



Calculation Policy

Haresfield C of E Primary School



How we teach it.

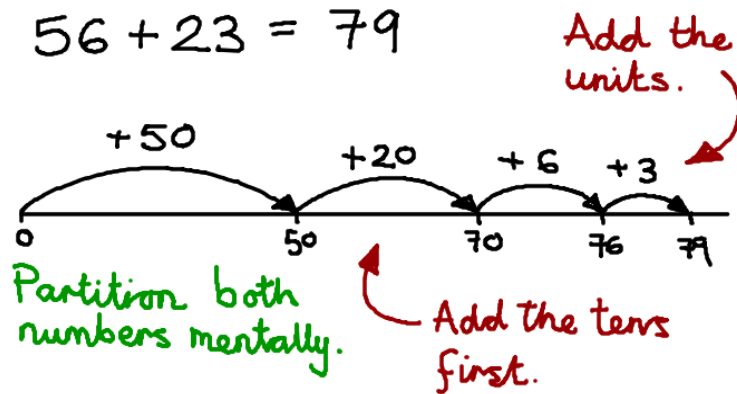
Written and mental calculation at Stage 3

Written Addition at Stage 3

Method:

Addition using a number line.

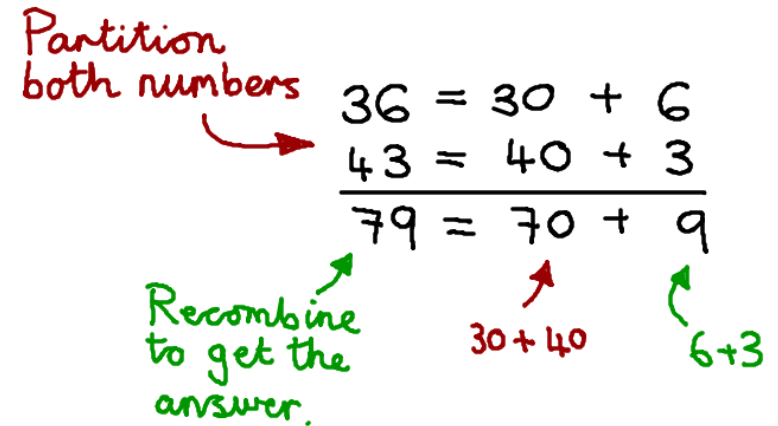
In Year 3 we will be partitioning both numbers and adding on a number line.



Leading to:

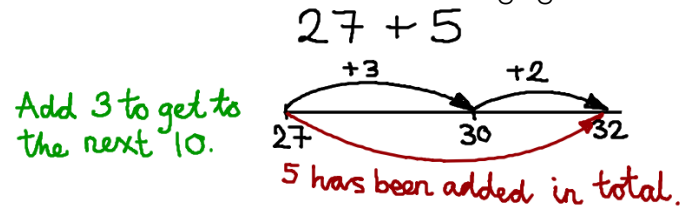
The Expanded Method of Addition.

Partitioning both numbers on a number line leads into using a more formal method of addition.



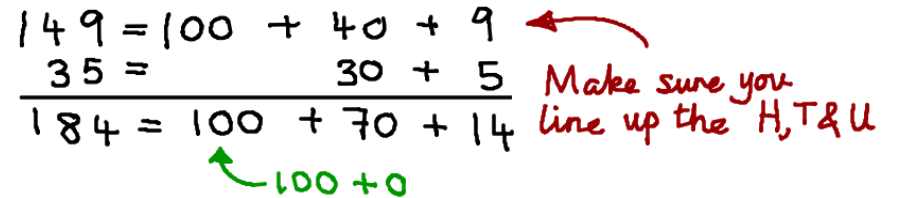
Strategies to support:

When addition crosses a ten or hundred use bridging to add.



Next Steps:

Adding 3 digit numbers using the expanded method.



Mental Addition at Stage 3

Children should be able to recall:

- Addition facts for all numbers to 20 drawing on knowledge of inverse relationship.
E.g. $9 + 8$, $13 + 6$

- Sums of multiples of 10.
E.g. $50 + 80$
- Pairs of two-digit numbers with a total of 100.
E.g. $32 + 68$

- Addition doubles for multiples of 10 to 100.
E.g. $90 + 90$

Working mentally, children should be able to:

- Add and subtract groups of small numbers.
E.g. $6 + 3 - 2$

- Add two-digit numbers.
E.g. $34 + 65$
- Add a two-digit number from a multiple of 10.
E.g. $50 + 38$

- Add near doubles.
E.g. $16 + 18 = 16 + 16 + 2$

Children should know when to:

- Reorder numbers when adding.
- Identify pairs totalling 10 or multiples of 10.

