end{array}$$

Stage 8

$$\begin{array}{r} 28_{r12} \\ 15\overline{)432} \\ 300 \quad (20\times15) \\ \hline 132 \\ 120 \quad (8\times15) \\ \hline 12 \end{array} \qquad \begin{array}{r} 28_{r12/15} \\ 15\overline{)432} \\ 300 \quad (20\times15) \\ \hline 132 \\ 120 \quad (8\times15) \\ \hline 12 \end{array}$$

Children will be secure in using short division for one digit divisors and long division for two digit divisors. They will be able to interpret remainders as fractions.