Year 4 Calculation Policy

- Addition – Mental Strategies
- Addition – Written Strategies
- Addition – Resources and Vocabulary
- Subtraction – Mental Strategies
- Subtraction – Written Strategies
- Subtraction – Resources and Vocabulary
- Multiplication – Mental Strategies
- Multiplication – Written Strategies
- Multiplication – Resources and Vocabulary
- Division – Mental Strategies
- Division – Written Strategies
- Division – Resources and Vocabulary

ALDERMAN
RICHARD HALLAM

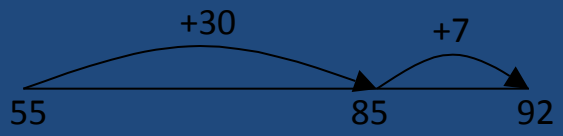
Addition – Mental Strategies and Jottings

- Partition the second number into tens and ones and recombine e.g.

  55 + 37 = 55 + 30 + 7

  = 85 + 7

  = 92



- Add the nearest multiple of 10, 100 or 1000 then adjust e.g.

  63 + 29 = 63 + 30 – 1

  2998 + 47 = 3000 + 47 - 2

- Find near doubles and adjust as needed e.g.

  72 + 68 = (70 + 2) + (70 – 2)

<u>Use of the bar model with problems if applicable</u>

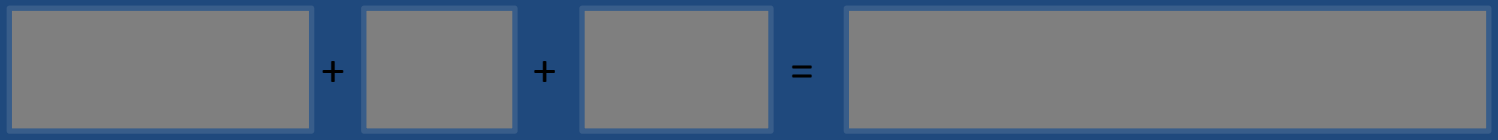
I have different lengths of rope: 5.4 m is red, 1.7 m is yellow, 2.5 m is blue. What length of rope do I have altogether?

?		
5.4m	1.7m	2.5m

Addition – Mental Strategies and Jottings

The Bar model

Aggregation

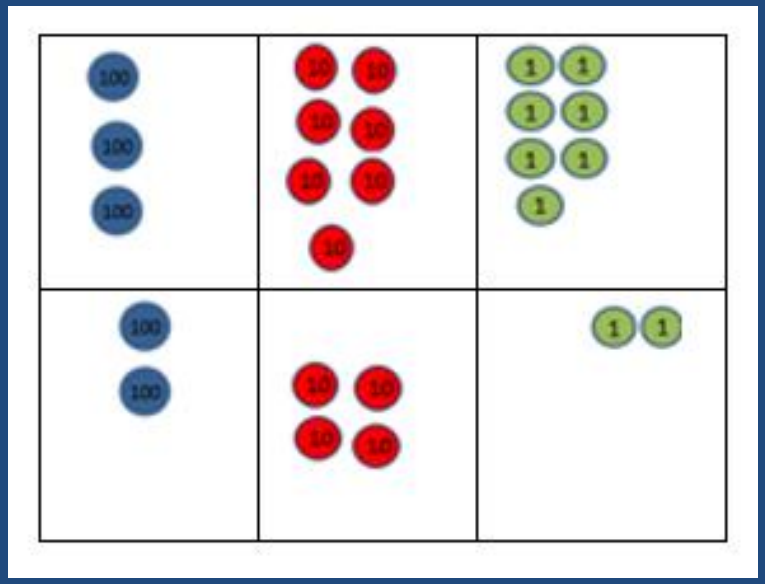


Augmentation

Addition – Written Strategies

- Expanded column addition

  (use of place value counters or base 10)



$$\begin{array}{r} 377 \\ +\ 242 \\ \hline 9 \\ 110 \\ +\ 500 \\ \hline 619 \end{array}$$

Children to use place value counters to physically lay out the calculation and practise exchanging counters e.g. 10 tens can be exchanged for 1 hundred.

- Leading to short column addition

  This is a shortened version of the above method.
  Not to be taught as a new method!

  (use of place value counters)

$$\begin{array}{r} 377 \\ +\ 242 \\ \hline 619 \\ {\scriptstyle 1} \end{array} \qquad \begin{array}{r} 265.4 \\ +\ 132.5 \\ \hline 397.9 \end{array}$$

Subtraction – Mental Strategies and Jottings

- Find a small difference by counting up e.g. 5003 – 4996 = 7

  This should be modelled on a blank number line and focus on counting forwards, not backwards.

