Calculation Policy

Haresfield C of E Primary School

HARESFIELD SCHOOL

NON : SEMPER : ALACRI

How we teach it.

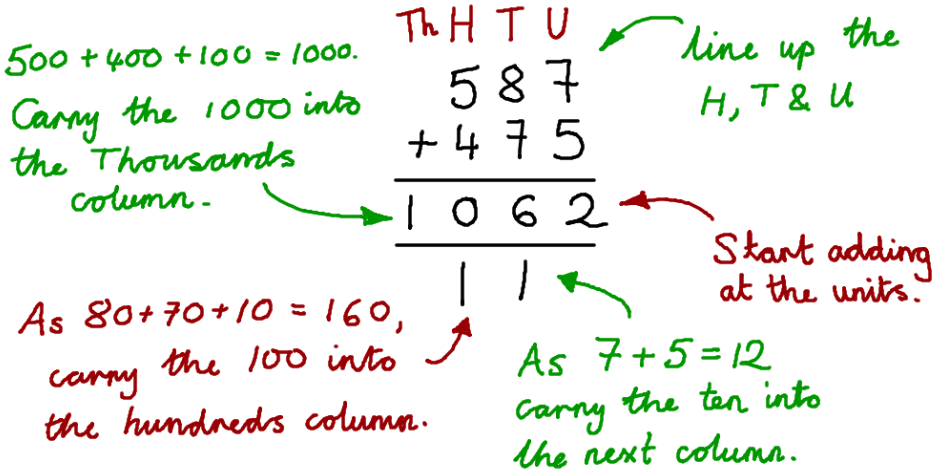
Written and mental calculation at Stage 6

Written Addition at Stage 6

Method:

Column Addition.

Children will practise using column addition to add numbers of all sizes. Secure knowledge of place value is essential.



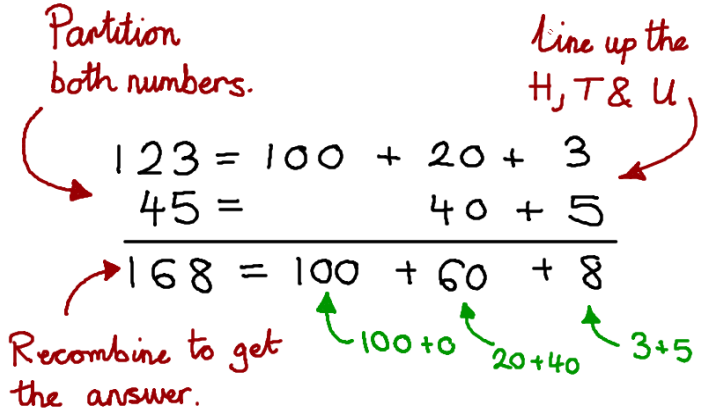
Common Mistakes to look out for:

- Make sure that the digits are lined up correctly in columns of thousands, hundreds, tens and units.
- Check that carrying is done correctly. The digit that needs to be carried must be placed in the correct column and then added in the next step.

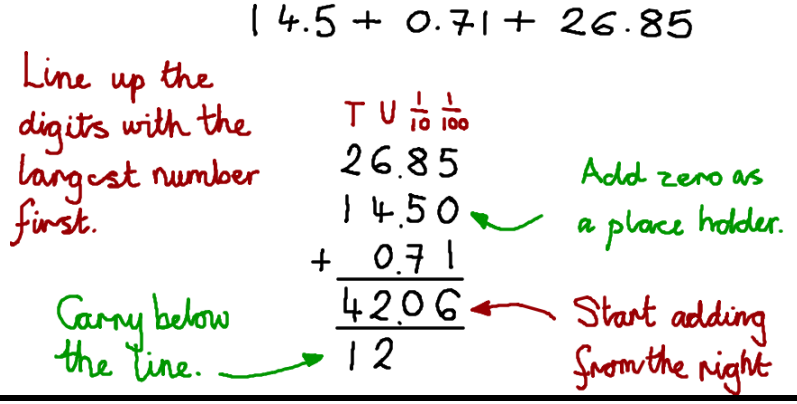
Alternative Methods:

By the end of Year 6 children will need to be secure in their knowledge of an efficient method of addition. The following methods may be of help.