- Partition: Add tens and ones separately then recombine.
- Partition: Count on in tens and ones to find the total.
- Partition: Add 10 or 20 and adjust.

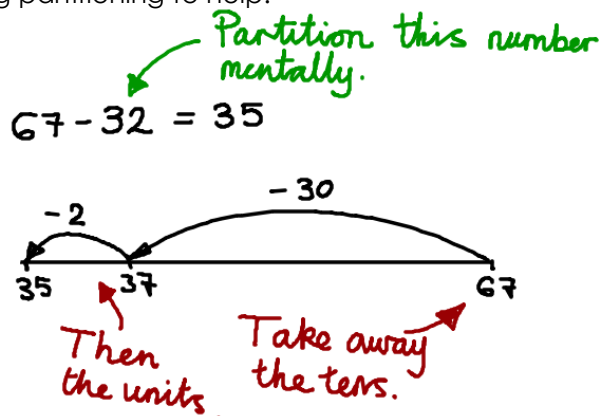
- Partition: Double and adjust when adding near doubles.
- Count on in minutes and hours bridging through 60.

Written Subtraction at Stage 3

Method:

Counting back using a number line.

In Year 3 we will be using a number line to count back from the biggest number using partitioning to help.

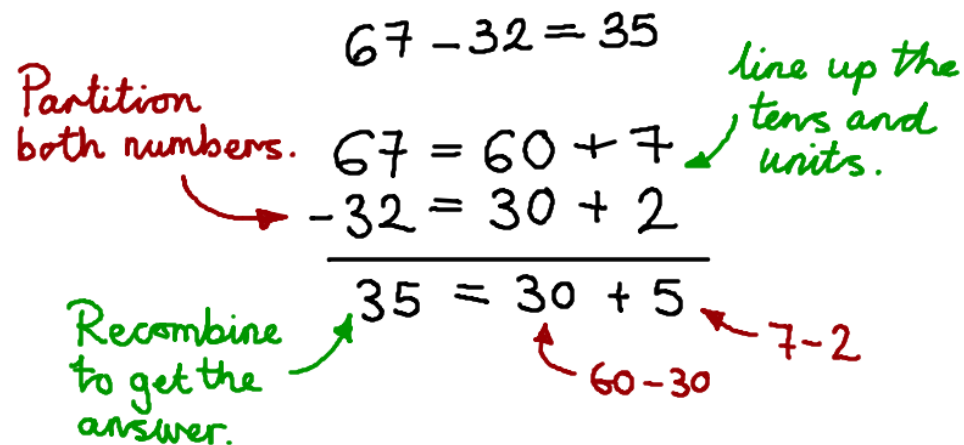


Note: Counting back is not always the most efficient method when the numbers are closer together.

Leading to:

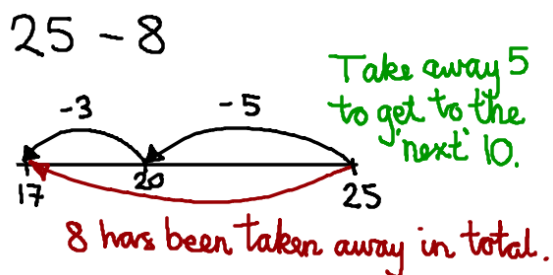
The Expanded Method of Subtraction.

Partitioning both numbers leads to the opportunity to use more formal methods of subtraction.



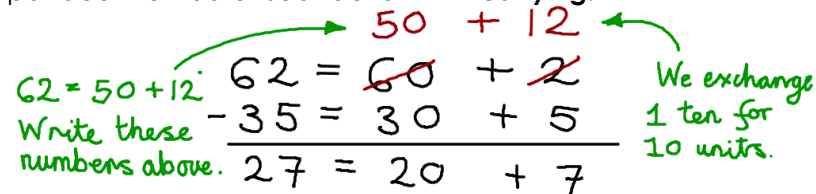
Strategies to support:

Subtracting to get to the next ten or hundred simplifies the subtraction.



