Maths Calculation Policy

Thursday 9th October 2014

+ − × ÷

1. Addition and Subtraction

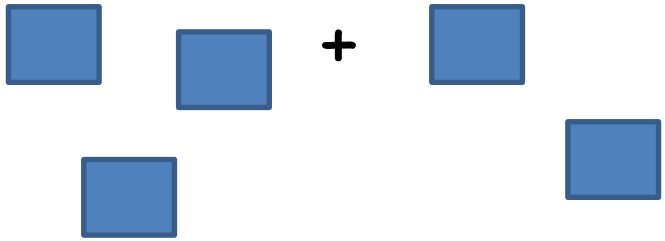
2. Multiplication and Division

3. Your turn

Addition – Reception/Y1

Pictures and symbols

Add two groups of objects.

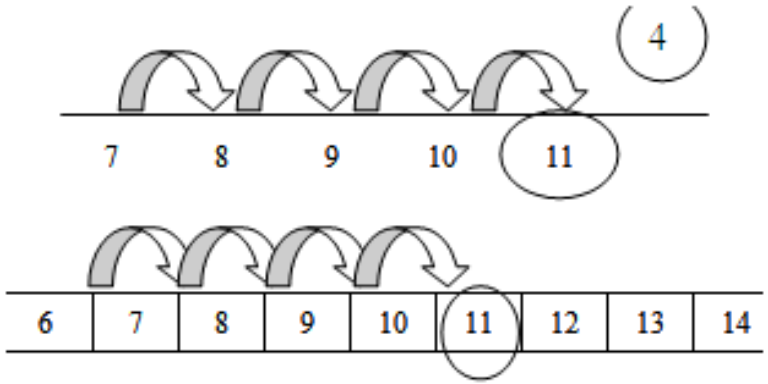


+ = 5

3 + 2 = 5

Use a number line to count in ones

7 + 4 = 11

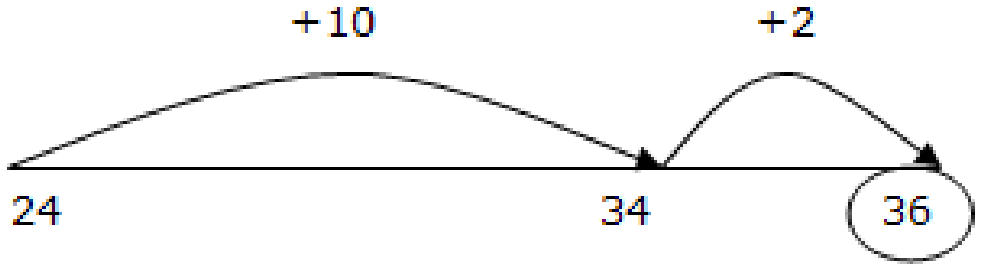


Add one-digit and two-digit numbers to 20

Addition – Y2

Partition the smaller number into tens and units

24 + 12 =
24 + 10 + 2



Partition into tens and units and recombine

26 + 32 = 58
20 + 30 = 50
6 + 2 = 8

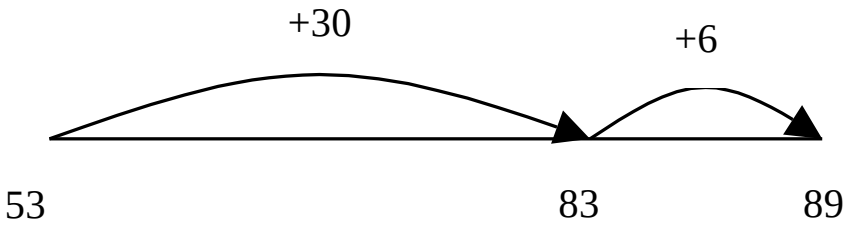
Addition – Y3

Partition the smaller number into tens and units

53 + 36 = 53 + 30 + 6

= 83 + 6

= 89



Begin to use expanded method in columns

```
  324
+ 261
-----
    5
   80
  500
-----
  585
```

Addition – Y4

Expanded method in columns, including adding pounds and pence.