- Subtract the nearest multiple of 10 and then adjust

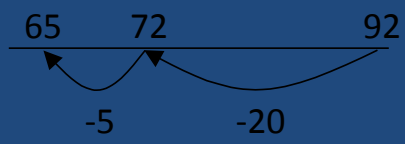
  e.g. 98 – 23 = 98 – 20 (-3)

  = 78 – 3

  = 75

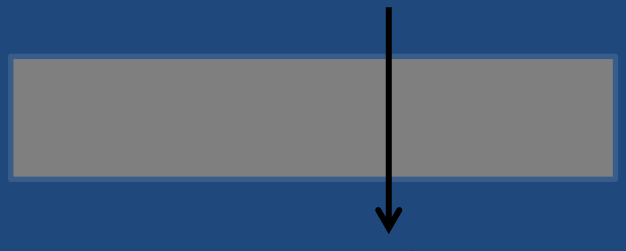
- Use known number facts and place value to subtract

  92 – 25 = 67



Subtraction – Mental Strategies and Jottings

The Bar model



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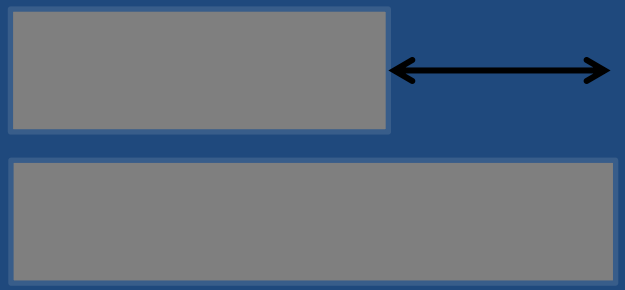
Partitioning into two groups

Reduction – by a quantity or amount



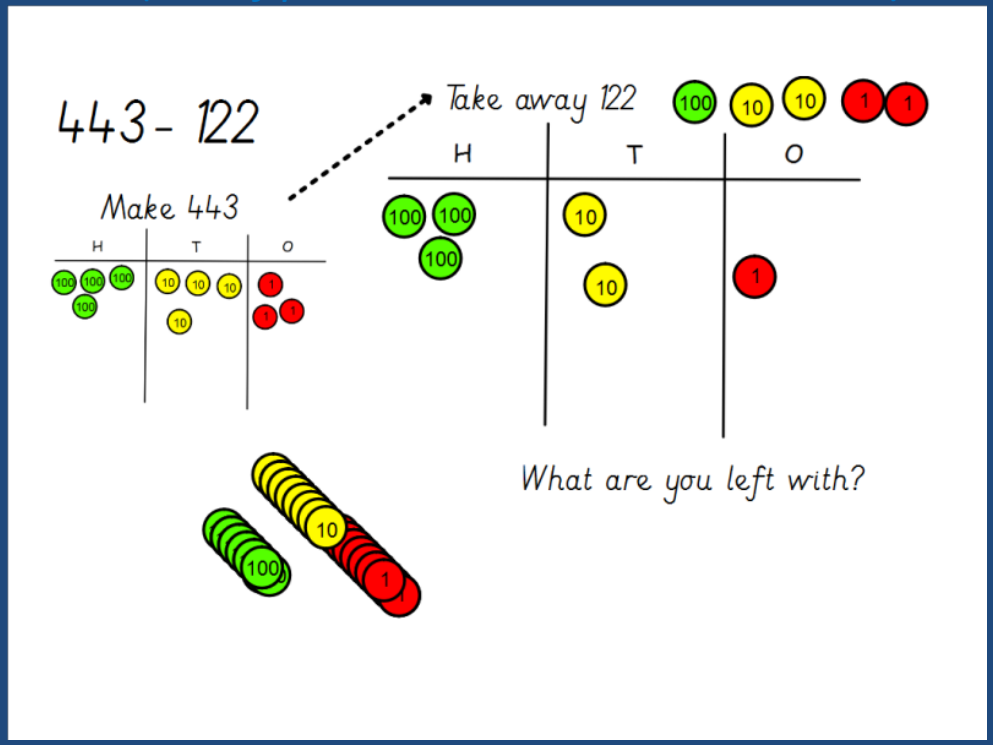
Comparison – of the difference

Inverse – how much more

Subtraction – Written Strategies

- Expanded column subtraction

(use of place value counters or base 10)



400 + 40 + 3
- 100 + 20 + 2
300 + 20 + 1
321

- Leading to short column subtraction

(use of place value counters)

443
-122
321

Multiplication – Mental Strategies and Jottings

- Children must know all times tables up to 12 x 12
  - Daily practise of times tables, forwards and backwards is recommended. This can be done in the line when walking into the classroom.

