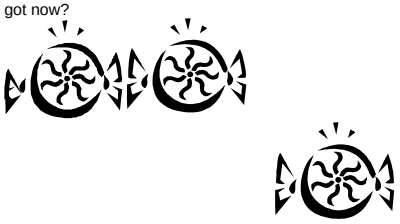
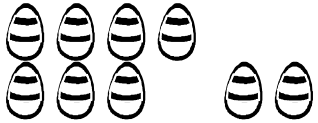
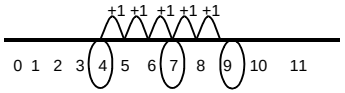
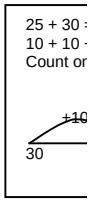
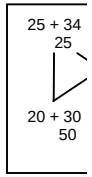
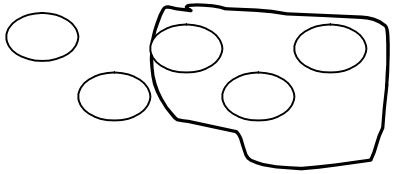
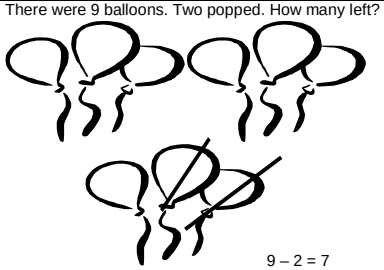
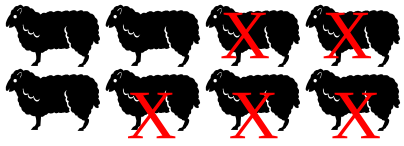
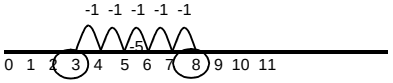
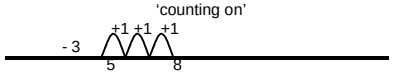
ADDITION

Nursery	Reception	Y1	
I've got 2 sweets and I am given one more. How many have I got now?  Strategy: combining two groups and counting to establish total Recording: teacher demonstration of pictorial recording where appropriate. Vocabulary: more, and, make, sum, total, altogether Equipment: every day objects, counters, fingers	Jane had 3 bears. She was given 2 more. How many does she have now?  3 2 3+2 = 5 Strategy: combining two or more groups and counting to establish total Recording: teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Children begin using notation when appropriate e.g. Summer term Vocabulary: add, more, and, make, sum, total, altogether Equipment: number lines, counters, fingers	Some hens lay 2 eggs, 4 eggs and 3 eggs. How many eggs did they lay altogether?  4 + 3 + 2 =  Children should start counting at 4. 4 + 3 + 2 = 9 Strategy: reordering to begin with largest number and counting on Recording: Children to continue to develop pictorial recording; use standard notation; using a tally and beginning to record on a number line. Vocabulary: add, more, and, make, sum, total, altogether, *plus, equals* Equipment: number lines, counters, fingers; addition & subtraction facts ITP.	My cat is 25c dog?  Strategy: reo other number tens and one Recording: C especially usi to show partit  Vocabulary: a plus, *addition* Equipment: n material; add

SUBTRACTION

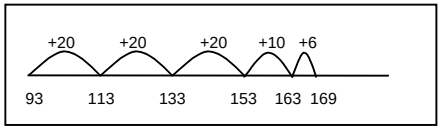
Nursery	Reception	Y1	
There were 5 beads but I hid some. You can see there are 3 left. How many did I hide?  Strategy: begin to recognise subtraction as 'taking away' and 'counting back'. Also compare two numbers to find 'difference'. Recording: teacher demonstration of appropriate pictorial recording where appropriate. Vocabulary: take away, leave, Equipment: every day objects, counters, fingers	There were 9 balloons. Two popped. How many left?  9 – 2 = 7 Strategy: recognise subtraction as 'taking away' and 'counting back'; compare two numbers to find difference. Recording: teacher demonstration of calculation to match pictorial recording using standard notation of - and =. Children begin using notation when appropriate e.g. Summer term Vocabulary: take away, leave, how many are left, how many fewer than, difference between Equipment: number lines, counters, fingers	My shepherd looks after 8 sheep. He has lost 5 how many left?  8 – 5 = 3 'taking away'  'counting on'  Strategy: recognise subtraction as 'taking away' and 'counting back'; or 'counting on' as the most efficient way of finding 'difference'. Decide on most efficient strategy. Recording: Children to continue to develop pictorial recording; use standard notation; using a tally and beginning to record on a number line. Vocabulary: take away, leave, how many are left, how many fewer than, difference between, *how much more is…., subtract, minus, equals* Equipment: number lines, counters, fingers; adiition & subtraction facts ITP; Difference ITP	There are 56 are left? 56 - 30 Where a 'differenc record in 30 Differenc This is a desi 26 partition either on 56 -10 -1 Ideally, they s these methoc Strategy: rec back'; recogn finding 'differ Recording: C especially usi to show partit Vocabulary: t fewer than, d subtract, min Equipment: n material; add

ADDITION

Y3

In a school there are 76 boys and 93 girls. How many children are there altogether?