£3.24
+ £2.61
.05
.80
£5.00
£5.85

Add together four-digit numbers

Addition – Y5

Expanded method in columns

$$
\begin{array}{r}
587 \\
+\ 475 \\
\hline
12 \\
150 \\
900 \\
\hline
1062
\end{array}
$$

Column Method – recording carried digits below the line.

$$
\begin{array}{r}
587 \\
+\ 475 \\
\hline
1062 \\
\hline
1\ 1
\end{array}
$$

Add together whole numbers with more than 4 digits

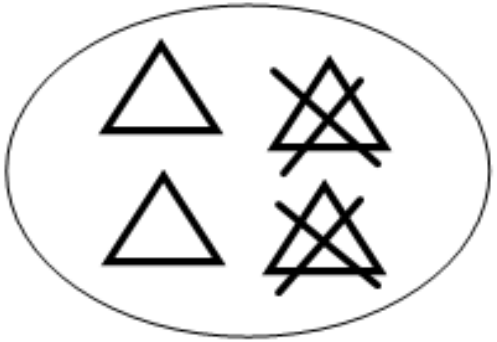
Addition – Y6

Column Method – recording carried digits below the line

$$\begin{array}{r} 47 \\ +\ 76 \\ \hline 123 \\ \hline 11 \end{array} \qquad \begin{array}{r} 258 \\ +\ 87 \\ \hline 345 \\ \hline 11 \end{array} \qquad \begin{array}{r} 366 \\ +458 \\ \hline 824 \\ \hline 11 \end{array}$$