The Expanded Method of Addition.



Adding several decimals.



Mental Addition at Stage 6

Children should be able to recall:

- Addition facts for multiples of 10 to 1000.
  E.g. 650 + ? = 930

- Addition facts for decimal numbers with one decimal place.
  E.g. 1.4 + ? = 2.5

- What must be added to a decimal with units, tenths and hundredths to make the next whole number,
  E.g. 7.26 + ? = 8

Working mentally, children should be able to:

- Add pairs of decimals with units, tenths or hundredths.
  E.g. 0.7 + 3.38

- Find doubles of decimals each with units and tenths.
  E.g. 1.6 + 1.6
- Add near doubles of decimals.
  E.g. 2.5 + 2.6 = 2.5 + 2.5 + 0.1

- Add a decimal with units and tenths, that is nearly a whole number.
  E.g. 4.3 + 2.9

Children should know when to:

- Count on in hundreds tens, ones and tenths and hundredths.
- Use knowledge of place value and related calculations.
  E.g. 6.8 + 4.3 using 68 + 43

- Use knowledge of place value and of doubles of two-digit numbers.
- Partition: Double and adjust.
  E.g. 1.6 + 1.7 = 1.6 + 1.6 + 0.1

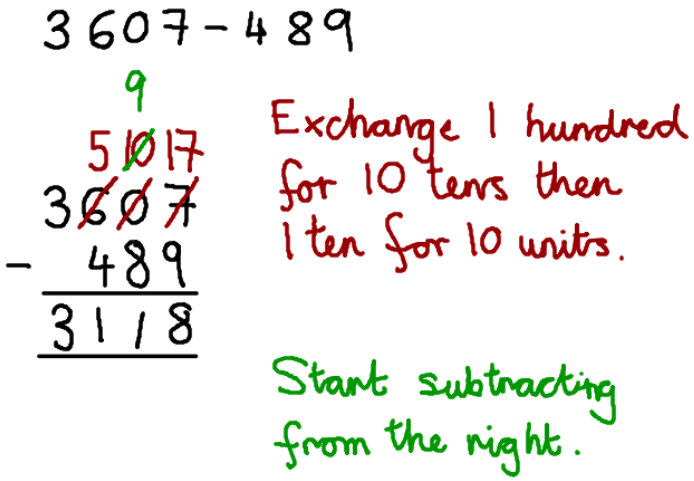
- Partition: add a whole number and adjust.
  E.g. 4.3 + 2.9 = 4.3 + 3 - 0.1
- Partition: Count on in minutes and hours, bridging through 60 (analogue and digital times, 12-hour and 24-hour clock)

Written Subtraction at Stage 6

Method:

Column Subtraction.

Children will practise using Column methods to subtract numbers of increasing size. Secure knowledge of place value is essential.



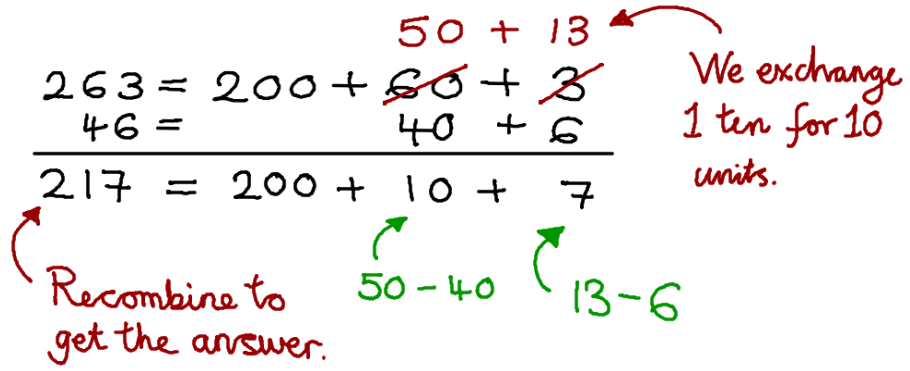
Common Mistakes to look out for.