93 + 76 = 169



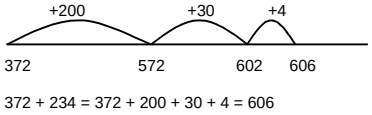
93
+76
1 1 69

Recording: Children to make decisions about appropriate recording especially using their own number lines and standard notation to show partitioning and recombining. Begin to introduce expanded vertical standard written method during summer term if secure with other recording.
Vocabulary: add, more, and, make, sum, total, altogether, plus,
Equipment: number lines, hundred squares, Base 10 material

Y4

A lorry driver drove 234 miles in the morning and 372 miles in the afternoon. How many miles did he drive altogether?

372 + 234 = 606



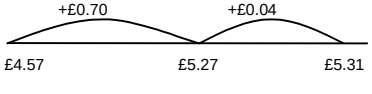
372 + 234 = 372 + 200 + 30 + 4 = 606

Then as vertical:

372
+234
6 1 06

Children should also complete problems such as these:

£4.57 + 74



£4.57 + 74p = £5.57 + £0.70 + £0.04 = £5.31

Strategy: reordering to begin with largest number; partitioning other numbers and counting on.
Recording: Children to make decisions about appropriate recording especially expanded or compact vertical written method. Also use of own number lines and standard notation to show partitioning then recombine
Vocabulary: add, more, and, make, sum, total, altogether, plus, addition, *increase*
Equipment: number lines, Base 10 material

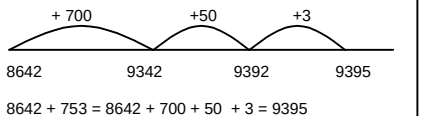
Y5

What is the total of 8642 and 753?
Expanded or compact vertical recording:

8642
+753
9395
1

For children who may need other strategies:

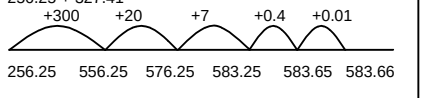
Or use of number line



8642 + 753 = 8642 + 700 + 50 + 3 = 9395

Children should also complete problems such as these:

256.25 + 327.41



256.25 + 327.41 = 583.66

Then convert/relate this to the column method, as above.

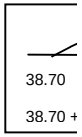
Strategy: Compact vertical method beginning with least significant digit or partitioning other numbers and counting on from most significant digit – horizontal or expanded vertical
Recording: Children to make decisions about appropriate recording especially expanded or compact vertical standard written method. Also use of own number lines and standard notation to show partitioning then recombine
Vocabulary: add, more, and, make, sum, total, altogether, plus, addition, increase
Equipment: number lines, Base 10 material

[Y6]

What is 4.21c

38.70
+4.21
42.91
1

For children v



Year 6 should
methods.

Strategy: Cor
significant dig
from most sig
recording
Recording: C
recording esp
written metho
notation to sh
Vocabulary: a
plus, addition
Equipment: n

SUBTRACTION

Y3

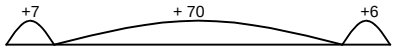
In a school there are 176 boys and 93 girls. How many more girls are there than boys?

This is the desirable method:

'compact decomposition' 46 – 27

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

176 - 93

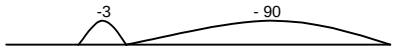


93 100 70 176

7 + 70 + 6 = 83 so 176 – 93 = 83

Children should also know about this method.

176 – 93



83 86 176

176 – 93 = 83

Strategy: recognise subtraction as 'taking away' and 'counting back'; recognise 'counting on' as the most efficient way of finding 'difference'
Recording: Children to make decisions about appropriate recording especially using their own number lines and standard notation to show partitioning and recombining. Only partition one number.
Vocabulary: take away, leave, how many are left, how many fewer than, difference between, how much more is…., subtract, minus, subtraction
Equipment: number lines, hundred squares, Base 10 material

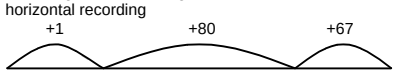
Y4

The price of a computer is reduced from £767 to £619. By how much is it reduced?
(This should also extend to decimals up to 1/100)

'compact decomposition' 419 – 237

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

'Counting on' either using a number line or informal horizontal recording



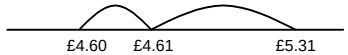
619 620 700 767

767 – 619 = 148 i.e. the difference between 767 and 619 is 148.