- When multiplying 3 numbers, they should multiply the largest two numbers first e.g. 2 x 7 x 5 = 2 x (7 x 5) = 2 x 35 = 70

- Children should be able to recognise the factor pairs for any given number

- Commutativity – children to explore place value and known times tables
  E.g. 3 x 200 = 600 can be derived from 3 x 2 = 6

<u>Use of the bar model with problems to help understand multiplication as repeated addition</u>

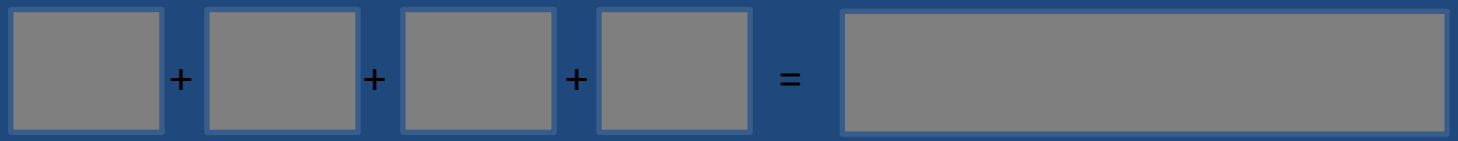
I have £1.50, Liz has 5 times as much. How much does Liz have?

?				
£1.50	£1.50	£1.50	£1.50	£1.50

Multiplication – Mental Strategies and Jottings

The Bar model

Repeated Aggregation



Scaling

Multiplication– Written Strategies

- Expanded short column multiplication

(use of place value counters or base 10 for arrays may be used to support calculations if necessary)

Commutativity:
6 x 2 = 12
6 x 20 = 120

(6 x 4)
(6 x 20)

```
  24
 x 6
 24
+120
144
```

Commutativity:
5 x 4 = 20
5 x 40 = 200

Commutativity:
5 x 3 = 15
5 x 30 = 150
5 x 300 = 1500

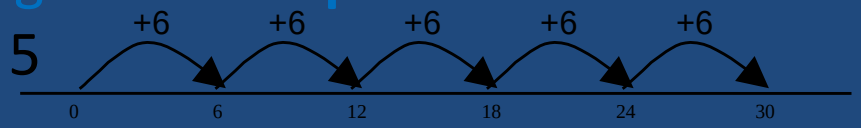
(5 x 2)
(5 x 40)
(5 x 300)

```
  342
 x 5
  10
 200
+1500
1710
```

Division – Mental Strategies and Jottings

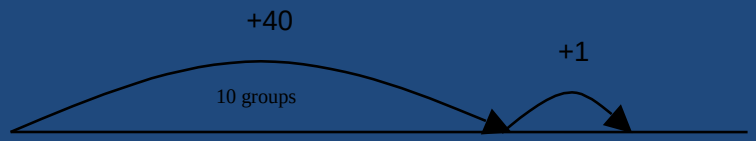
- Sharing and grouping to count **up**

30 ÷ 6 =



- Larger groupings of known number facts including remainders

41 ÷ 4 = (10 x 4) + 1 = 10 r.1



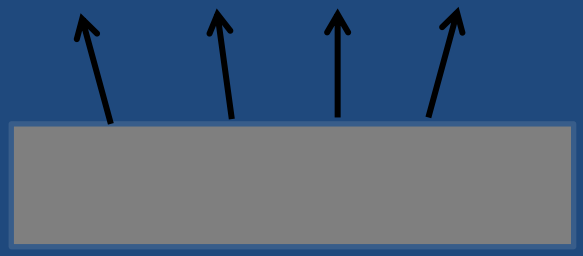
<u>Use of the bar model with problems if applicable</u>

84 marbles are shared between 7 children, how many did they each receive?

84	
7 x 10 = 70	14 = 7 x 2

Division – Mental Strategies and Jottings

The Bar model



Sharing equally

Repeated subtraction

Repeated addition

Ratio

Division – Written Strategies

- Division by chunking using known multiples

e.g. 72 ÷ 5 =

$$\begin{array}{rrl} & 72 & \\ - & \underline{50} & (5 \times \mathbf{\underline{10}}) \\ & 22 & \\ - & \underline{20} & (5 \times \mathbf{\underline{4}}) \\ & 2 & \end{array}$$

NB. Although there is no curriculum expectation of standard algorithms for division yet, children need to have the expanded building blocks for Y5

- Bus stop method for division with equipment

Using place value counters

$$\begin{array}{r|l} & 20 \ + 4 \\ \hline & {\scriptstyle 60\ +\ 10} \\ 3 & \not{70} \ + 2 \end{array}$$