- Children must ensure that the bottom number is subtracted from the top. If the top digit is smaller than the top digit children must exchange with the next digit.
- In some calculations, e.g. 305 - 58, children will need to exchange more than once to subtract successfully.

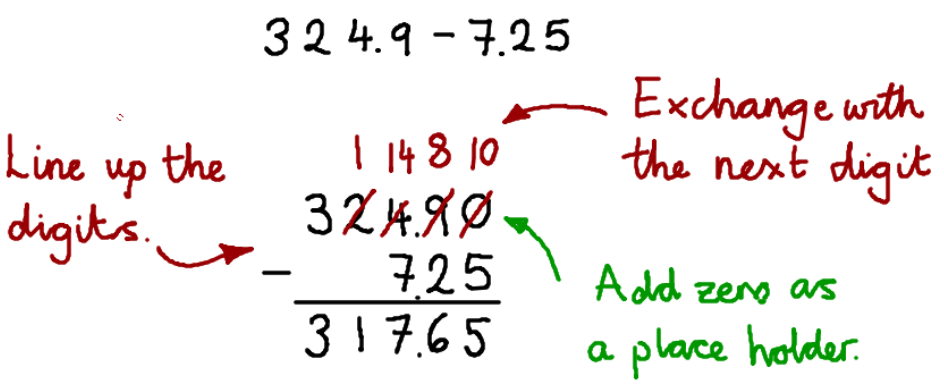
Alternative Methods.

By the end of Year 6 children will need to be secure in their knowledge of an efficient method of subtraction. The following methods may be of help.

The Expanded Method of Subtraction.



Subtraction decimals with a different number of digits.



Mental Subtraction at Stage 6

Children should be able to recall:

- Subtraction facts for multiples of 10 to 1000.
  E.g. ? - 250 = 540

- Subtraction facts for decimal numbers with one decimal place.
  E.g. ? - 1.4 = 2.5

- What must be subtracted from a decimal with units, tenths and hundredths to make the previous whole number,
  E.g. 7.26 - ? = 7

Working mentally, children should be able to:

- Subtract pairs of decimals with units, tenths or hundredths.
  E.g. 4.54 - 0.84

- Subtract a decimal with units and tenths, that is nearly a whole number.
  E.g. 6.5 - 3.8 = 6.5 - 4 + 0.2

Children should know when to:

- Count back in hundreds tens, ones and tenths and hundredths.
- Use knowledge of place value and related calculations.
  E.g. 6.8 - 4.3 using 68 - 43

- Partition: subtract a whole number and adjust.
  6.5 - 3.8 = 6.5 - 4 + 0.2

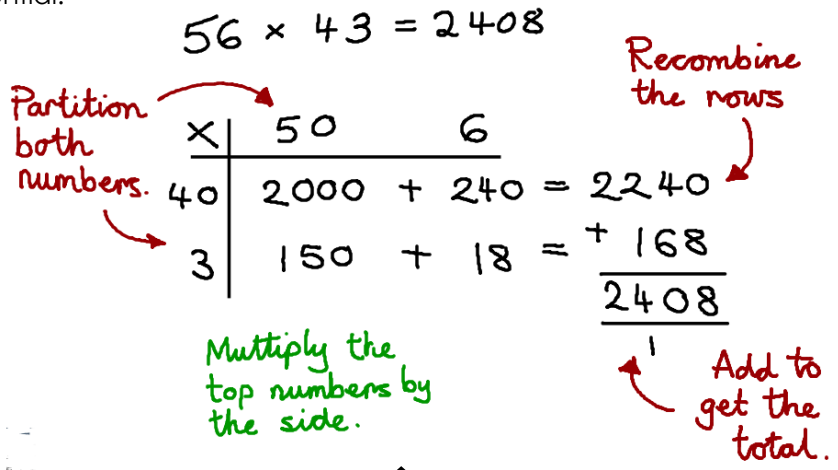
- Partition: Count back in minutes and hours, bridging through 60 (analogue and digital times, 12-hour and 24-hour clock)

Written Multiplication at Stage 6

Method:

The Column Method of Multiplication.

Children will continue to use the Grid Method to multiply larger numbers and decimals. Secure knowledge of multiplication of multiples of 10 is essential.