767 - 619 = 767 – 600 – 10 – 9
767 – 600 = 167 'counting back'
167 – 10 = 157 either by partitioning
157 – 9 = £148 or using a number line

Children should also be able to complete problems such as this:

£5.31 – 71p



£4.60 £4.61 £5.31

£5.31 - £0.70 - £0.01 = £4.60

Children should also relate this to a column method, as shown above.

Strategy: recognise subtraction as 'taking away' and 'counting back'; recognise 'counting on' as the most efficient way of finding 'difference'
Recording: Children to make decisions about appropriate recording especially expanded vertical standard written method. Also use of own number lines and standard notation to show partitioning and recombining.
Vocabulary: take away, leave, how many are left, how many fewer than, difference between, how much more is…., subtract, minus, subtraction *decrease*
Equipment: number lines, hundred squares, Base 10 material

Y5

The sides of a sheet of paper are 419mm and 237mm. How much longer is one side than the other?

Continue to use 'counting on' and 'counting back' using partitioning or number lines for recording. Also introduce children to decomposition if entirely secure with informal recording on numberlines etc.

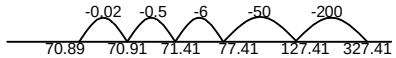
Introduce 'compact decomposition' if secure with above.
(This should also extend to decimals up to 1/1000)

'compact decomposition' 419 – 37

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

These methods should be extended to include problems such as 327.41 – 256.52

327.41 – 256.52
327.41 – 200 – 50 – 6 – 0.50 – 0.02 = 70.89

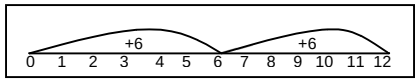
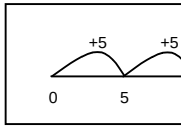


70.89 70.91 71.41 77.41 127.41 327.41

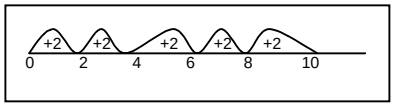
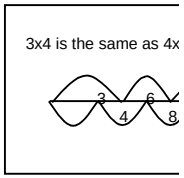
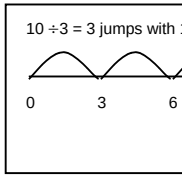
This should then be related to the column method.

Strategy recognise subtraction as 'taking away' and 'counting back'; recognise 'counting on' as the most efficient way of finding 'difference'
Recording: Children to make decisions about appropriate recording especially expanded or compact vertical standard written method. Also use of own number lines and standard notation to show partitioning and recombining
Vocabulary: take away, leave, how many are left, how many fewer than, difference between, how much more is…., subtract, minus, subtraction, decrease
Equipment: number lines, Base 10 material

MULTIPLICATION

Nursery	Reception	Y1	
How many feet have these three teddy bears got altogether?  Strategy: begin to recognise repetitive addition of groups of the same size Recording: teacher demonstration of appropriate pictorial recording where appropriate. Vocabulary: groups, sets Equipment: every day objects, counters, fingers	How many wheels do we need for these three lego cars?  4 + 4 + 4 = 12 Strategy: begin to recognise repetitive addition of groups of the same size; counting in steps of 10 or 2 Recording: teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Demonstrate on number line. Vocabulary: double, group, sets Equipment: every day objects, counters, fingers	Tina rolled double 6 on her two dice. What was her score? The main focus is on practical activity.   They may move on to a number sentence, 2 x 6. Strategy: to recognise repetitive addition of groups of the same size; counting in steps of 2, 5 or 10 Recording: teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Also use of tally. Demonstrate on number line. Vocabulary: double, group, Equipment: every day objects, counters, fingers, Multiplication facts ITP	What is the value of 4 two  Strategy: to recognise re same size; as an array; k and 10 times tables. Mov demonstration of calculati (array) using standard no on number line. Vocabulary: double, grou lots of, Equipment: number lines, facts ITP'