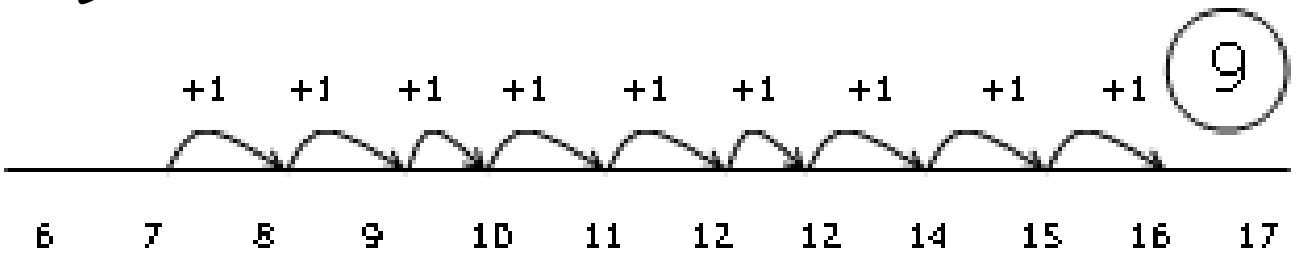
Subtraction – Reception/Y1

Pictures and symbols



Use a number line to count in ones

16 – 7 = 9

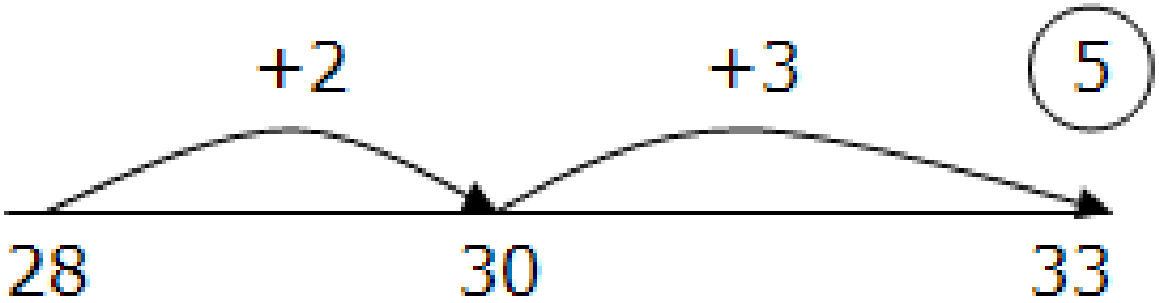


Subtraction - Y2

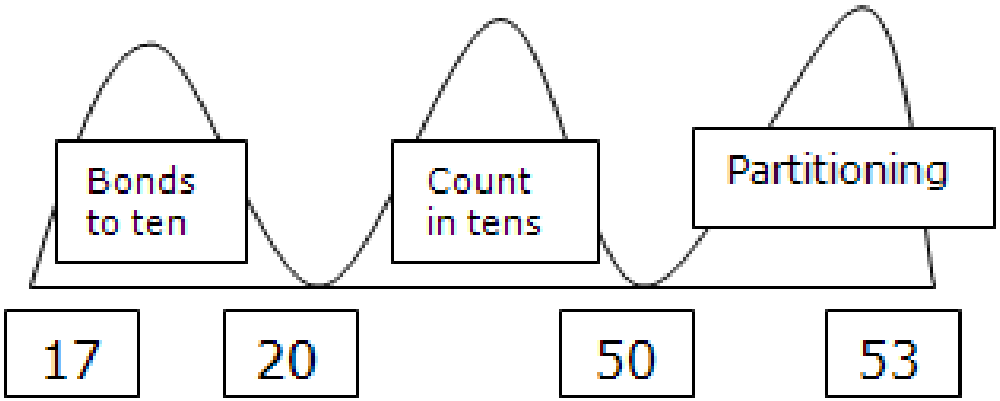
Use a number line to count up

Use number bonds to ten

33 - 28 = 5

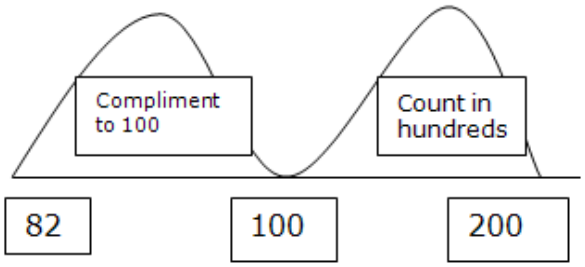


53 - 17 =



Subtraction – Y3

Subtract numbers with up to 3 digits using formal written method of column subtraction.



Develop number line into vertical recording in columns.

$$
\begin{array}{rll}
74 & & \\
-\ 27 & & \\
\hline
3 & \rightarrow 30 & \\
40 & \rightarrow 70 & \\
4 & \rightarrow 74 & \\
\hline
47 & &
\end{array}
$$

Subtraction – Y4

Subtract 4-digit numbers, with the majority using vertical recording in columns.

$$\begin{array}{rl} 74 & \\ -\ 27 & \\ \hline 3 & \rightarrow 30 \\ 40 & \rightarrow 70 \\ 4 & \rightarrow 74 \\ \hline 47 & \end{array}$$

Development of work where no adjustments of decomposition is needed

$$\begin{array}{r} 500 + 60 + 3 \\ -\ 200 + 40 + 1 \\ \hline 300 + 20 + 2 \end{array}$$

Subtraction – Y5

Subtract whole numbers with more than 4 digits, using formal written methods.

Partition numbers to take the smaller number away from the bigger number

$$\begin{array}{r} 326 \\ -178 \\ \hline 2 \\ 20 \\ 100 \\ 26 \\ \hline 148 \end{array} \begin{array}{l} \\ \\ \rightarrow 180 \\ \rightarrow 200 \\ \rightarrow 300 \\ \rightarrow 326 \end{array}$$

$$\begin{array}{r} 563 \\ -\ 241 \\ \hline 322 \end{array}$$

$$\begin{array}{r} \overset{400}{\cancel{500}} + \overset{90}{\cancel{0}} + \overset{13}{\cancel{3}} \\ -\ 200 + 70 + 8 \\ \hline 200 + 20 + 5 \end{array}$$

$$\begin{array}{r} \overset{4}{\cancel{5}}\ \overset{9}{\cancel{0}}\ \overset{13}{\cancel{3}} \\ -\ 2\ 7\ 8 \\ \hline 2\ 2\ 5 \end{array}$$

Subtraction – Y6

Subtract whole numbers with more than 4 digits using formal written methods.