Next Steps:

The Expanded Method of Subtraction **with carrying**.



Mental Subtraction at Stage 3

Children should be able to recall:

- Subtraction facts for all numbers to 20 drawing on knowledge of inverse relationship.
E.g. $17 - 9$

- Differences of multiples of 10.
E.g. $120 - 90$

- Pairs of two-digit numbers with a total of 100.
E.g. $32 + ? = 100$

Working mentally, children should be able to:

- Add and subtract groups of small numbers.
E.g. $5 - 3 + 2$

- Subtract a two-digit number from a multiple of 10.
E.g. $90 - 27$

- Subtract two-digit numbers.
E.g. $68 - 35$

Children should know when to:

- Partition: Count back in tens and ones to find the difference.

- Partition: Subtract 10 or 20 and adjust.

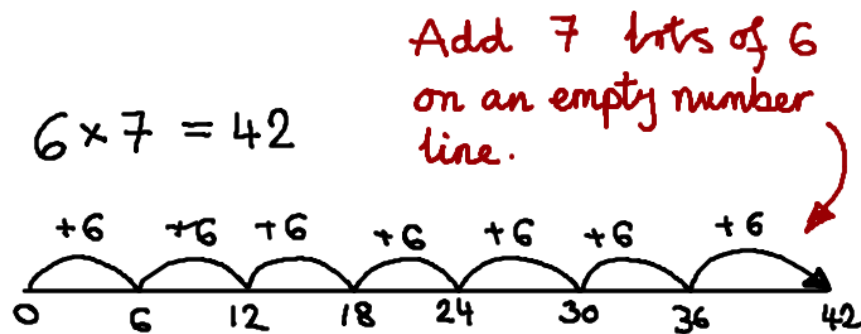
- Count back in minutes and hours bridging through 60.

Written Multiplication at Stage 3

Method:

Repeated addition using a number line.

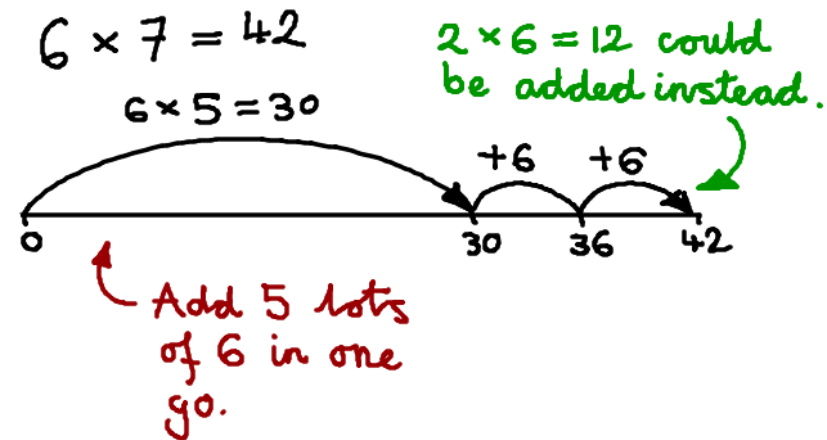
Understanding multiplication as repeated addition is key to understanding formal methods of multiplication.



Leading to:

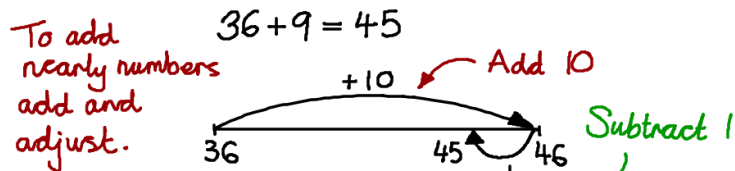
Repeated addition using times table facts.

By using known times table facts shortcuts can be taken to reduce the number of steps to multiply.



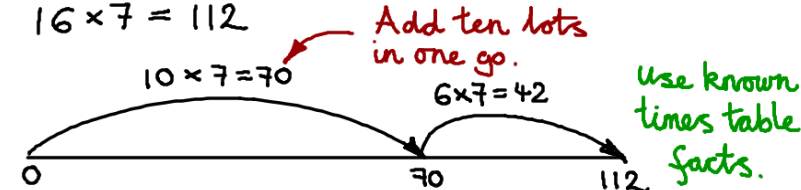
Strategies to support:

Adding 'nearly' numbers using compensating.