DIVISION

Nursery	Reception	Y1	
If we share out these cakes so everyone has one each, how many will be left over? If everyone has two cakes, how many children will be able to have biscuits today?  Strategy: begin to recognise sharing equally; also repetitive addition or subtraction of groups of the same size Recording: teacher demonstration of appropriate pictorial recording where appropriate. Vocabulary: groups, share Equipment: every day objects, counters, fingers	Can we share out these cakes fairly? How shall we do it? If we put two cakes on each plate, how many plates do we need?  Strategy: begin to recognise sharing equally; also repetitive addition or subtraction of groups of the same size i.e. grouping Recording: *teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Demonstrate on number line.* Vocabulary: groups, share, left over Equipment: every day objects, counters, fingers	Half the cakes in this box of 10 are gone. How many are left? Two cakes are put into each box. How many boxes do we need?  2 +2 +2 +2 +2 = 10  Strategy: begin to recognise sharing equally; also repetitive addition or subtraction of groups of the same size i.e. grouping Recording: *teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Demonstrate on number line.* Vocabulary: groups, share, left over Equipment: every day objects, counters, fingers, Grouping ITP	How many sticks of 5 cub 20 cubes? If 20 cubes are people, how many cubes  Cubes should also be use side a numberline. When illustrated below, the desi identified on a pre drawn problem. Children mark th  Strategy: recognise divisi repetitive addition or subt size i.e. grouping Recording: teacher demo pictorial recording using s Demonstrate on number l Vocabulary: groups, shar equal groups of Equipment: number lines,

MULTIPLICATION

Y3

There were 3 rows of 13 chairs. How many chairs are there altogether?

$$\begin{array}{r} 13 \\ \times\ 3 \\ \hline 39 \end{array}$$

13 x 3

	10	3
3	30	9

30 + 9 = 39

So 13 x 3 = 39

Strategy: to recognise multiplication as repetitive addition of groups of the same size; as an array; as scaling.
Counting in steps of 2,3, 4, 5, 6 and 10
Recording: Use of standard notation of x and =; number lines and arrays; introduce grid multiplication
Vocabulary: double, groups of, times, multiply, multiple, lots of,
Equipment: counters, array/square grid, number lines, multiplication grids, multiplication facts ITP

Y4

59 x 4

$$\begin{array}{r} 59 \\ \times\ 4 \\ \hline 236 \\ {\scriptstyle 3} \end{array}$$

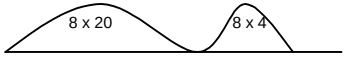
For children who may need other strategies:

23 children went to the theatre. The cost of the coach and theatre ticket was £8 each. What was the total cost?

23 x 8 = 8 x 23
Begin to use grid multiplication to compact the array

x	20	3
8	80	12

80+80+12+12= 184



0 160 184

160 + 24 = 184

Strategy: to recognise multiplication as repetitive addition of groups of the same size; as an array; as scaling.
Counting in steps of 2,3, 4, 5 or 10
Recording: Use of standard notation of x and =; grid multiplication; number lines and arrays.
Vocabulary: double, groups of, times, multiply, multiple, lots of, product, inverse
Equipment: array/square grid, number lines, multiplication grids

Y5

59 x 24

$$\begin{array}{r} 59 \\ \times\ 24 \\ \hline 236 \\ {\scriptstyle 2\ 3} \\ 1180 \\ {\scriptstyle 1\ 1} \\ \hline 1416 \\ {\scriptstyle 1} \end{array}$$

7 x 3.09

$$\begin{array}{r} 3.09 \\ \times\ 7 \\ \hline 21.63 \\ {\scriptstyle 2} \quad {\scriptstyle 6} \end{array}$$

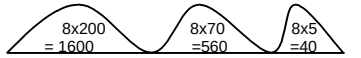
For children who may need other strategies:

The class wants to make 275 spiders for a display. How many legs do they need to make?

275 x 8= 8 x 275
Use grid multiplication as for Y4 then to compact the array:

x	200	70	5
8	1600	560	40

1600+560+40 = 2200



0 1600 2160 2200

This method should also be used to complete:
TU x TU, U.t x U.

Strategy: to recognise multiplication as repetitive addition of groups of the same size; as an array; as scaling.
Counting in steps of any size to 10
Recording: Grid multiplication; use of standard notation of x and =;; number lines and arrays.
Vocabulary: double, groups of, times, multiply, multiple, lots of, product, inverse
Equipment: array/square grid, number lines, multiplication grids

[Y6]

509 x 24

$$\begin{array}{r} 509 \\ \times\ 24 \\ \hline 2036 \\ {\scriptstyle 2\ 3} \\ 10180 \\ {\scriptstyle 1\ 1} \\ \hline 12216 \\ {\scriptstyle 1} \end{array}$$

17 x 3.09

$$\begin{array}{r} 3.09 \\ \times\ 17 \\ \hline 21.63 \\ {\scriptstyle 2} \quad {\scriptstyle 6} \\ 30.90 \\ \hline 52.53 \\ {\scriptstyle 1} \end{array}$$

For children who may nee

Calculate 509 x 24.