Use vertical recording of subtraction, wher adjustments and decomposition are needed.

$$\begin{array}{r} {}^{4}\cancel{5}\,{}^{9}\cancel{0}\,{}^{13}\cancel{3} \\ -\ 2\,7\,8 \\ \hline 2\,2\,5 \end{array}$$

Lead to decimal decomposition

$$\begin{array}{r} {}^{1}\,{}^{11}\,{}^{14} \\ \cancel{22.4} \\ -\ 17.8 \\ \hline 4.6 \\ \hline \end{array}$$

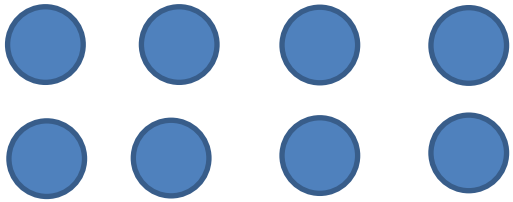
Multiplication – Reception/Y1

Pictures and symbols

There are 2 stars in each bag.

How many stars are there in 5 bags?

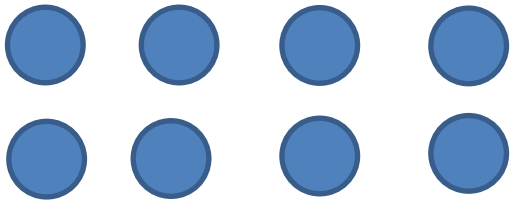
Arrays and repeated addition



4 x 2 or 4 + 4

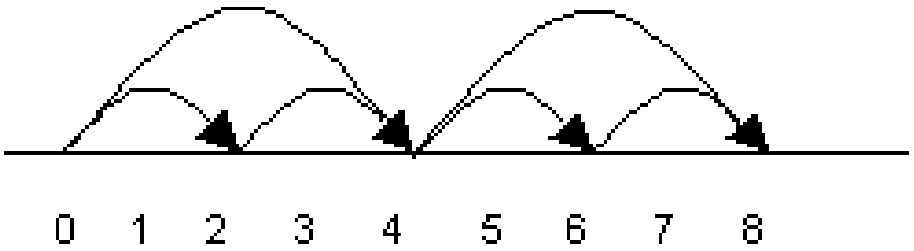
Multiplication – Y2

Arrays and repeated addition



4 x 2 or 4 + 4

Record jumps on a number line



Multiplication – Y3

Multiply a 2 digit number by any 1 digit number using the grid method

32 x 5 =

x	30	2
5	150	10

= 150 + 10 = 160

Multiplication – Y4

Multiply a two-digit and three-digit numbers by any single digit

32 x 25 =

x	30	2
20	600	40
5	150	10

=

600
150
+ 40
10
800

Leading to expanded short multiplication method for two-digit by one-digit numbers

HTU
38
X 7
56
210
266

Multiplication – Y5

Multiply numbers up to 4-digits by a one- or two-digit number using formal written method, including long multiplication for two-digit numbers

THTU	
	56
X	27
	392
	1120
	1512
1	

Represent the method of recording as column format

Use short multiplication for 2 x 1 digit numbers

24 x 6 becomes

		2	4
	x		6
	1	4	4
		2	

Answer: 144

Multiplication – Y6

Multiply multi-digit numbers up to 4 digits by a two-digit whole number using formal written methods.

2741 × 6 becomes

	2	7	4	1
×				6
1	6	4	4	6
	4	2		

Answer: 16 446

24 × 16 becomes

		2	
	2	4	
×	1	6	
2	4	0	
1	4	4	
3	8	4	

Answer: 384

When multiplying 2 x 2 digit, use long multiplication method

Division – Reception/Y1

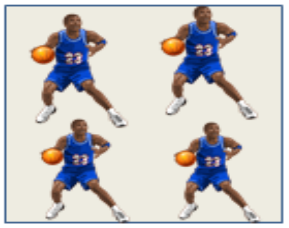
Pictures and marks

Modelled as sharing

6 sweets are shared between 2 people

12 people get into teams of 4 to play a game.

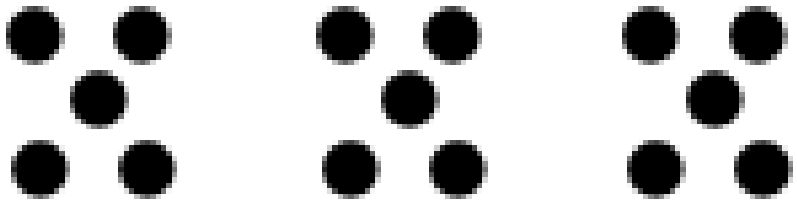
How many teams are there?