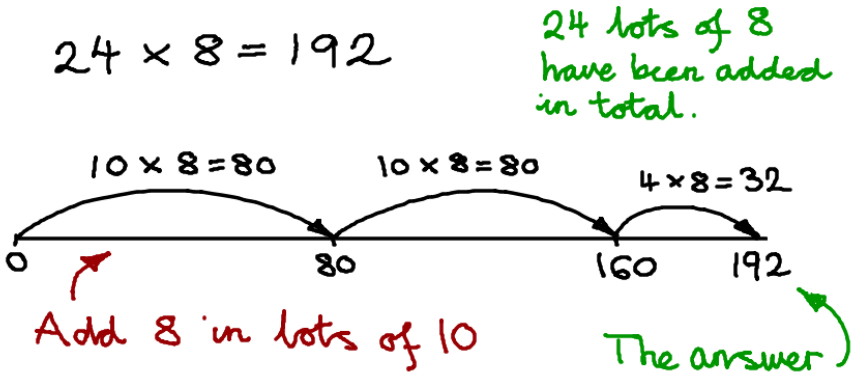
Common Mistakes to look out for.

- Check multiplication of multiples of 10 and 100 as calculations are often wrong by a factor of 10.
- Ensure that after recombining, the digits are lined up to enable column addition to proceed effectively.
- Children may need to carry when adding.

Alternative Methods.

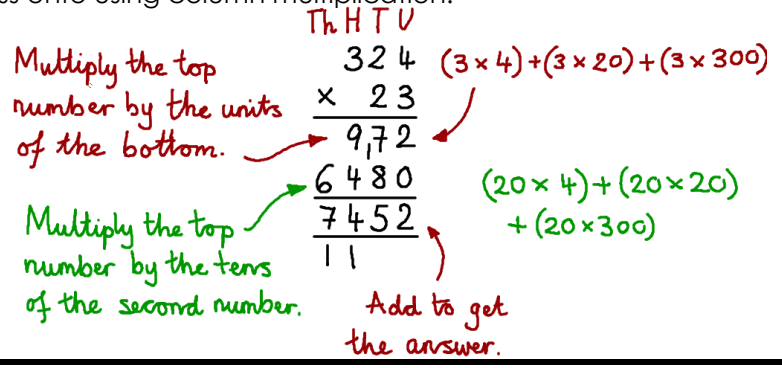
By the end of Year 6 children will need to be secure in their knowledge of an efficient method of multiplication. The following methods may be of help.

Repeated Addition using a number line.



Column Multiplication.

Once children are secure in their use of the Grid Method they may progress onto using column multiplication.



Mental Multiplication at Stage 6

Children should be able to recall:

- Squares to 12 x 12

- Squares of the corresponding multiples of 10

- Prime numbers less than 100.

Working mentally, children should be able to:

- Multiply pairs of two-digit and single-digit numbers.
  E.g. 28 x 3
- Double decimals with units and tenths.

- Multiply pairs of multiples of 10 and 100.
  E.g. 50 x 30, 600 x 20
- Multiply two-digit decimals
  E.g. 0.8 x 7

- Identify numbers with odd and even numbers of factors and no factor pairs other than 1 and themselves.

Children should know when to:

- Partition: Double the units and tenths separately and recombine.

- Use knowledge of multiplication and place value when calculating with multiples of 10 and 100.
  E.g. 60 x 70 using 6 x 7

- Use knowledge of multiplication facts to identify factor pairs and numbers with only two factors.

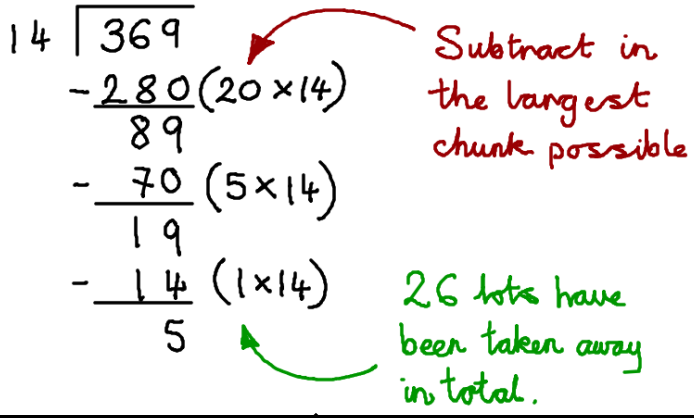
Written Division at Stage 6

Method:

Chunking using times table facts and multiples of 10.

