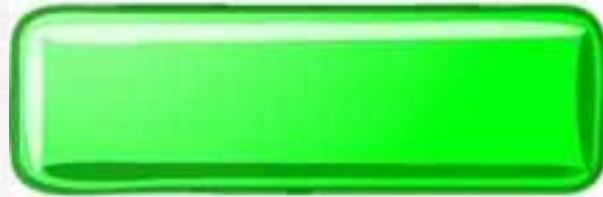


Calculation Policy – Years 5 and 6

Tuesday 6th November 2018



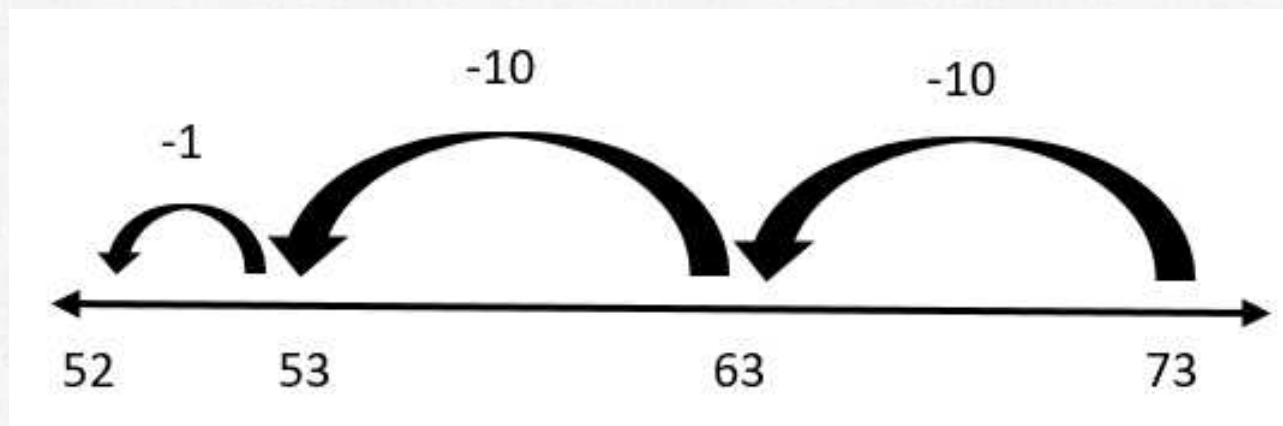
Subtraction



Stage 2

Number line

$$73 - 21$$

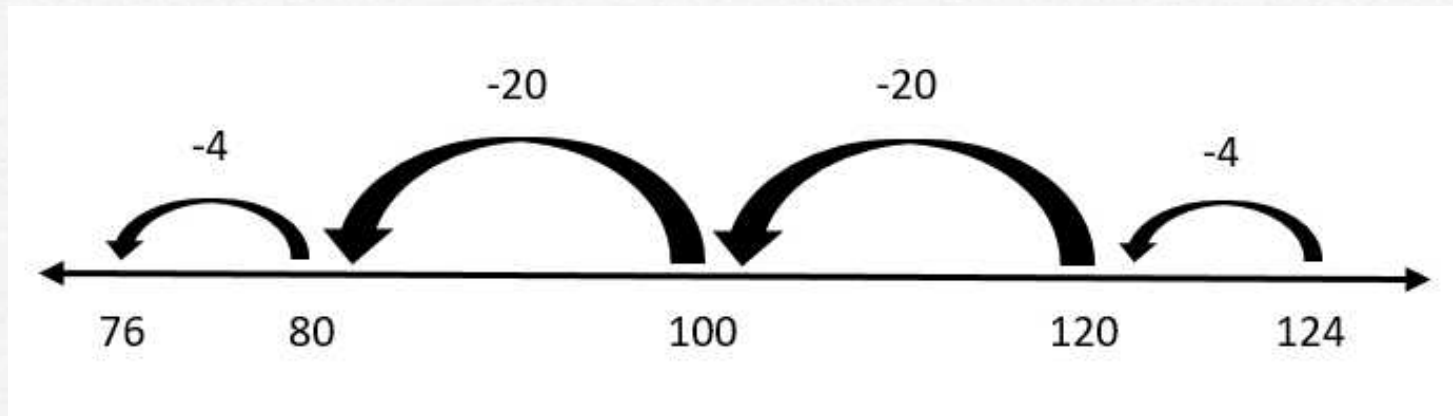


Start at 73. Jump back in 'tens' twice (twenty).
Then jump back one (one).