Division – Y2

Divide 2-digit numbers by 2, 5 and 10

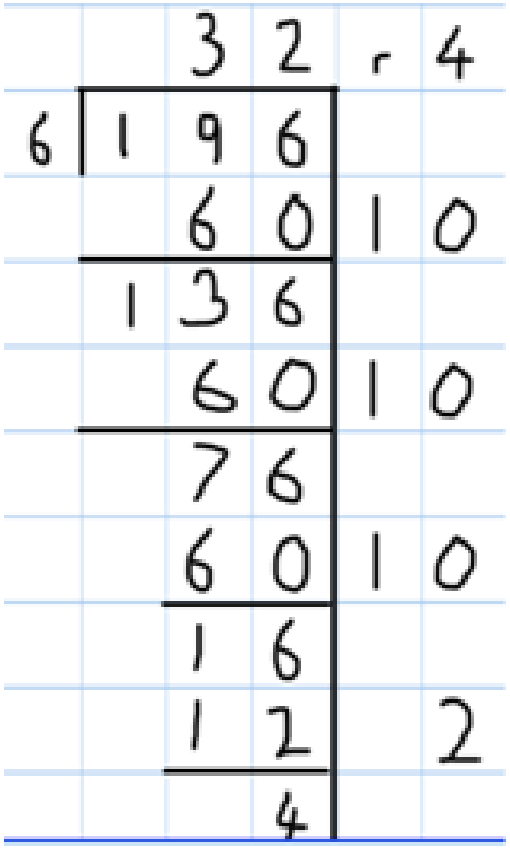
There are 15 sweets. How many people can have 5 each?



Division – Y3

Divide a 2-digit number by the multiplication tables that they know

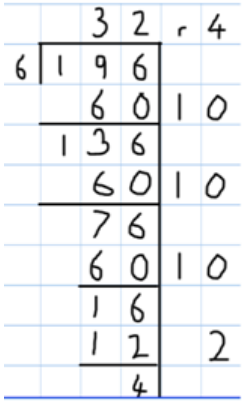
Introduce 'chunking' method



Division – Y4

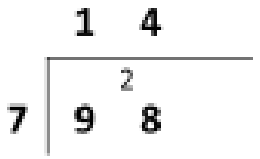
Divide a 2-digit number by a single digit number

Continue to use 'chunking' method



Move onto short division to divide a 2-digit number by a single digit

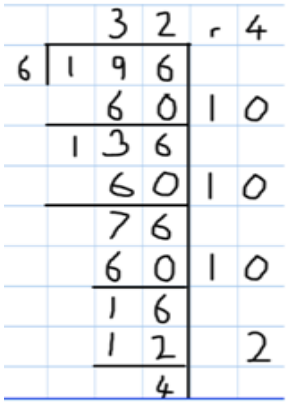
98 ÷ 7 becomes



Answer: 14

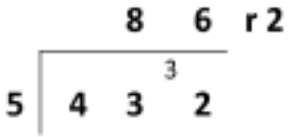
Division – Y5

Use 'chunking' method for division



Move onto short division to divide a 4-digit number by a single digit, including where there are remainders

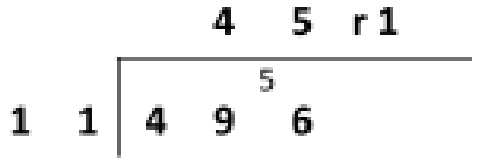
432 ÷ 5 becomes



Answer: 86 remainder 2

Record remainders as a fraction

496 ÷ 11 becomes

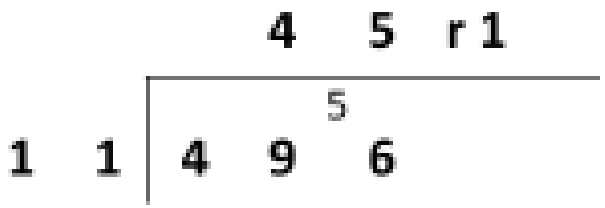


Answer: $45\frac{1}{11}$

Division – Y6

Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, or short division where appropriate

496 ÷ 11 becomes



Answer: $45\frac{1}{11}$