Children will continue to use repeated subtraction to divide. Children will use known facts and can take away chunks of varying size.

369 ÷ 14 = 26 r 5



Common Mistakes to look out for.

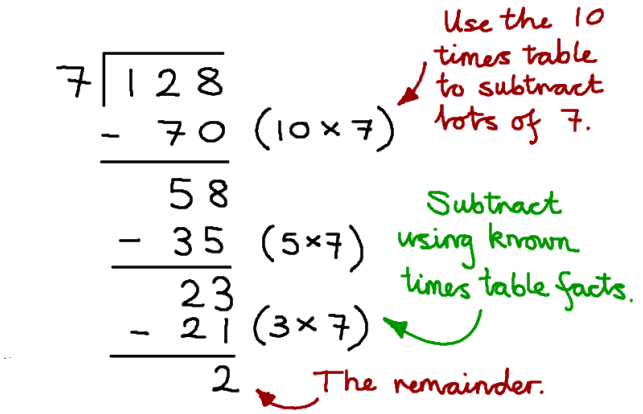
- When subtracting children will need to ensure they have lined up the digits to allow accurate subtraction.
- Children may need to exchange when subtracting and can forget to do this.
- Ensure that the number of 'lots' subtracted are all totalled.

Alternative Methods.

By the end of Year 6 children will need to be secure in their knowledge of an efficient method of division. The following methods may be of help.

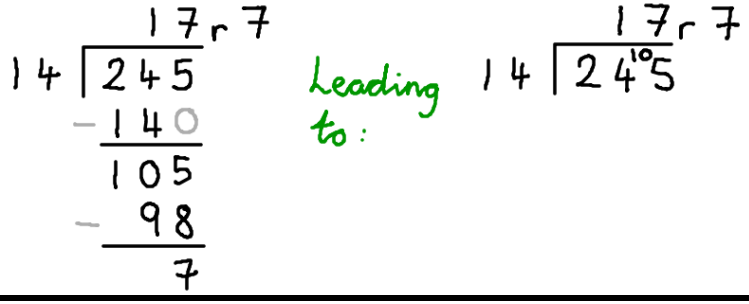
Chunking using times table facts.

128 ÷ 7 = 18 r 2



Short and long division.

Once children are secure in their understanding of division and accurate in their use of chunking they may use short and long division.



Mental Division at Stage 6

Children should be able to recall:

- Prime numbers less than 100.

- Equivalent fractions, decimals and percentages for hundredths.
  E.g. 35% is equivalent to 0.35 or $^{35}/_{100}$

Working mentally, children should be able to:

- Divide a two-digit number by a single-digit number.
  E.g. 68 ÷ 4
- Divide by 25 or 50.
  E.g. 480 ÷ 25

- Halve decimals with units and tenths.
  E.g. Half of 15.2
- Divide multiples of 100 by a multiple of 10 or 100 (Whole number answers).
  E.g. 600 ÷ 20, 800 ÷ 400
- Divide two-digit decimals.
  E.g. 4.8 ÷ 6

- Find 10% or multiples of 10% of whole numbers and quantities.
  E.g. 30% of 50 ml
- Simplify fractions by cancelling.
- Scale up and down using known facts.
  E.g. Given that three oranges cost 24p, find the cost of four oranges.

Children should know when to:

- Partition: Use partitioning and the distributive law to divide tens and ones separately.
  92 ÷ 4 = (80 + 12) ÷ 4
- Form an equivalent calculation.
  E.g. To divide by 25 divide by 100 then 4.

- Use knowledge of equivalence between fractions and percentages and the relationship between fractions and division.

- Recognise how to scale up or down using multiplication and division.
  E.g. If three oranges cost 24p, one orange costs 24 ÷ 3 = 8p