Stage 2

Consolidation of the number line method from Year 2, looking at using larger numbers.

$$124 - 48$$



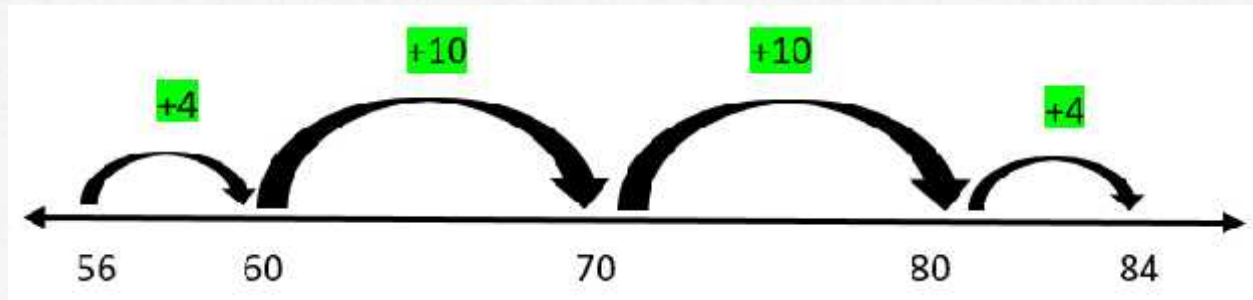
Jump back to the nearest ten $124 - 4 = 120$

Then subtract the remaining amount by jumping back in different sizes of jumps. The example above shows two jumps of 'twenty' but you could use four jumps of 'ten' or one jump of 'forty'.

Stage 2

Number line (left to right – finding the difference)

$$84 - 56$$



Start from 56 and jump to the nearest ten. Continue jumping until reaching 84.

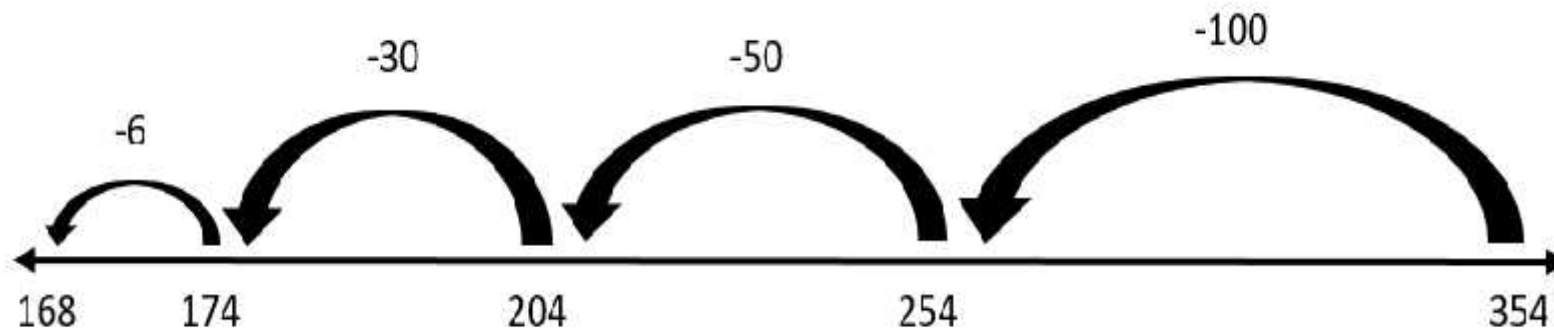
$$4 + 10 + 10 + 4 = 28$$

This method should be used when finding a small difference between numbers (when the two numbers are close together e.g. 84 - 77).

