

Calculation Policy – Division

EYFS

Understanding the operation and related vocabulary

- record using marks that they can interpret and explain
- begin to use the vocabulary involved in dividing; *share, equally*

Mental methods

- solve simple problems sharing



Calculation Policy – Division

Year 1	Year 2
Understanding the operation and related vocabulary - Begin to understand division as grouping and sharing by using concrete objects, pictorial representations and arrays to solve problems; make connections between the different representations and use pictorial representations - begin to use the vocabulary involved in dividing; <i>array, row, column, equal groups of,</i>	Understanding the operation and related vocabulary - Understand the operation of division as sharing equally and grouping - Begin to relate division and fractions - show that division of one number by another cannot be done in any order - recognise the inverse relationship between multiplication and division - write mathematical statements using the division ($\div$), and equals ($=$) signs - understand and use the vocabulary involved in dividing; <i>divide, left over</i>
Recalling number facts - count in multiples of twos, fives and tens - know corresponding halves of doubles of all numbers to 10 - begin to recognise odd and even numbers	Recalling number facts - count in steps of 2, 3, and 5 from 0 - recall corresponding halves of doubles of all numbers to 15 and doubles of multiples of 5 to 50 - recall and use division facts for the 2, 5 and 10 multiplication tables - recognise odd and even numbers
Mental methods and mental methods with jottings - count a set of objects by grouping in 2s, 5s or 10s - solve problems involving sharing, grouping and halving; make equal groups - use knowledge that halving is the inverse of doubling and that doubling is equivalent to multiplying by two	Mental methods and mental methods with jottings - calculate mathematical statements for division within the multiplication tables knowing the inverse. - partition: when halving, halve the tens and ones separately, then recombine, how many groups make the whole? - use knowledge that halving and doubling are inverse operations

This Calculation Policy summaries some of the Statutory Requirements for the 2014 Maths National Curriculum with the written methods to be taught for each year group within Witherley Primary School. Planning should be done from the NC2014 and an easy to view Four Operation Flyer is available for each year group to be shared with parents and children annually.

Calculation Policy – Division



Year 3	Year 4
Understanding the operation and related vocabulary	
- Understand the operation of division as sharing and grouping - Relate division and fractions and begin to use scaling to compare - Understand the idea of a remainder and make sensible decisions about rounding up or down after division in the context of a problem - understand that the principles of the commutative and associative laws do not apply to division - understand the inverse relationship between multiplication and division - solve missing numbers problems involving division - understand, read and spell vocabulary related to division correctly: <i>in every, remainder</i>	- continue to understand the operation of division as sharing and grouping - Relate division and fractions and begin to use scaling to compare - begin to understand links to ratio problems - continue to make sensible decisions about rounding up or down after division in the context of a problem - understand the distributive law - continue to understand that the principles of the commutative and associative laws do not apply to division - continue to understand the inverse relationship between multiplication and division - continue to solve missing number problems - understand, read and spell vocabulary related to division correctly <i>for every, quotient, divisible by, factor</i>
Recalling number facts	
- recall corresponding halves of doubles of all numbers to 20, doubles of multiples of 5 to 100 and doubles of multiples of 100 to 500 - recall and use division facts for the 3, 4, 8 multiplication tables and begin to use knowledge of place value to derive related facts	- derive corresponding halves of doubles of multiples of 50 to 1000 and multiples of 1000 - recall division facts for multiplication tables up to 12×12, and use place value to derive related facts - recognise and use factor pairs e.g. <i>use knowledge of multiplication and division facts to find factor pairs</i>

Calculation Policy – Division

Mental methods and mental methods with jottings	
- calculate mathematical statements for division using the multiplication tables that they know, beginning to divide two-digit numbers by one-digit numbers (for known multiplication tables), e.g. - partition: double or halve the tens and ones separately, then recombine with numbers up to 20 - use understanding that when a number is multiplied or divided by 10, its digits move one or two places to the left or the right and zero is used as a place holder	- divide mentally using place value, known and derived facts, including dividing by 1, e.g. - partition: double or halve the tens and ones separately, then recombine with numbers over 20 - use understanding that when a number is multiplied or divided by 10 or 100, its digits move one or two places to the left or the right and zero is used as a place holder
Formal written layout	
Begin to divide two-digit numbers by one digit numbers using the multiplication tables that they know progressing to a formal written method. Short division 98 ÷ 7 becomes $\begin{array}{r} 14 \\ 7 \overline{) 98} \end{array}$ Answer: 14	begin to divide two-digit and three-digit numbers by a one-digit number using formal written layout Short division 98 ÷ 7 becomes $\begin{array}{r} 14 \\ 7 \overline{) 98} \end{array}$ Answer: 14 432 ÷ 5 becomes $\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$ Answer: 86 remainder 2
Estimating and checking	
- estimate the answer to a calculation - use inverse operations to check answers - use equivalent calculations to check answers	