509 x 24 = 24 x 509
Use grid multiplication

x	500	0	9
20	10000	0	18
4	2000	0	3

10000+2000+180+36
Leading to standard l
children are completel

This method should be ex
including decimals similar

2.3 x 7

x	7
2	14
0.3	2.1

Strategy: to recognise mu
of groups of the same siz
Counting in steps of any s
Recording: Grid multiplica
x and =;; number lines an
Vocabulary: double, grou
lots of, product, inverse
Equipment: array/square
grids

DIVISION

Y3

50 ÷ 4

$$4 \overline{)5\,1\,0} \quad 1\ 2\ r\ 2$$

For children who may need other strategies:

A class of 50 children were grouped in 4s. How many groups were there altogether? 50 children were divided equally between 4 rooms. How many children were in each room?

50 ÷ 4

4 4 4 4 4 4 4 4 4 4 4 4 r2

0 4 8 12 16 24 28 32 36 40 44 48 49 50

Identify your destination number before you start.

50 ÷ 4 = 12 r 2

Strategy: recognise division as sharing equally; and, also repetitive addition or subtraction of groups of the same size i.e. grouping and understand there can be remainders.
Recording: teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Demonstrate on number line.
Vocabulary: groups, share, left over, divide, divided by, equal groups of, remainder
Equipment: number lines, counters, 'Grouping ITP'

Y4

84 ÷ 7

$$7 \overline{)8\,1\,4} \quad 1\ 2$$

87 ÷ 7

$$7 \overline{)8\,1\,7} \quad 1\ 2\ r\ 3$$

For children who may need other strategies:

There are 87 shopping days to Christmas. How many weeks is that?

87 ÷ 7 = 12 r.3 87 divided into groups of 7

x7

10 2

0 70 84 87 r.3

Begin to record information vertically introducing repeated subtraction. Continue to use repeated addition if necessary. If children are secure, introduce vertical recording during summer term.

87	x7	
- 70	(10)	so, 87 ÷ 7 = 12 r.3
17		
14	(2)	
3		

Strategy: recognise division as sharing equally; and, also repetitive addition or subtraction of groups of the same size i.e. grouping
Recording: teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Demonstrate on number line.
Vocabulary: groups, share, left over, divide, divided by, equal groups of, remainder, divided into, divisible by, factor, quotient
Equipment: number lines, counters, 'Grouping ITP'

Y5

Calculate 847 ÷ 7.

$$7 \overline{)8\,1\,4\,7} \quad 1\ 2\ 1$$

Also:

848 ÷ 7

$$7 \overline{)8\,1\,4\,8} \quad 1\ 2\ 1\ r\ 1$$ which can also be expressed as 1/7

For children who may need other strategies:

848 ÷ 7 =

848	x7	
-700	(100)	so, 848 ÷ 7 = 121 r.1 = 121 1/7
148		= 121.14285
147	(21)	
1		

Express remainders as quotients.

x7

100 21

0 700 847 848 r.1

Continue to use repeated addition if appropriate.

Strategy: recognise division as sharing equally; and, also repetitive addition or subtraction of groups of the same size i.e. grouping
Recording: teacher demonstration of calculation to match pictorial recording using standard notation of + and =. Demonstrate on number line.
Vocabulary: groups, share, left over, divide, divided by, equal groups of, remainder, divided into, divisible by, factor, quotient
Equipment: number lines

Y6

578 ÷ 17

$$17 \overline{)5\,7\,6\,8} \quad 0\ 3\ 4$$

Also:

443 ÷ 6

$$6 \overline{)4\,4\,2\,1\,.\,3\,0} \quad 0\ 7\ 3\ .\ 5$$

For children who may nee

87.5m of ribbon are cut in
each length?

87.5 ÷ 7 =

87.5	x7	
-70.0	(10)	
17.5	(2)	
14.0		
03.5		

Express remainders a

x7

10

0

Continue to use repe

Strategy: recognise divisi
repetitive addition or subt
size i.e. grouping
Recording: teacher demo
pictorial recording using s
Demonstrate on number l
Vocabulary: groups, shar
equal groups of, remainde
factor, quotient
Equipment: number lines