Stage 2

Use of an empty number line (right to left) for HTO - TO
and HTO - HTO

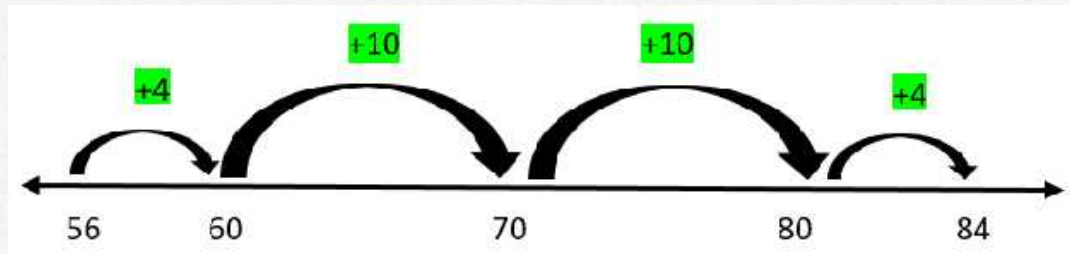
$$354 - 186$$



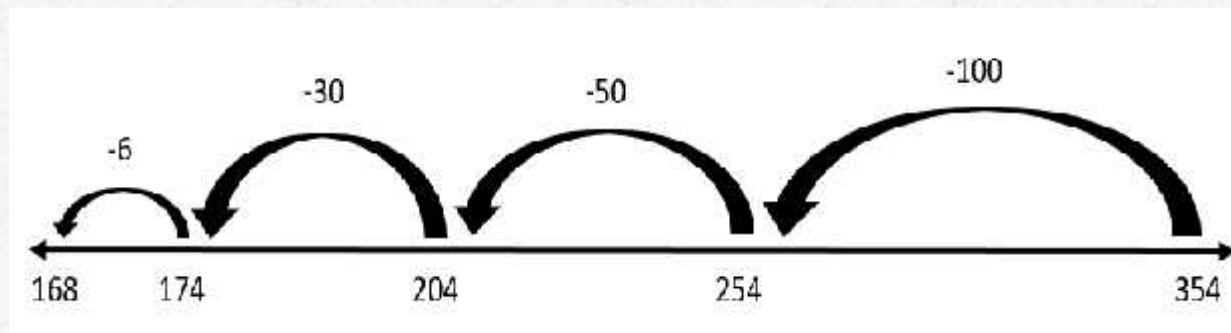
Over to you:

Try using a number line to solve one of these calculations:

$$73 - 48$$



$$357 - 143$$



Stage 3

Expanded partitioning without exchanging

$$96 - 42$$

$$96 = 90 + 6$$

$$- \underline{42} = 40 + 2$$

$$54 \quad 50 + 4$$

Step 1 – write the calculation vertically

Step 2 – partitioning

Step 3 – column subtraction

Stage 3

Expanded partitioning with exchanging

1) Write the calculation vertically

$$\begin{array}{r} 193 \\ - 66 \\ \hline \end{array}$$

Stage 3

Expanded partitioning with exchanging

2) Partition the digits

$$193 = 100 + 90 + 3$$

$$\underline{- 66 = 0 + 60 + 6}$$

Stage 3

Expanded partitioning with exchanging

3) Subtract the ones column. As you cannot do '3 - 6', you must exchange from the tens column, bringing one ten into the ones column (thus taking one ten away from the tens column). $13 - 6 = 7$

$$\begin{array}{r} 3 = 100 + \cancel{90} + \color{red}{13} \\ - 66 = + 60 + 6 \\ \hline 7 \end{array}$$

Stage 3

Expanded partitioning with exchanging

4) Subtract the tens column ($80 - 60 = 20$).

