Calculation Policy

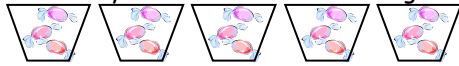**M U L T I P L I C A T I O N**

Stage 1 –
Pictures and symbols
There are 3 sweets in one bag.
How many sweets are there in 5 bags?
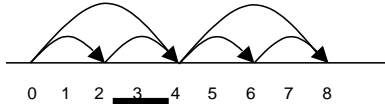
Stage 2 –
Arrays and repeated addition
• • • •   4 x 2 or 4 + 4
• • • •
2 x 4

2 + 2 + 2 + 2

0 1 2 3 4 5 6 7 8

Stage 3 –
Number lines
E.g. 6 x 3

0   6   12   18
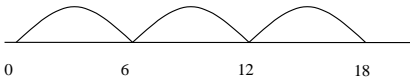
Partitioning
E.g. 15 x 2 = 30

x	10	5
2	20	10	= 30

Stage 4 –
Grid method
E.g. 35 x 2 = 70

x	30	5
2	60	10	= 70

E.g. 123 x 3 = 369

x	100	20	3
3	300	60	9	= 369

Stage 5 –
Grid method
72 x 38

x	70	2
30	2100	60	= 2160
8	560	16	= 576 +
			2736
			1

Progressing to using the grid method for decimals.

Stage 6 –
Column multiplication
72 x 38

```
      72
      38 x
     576
   2160 +
   2736
```

D I V I S I O N

Stage 1 –
Pictures / marks
12 children get into teams of 4 to play a game. How many teams are there?

Stage 2 –
Sharing – 6 sweets are shared between 2 people. How many do they have each? (6 ÷ 2)
♦ • • •   • • •

Grouping – There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)
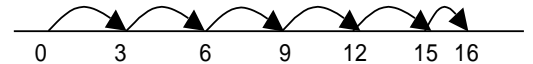
| 0 | 2 | 4 | 6 |
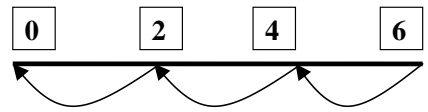
Stage 3 –
Division with remainders
16 ÷ 3 = 5 r1
Sharing - 16 shared between 3, how many left over?
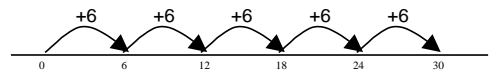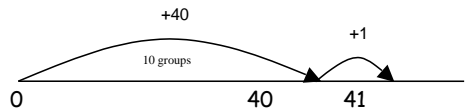Grouping – How many 3's make 16, how many left over?
e.g.

0   3   6   9   12   15   16

Stage 4 –
30 ÷ 6 can be modelled as:
Grouping – groups of 6 taken away and the number of groups counted e.g.

+6   +6   +6   +6   +6
0   6   12   18   24   30

41 ÷ 4 = 10 r1

+40
10 groups   +1
0   40   41

Stage 5 –
Use chunking for division.

```
8 | 146
    80      (8 x 10)    Total all the
    66                  'chunks' of
    40      (8 x 5)     8 to find the
    26                  answer.
    24      (8 x 3)
     2
```

Answer: 18 r 2

This method can also be used when dividing larger numbers and decimals, and when there is a remainder

A D D I T I O N

Stage 1 –
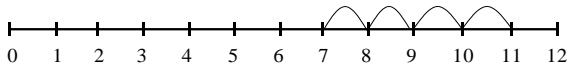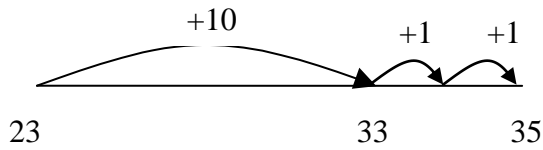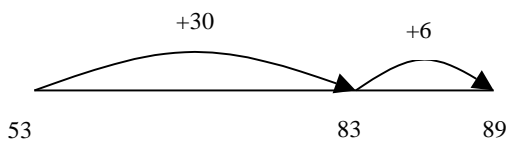Using number lines to count on ones.

7 + 4 = 11

0 1 2 3 4 5 6 7 8 9 10 11 12

Stage 2 –
23 + 12 = 23 + 10 + 1 + 1
= 33 + 1 +1
= 35

+10   +1 +1

23   33   35

Stage 3 –
Partition into tens and ones and recombine.

+30   +6

53   83   89

Stage 4 –
83 + 42 = 125

```
                    Progress to:
  80 + 3                 83
+ 40 + 2                +42
 120 + 5 = 125           5
                        120
                        125
```

Stage 5 –
Formal method, showing numbers carried <u>underneath</u>.

```
  358      Extend to numbers with any
+  73      number of digits and
  431      decimals with 1 and 2
   1 1     decimal places.
```

S U B T R A C T I O N

Stage 1 –
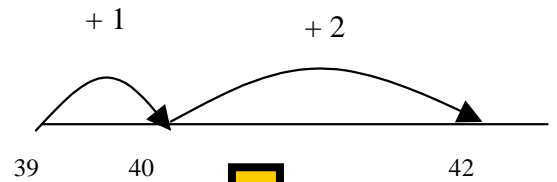Using number lines to count back in ones.
11 - 7 = 4

0 1 2 3 4 5 6 7 8 9 10 11 12
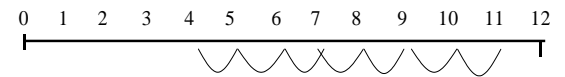
Counting on, using a number line, to find the difference between 7 and 11.

0 1 2 3 4 5 6 7 8 9 10 11 12
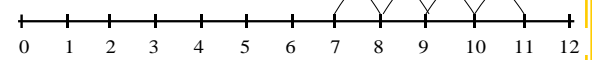
Stage 2 –
Find a small difference by counting up.
42 – 39 = 3

+ 1   + 2

39   40   42

Stage 3 – Counting back in tens and ones.
37 – 12 = 37 – 10 – 1 - 1
= 27 – 1 -1
= 25

25   27   37
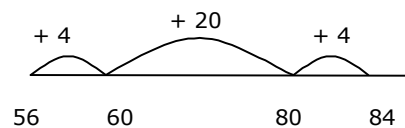
-1   - 1   -10
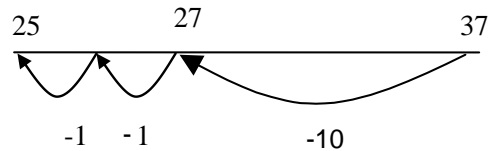
Progressing to taking larger jumps with the units.

Stage 4 –
Complementary addition (counting up from the smaller number to the larger number)

84 – 56 = 28

+ 4   + 20   + 4

56   60   80   84

Stage 5 –
83 – 42 = 41

```
                  Progress to:
                       83
  80 + 3             - 42
- 40 + 2               1
 40 +  1 = 41          40
                       41
```

Stage 6 –
Decomposition

```
  8  1              2  4  1
  9 2                3 5 2
-  3 8             - 1 7 8
  5 4                1 7 4
```

Progress to using decomposition with decimals.