Calculation Policy – Division



Year 5	Year 6
Understanding the operation and related vocabulary	
- continue to relate division and fractions - Understand - scaling by simple fractions - simple rates - begin to understand links to ratio problems - interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding - continue to understand the distributive law - continue to solve missing number problems - begin to use brackets - read, spell and pronounce mathematical vocabulary related to division correctly; <i>prime numbers, prime factors, composite numbers</i>	- continue to relate division and fractions - Continue to understand - scaling by fractions - rate - links to ratio problems - interpret remainders as whole number remainders, fractions, decimals or by rounding, as appropriate for the context - round answers to a specified degree of accuracy - use their knowledge of the order of operations - continue to solve missing number problems - explore the order of operations using brackets - read, spell and pronounce mathematical vocabulary related to division correctly; <i>common factor, common multiple</i>
Recalling number facts	
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 - derive corresponding halves of doubles of decimals (to one decimal place) using knowledge of place value - continue to recall division facts for multiplication tables up to 12×12 fluently, and derive and use related facts - identify multiples and factors, and common factors of two numbers, and primes	- derive corresponding halves of doubles of decimals (to two decimal places) using knowledge of place value - continue to recall division facts for multiplication tables up to 12×12 fluently, and derive and use related facts - identify common factors, common multiples and prime numbers

Calculation Policy – Division

Mental methods and mental methods with jottings

- divide numbers mentally drawing upon known facts
- use factors to construct equivalence statements
- begin to divide tenths, and 1-digit whole numbers and tenths by 1-digit whole numbers, e.g.
 - multiply or divide by 4 or 8 by repeated doubling or halving
 - form an equivalent calculation, e.g. to multiply by 5, multiply by 10, then halve; to multiply by 20, double, then multiply by 10
 - use knowledge of doubles/halves and understanding of place value, e.g. when multiplying by 50 multiply by 100 and divide by 2
 - use knowledge of division facts, e.g. when carrying out a division to find a remainder
 - use understanding that when a number is multiplied or divided by 10 or 100, its digits move one or two places to the left or the right relative to the decimal point, and zero is used as a place holder
- perform mental calculations, including with mixed operations, large numbers and decimals, e.g.
 - partition: use partitioning and the distributive law to divide tens and ones separately, e.g. $92 \div 4 = (80 + 12) \div 4 = 20 + 3 = 23$
 - form an equivalent calculation, e.g. to divide by 25, divide by 100, then multiply by 4; to divide by 50, divide by 100, then double
 - use knowledge of the 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 $24 \div 3 = 8$ p so four oranges cost $8 \times 4 = 32$ p
 - Use knowledge of multiplication and division facts to identify factor pairs and numbers with only two factors

Formal written layout

- divide numbers up to 4 digits by a one-digit number using a formal written method
- divide numbers up to 4 digits by a two-digit whole number using a formal written method
- divide numbers (up to two decimal places) by 1-digit and 2-digit whole numbers and give answers up to 2 decimal places
- calculate decimal fraction equivalents

Short division

$98 \div 7$ becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \\ \underline{7} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

Answer: 14

$432 \div 5$ becomes

$$\begin{array}{r} 86 \text{ r}2 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

$496 \div 11$ becomes

$$\begin{array}{r} 45 \text{ r}1 \\ 11 \overline{) 496} \\ \underline{44} \\ 56 \\ \underline{55} \\ 1 \end{array}$$

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

Short Division

Show $8/11$ as a decimal

$$\begin{array}{r} 0.7272 \\ 8 \overline{) 8.0000} \\ \underline{8} \\ 0 \\ \underline{0} \\ 0 \\ \underline{0} \\ 0 \\ \underline{0} \\ 0 \end{array}$$

Long Division

$432 \div 15$ becomes

$$\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{30} \\ 132 \\ \underline{120} \\ 12 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

$432 \div 15$ becomes

$$\begin{array}{r} 28.8 \\ 15 \overline{) 432.0} \\ \underline{30} \\ 132 \\ \underline{120} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

Answer: 28.8

Estimating and checking

use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
continue to use appropriate strategies to check answers