$$\begin{array}{r} 3 = 100 + \overset{80}{\cancel{90}} + 13 \\ - 66 = + 60 + 6 \\ \hline 20 + 7 \end{array}$$

Stage 3

Expanded partitioning with exchanging

6) Add the digits together ($100 + 20 + 7 = 127$)

$$\begin{array}{r} \\ = + + \\ \hline 127 + 20 + 7 \end{array}$$

80

$$193 = 100 + \cancel{90} + 13$$

Stage 3 into Stage 4

As for addition, once children are confident in using these methods, they can begin to use the more formal traditional method for subtraction.

Stage 4

$$\begin{array}{r} 8^1 \\ 193 \\ - \underline{66} \\ 127 \end{array}$$

As the one on the top line is smaller than the one on the bottom line, you must exchange from the tens column - the '3' becomes '13' and the '9' (tens) becomes '8' (tens).

Stage 4

This method continues through to Year 6, with more complex questions involving larger numbers and decimals.

$$\begin{array}{r} \overset{2}{\cancel{3}}.\overset{13}{\cancel{4}}\overset{17}{\cancel{7}} \\ - 1.59 \\ \hline 1.88 \end{array}$$

Possible problems with vertical methods

- As for addition, the columns must be lined up accurately (ones on top of ones, tens on top of tens etc).
- Children may try to swap round the digit on the top with the one on the bottom. This will obviously completely change the question that they are trying to answer.
- Children may forget to exchange digits, or try to subtract from a digit that has been exchanged.

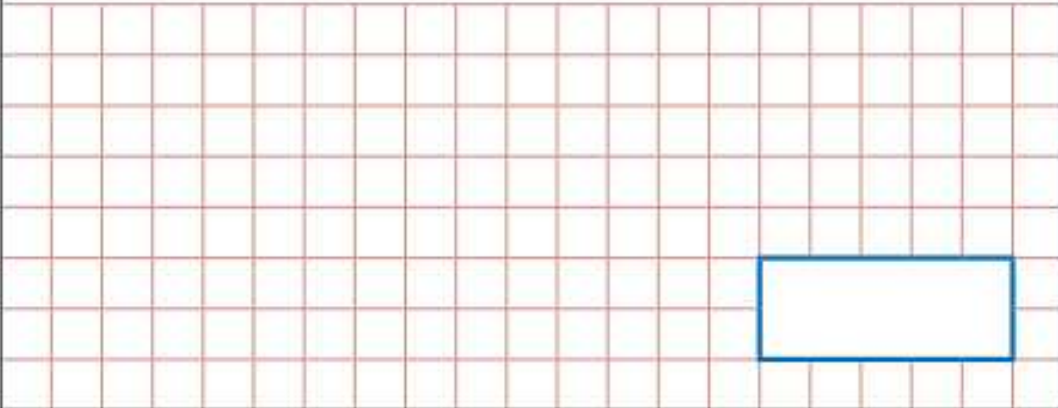
Espresso, Purple Mash and RM Easimaths

Please see the log-in information within your child's homework diary for access to these resources.



Key Stage 2 SATs

- Three mathematics papers
- Paper 1 – Arithmetic (30 mins, 36 questions)
- Papers 2 and 3 – Reasoning (40 mins, 20 questions approx.)

1	$39 + 673 =$  <input data-bbox="1355 1204 1608 1311" type="text"/>	<input data-bbox="1686 1201 1765 1278" type="checkbox"/> 1 mark
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Paper One Example Questions

7

$$7,064 - 502 =$$

9

$$56.38 + 24.7 =$$

1 mark

Paper 2/3 Example Question

16

Adam wants to use a mental method to calculate $182 - 97$

He starts from 182

Here are some methods that Adam could use.

Tick the methods that are **correct**.

add 3 then subtract 90

subtract 100 then add 3

subtract 7 then subtract 90

subtract 3 then subtract 100

2 marks