Next Steps:

Using multiplication of multiples of 10 allows bigger numbers to be multiplied.



Mental Multiplication at Stage 3

Children should be able to recall:

- Multiplication facts for the 2, 5 and 10 times table

- Multiplication facts for the 3, 4 and 6 times tables

- Doubles of multiples of 10 to 100.
E.g. Double 90

Working mentally, children should be able to:

- Double any multiple of 5 up to 100.

- Multiply one-digit or two-digit numbers by 10
E.g. 7×10 , 46×10

- Multiply one-digit or two-digit numbers by 100
E.g. 7×100 , 46×100

Children should know when to:

- Partition: when doubling, double the tens and units separately then recombine.

- Use knowledge that halving and doubling are inverse operations.

- Recognise that when multiplying by 10 or 100 the digits move one or two places to the left and zero can be used as a place holder.

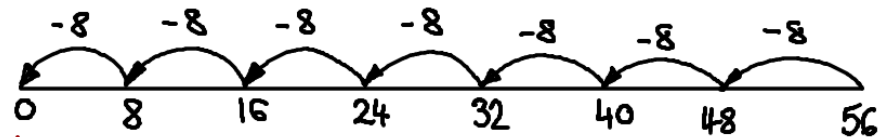
Written Division at Stage 3

Repeated subtraction using a number line.

Understanding division as repeated subtraction is key to understanding formal methods of division.

$$56 \div 8 = 7$$

Repeatedly subtract 8.



Subtract until it is no longer possible.

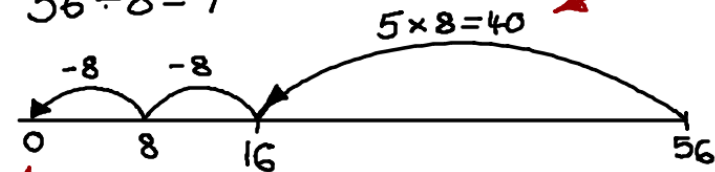
7 lots of 8 have been taken away.

Repeated subtraction using times table facts.

By using known times table facts shortcuts can be taken to reduce the number of steps needed to divide.

$$56 \div 8 = 7$$

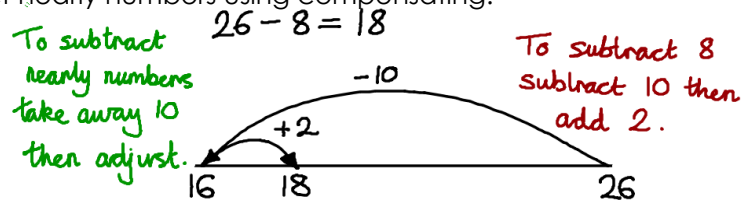
Subtract 5 lots of 8 in one go.



Subtract 8 until it is no longer possible.

Strategies to support:

Subtract nearly numbers using compensating.



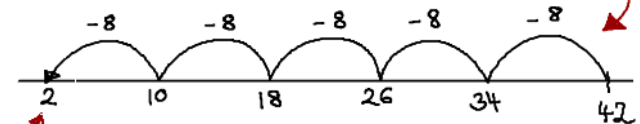
To subtract nearly numbers take away 10 then adjust.

To subtract 8 subtract 10 then add 2.

Next Steps:

Division with remainders. $42 \div 8 = 5 \text{ r } 2$

Subtract 5 lots of 8.



This is the remainder.

Mental Division at Stage 3

Children should be able to recall:

- Corresponding division facts for the 2, 5 and 10 times tables.

- Corresponding division facts for the 3, 4 and 6 times tables.

- Halves of multiples of 10 and 100.
E.g. Half of 90

Working mentally, children should be able to:

- Halve any multiple of 10 up to 200.
E.g. Halve 170

- Find unit fractions of numbers and quantities involving halves, thirds, quarters, fifths and tenths,

Children should know when to:

- Partition: when halving, halve the tens and units separately, then recombine.

- Use knowledge that halving and doubling are inverse operations.

- Recognise that finding a unit fraction is equivalent to dividing by the denominator and use of division facts.